

Honourable Founder Chairman



Dr. M.S. Ramaiah, FIAE

(1922 -- 1997)

"A True Karma Yogi"

RAMAIAH INSTITUTE OF TECHNOLOGY

(Autonomous Institute, Affiliated to VTU)

BANGALORE



Dr. M. S. Ramaiah a philanthropist, founded 'Gokula Education Foundation' in 1962 with an objective of serving the society. M S Ramaiah Institute of Technology (MSRIT) was established under the aegis of this foundation in the same year, creating a landmark in technical education in India. MSRIT offers 17 UG programs and 15 PG programs. All these programs are approved by AICTE. All eligible UG and PG programs are accredited by National Board of Accreditation (NBA). The institute is accredited with **'A+' grade by NAAC in March 2021** for 5 years. University Grants Commission (UGC) & Visvesvaraya Technological University (VTU) have conferred Autonomous Status to MSRIT for both UG and PG Programs since 2007. The institute is a participant to the Technical Education Quality Improvement Program (TEQIP), an initiative of the Government of India. The institute has 380 competent faculty out of which 60% are doctorates. Some of the distinguished features of MSRIT are: State of the art laboratories, individual computing facility for all faculty members, all research departments active with sponsored funded projects and more than 300 scholars pursuing Ph.D. To promote research culture, the institute has established Centre of Excellence for Imaging Technologies, Centre for Advanced Materials Technology, Centre for Antennas and Radio Frequency systems (CARFS), Center for Cyber Physical Systems & Schneider Centre of Excellence. **M S Ramaiah Institute of Technology has obtained "Scimago Institutions Rankings" All India Rank 107 & world ranking 600 for the year 2022.** The Entrepreneurship Development Cell (EDC) and Section 8 company "Ramaiah Evolute" have been set up on campus to incubate startups. MSRIT has a strong Placement and Training department with a committed team, a good Mentoring/Proctorial system, a fully equipped Sports department, large air-conditioned library with good collection of book volumes and subscription to International and National Journals. The Digital Library subscribes to online e-journals from Elsevier Science Direct, IEEE, Taylor & Francis, Springer Link, etc. MSRIT is a member of DELNET, CMTI and VTU E-Library Consortium. MSRIT has a modern auditorium and several hi-tech conference halls with video conferencing facilities. The institute has excellent hostel facilities for boys and girls. MSRIT Alumni have distinguished themselves by occupying high positions in India and abroad and are in touch with the institute through an active Alumni Association.

As per the National Institutional Ranking Framework (NIRF), MoE, Government of India, M S Ramaiah Institute of Technology has achieved 65th rank among 1143 top Engineering institutions of India for the year 2021 and stands 1st amongst the Engineering colleges affiliated to VTU, Karnataka.

Chairman's Message



Ramaiah Institute of technology has always welcomed the students with open arms to pursue their dreams. It offers them the best of the infrastructure facility and dedicated faculty to prepare them for the challenges ahead in their chosen career by suitably equipping them with the right tools and knowledge of advancements in technology.

PRADARSHANA provides opportunity to bring out the best in our students to exhibit innovativeness, skill-set and diversity in their projects.

I appreciate all the faculty, staff and students who have strived hard to come up with **PRADARSHANA-2022**.

Best Wishes

A handwritten signature in black ink, appearing to read 'Dr. M.R. Jayaram'. The signature is fluid and cursive, with a prominent 'D' and 'J'.

Dr. M.R. Jayaram

Chairman,
Gokula Education Foundation

Vice Chairman's Message

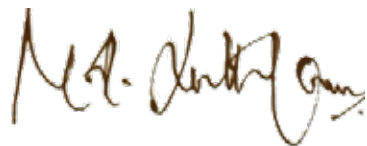


Ramaiah Institute of Technology Imparts quality technical education by promoting innovative skills development, techno-entrepreneurial activities and consultancy in emerging areas. Further we at Ramaiah Institute of Technology provide conducive learning environment through continuous improvement.

PRADARSHANA remains a mile stone event that provides an opportunity to students to exhibit the knowledge, commitment, creativity and talent.

I extend warm greeting to the faculty, staff and Students and my best wishes for the success of **PRADARSHANA 2022**.

Best Wishes



Sri. M.R. Seetharam

Hon'ble Vice Chairman , GEF &
Director, RIT
Former Minister for Planning, Statistics,
Science & Technology, Govt. of Karnataka.

Secretary's Message



Ramaiah Institute of Technology delivers global quality technical education by facilitating competencies towards creation of new skills, techno-entrepreneurial practices and socio-economic consulting.

PRADARSHANA has served as the platform for the young and the aspiring minds to think, innovate and excel in their chosen domain.

My hearty congratulations to all those involved in **PRADARSHANA-2022** for their best efforts.

Best Wishes

Sri. M.R. Ramaiah

Secretary, Gokula Education Foundation &
Director, Ramaiah Institute of Technology

CE's Message



Ramaiah Institute of Technology consistently channelizes the endeavours towards providing state-of-the-art facilities in terms of infrastructure, technology, educational plan and extracurricular activities. We aim to instil confidence, self-motivation, critical thinking and problem-solving skill sets in our students by imparting value-added education.

PRADARSHANA functioned as a befitting stage for students of Ramaiah Institute of Technology to showcase their intelligence, hard work, expertise and talents.

I want to express my gratitude to the faculty, staff and all the students involved in **PRADARSHANA-2022**.

Best Wishes

A handwritten signature in black ink, appearing to read 'Sri B.S. Ramaprasad'.

Sri B.S. Ramaprasad

Chief Executive, GEF (Engg. & General Sciences)

Principal's Message



We at Ramaiah Institute of Technology strive to fulfil the dream of our visionary founder chairman Dr. M S Ramaiah to achieve excellence in the field of engineering and management education to address the global socio-economic challenges.

PRADARSHANA provides the platform for students from various disciplines to showcase their innovative ideas and research competencies. It also provides students an opportunity to up-skill and be industry ready to work on challenging projects which impacts the society.

My heartiest congratulation to all the faculty members along with the staff members and students involved in **PRADARSHANA-2022**.

Best Wishes

A handwritten signature in black ink, which appears to read 'N.V.R. Naidu'. The signature is fluid and cursive, written on a white background.

Dr. N.V.R. Naidu

Principal, Ramaiah Institute of Technology

GLIMPSE OF PRADARSHANA



GLIMPSE OF PRADARSHANA



GLIMPSE OF PRADARSHANA



Pradarshana Proceedings 2022

PATRONS

Dr. M.R. Jayaram

Hon'ble Chairman, GEF

Sri M.R. Seetharam

Hon'ble Vice Chairman, GEF &
Director, RIT

Sri M.R. Ramaiah

Hon'ble Secretary- GEF &
Director- RIT

Sri B.S. Ramaprasad

Chief Executive
GEF (Engg. & General Sciences)

Sri G. Ramachandra

Chief of Finance
GEF (Engg. & General Sciences)

Advisory Committee

Dr. N.V.R. Naidu

Principal, RIT

Dr. Pradipkumar Dixit

Vice Principal, RIT

Dr. Archana

Registrar (Academics), RIT

Sri Mahadev Kokkari

Registrar (Admin), RIT

About Entrepreneurship Development Cell (EDC)

Entrepreneurship Development Cell (EDC) was established in July 2003.

EDC is a Platform for the RIT students dedicated to development of multidimensional skills. Creating a forum where we can bring Interdisciplinary students to bring the heterogeneous culture together. It invites various eminent entrepreneurs to deliver lectures to educate students about the joys and hardships of entrepreneurship. Guest Lectures, Workshops, Case Study, Group Discussions are conducted throughout the year to involve students in activities that are essential to be an entrepreneur. E-Cell also actively incubates startup ideas by creating required eco system to be an entrepreneur. Entrepreneurship Development Cell basically aims at recognizing and developing soft skills of individuals. To be a successful entrepreneur it is important for an individual to be a leader, a team player and a risk taker. He should also be an excellent judge of opportunities and recognize the potential a market can offer. A good entrepreneur has to analyze the market, plan and implement his ideas for a better society. Keeping these objectives in mind E-Cell functions to guide the budding Entrepreneurs in their endeavour.

VISION

To provide and sustain entrepreneurial activities to foster startup culture and strive to implement environmental, social and economic solutions.

MISSION

- To generate new and innovative ideas.
- To organize entrepreneurial Conclaves/ Ideathon / Hackathon / Competitions.
- To convert innovative ideas into tangible products and solutions.
- To encourage start-ups and its ecosystem.

CORE VALUES

- To identify creative students and inspire them with an innovative ecosystem which provides professional and ethical inputs to become successful entrepreneurs.
- To enable students to follow the path of enterprise with commitment to service.

The activities of EDC are based on different verticals: Awareness and motivational program on entrepreneurship, Skill development workshops/talks and Entrepreneurial talks. EDC is a platform to organize entrepreneurial Conclaves/ Ideathon / Hackathon / Competitions, to generate new and innovative ideas and to encourage start-ups and its ecosystem.

Significant milestones...

- Many reasonable start-ups have been mentored in the last 10 years.
- Currently, four prototypes are being incubated.
- EDC has collaborations with Confederation of Indian Industry(CII) and National Entrepreneurship Network(NEN), Wadhwani foundation.
- One startup has attracted the attention of Dubai based Cocoon Ventures, a Company, which has signed a Rs.1 crore patency contract.
- EDC has an annual budget allocation of Rs.15.0 Lakhs approximately.
- EDC has a built-up area of around 5000 Sq.ft. approximately.



Dr. Prabha Ravi

Associate Professor, Dept. of Medical Electronics
Co-ordinator EDC & Pradarshana 2022

Pradarshana Proceedings Committee



Dr. Monica R Mundada

Chief Proctor, RIT
Professor, Dept. of Computer Science & Engineering



Dr. M Shilpa

Associate Professor,
Dept. of Industrial Engineering & Management



Mr. Pradeep Kumar D

Assistant Professor
Dept. of Computer Science & Engineering

Organizing Committee

Members of Pradarshana 2022

Committee	Faculty Name & Designation	Dept
Publicity & Media	Dr. K R Phaneesh, Professor	ME
	Dr. C G Raghavendra, Associate Professor	ECE
	Dr. Sridhar B S, Assistant Professor	ME
	Dr. Manish Kumar, Assistant Professor	MCA
Printing	Dr. S Ajitha, Associate Professor	MCA
	Dr. Madhu Bhan, Assistant Professor	MCA
	Dr. R R Siva Kiran, Assistant Professor	CH
Infrastructure	Dr. P B Nagaraj, Associate Professor	ME
	Dr. R Mourougane, Associate Professor	CV
	Mrs. Suguna M Rao, Assistant Professor	CV
	Ms. Meghana M, Assistant Professor	ARCH
Hospitality	Dr. Adarsha K, Assistant Professor	MBA
	Mr. Sagar J S, Assistant Professor	CH
	Mr. M Gokulakrishnan, Assistant Professor	BT
Documentation	Dr. Rajeswari M Kulkarni, Associate Professor	CH
	Dr. Umeswaraddi, Assistant Professor	ETE
Industry collaboration & stalls	Dr. S Dawnee, Associate Professor	EEE
	Dr. T D Senthilkumar, Professor	ECE
	Dr. Shobha K R, Associate Professor	ETE
	Dr. Jyothi Lakshmi R, Assistant Professor	ME
Identifying social relevant projects	Dr. Shobha R, Associate Professor	IEM
	Dr. Siddesh G M, Associate Professor	ISE
Reception & Stage	Dr. K M Vanita, Assistant Professor	ETE
	Dr. Sumana Maradithya, Associate Professor	ISE
	Dr. Meeradevi A K, Assistant Professor	CSE

Department Project Coordinators U G (July - 2022)

Sl.No	Programme	Name of the Faculty	Designation
1	Architecture	Ar. Meghana K Raj	Associate Professor
		Ar. Reema Harish Gupta	Associate Professor
2	Biotechnology	Dr. Lokesh K N	Associate Professor
3	Chemical Engineering	Dr. Rajeswari M Kulkarni	Assistant Professor
4	Civil Engineering	Mr. M L Harish	Assistant Professor
5	Computer Science & Engineering	Dr. Rajarajeswari S	Associate Professor
6	Electronics & Communication Engineering	Dr. V Anandi	Associate Professor
7	Electrical & Electronics Engineering	Dr. S Dawnee	Associate Professor
8	Electronics & Instrumentation Engineering	Dr. Jyothirmayi M	Professor
9	Industrial Engineering & Management	Dr. M R Shivakumar	Assistant Professor
10	Information Science & Engineering	Dr. Lincy Meera Mathews	Assistant Professor
11	Mechanical Engineering	Dr. Niranjan Murthy	Associate Professor
		Dr. Rajeesh S	Assistant Professor
12	Medical Electronics Engineering	Dr. Basavaraj Hiremath	Assistant Professor
13	Electronics & Telecommunication Engineering	Dr. S G Shivaprasad Yadav	Associate Professor

Project Abstracts

Department Name	Page No.
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Biotechnology	43
Chemical Engineering	61
Civil Engineering	73
Computer Science & Engineering	93
Electronics & Communication Engineering	117
Electrical & Electronics Engineering	141
Industrial Engineering & Management	151
Information Science & Engineering	161
Electronics & Instrumentation Engineering	187
Mechanical Engineering	201
Medical Electronics Engineering	233
Electronics & Telecommunication Engineering	243

Projects Summary

Department Name	Number of Projects
School of Architecture	64
Biotechnology	32
Chemical Engineering	19
Civil Engineering	33
Computer Science & Engineering	41
Electronics & Communication Engineering	42
Electrical & Electronics Engineering	16
Industrial Engineering & Management	15
Information Science & Engineering	45
Electronics & Instrumentation Engineering	22
Mechanical Engineering	58
Medical Electronics Engineering	14
Electronics & Telecommunication Engineering	20
Total Projects	421

School of **Architecture**



Project Abstracts

2021 - 2022

Intermodal Transit Hub		
SL.NO	USN NO.	NAME
1	1MS17AT001	Abdul Ahad
Mentor Name	Prof. Jotirmay Chari	
ABSTRACT		
<p>The project aims at the creation of an intermodal transit hub that incorporates a metro station, a bus terminal along with a commercial hub and inclusive interactive urban spaces. These can be exhibition halls, open markets etc. The hub will be located on an appropriate site that offers connectivity to several adjacent high demand areas.</p>		

Retail Complex		
SL.NO	USN NO.	NAME
2	1MS17AT002	Aditi Shrivastava
Mentor Name	Prof. Jotirmay Chari	
ABSTRACT		
<p>The proposed Retail Complex is a design for a contemporary shopping place which seeks inspiration from traditional street markets. Located in the upcoming city of Greater Noida, the proposal aims to bridge the gap between a shopping mall and a street market by providing a one stop shopping experience incorporating the best both malls and street markets have to offer.</p>		

Agricultural Research Institute		
SL.NO	USN NO.	NAME
3	1MS17AT003	Aditi Udupa
Mentor Name	Dr. Monalisa	
ABSTRACT		
<p>The project involves the design of an Agricultural Research Institute located in the city of Haveri, Karnataka. Agricultural research institutes are unique in their need for private labs paired with a need for a strong relationship with the farmers and public for training activities. The project aims to explore how this specific typology of institute can benefit from architectural interventions, leading to the creation of a research environment that is specifically catered to individuals involved in agricultural research. The concept builds on the close- knit relationship required between built form and open space. The project aims to create buildings which accentuate their surroundings and provide spaces for multifaceted interactions amongst the users.</p>		

City Center		
SL.NO	USN NO.	NAME
4	1MS17AT004	Aishwarya S Patil
Mentor Name	Assoc. Prof. Monalisa	
ABSTRACT		
<p>This thesis intends to study the Architectural identity of the city, Role of Architecture as a part of Identity, different layers affecting the identity of a city and what causes the loss of identity and explore architectural solutions that can redefine the identity of the city. This design helps to understand the act of globalization in Indian cities to design public places using regional characteristics combined with Modern architecture which gives the identity to the city. The project is to be developed and redefined & integrating modern architecture with traditional values of the region. The catchment area of the complex will include all coherence and harmony in overall development exists.</p>		

Think Tank for Building Materials and Technology		
SL.NO	USN NO.	NAME
5	1MS17AT005	Akanksha Bajaj
Mentor Name	Assoc. Prof. Surekha	
ABSTRACT		
<p>The world is collectively facing problems of climate change, waste management and resource depletion and the construction industry plays a huge role in this. The proposed project is a Think Tank for Building Materials and Technology, located in Hyderabad, India- a rapidly developing metropolitan with a potential for green infrastructures. The think tank is primarily a research center for sustainable innovations in building materials so our future buildings can be smarter, greener, consume lesser resources, produce less carbon footprint and be circular in nature. The think tank also provides interaction with other industries and associated fields in construction by hosting expos, providing services like consultations and commission work, retail fairs and educational seminars on the latest inventions.</p>		

Floriculture Research Institute and Hub		
SL.NO	USN NO.	NAME
6	1MS17AT006	Akanksha Gunda
Mentor Name	Assoc. Prof. Surekha	
ABSTRACT		
<p>Karnataka accounts for 75% of India's total flower production, making it the largest producer with about 40 flower growing and exporting units. Floriculture is the area of ornamental horticulture associated with the production and use of flowers, potted plants, and annual bedding plants. It includes the use of floral products in the florist's trade. Floriculture plays a major role in the State's and Nation's economy and yet it does not have a dedicated Research and Development Institution to promote further innovation and growth. Even though huge areas of agricultural lands are provided for cultivation, many flowers are wasted either due to disposal after use or non-marketability by farmers. The thesis project aims to plan a hub which constitutes a Research institution, a farmers training institute to educate the farmers on the latest production, harvesting techniques and the new implements available to ease the process of growing flowers, a processing unit for conversion of waste and excess produce of flowers into value added products, a dedicated vocation training centre for the public and a market complex with a marketing institute and office. This would cover growing, processing, research & marketing of flower crops. The objectives are to use indigenous available sources for making advances in management of major flower crops of Karnataka, utilize or develop technologies from developed countries, making floriculture even a more profitable field.</p>		

Wellness Retreat Centre		
SL.NO	USN NO.	NAME
7	1MS17AT007	Amisha Patel
Mentor Name	Assoc. Prof. Lavanya Vikram	
ABSTRACT		
<p>Wellness retreat center is a center where treatment is carried out using the therapies derived from the seven-chakra concept which is based on Ayurveda, naturopathy, yoga, meditation etc. I chose this topic as It is of vital importance in today's date as the urban stress, busy life schedule, disrupted time table has added on to people's anxiety leading to the increased rate of depression. In general, also if we see anything happens and it is directly affecting our mental health. So, this would be like a need of an hour. This wellness centre has spaces like welcome centre, admin, research facilities to further make the whole healing process even more authenticated and certified, wellness clinic where people can interact with professionals and have one on one interactions, therapy areas housing facilities starting from ward to villas, dining space all connected with different types of healing landscapes or its elements.</p>		

IIM Shillong		
SL.NO	USN NO.	NAME
8	1MS17AT008	Ananya Biswas
Mentor Name	Assoc. Prof. Lavanya Vikram	
ABSTRACT		
<p>Management has been an essential component for the development of an organization, society or a country, including personal growth and development of an individual. This project has been proposed in Shillong, Meghalaya. IIMS was established in 2007 and is the seventh IIM to be established in India and despite being one of the old IIMs is currently functioning in a temporary campus- the Mayurbhanj campus. The proposal for the new IIMS campus aims to create an informal yet distinctive institution, responding to the site, context and the climate and bringing out the very essence of the blend of Traditional Khasi architecture and new construction technologies.</p>		

North East Tribal Handicrafts & Performing Arts Center		
SL.NO	USN NO.	NAME
9	1MS17AT009	Ankita Hatibaruah
Mentor Name	Assoc. Prof. Sudha Kumari	
ABSTRACT		
<p>Northeast India is home to hundreds of tribes and thus home to hundreds of different cultures. But in this modernizing world, these unique cultures, artforms, handicrafts and performing arts are fading away. Thus, this project aims to create a platform to bring together the rich culture and heritage of the Northeast together and teach the community about the culture through the use of events, festivals, and workshops. It also aims to promote the artforms of Assam and other parts of northeast as well which are slowly dying out with time. Promoting these artforms and educating students, or spectators from all around the globe about these almost vanishing artforms needs infrastructure which should be much rich further creating a good learning atmosphere.</p>		

International Convention Complex		
SL.NO	USN NO.	NAME
10	1MS17AT010	Anushreya Kondapi
Mentor Name	Assoc. Prof. Sudha Kumari	
ABSTRACT		
<p>The development of convention centers and exhibition facilities are increasingly being encouraged for their role in simulating local economies and improving quality of life. Conferences and business tourism is a very important sector of the MICE (Meetings, incentives, conferences, and exhibitions) industry. A Convention Complex is a conglomeration of various spaces including pavilions, convention halls, conference rooms, hotels, restaurants and various other recreational spaces for the delegates and visitors. The conventions held, have attendees coming in from all around the country, as well as the international guests, and thus the space is designed in order to accommodate people from far and wide. This also leads to an increase in tourism and exchange of cultures. The idea of this project is to design a self-sufficient space which provides all the facilities for different types of events, in the Indian state of Goa.</p>		

Disaster Management Institute		
SL.NO	USN NO.	NAME
11	1MS17AT011	Belli Rekha P
Mentor Name	Assoc. Prof. Meghana K Raj	
ABSTRACT		
<p>A critical component of disaster management is the knowledge of available resources and how to respond at the time of it. The role of institutions spans in all phases of the disaster cycle, as an educational and research institute by necessity is involved in all phases and contributes broadly to the society. The institution can offer especially in terms of academic contributions and help in the reconstruction phase as well. The institute can also concentrate on disaster training to introduce the participants as to how to respond to disasters. Indeed, there is a serious need for education in a disaster. However, Institution plays a major role in planning and implementation efforts since the above stated requires a major scientific base whereby by inculcating the proper information and the uncertainties that comes with the disaster impact need to be understood completely before preparedness plan implementation. If the academia (source pertinent to information and the analytical and critical methods) combined with management skills can make a major long-lasting contribution to the society.</p>		

AIIMS		
SL.NO	USN NO.	NAME
12	1MS17AT012	Bhavani Katkam
Mentor Name	Assoc. Prof. Meghana K Raj	
ABSTRACT		
<p>The thesis proposes the design of AIIMS, Raichur. This is a live project proposed in Raichur by Minister Of Health And Family Welfare Of Government Of India. The condition of rural areas in the district is even more distressing where due to lack of ignorance and improper healthcare facilities many children suffer from malnourishment. But with the recent intervention of the state government in proposing AIIMS, institute, it is hoped that the health of these children would improve and also improve medical standards of the town. This project will help people access healthcare facilities regardless of socioeconomic status or caste. Even lower group strata will be able to receive quality affordable medication. The proposal consists of a hospital of 500 beds, institution and quarters.</p>		

Professional Football Club Complex		
SL.NO	USN NO.	NAME
13	1MS17AT013	Bhavish M Shah
Mentor Name	Assoc. Prof. Tejaswini H	
ABSTRACT		
<p>The purpose of the thesis is to explore methods to increase the footfall and revenue generation through the design of a professional football club complex. Football is one of the most-viewed sports in the world, gaining popularity in India as well. For a country with 1.38 billion people, Football clubs are clubs that have been registered with the All-India Football Federation (AIFF) and hold a license for the same. The thesis helps to understand why there is neglect in the development of facilities concerning the sport and resolve it. The design aims at understanding the situations of sports facilities that need to be designed to integrate the closed spaces with the open ones and make the space public friendly.</p>		

Mixed Retail and Entertainment Centre		
SL.NO	USN NO.	NAME
14	1MS17AT014	D Keerthana Reddy
Mentor Name	Assoc. Prof. Tejaswini H	
ABSTRACT		
<p>The proposed project Mixed Retail and Entertainment is a new form of development consisting of unanchored retail projects that mix entertainment venues and restaurants as a solution for enticing visitors to the city. The difference between this destination and the traditional shopping mall is the experience gained when leaving the destination. The thesis explores the ways in which design incorporates various functions (of retail trade and retail estate shopping activities) and facilities (for leisure, recreation, and entertainment) in one place to derive maximum benefit in the most efficient manner. An emphasis has been made on incorporating the history and culture and the site's sense of place, two place making components that help create a distinct destination. These strategies were used as a basis for developing design criteria that were in turn applied to the development of a master plan for a Mixed Retail and Entertainment center in Mysore, Karnataka.</p>		

Hotel Management and Catering Institute		
SL.NO	USN NO.	NAME
15	1MS17AT015	Darshan Gowda N
Mentor Name	Assoc. Prof. Reema Gupta	
ABSTRACT		
<p>Hotel Management as a field requires aspirants to possess good communication skills as well as an impressive personality. Due to globalisation the hotel management industry is growing with leaps and bounds. Each year, a lot of hospitality related jobs are injected into the economy. There are so many departments that contribute to different aspects of running a hotel, this also includes recreation, public relations, security, and computer applications. The aim of the project is to improve the standards of hospitality education keeping pace with the human resource requirements of the hospitality industry and to create comfortable atmosphere to train students on all core areas of hospitality industry.</p>		

Citizen Development Offices		
SL.NO	USN NO.	NAME
16	1MS17AT017	H V Tina Vaishnavi
Mentor Name	Assoc. Prof. Reema Gupta	
ABSTRACT		
<p>Public administration in India faces immense challenges. With the government and municipal offices being engaged in providing both direct and indirect services to the general public, it is important that the government offices are equipped with state-of-the-art facilities and infrastructure to enable them to optimize their performance. Hence, this space should help the public to visualize government and municipal spaces in a different and better perspective. This project aims to house the different municipal bodies under one roof for the benefit of the public as well as to create a link between the employees of the different offices. This project also hopes to act as an urban square considering the proximity to the transport stations as well as other buildings of the same category.</p>		

Bus Terminal with Commercial Complex		
SL.NO	USN NO.	NAME
17	1MS17AT018	Harini A
Mentor Name	Assoc. Prof. Meghana K Raj	
ABSTRACT		
<p>A transit hub is the spine of any city. It serves the most basic necessity for the city that is transportation. But when we hear about 'Transit Hub', the first thing that comes to our mind is either train or bus or metro or all combined. The fashion of creating huge transit hubs without any concern for the immediate society around it has a deteriorating effect on itself. Because of this, people have to adjust to the design rather than creating an adaptive design. A transit hub does not necessarily need to be just a starting or ending point of a journey. It can also serve as a node for the community that surrounds or resides around the hub. But how does this happen? How to get the community involved in the process? The answers lie in the needs and aspirations of the society. If their wants and demands can be met on an optimum level at a place which provides them an escape from their daily schedule & also gives them a new set of viewpoints for the environment surrounding them, then the space will act as a node for the society & passengers. This is what has been tried to achieve.</p>		

Center for Karnataka Handicrafts		
SL.NO	USN NO.	NAME
18	1MS17AT019	Harsha Pradha M
Mentor Name	Asst. Prof. Divya Susanna Ebin	
ABSTRACT		
<p>Many artists involved in arts, crafts and handicrafts have no access to proper working place. Bringing them all together by providing all the necessary facilities and also encouraging the Karnataka handicrafts and culture and embedding them in the future generation by providing the particular education needed which is not a part of basic education in schools and colleges. And also providing a platform to sell those hand made products and display them. Design a center for the cultural heritage of Karnataka by bringing them together and forward it to the younger generation to experience and use them. Providing platform to sell those hand made products and display them.</p>		

Urban Food Hub & Culinary School		
SL.NO	USN NO.	NAME
19	1MS17AT020	Harshitha Ashok
Mentor Name	Asst. Prof. Jyotsna Rao J	
ABSTRACT		
<p>Food and Architecture are parallel creative fields due to the exuberant quality of art that exists in them. These synonymous projections were extended to explore a newer perspective, one that could inscribe value to our city and engage a wide range of citizens. The idea is to create a new food public space in Bangalore. This project is located in Chikkajala, an upcoming town in Bangalore North. It aims to create a space that cultivates, produces, and distributes its own food. Hence, providing opportunities not only for students who want to acquire knowledge, but also for farmers to grow their produce, as well as for startup companies and catering businesses.</p>		

Biotechnology And Life Science Park		
SL.NO	USN NO.	NAME
20	1MS17AT021	Harshitha K S
Mentor Name	Asst. Prof. Jyotsna Rao J	
ABSTRACT		
<p>Aiming at enhancing the field of Bioscience in Bengaluru, the park establishes itself as an integrated community dedicated towards entrepreneurs, researchers, and global investors for conducting quality groundwork for the betterment of lifestyle and environment. The design aims at finding the Genius loci (referred to as something that drives the spirit of the space) to share the knowledge of the work process and engage in collaborations at various stages, to introduce learners towards the professional field. As a live ongoing project, the motive here is to bridge the gap between the analytics and its pragmatic usage, to direct towards a multi-disciplinary finding.</p>		

HEALTHCARE INNOVATION HUB		
SL.NO	USN NO.	NAME
21	1MS17AT022	Havishya Kolli
Mentor Name	Asst. Prof. Kriti Bhalla	
ABSTRACT		
<p>With several unprecedented challenges driving the need for quick solutions, the healthcare industry has experienced a multitude of improvements over the years, and it now continues to advance its focus towards digitalization. This calls for an innovative environment as a step forward towards delivering user centric health management. The modern healthcare innovation hub is a live project proposed by Siemens Healthineers in Bangalore. The project is located in Electronic city and aims to provide professionals an intensively collaborative and creative setup for innovation in the healthcare industry to solve the problems of the present and future as well. The project blends with the city’s IT hub through a site responsive design approach and the concept of open innovation to highlight ‘users’ via a breathing campus.</p>		

Centre for Journalism and Mass Media		
SL.NO	USN NO.	NAME
22	1MS17AT023	Inchara B Suresh
Mentor Name	Asst. Prof. Kriti Bhalla	
ABSTRACT		
<p>The Centre for Journalism and Mass Media aims to help encourage students and the public interested in engaging in journalism and expression through the usage of technology and social interaction. This would help with the development of the youth and their thinking with an engaging platform. The center includes an institute, workshops, library, auditorium, a social media influencer zone (including radio broadcast station, recording studios, printing room) and student housing. It aims to have interactive learning to amalgamate different ways of thinking.</p>		

Institute for Performing and Fine Arts		
SL.NO	USN NO.	NAME
23	1MS17AT024	Jahnavi K
Mentor Name	Asst. Prof. Aishwarya Yoganand	
ABSTRACT		
<p>Performing arts refers to the forms of art in which artists use their voices, bodies, or inanimate objects to convey artistic expression. It is different from visual arts, which is when artists use paint, canvas, or various materials to create physical or static art objects. Fine Arts is a broader term which includes painting to sketching to dance, film making, animations, design, and graphics to music. A branch of Fine Arts, Visual Arts deals with the work, which is actually visual in nature such as ceramics, painting, drawing, printmaking, design, crafts, photography, film making, design and graphics. The integration of performing arts and fine arts together can provide scope and exposure to students along with preserving various art disciplines of the place.</p>		

Bus Terminal Cum Commercial Complex		
SL.NO	USN NO.	NAME
24	1MS17AT025	K Divya C Reddy
Mentor Name	Asst. Prof. Aishwarya Yoganand	
ABSTRACT		
<p>The spiritual center of Andhra Pradesh, Tirupati, sees around 75,000 pilgrims daily to visit the holy abode of Lord Venkateswara, Tirumala. With the population of the city increasing and fluctuating everyday due to the migrating population, citizens face difficulties due to inadequate. Services in the existing bus station. APSRTC has set up a proposal to upgrade Tirupati Central Bus Station with better facilities and convert it into integrated stations. In addition to the above-mentioned facilities, spaces for recreation such as food courts, retail complexes are also to be provided.</p>		

District Center		
SL.NO	USN NO.	NAME
25	1MS17AT026	Kiran Kumar S
Mentor Name	Asst. Prof. Meghana M	
ABSTRACT		
<p>The topic will explore the condition of the modern urban situation in which most of the people live and spend their time inside of the building. Finding ways to provide modern infrastructure for more open spaces like urban plazas, entertainment nodes. Exploring interrelationships of the spaces with mixed use technique. Also give focus in evolving contemporary models for traditional Indian markets. Giving them healthier, comfortable, and more functional open spaces.</p>		

Space Exploration and Science Park		
SL.NO	USN NO.	NAME
26	1MS17AT027	Krittika K C
Mentor Name	Asst. Prof. Meghana M	
ABSTRACT		
<p>A space exploration and Astronomy Park is an attempt to educate, inspire and make people traverse into space by the design of the architectural spaces. Implementation of varying forms, semblance of space shuttles and ships, inducing an otherworldly sensation with interior and exterior spaces and detail at eye level is important. This park includes exhibition spaces - temporary and permanent, dedicated spaces for holographic and VR displays, Planetarium, Mars display dome, Remote Observatory, and a space club.</p>		

Sports Training Centre		
SL.NO	USN NO.	NAME
27	1MS17AT028	Kumar Swamy P
Mentor Name	Asst. Prof. Sheethal B S	
ABSTRACT		
<p>The Academy of Sport Program enables youth to get quality training in a particular sport and creates opportunities to further develop their skills and their understanding of their chosen sport. This also includes a healing center that mainly focuses on yoga, spa, sport strategy, analysis, food diet, supplements, medical facilities, and recovery. This academy also holds the tournaments but to limited sports facilities.</p>		

Archaeological And Heritage Conservation Institute		
SL.NO	USN NO.	NAME
28	1MS17AT029	Lipika Rajashekhar
Mentor Name	Asst. Prof. Megha Ann Jose	
ABSTRACT		
<p>Archaeology and heritage connect a community with its past and ensures its continuity into the future. It is a product of several generations, representing their values which were created and carried through shared experiences, while ensuring the continuation of their traditional way of life with socio-cultural practices rooted in place. Mysore, an ancient, historical, and cultural capital, holds the rank of being a heritage city in India, recognized under the cultural tag, both by the state and national governments. The unreserved harmony of architectural buildings, sites, lakes, parks, and open spaces with the backdrop of Chamundi hills add to the city's attraction. The city, with its long boulevards radiating from a well-defined central axis and well-recessed public buildings balanced on either side, is capable of being a model for any town planner. Architectural heritage includes not only individual buildings of exceptional quality and their surroundings or group of buildings – providing a special setting by virtue of uniqueness from their architectural style – but also all areas and settings of cities which have historic or cultural interests. In this way, Mysore is a dogma of tangible and intangible heritage elements; its structured urban design constituents include many monuments, heritage buildings, precincts/heritage areas and natural spaces. Considering all these factors and Mysore's rich history and cultural significance, this paper attempts to identify the archaeological and heritage resources in the City of Mysore for conservation. Furthermore, unfortunate attempts at heritage conservation by the formal authorities have devalued the eminence of such sites, resulting in the discontinuation of the valuable cultural links, as well as leading to deterioration of these structures. Accordingly, the current paper centres on raising awareness towards the crucial aspects of any heritage conservation and management – such as requiring time, commitment, adequate knowledge, experience, and local support, while also concentrating on practices to adopt in order to minimize degradation in the process of site preservation and/or restoration.</p>		

Coworking Park		
SL.NO	USN NO.	NAME
29	1MS17AT030	M Arsha Giju
Mentor Name	Asst. Prof. Megha Ann Jose	
ABSTRACT		
<p>The coworking park is a networking hub catered for self-employed individuals, start-ups, small and large companies to provide them with a flexible, interactive workspace and culture that allows sharing of resources and amenities. The pandemic has opened our eyes to the advantages of a flexible work schedule but at the same time the human need for community and importance of social interaction came into the foreground. A coworking park is the best of both worlds. Larger enterprises have also seen the advantage of the co-working culture and have collaborated with many cowork companies to provide the best office spaces for their employees. But the scope for Coworking park is not exclusively for its members, co- working park has the potential to create around it a hub of activities that can be inviting and encouraging to visitors as well and has a potential to be a beginning of urban development.</p>		

Episteme - Science Center		
SL.NO	USN NO.	NAME
30	1MS17AT031	Madhura B
Mentor Name	Asst. Prof. Megha Ann Jose	
ABSTRACT		
<p>The proposed science center at Shivamogga, Karnataka involves design of science museums, research, and observatory facilities. The design aims at encouraging experience-based learning of science in a district with a growing number of educational institutions. To encourage native community knowledge and to keep up with the recent interests of organic farming the design will accommodate an agricultural workshop facility.</p>		

Organic Food Products Company Headquarters		
SL.NO	USN NO.	NAME
31	1MS17AT033	Manali Arun Kumar
Mentor Name	Asst. Prof. Pooja M Naik	
ABSTRACT		
<p>Headquarters of an organic products company is the premises serving as the managerial and production center of the company called organic tattva which deals with the manufacturing and marketing of organic food products. Organic industry is growing very fast and has high demand in the present society. A Headquarters of an organic company welcomes that shift in the lifestyle. This is a development which has its administrative office, manufacturing, testing, and marketing at one place. The main objective of any marketing organization is achieving the customer requirements and making profit with the production they make. An important task for an organization when it wants to develop a marketing plan is to collaborate and integrate with the production unit to achieve desired objectives. To achieve the integrative links and relations between marketing and production through architecture.</p>		

India Habitat Center, Hyderabad		
SL.NO	USN NO.	NAME
32	1MS17AT034	Mohammed Ashfaq Madni
Mentor Name	Asst. Prof. Pooja M Naik	
ABSTRACT		
<p>The IHC is a Cultural and a Conventional Centre that would provide a physical environment which would serve as a catalyst for a synergetic relationship between individuals and institutions working in diverse habitat related areas and therefore, maximize their total effectiveness. To facilitate this interaction, the culture provides a range of facilities. It would focus on bringing together the diverse population to recognize, appreciate and take part in the development of commercial and economic development along with the use of active and passive measures to create a comfortable environment for the users. The govt. approved the proposal of IHC, Hyderabad based on IHC, Delhi which is considered as an iconic building with govt. And public usage and effective architectural characters.</p>		

Automobile Museum & Convention Centre		
SL.NO	USN NO.	NAME
33	1MS17AT035	Mohammed Nabeel
Mentor Name	Asst. Prof. Yashas Hegde	
ABSTRACT		
<p>The automobile industry today is at the brink of making a quantum leap to switch to renewable energy entirely. As more and more manufacturers consider the shift to clean energy it significantly changes how we perceive automobile transportation. With radical changes under the hood, manufacturers are revamping the exterior as well, to complement this growth and innovation architectural intervention can catalyze this shift and encourage more people to opt for the eco-friendly option. "Architecture... does not consist in the sum of the width, length and height of the structural elements which enclose space, but in the void itself, the closed space in which man lives and moves."--Bruno Zevi By proposing an automobile museum and convention centre, people can experience this bold move while being connected to the rich legacy of automobile transport. This will help the world realise the economic and environmental advantages and make informed choices with their purchases.</p>		

Centre for Excellence in Design and Manufacture of Wood Based Handicrafts		
Sl.no	Usn No.	Name
34	1MS17AT037	Navya Raju
Mentor Name	Asst. Prof. Yashas Hegde	
ABSTRACT		
<p>Karnataka (Erstwhile Princely State of Mysore) is historically known for art, artefacts, carvings, sculpture, handicrafts, and legacy of rich heritage. Especially the handicrafts of Karnataka (Old Mysore) are world renowned and have global demand. One of the challenges the handicrafts industry faces is the fast disappearance of traditional skilled artisans, and absence of interest on the part of young people towards craftsmanship, indigenous art and handicrafts. The present proposal jointly initiated by Karnataka Jnana Aayoga (KJA) and University of Mysore (UOM) is an incentive taken by the Government of Karnataka taking note of preservation and promotion of indigenous (local) art and culture in the context of advent of global (Western) cultural domination. Although, there are several assorted mechanisms available for study and promotion of these activities, there is no single center for excellence to train, design and develop the manufacturing sector of wood-based handicrafts in Karnataka. Finding a market is also a challenge that this proposal hopes to address. Hence, the present proposal to establish the Centre for Excellence in Design and Manufacture of Wood-based Handicrafts, at Mysore.</p>		

Youth Development Center		
SL.NO	USN NO.	NAME
35	1MS17AT038	Neha V Palankar
Mentor Name	Asst. Prof. Theju Gowda	
ABSTRACT		
<p>India has the highest number of youth population; therefore, there is a need for developing and giving them the opportunities and guidance for success and career development which ensures the country's growth as well. The Youth Development center will act as a place where young people can meet and participate in a variety of activities, providing them job opportunities and exposure to different platforms. It serves the dual purpose of accommodating unstructured social interaction among different age groups and providing instructional classes in a supervised environment. The intent of this project is to promote positive development among youth, navigate adolescence in healthy ways, engage them in extracurricular activities, and disseminate information on career and education pathways.</p>		

Business and Entrepreneurial Hub		
SL.NO	USN NO.	NAME
36	1MS17AT039	Nidhi B Gowda
Mentor Name	Asst. Prof. Theju Gowda	
ABSTRACT		
<p>As the world is moving rapidly towards urbanization, it has become imperative for cities to develop in order to cater to the changing times. Modernization has led to numerous path-breaking innovations in various spheres of life. As a result, the potential for growth in urban cities has reached a new high. When people from different business backgrounds collide, new ideas are born which benefit the society as a whole hence accommodate cultural exchange and sheds importance to all professionals irrespective of their individual contribution. This design project consists of office spaces for employees working in tech companies as well as young entrepreneurs and aspiring students, thus comprises of common co-working areas. Locating these varied sets of work areas in the same vicinity establishes exchange of ideas and promotes interaction. Satisfying the working professionals as well as the newer generation with intellectual minds to explore and find their calling in order to make a difference.</p>		

Fashion Technology Institute and Museum		
SL.NO	USN NO.	NAME
37	1MS17AT040	Nirmita Sharat Kumar K
Mentor Name	Asst. Prof. Megha Ann Jose	
ABSTRACT		
<p>The handloom industry is diverse and rich in history. Throughout centuries, handloom weaving has been embedded as culture and tradition within rural communities, but due to modernization and technological development the art of handloom weaving is dying. Hindupuram is a town in Andhra Pradesh's Anantapur district, famous for its handloom silk saris. The lack of opportunities and development schemes from the government discourages handloom weavers to carry on with their profession. Not only is this a considerable loss of culture and skill for India, but it also greatly affects the people themselves, who have practiced and honed their craft for many years, only to have no way to help themselves when their skilled hands are replaced by machines. The handloom products of Hindupuram, as well as India at large, are on the verge of extinction and are getting replaced by power looms that can produce much more silk, in the same amount of time that a handloom weaver takes to create a single finished piece, but is lacking completely in terms of quality, eccentricity, art, and especially humanity. The traditional handloom industry cannot be left to die, with its weavers living in economic crisis, hence it is necessary to encourage the local handloom weavers to carry on the culture. There is the need to provide opportunities for handloom weavers to interact with designers and the students to gain knowledge.</p>		

Eco Tourism Hub, Coorg		
SL.NO	USN NO.	NAME
38	1MS17AT041	Poorvika G D
Mentor Name	Prof. Jotirmay Chari	
ABSTRACT		
<p>Ecotourism has the potential to ensure sustainable use of the country's resources and generate jobs for the local population. Architecture plays a vital role in ecotourism as it is an expression of natural surroundings through space. Ecotourism can provide a near term, relatively low-cost solution to over tourism if it is implemented correctly. Ecotourism allows revenue to be distributed more evenly to underserved areas, while ensuring that tourism revenue stays within and works for the communities that engage in it. Karnataka is a major destination for tourists in the country. The districts of the Western Ghats and the Southern districts have popular eco-tourism locations. Some of the popular locations include Kudremukh, Madikeri and Agumbe. The project consists of spaces designed to experience the local culture, tradition, food style and to experience the essence of the coffee land with proper accommodation, there by leading to the social and economic development of the place which directly contributes to the development of nation and tourism.</p>		

Tribal Eco Village		
SL.NO	USN NO.	NAME
39	1MS17AT042	Prachhi Patel
Mentor Name	Dr. Mona Lisa	
ABSTRACT		
<p>Tribal architecture in India is not ‘pukka’ but defined as ‘kaccha’, built by local people using impermanent building materials such as mud, grass, fiber, or semi-permanent wood, coconut, or palm frond. Kaccha architecture is replaced on an annual or seasonal basis as is therefore a short-lived dwelling without stability or endurance, that constantly requires replacement. Tribal architecture was neglected, often regarded as backwards and primitive, associated with underdeveloped societies which became a cultural metaphor for the people. My project intends to understand the socio-cultural aspects of the tribal community, lifestyle, and local architecture; converting it into the everyday design for the community which also acts as a tourist hub. The traditional knowledge system of the community provides the guidelines for design.</p>		

Fashion Hub, Bangalore		
SL.NO	USN NO.	NAME
40	1MS17AT043	Pragathi Gatti
Mentor Name	Dr. Mona Lisa	
ABSTRACT		
<p>Fashion is the need of the society. Fashion is the mode of action method of conduct, manner, custom sort, and way. Fashion is not only the method or the way how one is dressed up built it is also the style. What makes the difference is the type of fabric, usage of threads, and the combination of colours. A serious reason for India not being successful has been its isolation in the fashion system. The Fashion Hub is a forum for all the activities related to fashion. It is an amalgamation of fashion incubators, Fashion designers, Library, Research and Development centre, Exhibition area, Runways, Boutiques, Flagship stores, Fashion exhibition, Product launching area, food joints. The project intends to create interactive, creative, and inspiring platform for various fashion professionals, fashion aspirants, fashion entrepreneurs and to provide high end for Indian fashion and to integrate its various aspects. The defined community will be able to understand and explore fashion, to help emerging designers grow and showcase on global platform and make fashion available for all. The project also highlights the importance of making general public aware of the process involved in the production of the garments and accessories they wear.</p>		

Cricket Academy, Hubli		
SL.NO	USN NO.	NAME
41	1MS17AT044	Prashant Chavan
Mentor Name	Assoc. Prof. Surekha R	
ABSTRACT		
<p>Promoting physical activity is an important public health priority in which sports plays an important role when it comes to imparting character values and physical and mental well-being of a person. The availability of sports facilities and venues has been an issue in developing cities. Wherein, when the city host sports events, venues are being dispersed in different parts of the city; some venues are in the neighboring cities, which can cause inconvenience to the athletes and audience. And this sparks the need to design sustainable sports facilities to moderate the intention of people to be inclined into physical activities and sports participation creating a strong advantage to the well-being of the public. A stadium is first and foremost the staging of the game for the masses of people. However, this utilitarian perspective is limited, and it belies the bigger implications of a stadium's effects on the individual visitor and on the community it serves. The influence of a stadium is tremendous in its immediate surroundings and income cases can be felt around the world.</p>		

Traveller's Retreat		
SL.NO	USN NO.	NAME
42	1MS17AT045	Pratiksha G S
Mentor Name	Assoc. Prof. Surekha R	
ABSTRACT		
<p>This thesis concentrates on designing a suitable accommodation facility for tourists that is budget friendly. As the tourism industry has grown manifold in the last decade and so also has its carbon footprint. Thus, there is a need for new and sustainable models of lodging. Tourism as an industry contributes up to 10% of the global GDP. When we travel, we need to ensure that we're not just seeing different cultures from the outside, but from within their communities as well. Growth of backpacking gives rise to increased demand for affordable lodging facilities, thus hostels. Future hostel travellers are increasingly women and hostels need to consider how to cater to their needs to better position themselves. Security, cleanliness and atmosphere are set to be the biggest booking influencing factors for the foreseeable future. so investing in these areas is the key.</p>		

Centre for Music Therapy, Mangalore		
SL.NO	USN NO.	NAME
43	1MS17AT046	Preene Dias
Mentor Name	Assoc. Prof. Lavanya Vikram	
ABSTRACT		
<p>Mental health is an aspect that is considered a taboo and is often overlooked in a country like ours. Teenagers and youngsters go through many facets of mental illnesses ranging from depression, anxiety, obsessions, suicidal behaviour and substance dependence. It has been proven that music is a great healer and can be used as a tool to help people in these phases of mental illness. The project aims to combine these facets of architecture and music for healing.</p>		

Centre for Children with Special Needs, Nimhans		
SL.NO	USN NO.	NAME
44	1MS17AT047	Preetha K
Mentor Name	Assoc. Prof. Lavanya Vikram	
ABSTRACT		
<p>The early formative years have a huge impact on shaping the personality of an individual. As far as children are concerned, the environment around them has the potential to enhance their experience of space, increase their sense of power, build social bonds, and integrate them into the society. Architecture plays a pivotal role in the development of a child both psychologically and spatially. A link between architecture and psychology is thus needed as an attempt to provide an optimum psychological fit between children and their physical surrounding. Comprehensive changes are required to both enhance inclusivity in education and society and addressing the larger phenomenon of social indifference. This change firstly needs to be brought about within children in their growing years as that are what shapes their entire personality and their take on life thereafter. Within the vast spectrum of the various kinds of physical and mental disabilities prevalent, children with special needs have different ways of perceiving reality and thus have different behavioral, social, and physical needs. The need of the hour is to design environments and create positive spaces to nurture these young minds into becoming confident individuals and thereby help them contribute to the society in their own unique ways.</p>		

Social Upliftment Centre, Mangalore		
SL.NO	USN NO.	NAME
45	1MS17AT048	Prerana Rai
Mentor Name	Assoc. Prof. Sudha Kumari	
ABSTRACT		
<p>Destitution is a twofold kind of deprivation. In the 'space' of income or monetary poverty it involves, first, the absence of any control over assets and, second, the loss of access to income from one's own labour. It is also the loss of enfranchisement or entitlements, e.g., the loss of access to 'common' property and public goods and services, the disappearance of political legitimacy and citizenship i.e., the violation of political rights. It means the collapse of moral units above the level of the individual, the draining away of social support. They may be actively socially expelled. The topic I have chosen- Social Upliftment Center, aims to find a solution to this problem. It aims at understanding the requirements of the underprivileged population of India and provide them with these necessary spaces. With growing urbanization, inequalities are increasing rapidly, and it is of utmost importance that we care for the underprovided. This is where the institute comes in, to serve the needs of these individuals so they can live a happy and respectable life in the future. People are born unequal, and these factors might be hard to change, but everybody deserves an opportunity to change their present conditions and live a happy life. This campus provides them the opportunity to do so.</p>		

Rural Arts & Crafts Hub		
SL.NO	USN NO.	NAME
46	1MS17AT049	Priyanka R
Mentor Name	Assoc. Prof. Sudha Kumari	
ABSTRACT		
<p>A Rural Arts & Crafts Hub is an architectural space in rural area to revitalize the fading arts and crafts. It's pretty evident that India's biggest need to fully leverage the demographic dividend is to create jobs, and to create them close to where the rural population lives and if these jobs are those which has been practiced since many generations with reflecting our culture, it will add more value to the development. The main reason for fading of these arts and crafts is the lack of exposure, facilities, and support for the artisans. These arts and crafts are an integral part of the rich culture and tradition of our country, expression of our life and these are one of those very few things on earth which are sustainable and friendly to both humans and nature. The project consists of spaces designed to give rural artisans a strong base for their artistic life and provide a powerful exposure of such talents, there by leading to the social and economic development of the village which directly contributes to the development of nation.</p>		

Community Resource Centre, An Urban Bridge to Equity		
SL.NO	USN NO.	NAME
47	1MS17AT050	Rachana N
Mentor Name	Assoc. Prof. Meghana K Raj	
ABSTRACT		
<p>The idea behind the centre was to identify the problems with current slum integration programs and find an alternate and better solution to make the integration more organic. Through research, it was understood that current government programs don't tend to work fully, either because they are located on the outskirts of cities or are providing a one-size-fits-all type programs without understanding the needs and mentalities of the slums. Ideally, slum integration occurs by providing three types of spaces- spaces for empowerment, education, and innovation. All these spaces tend to work only with the presence of community spaces that bring people together at different levels in order for them to learn from each other and ideate. This facilitates active learning of the more primitive slums and increases their likelihood of accepting help. Secondly, the centre also establishes passive interaction between the slums and Sheshadripuram locality to facilitate the slums' understanding of the increased quality of life the integration program would lead to. Spaces such as the PHC, skill development centre, and anganwadi educate people and the maker spaces and flea markets help the people innovate and sell their art and work.</p>		

Information & Technology Park, Tumkur		
SL.NO	USN NO.	NAME
48	1MS17AT051	Rachana Umesh
Mentor Name	Assoc. Prof. Meghana K Raj	
ABSTRACT		
<p>Computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflow worth US\$ 44.91 billion between April 2000 and March 2020. The sector ranked second in FDI inflow as per the data released by Department for Promotion of Industry and Internal Trade (DPIIT). Further, the country is providing procedural ease and single window clearance for setting up facilities. On May 2019, the Ministry of Electronics and Information Technology (MeitY) launched the MeitY Startup Hub (MSH) portal. Also, the Government has identified IT as one of the 12 champion service sectors for which an action plan is being developed. It is setting up a Rs. 5,000 crore (US\$ 745.82 million) fund for realizing the potential of these champion service sectors. From the above figures it is very evident how the IT industry is going to shape the future of India; therefore, adequate infrastructure needs to be provided in order to support this booming industry.</p>		

Sports Institute & Training Centre, Hassan		
SL.NO	USN NO.	NAME
49	1MS17AT052	Rineeth C R
Mentor Name	Assoc. Prof. Tejaswini H	
ABSTRACT		
<p>Making sports a part of mainstream education than just extracurricular activities are critical. Crusaders of education in India should work towards setting up Physical Education and Sports Qualification framework and educational institutes should develop specialized courses and training programs for fulfilling this demand of experts. Sports Institute enable students with a talent in a particular sport the opportunity to further develop their skills and their understanding about the sport and take it forward as their career. This sports institute thrives to provide an infrastructure inspired from biophilic architecture to bridge the gap between health and built forms. Main sporting facilities include tennis, basketball, badminton, squash, swimming with indoor sports such as table tennis, carrom, chess etc. It also includes a Sports Healing Therapy Center and academic spaces. This Sports Institute and Training Center placed in a rural setup in a town named Shantigrama Hassan District as there is a need to address the talented sportsman who lacks opportunities and proper infrastructure.</p>		

Army Paraplegic Rehabilitation Centre, Dehradun		
SL.NO	USN NO.	NAME
50	1MS17AT053	Ritu Jain
Mentor Name	Assoc. Prof. Tejaswini H	
ABSTRACT		
<p>Paraplegics have not received adequate attention of doctors and health services in our country. Even today very few states have well-organized paraplegic centres. Military Hospital Kirkee is a general hospital of 600 beds. It has a 200-bedded Orthopedic Centre. Armed Forces organized paraplegic units of 30 beds each at Lucknow and Poona after 1965 Indo-Pak Conflict. These units were attached to neurosurgical centres under the care of neurosurgeons. Twenty-two war casualties had paraplegia in the 1965 conflict. In 1968, rehabilitation of paraplegics was organized by shifting the 30-bedded unit from Military Hospital Poona to Military Hospital Kirkee where facilities for vocational training were available at the adjoining Queen Mary's Technical School. In 1971, it was reorganized to a 100-bedded spinal cord injury centre. By end of December 1971, we had 92 patients at our centre, who have since undergone a total medical care and rehabilitation at this centre. There were initial problems of staff and equipment to cater for these severely disabled patients which have now been overcome.</p>		

Natural Healing & Research Centre		
SL.NO	USN NO.	NAME
51	1MS17AT054	Sanidhya D K
Mentor Name	Assoc. Prof. Reema H Gupta	
ABSTRACT		
<p>Nature cure or Naturopathy medicine is a form of alternative medicine that works in helping the body to heal itself, using the force of Nature. Its fundamental belief is using the 5 primordial agents of nature that is the earth water fire and the air along with ether. Yoga is a mind and body practice with a 5,000-year history in ancient Indian philosophy. Various styles of yoga combine physical postures, breathing techniques, and meditation or relaxation. To convey its spiritual message and guide sessions, yoga often uses the imagery of a tree with roots, a trunk, branches, blossoms, and fruits. Research and development (R&D) include activities that companies undertake to innovate and introduce new products and services. The aim of the project is to design a natural healing centre that would provide 3 types of Indian medicinal system i.e., Ayurveda, Naturopathy and Yoga. Along with these treatments, the centre will also have a research and development facility to conduct research and experiments for healing diseases. The centre to be designed in vernacular style with vernacular materials available there, with eco-friendly methods and local materials.</p>		

School of Performing Arts, Mysore		
SL.NO	USN NO.	NAME
52	1MS17AT055	Sarvesh G Hiremath
Mentor Name	Assoc. Prof. Reema H Gupta	
ABSTRACT		
<p>Performing arts refers to forms of art in which artists use their voices, bodies or inanimate objects to convey artistic expression. It is different from visual arts, which is when artists use paint, canvas or various materials to create physical or static art objects. Performing arts include a range of disciplines which are performed in front of a live audience, including theatre, music, and dance. Performing arts degrees are generally either practice-based (involving a great deal of actual performance) or academic, which combines practical work with analysis of the background of the subject. Teaching is therefore likely to be delivered through a mix of practical workshops and lectures. Most performing arts degrees provide an overall foundation spanning various disciplines, before asking students to choose a particular pathway. The aim of the project is to design an institute that promotes and fosters performing arts like Dance, Music, and Drama to major age group. To create awareness among the students about the future in performing arts by merging the theory and practice of it by creating spaces that facilitate it.</p>		

National Military & War Museum, Delhi		
SL.NO	USN NO.	NAME
53	1MS17AT056	Sayana James
Mentor Name	Asst. Prof. Divya Susanna Ebin	
ABSTRACT		
<p>War histories are as much about peace as about aggression. It's a celebration of efforts towards peace, good governance that especially the Indian military and armed forces have struggled for. A celebration of the struggles towards all efforts in the direction of human development and civilization growth. A celebration of Indian military's democratic and societal credentials, as the strongest pillars of India's democracy and as the most socially engaged troops with civilian life in entire world. "What is a glorious adventure for you, is a daily routine for us" This is a statement that holds the amount of utmost truth. We as regular citizens know little about the life and the hardships that of a soldier. We learn rifle shooting as a sport, whereas the soldiers play with their lives holding them daily. Indian Military is not just soldiers in a field, but it is a way of life that demands discipline and sacrifice at its foremost. We have won many wars, but these wars priced many fathers, husbands, brothers and sons. These sacrifices are noteworthy and that is why Indian historical wars become an important aspect for anyone interested in Indian military.</p>		

Mixed Use Development, Bangalore		
SL.NO	USN NO.	NAME
54	1MS17AT057	Shashank S
Mentor Name	Asst. Prof. Divya Susanna Ebin	
ABSTRACT		
<p>A mixed-use development is a project with planned integration of some combination of retail, office, residential, hotel, recreation, or other functions. It is pedestrian-oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression, and tends to mitigate traffic and sprawl. The density levels are generally higher in an urban setting but not necessarily. It can differ in relation to its surroundings. It can be a higher density infill project in an established urban setting, or it can be a development in the growth corridor in a suburban setting. The aim is to design a mixed-use development with live-work-play environment as the main feature. The project is setup in a suburban corridor, this can guide the development that surrounding areas undergo in the future.</p>		

Agri Development & Experiential Centre		
SL.NO	USN NO.	NAME
55	1MS17AT058	Shashank V K Devisetty
Mentor Name	Asst. Prof. Jyotsna Rao J	
ABSTRACT		
<p>Farmers and agriculture sector is the most important occupation in the world and is surprisingly lacking and not taken care of. Especially in a country like India, where the majority of the population's occupation and source of income is agriculture, the sector is not taken and is discouraged to adapt to the latest technological advancements. As an attempt to popularize the sector, make it more efficient, uplift the standard of living of farmers, provide an alternate source of occupation and encourage agricultural sector to include technology in their traditional practices, the architectural solution i intend to provide will fill these gaps to help nurture the new age of farming and make it more aware. Rural revitalization will require advertising and publicity. In this case given the way this sector has been it needs to be nearer to the city and has to draw in crowds as a place for entertainment and knowledge, which will be given by means of an exhibit centre, entertainment and commercial complex, experiential fields etc.</p>		

Trauma Care Hospital, Mandya		
SL.NO	USN NO.	NAME
56	1MS17AT059	Shivani Nagesh
Mentor Name	Asst. Prof. Jyotsna Rao J	
ABSTRACT		
<p>Emergency Care is an essential part of the health system and serves as the first point of contact for many around the world. Especially when there are logistical or financial barriers to healthcare access, people may present for care only when symptomatic with acute illness or injury. The site chosen in on the Bangalore-Mysore Highway near Mandya. This road has good connectivity to both the major cities as well as the surrounding rural area which has poor or no medical facilities to treat accident victims. With thousands of people commuting through this highway and this number increasing every year the area is more prone to accidents. To cater to such tragedies an accident and emergency care center would help the accident victims get medical attention sooner. Thus, increasing the chances of the victim surviving. The design included an emergency ward equipped with operation theatres and an inpatient ward. A general healthcare division with outpatient wards.</p>		

Skill Development Centre for a Rural Area		
SL.NO	USN NO.	NAME
57	1MS17AT060	Shravya Arun
Mentor Name	Asst. Prof. Kriti Bhalla	
ABSTRACT		
<p>When skills development takes place in an appropriate manner, then the individuals are required to produce the desired outcomes. The rural individuals focus upon the development of their skills and abilities in terms of various aspects. When the youth from rural areas are engaged in development of their skills, then their major focus is to bring about improvements in productivity. The improved productivity can be in the form of real gross domestic product, i.e., economy, increased profit is related to enterprises and higher wages are related to the workforce. The increase in productivity can be attributed to number of reasons, such as, new technology, new machines, tools, equipment, enhanced management practices, investments made in equipment and technology, occupation safety, improvements in the skill levels of workers, macro-economic policies, labour market conditions, working environmental conditions and public investment in infrastructure and education.</p>		

Tesla Headquarters, Kolkata		
SL.NO	USN NO.	NAME
58	1MS17AT061	Shubhangi Agarwal
Mentor Name	Asst. Prof. Aishwarya Yoganand	
ABSTRACT		
<p>A corporate headquarters (CHQ) is a place where a company’s executive management and key managerial and support staff are located. It is thus considered to be the most prestigious location and may also lend prestige to its host city and help attract other businesses to the area. In this world, the complexities of the global economy generated demand for new forms of financial and producer services which need to be managed and controlled by the far-flung networks of the global corporation. Hence, businesses frequently locate their corporate headquarters in large cities because of the greater business opportunities available there. Office spaces have become an important part of human lives. With Tesla building its most affordable car yet, Tesla continues to make products accessible and affordable to more and more people, ultimately accelerating the advent of clean transport and clean energy production. Electric cars, batteries, and renewable energy generation and storage already exist independently, but they become even more powerful when combined – that’s the future we want. Building the Indian Headquarters for Tesla will create room for a better future where everything is revolutionized from its core.</p>		

Natural Wellness Retreat		
SL.NO	USN NO.	NAME
59	1MS17AT062	Sushmitha
Mentor Name	Asst. Prof. Meghana M	
ABSTRACT		
<p>Natural wellness retreat is a health centre that provides treatments based on alternative medical systems. Alternative medical systems are entire systems of health theory and practice (including traditional Chinese medicine, Ayurvedic medicine, Naturopathy and Homeopathy) prevailing from ancient times and different from conventional medicine. These systems are based on theory of five elements of nature: earth, water, fire, air and space. They are highly effective towards chronic diseases and stress disorders. Architecture is a versatile medium that allows the user to involve and interact with the elements used in a space. The human mind is highly receptive towards the objects and events around it. Hence a space affects the users based on their perception of the same. The same concept can be applied in a therapeutic setting where the design of the space enables high participation from the user through activation of senses. The thesis focuses on usage of various architectural elements that bring in healing of the user at physical, mental, and spiritual levels</p>		

Educational Campus Design Addressing Mental Health		
SL.NO	USN NO.	NAME
60	1MS17AT063	Unnathi Hegde
Mentor Name	Asst. Prof. Sheethal B S	
ABSTRACT		
<p>With the ever-increasing needs of daily life and activities, something that gets pushed behind is Mental Health. This affects people on different scales and should be understood with the same gravity and importance as physical health. The stigma surrounding this conversation hinders one's battle and growth from their mental health. The likelihood of an individual facing a mental problem is 1 out of 7 individuals. From the effects of built space, volume, spatial proportions, and ratios, colours, sunlight and other factors are all studied in depth to understand their respective effects on individuals. Through this thesis research and design, explorations into the effect of architectural and environmental spaces on one's mental well-being and psychology is studied in depth and catered to while also defining a space that acts as a mental relief buffer to de-stigmatize and normalize conversations of mental health while offering basic preliminary help and support groups.</p>		

Scouts & Guides Advanced Training Institute, Davanagere

SL.NO	USN NO.	NAME
61	1MS17AT064	Varun V
Mentor Name	Asst. Prof. Megha Ann Jose	

ABSTRACT

In this competitive world, young parents are striving very hard to do their best to achieve higher positions in their career. Due to their busy lifestyle their child or children are getting deprived of their parental love and affection. The parents are not spending quality time with their child, and they are not able to concentrate on their child's holistic development. Children are often pressurized by their parents and society in general to get good marks and secure higher ranks in academics, blindsiding sports, vocational skills, martial arts, and cultural art forms which are considered extracurricular training depriving children to develop holistically. Scouting is a program of informal education with an emphasis on practical outdoor activities, including camping, woodcraft, aquatics, hiking, backpacking, and sports. Distinctive uniform insignia include the fleur-de-lis and the trefoil, as well as badges and other patches. Children learn discipline, moral values, etiquettes, and also make them sensitive towards environment and wildlife. In the beginning they learn how to be a good team player and eventually down the line they will learn leadership qualities.

Rural Residential School, Coorg

SL.NO	USN NO.	NAME
62	1MS17AT065	Vikram S R
Mentor Name	Asst. Prof. Pooja M Naik	

ABSTRACT

The project intention is to design a school which will provide a good built environment with a blend of cluster and courtyard planning and merging the built form with open spaces and landscape for a soothing environment. To provide infrastructure for rural schools where rural areas lack. The principal aim is to present a bachelor thesis to access the use of the Indian education plan for support and improvement of childhood education in rural areas by providing residential schools for zones or districts. Based on acquired knowledge, my thesis project aid in the native community of rural children of Somwarpet (Kodagu) is proposed. To provide good infrastructure a strong component of culture value, awareness of the environment, adventure activities and physical education to the talented children predominantly from the rural areas without regard to their family's socio-economic status. To establish a common core-curriculum to ensure comparability in standards and to facilitate and understand the common and composite heritage of our people.

Urban Entertainment Centre, Hebbal

SL.NO	USN NO.	NAME
63	1MS17AT066	Vinay Yadav G N
Mentor Name	Asst. Prof. Amala Anna Jacob	

ABSTRACT

The purpose of the thesis is to create a social gathering space for the society where all the different class and ages can interact and have an interactive time. The project is a step towards socially activity time rather being socially active on social networking sites. The change of shopping environment created new emerging type of shopping center after 1990's, that is 'Urban Entertainment Center' (UEC). One hand traditional shopping center was retail-centered, the other hand UEC is entertainment-centered and offers the trinity of synergy. Each component, that are retail, dining, and entertainment, play a role of drawing people, extending duration of visiting and making people revisit then the synergy makes commercial profit in shopping center. India and its markets are undergoing a sweeping change. This change is not only in the market structures but also in the way goods are being sold. Today markets and their processes are more flexible in all aspects like price, delivery, and choices etc. Hence the commercial project like Urban Entertainment Center can sustain economically and grow over a period.

M I G Housing, Trichy		
SL.NO	USN NO.	NAME
64	1MS16AT077	M S Raghul Amrith
Mentor Name	Asst. Prof. Yashas Hegde	
ABSTRACT		
<p>This project is located in Trichy, Tamilnadu and the site lies in delta part of the city. This project is designed to accommodate middle income group because 35% of the city's population come under MIG.</p> <p>This site is located in Sarkarpalyam village which is 12 kilometers from the main city. This region is also an upcoming industrial area and residential developments are planned.</p> <p>This residential complex constitutes 475 units in 5 blocks. Almost 75% of units are 2bhk and the rest is of 3bhk apartments. Amenities like club house, swimming pool, open parks and terrace walking tracks are provided. Services like STP, Transformer area and dg area are provided.</p>		

DEPARTMENT OF **BIOTECHNOLOGY**



Project Abstracts

2021 - 2022

Proteomic Analysis of High Biofilm Forming Clinical Isolates of *Candida tropicalis* upon Treatment with Aqueous Garlic Extract

SL.NO	USN NO.	NAME
1	1MS18BT052	Simrah Suhail Khan
	1MS18BT050	Shreeya Kumaresan
	1MS18BT019	Janvi Tarpaper
	1MS18BT061	Vaishnavi Murugan
Mentor Name	Dr. Bindu S	

ABSTRACT

Candida tropicalis is a major candidemia agent associated with high mortality rates. It is a major biofilm builder, which has caused increasing resistance to antifungal drugs on the market, including azole derivatives, amphotericin B, and echinocandins. Treatment of HBF clinical isolates of *C. tropicalis* with aqueous garlic extract could address the issue of increasing resistance to antifungal drugs. The proteomic analysis of the effect of aqueous garlic extract treated *C. tropicalis* isolates could elucidate the mechanism of action and aid in the development of an alternate antifungal therapy. *Candida tropicalis* clinical isolates will be treated with aqueous garlic extract. Protein will be isolated from the cell pellet and estimated using Lowry's method. The isolated protein will be subjected to in-gel digestion and in-solution trypsin digestion. Lyophilized samples of the same will be subjected to two-dimensional gel electrophoresis and MALDI-TOF analysis. Data will be processed and analyzed using whole genome and proteome databases. Proteomic analysis will be performed. The effect of aqueous garlic extracts on the proteome of high biofilm-forming, drug-resistant isolates of *C. tropicalis* will be understood.

RT-PCR ANALYSIS OF CTRG_06254 GENE EXPRESSION ASSOCIATED WITH BIOFILM FORMATION IN CLINICAL ISOLATES OF *Candida tropicalis*

SL.NO	USN NO.	NAME
2	1MS18BT013	Dimple Janardhan
	1MS18BT049	Sharanya R
	1MS18BT060	T S Rahul Kariappa
Mentor Name	Dr. Bindu S	

ABSTRACT

Candida species is a leading causal agent of life-threatening invasive, systemic fungal infections like Candidiasis. Drug resistance caused by the formation of the *Candida tropicalis* biofilm is one of the main reasons for antifungal therapy failure. The agglutinin-like sequence (ALS) gene family encodes cell-surface adhesins that promote colonization and biofilm formation (BF) in candidiasis. The study of the molecular pathology of ALS genes will be promising in treating nosocomial infections of medical devices. The ALS family in *C. tropicalis* is represented in several CTRG genes. In this study, urine/catheter isolates U873 and C4 (High Biofilm formers) will be compared against U1360 and U1179 (low biofilm formers). The gene expression of CTRG_06254, an ortholog of ALS3, will be studied through RT-PCR analysis. This CTRG_06254 gene encodes mannosyltransferase and isoforms of this protein has been found to regulate biofilm formation. The primer for the gene will be designed using Primer BLAST. This study can help in understanding host environments and other factors which can influence and propagate biofilm formation.

Development of sustained release nano-capsules from pomegranate peel with enhanced bioavailability for ulcerative colitis

SL.NO	USN NO.	NAME
3	1MS18BT021	Likhitha C
	1MS18BT024	Maanya Vittal
	1MS18BT035	Pooja N
Mentor Name	Dr. Chandrababha M N, Mrs. Monika P	
ABSTRACT		

Pomegranate (*Punica granatum* L.) belongs to the family Punicaceae. The part of pomegranate that is under frequent investigation is the peel. The phytochemicals present in Pomegranate peel extract (PPE) is known to have myriad biological properties for applications in clinical and biomedical fields. Ulcerative colitis, a chronic inflammation of intestine poses a major health care burden and a clinical challenge due to its inefficient treatment methods. Moreover, the conventional therapies use drugs that are high in costs and has lower bioavailability and efficiency at the target site. To address these issues with respect to the devastating disease, in our current study, we hypothesize that nano-capsules of PPE using an enteric, biodegradable, non-toxic polymer Eudragit L 100 may increase the bioavailability and bio-efficiency by significantly reducing the chronic inflammation in human colon region. Thus, the developed sustained release nano-capsules can be a great option for the treatment of ulcerative colitis.

Development of biocompatible nano-spray using pomegranate peel for enhanced chronic wound healing

SL.NO	USN NO.	NAME
4	1MS18BT042	Rucha Konety
	1MS18BT033	Pooja Gondi
	1MS18BT002	Abhikhya R
Mentor Name	Dr. Chandrababha M N, Mrs. Monika P	
ABSTRACT		

A chronic skin injury and its correlated complications of non-healing wounds has paved the way for engineered nano-spray technology that aids in the healing process by speeding up the repairing of the injured tissue. Fibroblasts play a very critical role in normal wound healing by creating an extracellular matrix and collagen structures. The dysfunction of the fibroblast is one of the key reasons for the non-healing of chronic wounds. Using the medical application of nanotechnology, our current study aims to develop a novel drug delivery system for assisted chronic wound healing using a nano-spray formulation from pomegranate peel and biocompatible and biodegradable polymer chitosan. Thus, the developed PPE-CS nano spray can be an efficient, safe, economical and a great option that can aid rapid wound healing especially in chronic wound patients.

Utilization of Coffee Husk as a source of Pectin: Optimization of Microwave Assisted Extraction process and Determination of its Molecular and Functional properties

SL.NO	USN NO.	NAME
5	1MS18BT056	Sudha S Lingam
	1MS18BT030	Nishka S
	1MS18BT018	Himanshi Gupta
	1MS18BT058	Sumukh G M
Mentor Name	Dr. Divyashri G	

ABSTRACT

In the present study, pectin was extracted using microwave assisted technique using citric acid as a solvent, extraction conditions viz., microwave energy (275-800 W), temperature (50-100 C), solid/solvent content (2.5-12.5 g/100 ml) and time (5-25 min) were optimized and it's molecular and functional properties were evaluated. The extracted pectin was characterized using FT-IR and XRD techniques. The in vitro antioxidant activity was measured by using two different assays (DPPH (2,2-diphenyl-1-picrylhydrazyl), and ferrous reducing antioxidant capacity). Biological activity of pectin viz., antimicrobial and anti-inflammatory properties indicated that coffee husk present excellent potential for the extraction of biologically active pectin.

Production and Optimization of Protein and Carotenoids from Chlorella

SL.NO	USN NO.	NAME
6	1MS18BT012	Devdatta Chatterjee
	1MS18BT016	Gowrishankar B
	1MS18BT026	Mellvan Prakash
	1MS18BT062	Vignesh Dinesh
Mentor Name	Dr. P. Dhamodhar	

ABSTRACT

Microalgae are autotrophic microorganisms that live in marine, freshwater, and soil ecosystems and produce organic substances through photosynthesis. The number of studies on their use as a source of biologically valuable products is rapidly increasing due to their high metabolic flexibility, adaptation to various cultivation conditions, and the possibility of rapid growth. Chlorella is a good source of antioxidants and natural bioactive compounds used in the food and pharmaceutical industries, and one such compound is carotenoid. The present study provides a comparison of growth characteristics of chlorella vulgaris as standard and a wild type isolated from a water body. In optimum conditions their operation to biomass and carotenoid production are studied. The strain of the wild type will be determined by 18S rRNA sequencing. The optimum pH and salinity are determined for the wild type and compared with the standard. The amount of carotenoid produced per gram of dry biomass will be estimated spectrophotometrically. The type of carotenoid present would be determined using thin layer chromatography.

Functional Characterization of Type III Toxin-Antitoxin Systems

SL.NO	USN NO.	NAME
7	1MS18BT004	Aishwarya G
Mentor Name	External Mentor : Dr. Mahavir Singh Internal Mentor : Dr. Dhamodhar P	
ABSTRACT		

Toxin-antitoxin (TA) systems are genetic elements that are extensively present in bacteria. They comprise of a toxin (protein) which inhibits cellular processes and its cognate antitoxin (protein/RNA) that can counteract the toxin's activity. These systems play a key role in bacterial processes such as plasmid stability, viral defense and antimicrobial persistence. In type III TA systems, the toxin protein is an endo RNase and the antitoxin is made up of numerous RNA repeats. Upon processing by the toxin protein, monomeric repeats of the antitoxin assemble to interact with the toxin and neutralize it by forming a TA complex. Recent advances in the field have thrown light on the structure and function of some type III TA systems, however there is more to be understood about the interaction between the toxin and antitoxin components. To deepen our understanding of the same, we have mutated the key residues of the ToxN toxin and made different constructs of the ToxI antitoxin from the ToxIN family of type III TA systems found in *Escherichia coli*. Through this, we have attempted to study the interactions of these mutated proteins with the antitoxin in-vitro using biophysical techniques such as circular dichroism and isothermal titration calorimetry.

Eco-friendly nanoparticles for antibacterial activity and azo dye degradation

SL.NO	USN NO.	NAME
8	1MS18BT037	Priyal Vargis
	1MS18BT046	Samruddhi Sutar
	1MS18BT057	Suheeth A P
	1MS18BT064	Vrinda Garg
Mentor Name	External Mentor : Mr. Nagaraju Kottam Internal Mentor : Ms. Ahalya Naidu	
ABSTRACT		

MgFe₂O₄, in addition to performing as an excellent photocatalyst in dye degradation, due to its exceptional antimicrobial capabilities, could be a potent addition to the field of medicine. Such properties are attributed to the generation of reactive oxygen species. In this study, the efficiencies of Magnesium Ferrite nanoparticles (MgF-NPs) and Carbon Quantum Dots doped Magnesium Ferrite (MgF/CQD) nanocomposites as adsorbents were assessed and compared for the removal of toxic acid red dye from aqueous solution under visible light irradiation. Techniques such as X-Ray Diffraction, Electron Dispersive Spectroscopy, Scanning Electron Microscopy, and Fourier Transform Infrared Spectroscopy were used to characterize the synthesized nanoparticles and nanocomposites. The effects of MgF and MgF/CQD of varying loading concentrations, initial concentration of Methyl orange dye (5ppm), and pH 2 of the dye on photodegradation were studied in the presence of Visible light for 15, 30, 45, 60, and 75 minutes. Antibacterial studies of MgF-NPs and MgF/CQDs were conducted and compared as well. The results underline the effect of doping MgF with CQDs through a change in the morphology and crystallite size of the Nano Ferrites.

A stinging solution: Indian red scorpion (*Hottentotta tamulus*) venom and its applications in agricultural pest control

SL.NO	USN NO.	NAME
9	1MS18BT017	Harihara Prakash
Mentor Name	External Mentor : Dr. Kartik Sunagar Internal Mentor : Dr. Ahalya Naidu	
ABSTRACT		

Conventional chemical pesticides are an increasingly important problem whose overuse and negative effects need to be addressed. The search for suitable alternatives to these pesticides is highly significant and of great importance to the biodiversity. Biopesticides have the potential to preserve biodiversity while serving as an effective pest repellent. Arthropod venom has the potential to serve as an efficient biopesticide lead, courtesy of the prey-specific toxins present in it. Toxins such as voltage gated channel inhibitors can act as effective pest control agents when expressed in recombinant vectors such as baculovirus, GMO plants and fungi. Indian red scorpions (*Hottentotta tamulus*) are medically relevant scorpions found throughout India whose venom has been shown to possess insecticidal activity. In our study, we test the effects of Indian red scorpion venom on *Spodoptera litura*, the tobacco cutworm, to check for the insecticidal properties of the venom. Using standard bioassay protocols used for insecticides, the effect of crude venom is checked and its bioactivity against the larvae is assessed. Characterisation of the *H. tamulus* venom will also tell us the composition of toxins present in the crude venom sample.

Monoclonal Antibody Bioprocess Design and Simulation

SL.NO	USN NO.	NAME
10	1MS18BT003	Adithya Rathish
Mentor Name	External Mentor : Mr. Anil Gokarna Internal Mentor : Dr. Lokesh	
ABSTRACT		

Monoclonal antibodies or (mAbs) are proteins made in laboratories using the hybridoma technology. They act like proteins called antibodies which are a part of our immune system. Laboratory-made monoclonal antibodies help stimulate the immune system to fight the antigen. Monoclonal antibodies are used for diagnosis, disease treatment and research. Monoclonal antibody are a low volume high value product in biopharma industry for that reason they are always in high demand, so we must ensure that there are no bottlenecks in the mAbs bioprocess. This is done by simulating the bioprocess design and to ensure that it is the "best" (fastest or least expensive) design among several plausible alternatives and what changes can increase throughput / efficiency. For that reason Superpro designer is used to simulate the mAbs (upstream) bioprocess, as SuperPro is one of the most popular simulation tool in industries. After the simulation of the upstream mAbs bioprocess the designing of the P&ID of one of the major unit operations of the upstream mAbs bioprocess which is the production bioreactor is done. P&ID stands for piping and instrumentation diagram where the software called ED² which is a Sartorius exclusive software is used for the creation and design of P&ID. The final part is the design of a production bioreactor vessel using Autocad. Autocad is a 2D design software used to design and represent any structure in a 2D form.

Development of a Self-Emulsifying drug delivery system for Rutin – Formulation, Characterization and Evaluation

SL.NO	USN NO.	NAME
11	1MS18BT038	Punith L
	1MS18BT040	Rajeev Shreedhar
	1MS18BT048	Sharan Kumar Belamagi
	1MS17BT058	Chinmaya Shivaswamy
Mentor Name	Dr. Lokesh	
ABSTRACT		

To develop this self-emulsifying drug delivery system (SEDDS), formulation required the use of a co-solvent, a surfactant and a suitable polymer to ensure an increased aqueous propensity, improved stability and incremental absorption efficacy for Rutin. This was performed (after establishing concentration calibration plots of Rutin in organic medium and in the aqueous medium) by using a unitary weight ratio of Rutin: PEG 6000 (Co-solvent and surfactant – carrier 1): Tocopherol Polyethylene Glycol Succinate 100 (TPGS/Tocophersolan) (Polymer and permeability enhancer - carrier 2) and mixing them in an isothermal water bath at 70 °C. This solution so developed was set up for evaporation to obtain the final solid form of the Rutin SEDDS formulation prior to characterization of its physio-chemical properties. Development of such formulations have the potential to be administered orally and provide for the absorption and thereafter the abundant bio-availability of the drug required for its therapeutic effect through the GI lumen. The scope of multiple BCS Class IV drugs to be developed into oral bio-formulations through the SEDDS will tremendously impact clinical medicine in the treatment of a myriad of disorders and diseases, due to the versatile therapeutic potential these substances exhibit upon efficient absorption.

Overcoming false positives in NALFA using LATE-PCR

SL.NO	USN NO.	NAME
12	1MS18BT008	Anushka Poola
Mentor Name	External Mentor : Dr Bhushan Toley Internal Mentor : Dr. Roshni Ramachandran	
ABSTRACT		

Nucleic acid lateral flow assays (NALFA) coupled with nucleic acid amplification techniques have become a promising strategy to detect various infectious diseases. However, in its mechanism lies the hindrance of false positives which reduces the accuracy of testing. The false positive signal emanates from the formation of primer dimers in the PCR product. The primer dimers formed are seen to have an affinity for the reagent dispensed at the test line of NALFA strip and as a result occupy the binding sites. We show that this effect may be alleviated by making use of LATE-PCR in order to eliminate the formation of primer dimers in the PCR product. To demonstrate this we utilized a LATE-PCR assay in which the forward primer was end labelled and the ratio of forward:reverse primer was varied to find the optimum concentration at which primer dimer formation would be reduced to the least. The unreacted ssDNA produced as a result of LATE-PCR is made to react with a labelled probe so that this hybrid can contribute to signal intensity as it will have affinity to the test line. Based on the obtained results, we provide recommendations for the optimal design of LATE-PCR reaction for NALFA detection in order to eliminate the chance of a false positive.

Improving the sensitivity and specificity of nucleic acid lateral flow assay to detect mutations using oligonucleotide ligation assay

SL.NO	USN NO.	NAME
13	1MS18BT036	Prithvi S Prabhu
Mentor Name	External Mentor : Dr. Bhushan Toley Internal Mentor : Dr. Roshni Ramachandran	
ABSTRACT		

Mycobacterium tuberculosis, the causative organism of Tuberculosis (TB), is ranked as the 13th leading infectious killer by the World Health Organization and has recently become a public health concern, particularly due to the rapid emergence of multidrug resistant (MDR) and extensively drug resistant (XDR) strains of the causative organism, that are the results of varying mutations in the organisms. The methods currently used to detect mutations in the disease-causing organism are expensive, time consuming and require skilled personnel. Therefore, the need of the hour is the development of a sensitive and specific point of care device that can detect the presence of a TB infection and the presence of specific mutations. Paper-based immunoassays or lateral flow assays represent a powerful technique with high relevance in biosensing as it achieved the requirements needed for point-of-care (POC), including rapid detection, smaller sample requirement, and low cost making it affordable and cost-effective healthcare in resource-limited areas. In this study, we aim to develop a nucleic acid based lateral flow assay that is capable of detecting mutations through Oligonucleotide Ligation Assay (OLA). We will also investigate different methods to separate the ligated products obtained after OLA, using different physical and chemical methods, in order to improve the sensitivity and specificity of the developed device

Development and characterization of Indocyanine green coated nanoparticles for studying release kinetics with photoacoustic imaging

SL.NO	USN NO.	NAME
14	1MS18BT022	Lishel Pinto
Mentor Name	External Mentor : Dr. Sanhita Sinharay Internal Mentor : Dr. Bhavya S G	
ABSTRACT		

Clinical translation has witnessed great potential in Photoacoustic (PA) technology, as a non-invasive bio-imaging modality. It enables real time monitoring of the drug delivery and release status. Exogenous contrast agents are important for better contrast and improved specificity. Indocyanine Green (ICG) is one such photosensitizer that has been studied and clinically approved for phototherapy. Although ICG has gained interest in PA research, its utility is limited by its potential to aggregate in aqueous solutions and low half-life of 3-4 minutes. Using a polymer that can improve the efficiency of ICG in aqueous medium and thermal environment is crucial. The co-polymer poly(lactic-glycolic acid) (PLGA) makes it attractive for drug delivery process because of its biocompatible and biodegradable properties. PLGA has the power to have controlled release which is essential for many drug delivery and release processes. Here we approach to study the basic properties of the dye ICG and prepare nanoparticles that are coated with PLGA. We characterize these particles and study their release kinetics with Multispectral Optoacoustic Tomography using phantoms. This study might have a potential in further in vitro and in vivo studies that can lead to a progress in the imaging modality for research and public theranostic approach.

Standardisation of in Vitro Chromosomal Aberration Assay for Genotoxicity Testing		
SL.NO	USN NO.	NAME
15	1MS18BT044	Rohit Shankar
Mentor Name	External Mentor : Dr. Raghavendra P Rao Internal Mentor : Dr. Bhavya S G	
ABSTRACT		
<p>Chromosomal aberrations, or abnormalities, are changes to the structure or number of chromosomes. A change to any of the chromosomes, in number or structure, creates a chromosomal aberration and may cause problems to the body. The purpose of the in vitro chromosomal aberration test is to identify substances that cause chromosomal aberrations. It has been seen that there is an increased use of personal care products in the world and it is common knowledge that it is going to gradually increase in the upcoming years. With increase in demand, the market is broadened and the supply is increased, multiple companies producing multiple products, all of which must be safe for the usage by the consumer. There are certain guidelines regulated by OECD, that must be fulfilled before the product is safe for use. One of the safety test that fulfils the guidelines is carried out in our study, that is the chromosomal aberration test. The cell line that present study deals with is the CHO-K cell (Chinese Hamster Ovary). This study would cover the following work that is, Revival/ maintenance of CHO-K cells, Standardization of in vitro chromosomal assay, to check genotoxic effect of various compounds.</p>		

Understanding the Molecular mechanism of phosphate response in plants		
SL.NO	USN NO.	NAME
16	1MS18BT053	Sineagha V
Mentor Name	External Mentor : Dr. Debabrata Laha Internal Mentor : Dr. Ravikumar Y S	
ABSTRACT		
<p>Plant needs 17 different elements to grow and develop healthily. Phosphorous is one of the macronutrients that plants require. As a component of ATP, phosphorus plays a crucial role in plant energy reactions. It also makes up phosphate backbone of the nucleic acids. Most critically, it is required for photosynthesis to occur. Given that phosphorus plays such a critical part in plant development, it is crucial to investigate and comprehend the impacts of phosphorus deficiency on plant growth and productivity. To compensate for the fact that phosphorus is becoming a limiting plant nutrient, phosphate fertilisers are being employed. The resources of phosphate rocks are diminishing as they are widely used. As a result, it is critical to study the mechanisms that plants have evolved to cope with phosphate deficiency and explore for ways to enhance these systems in order to maintain plant productivity during periods of low phosphate availability. This project aims at studying the phosphate response of plants.</p>		

Dynamics of regulatory network controlling Mesenchymal- Epithelial pathway in cancer		
SL.NO	USN NO.	NAME
17	1MS18BT010	Aymen Maqsood M
Mentor Name	External Mentor : Dr. Mohit Kumar Jolly Internal Mentor : Dr. Ravikumar Y S	
ABSTRACT		
<p>The primary cause of mortality associated with cancer is the metastasis of the primary tumor spread into distant body organs. The process of metastasis encompasses four significant steps, i.e., intravasation of tumor cells, survival in the circulation, extravasation, and establishment at the secondary sites. Before intravasation, tumor cells undergo three essential steps, emigration, invasion, and EMT; MET (Mesenchymal- Epithelial Transition); the reversal of EMT seems to occur following distribution and the subsequent formation of distant metastases. MET occurs at the Secondary site and allows the CTCs to colonize. Through various signaling pathways, it is regulated by genetic and epigenetic modifications. Understanding the sequential events during metastasis is essential for developing early biomarkers and therapeutic. After reviewing extensive literature, we hope to understand the regulatory network controlling the MET pathway through various data mining and analysis techniques.</p>		

Weaponisation of Physiological Proteins in Sea Lamprey: Through the Lens of Comparative Transcriptomics		
SL.NO	USN NO.	NAME
18	1MS18BT043	S Birendra Kumar
Mentor Name	External Mentor : Dr Kartik Sunagar Internal Mentor : Dr. T P Krishna Murthy	
ABSTRACT		
<p>Venoms are complex cocktails majorly composed of biologically active proteins along with other inorganic and organic compounds that are actively delivered from the specialized venom glands. Their primary ecological function is either for predation, defense, competition or a combination thereof. The venom proteins are originated from diverse events whose precise mechanisms are elusive. Sea lamprey (<i>Petromyzon marinus</i>) are a basal enigmatic lineage of jawless fishes and the most primitive vertebrates that diverged ~550 MYA. They are known to secrete buccal gland secretions with anti-coagulative properties to facilitate sanguivory, hence they are grouped under the league of venomous species. Being the basal and primordial vertebrate, sea lamprey remains unexplored. Therefore, it will be the ideal candidate to study the origins and evolutionary novelties, and also to understand the molecular mechanisms underpinning the venom evolution. For this study, we have considered transcriptome from buccal gland, heart and liver from two individual samples of sea lamprey and will be leveraging the comparative transcriptomics technique to characterize the transcriptome of sea lamprey and also to identify the tissue specific differentially expressed genes. This endeavor might pave a way to interpret the venom composition and also to scrutinize the evolutionary aspects of sea lamprey.</p>		

Comprehensive In silico analysis of non-synonymous missense SNPs of Heme-Oxygenase (HMOX-1) gene: An integrated Computational Approach

SL.NO	USN NO.	NAME
19	1MS18BT015	Durga Prasad N
	1MS18BT055	Sriraksha Prakash
Mentor Name	Dr. T P Krishna Murthy	

ABSTRACT

When red blood cells are lysed, haemoglobin containing iron gets oxidized, and heme no longer binds tightly to haemoglobin and may be released. If left uncontrolled, heme and its iron act as a pro-oxidant by catalytically amplifying the production of oxidants inside the cell via Fenton chemistry whereby Fe^{2+} is oxidised by hydrogen peroxide to Fe^{3+} , a hydroxyl radical, and hydroxyl anion. Amplification of oxidant production by redox-active iron can directly lead to lipid, protein and DNA damage, ultimately cell death. Heme oxygenase-1 (HMOX-1) catalyzes the oxidative cleavage of heme at the alpha-methene bridge carbon, released as carbon monoxide (CO), to generate biliverdin IXalpha, while releasing the central heme iron chelate as ferrous iron. Single Nucleotide Polymorphisms reported in the HMOX1 gene result in dysfunctional HMOX-1 protein. Dysfunctional protein leads to the accumulation of heme, which is cytotoxic to cells and also leads to the pathogenesis of atherosclerosis, heart failure, myocardial ischemia-reperfusion injury, inflammatory bowel diseases and Parkinson's disease. In this view, this work aimed to mine nonsynonymous missense SNPs of the HMOX1 gene from NCBI dbSNP to screen potential dangerous mutations based on various sequence and structure-based tools. Further, the deleterious nature of selected mutants was validated using molecular dynamic simulations, oncogenic analysis, conservational analysis etc.

Transcriptomic and Exome (variant) analysis of Ovarian cancer phenotypes

SL.NO	USN NO.	NAME
20	1MS18BT005	Akanksha Singh
Mentor Name	External Mentor : Dr. Bibha Choudhary Internal Mentor : Dr. Priyadarshini Dey	

ABSTRACT

Ovarian cancer is known to have a high fatality rate. Even upon high technological advancement ovarian cancer is only treated by radiotherapy, chemotherapy or hysterectomy. In this project with the help of bioinformatic tools the transcriptome and the exome (expression data and VARTYPE or variant type data) are extracted and analyzed from 10 different phenotype samples that include 3 types of HGSC (HIGH GRADE SEROUS CARCINOMA), MUCOSAL High grade, Endothelial, Granulosa High grade, cystadenoma high grade, papillary high grade, papillary low grade ovarian cancer and a normal (non-cancerous normal phenotype). The samples belong to the Indian region of the South Asian subcontinent hence helping to provide relevant information based on phenotype for an Indian cohort. Exome sequencing is done to obtain SNPs that help us study the effect of mutation to cause a particular phenotype of cancer. Finally, the transcriptomics on the other hand helps us study how much of the gene is being expressed or plays a part in the function of the gene. Hence, the data obtained will include unique mutations to specific phenotype, variant type specifically missense variants are either highly or lowly expressing and finding their functional relevance i.e., genes can either be tumour suppressing or belong to NCG (oncogenes). Pathway analysis is then conducted to both the obtained SNP variant data and expression data using REACTOME. Resulting data will help in early detection strategies, differentiating the cancer phenotype for mode of action in treatment strategies as well as possible biomarkers for inhibiting the mutation of cancer in the future by gene therapy advancement.

Unravelling The Host Defence Mechanisms And Enhanced Host Tolerance In Bats To Viruses

SL.NO	USN NO.	NAME
21	1MS18BT014	Disha Jain
Mentor Name	External Mentor : Dr Kesavardhana Sannula Internal Mentor : Dr. Abhijith S R	
ABSTRACT		

Bats are the only mammals that fly due to which they have high metabolic activity leading to DNA damage leading to variations in certain genes in their genome compared to humans and host several pathogenic RNA viruses like CoVs, and Nipah viruses. As bats are mammals, they express innate immune receptors and inflammasome-associated proteins like humans. The bat immune cells show a striking variation in NLRP3 inflammasome activation compared with human or mouse cells. However, expression of ASC, CASP1, and IL-1 β appeared to be not affected in bat immune cells like human cells. The Gasdermins are a family of pore-forming proteins studied to understand the innate immune response. One of the proteins which belong to this class is the Gasdermin D (GSDMD), which has been identified as the executioner of pyroptosis, an inflammatory form of lytic cell death that is induced upon formation of caspase-1-activating inflammasomes. The Gasdermin D controls the pro-active inflammatory cytokines such as IL-18 and IL-1 β . CASP1 cleaves pro-IL-1 β and pro-IL-18 into mature IL-1 β and IL-18 forms. CASP1 also cleaves a pore-forming protein Gasdermin D (GSDMD) at the linker region of its N- and C-terminal domains to liberate it from its autoinhibitory conformation. The formation of GSDMD pores in turn promotes osmotic lysis and a lytic form of cell death called pyroptosis.

Visualization of Stress Granule formation in Immune Response Cells

SL.NO	USN NO.	NAME
22	1MS18BT054	Soundarya S Kulkarni
Mentor Name	External Mentor : Dr. Shovamayee Maharana Internal Mentor : Dr. Abhijith SR	
ABSTRACT		

Under unfavourable conditions such as oxidative stress, change in osmotic pressure, temperature changes, toxins and viral infection, eukaryotic cells form dense aggregation to prevent themselves from these unfavourable changes. The formation of stress granules is one such way. Stress granules are membrane-less cytoplasmic condensates that form transiently via liquid-liquid phase separation in response to stress. Stress granules contain various translation factors, ribosomal subunits, scaffold proteins, RNA decay enzymes, RNA-binding proteins and helicases. Antiviral innate responses are produced in immune cells during viral infection by suppressing global transcription. Some viral infections have triggered stress granules, implying that these viruses may take advantage of this stress response. However, some viruses actively impede Stress Granule synthesis, indicating that these structures have an antiviral purpose. The dynamics of stress granules during inflammation remain unknown. We aim to visualize the liquid like phase separation of RNA binding protein, Fused in Sarcoma (FUS) in immune response cells.

Culturing and co-culturing of Melanocytes to study the expression of TRPV1

SL.NO	USN NO.	NAME
23	1MS18BT051	Siddharth M Mahishi
Mentor Name	External Mentor : Mr. Gokulakrishnan M Internal Mentor : Dr. Anita Damodaran	
ABSTRACT		

Melanin is produced by highly specialized cells named melanocytes and melanin production is a complex multistep process called melanogenesis. Melanin is the primary determinant of skin, hair and eye color, and it has a critical role in photoprotection due to its ability to absorb UV radiation, preventing sunlight-induced skin damage and skin cancer. Functional expression of TRPV1 has been identified in various non-neuronal cell types. Its expression has been detected in epidermis, isolated normal human keratinocyte, mast cell, and appendageal epithelial structures. In skin, keratinocytes, sebocytes, melanocytes, and several immune cells express TRPV1, making it an attractive focus area. When overexpressed recombinantly in cell lines, TRPV1 can be activated by capsaicin, the major pungent ingredient in chili peppers, or by related chemical compounds that share a vanilloid chemical group. The expression and activation of TRPV1 in melanocytes and keratinocytes are studied by using different treatments. The study involves culturing, co-culturing, harvesting and treating melanocytes as well as using PCR to study gene expression in keratinocytes that have been treated to study the expression of TRPV1.

In-silico analysis of interactions between spike protein of SARS-CoV-2 and ACE-2

SL.NO	USN NO.	NAME
24	1MS18BT009	Aparna Ananthanarayan
Mentor Name	External Mentor : Dr. Shaik Naseer Pasha Internal Mentor : Mr. Gokulakrishnan M	
ABSTRACT		

In this study, representative sequences of spike protein (S protein) of chronologically evolved SARS-CoV-2 strains were selected. The complete structure of the S proteins was predicted. Multiple Sequence Alignment of the Receptor Binding Domain (RBD) indicated the mutations across various strains. Site saturation mutagenesis results were used to determine the impact of mutations on stability of the RBD. A docking study between the S protein RBDs and human ACE-2 receptor will be carried out to gain a better understanding of the impact of mutations potentially involved in interactions which bring about stability. This could give insights into the causes of increased transmissibility of certain strains over other strains of the same virus.

Optimization Studies For Enzyme Production

SL.NO	USN NO.	NAME
25	1MS18BT039	Rahul Chandrasekharan
Mentor Name	External Mentor : Dr. Divyashri G Internal Mentor : Mr. Anand Hiremath	

ABSTRACT

Commercial enzyme production has grown during the past century in volume and enzyme production relied on the natural hosts as raw materials, however genetic engineering has now given a choice for producing sufficient quantities of enzymes in selected production hosts including microorganisms and transgenic plants. Production of a new microbial enzyme starts with screening of microorganisms for screening of extremophiles for enzymes having desirable features of activity. The level of enzyme activity produced by an organism from a strategy that has gained favor is production of the enzyme in a recombinant organism of choice whose growth conditions are well optimized and whose status is activity and stability properties of an enzyme prior to its production. Microbial source is preferred over plants and animals for production of enzymes due to the following reasons: Enzymes can be produced on large scale and are economical. These enzymes have played an important part in food production, can also serve as raw material for the enhancement of microbial enzyme activity. Examples of these animal enzymes include pepsin, pancreatic, trypsin and chymotrypsin Microbial enzymes are selected from group of fungi, bacteria and yeast. Microorganisms used in the production of industrial enzymes are aerobic strains with good biological activity.

To Study the Structure and Activity of Single disulphide conopeptide from *Conus zonatus*

SL.NO	USN NO.	NAME
26	1MS18BT045	Sahana Kumar
Mentor Name	External Mentor : Dr. Siddhartha P. Sarma Internal Mentor : Dr. Samrat K	

ABSTRACT

Conopeptides are neurotoxic peptides in the venom of marine cone snails and have broad therapeutic potential for managing pain and other conditions. The single disulphide conopeptide Czon1107, obtained from the venoms of *Conus zonatus*, strongly inhibits the human $\alpha 3\beta 4$ and $\alpha 7$ nicotinic acetylcholine receptor (nAChR) subtypes through noncompetitive inhibition. In this regard, the present work aims at expressing and purifying the peptide Czon1107 and its variant Czon1107 P7A. Mutational studies are carried out on the wild type Czon1107 to produce its variant P7A, where proline at position P7 was replaced with arginine. By solid-phase synthesis, the synthetic peptides are produced, following transformation and expression. Purification of the peptides is carried out using various analytical techniques like Ni-NTA chromatography, dialysis and HPLC. Further, structure-activity experiments are carried out for the synthesized peptides (wild type and P7A). These peptides are expected to provide a scaffold for rational drug design strategies for allosteric nAChR modulation.

Preparation of biocompatible MgO nanocomposite fabricated cefpirome for the enhancement of antibacterial activity

SL.NO	USN NO.	NAME
27	1MS17BT022	Mridula Bekal
	1MS17BT030	Pragathi K G
	1MS18BT001	Abdul Shakeeb khan
	1MS18BT041	Rithika Murugan
Mentor Name	Dr. Samrat K	

ABSTRACT

Antibacterial resistance is a great risk for human and global health. The extensive use of antibiotics clearly drives the evolution of drug resistance in pathogenic bacteria. To overcome this problem, various drug combination therapy, bacteriophage therapy and higher generation antibiotics are used. Among them, Cefpirome (Cef) is an extended-spectrum fourth-generation cephalosporin antibiotic has been used to treat various bacterial infections. But its use is limited by a relatively short half-life. However, nowadays synthesis of inorganic nanomaterials is of interest to researchers due to their profound antioxidant and antibacterial properties. MgO is an important inorganic oxide and has been widely used in many biomedical applications due to its non-toxic, biodegradability and biocompatibility nature. Many studies have shown that MgO nanoparticles possess strong antibacterial activity. In this regard, present work aims at synthesis of Mgo nanoparticles via precipitation method followed by encapsulation of antibiotic with BSA using 8% glutaraldehyde as a linker. The Cefpirome loaded MgO nanocomposite (Cef-MgONC) are characterized using various analytical techniques such as XRD, SEM and FTIR. Further, agar well diffusion method was used to study the synergetic antibacterial activity of Cef-MgONC against both Gram positive & Gram negative bacteria. The well diffusion method are expected to exhibit notable enhancement in antibacterial activity against both class of bacteria.

Characterizing synaptic dysfunction in Drosophila Model of Alzheimer's

SL.NO	USN NO.	NAME
28	1MS18BT063	Vijayavaishnavi V
Mentor Name	External Mentor : Dr. Sheeba Vasu Internal Mentor : Dr. Prabha M	

ABSTRACT

Alzheimer's Disease is a neurodegenerative condition characterized by the presence of senile amyloid plaques and hyperphosphorylated tau tangles. The amyloid hypothesis proposes that cleavage of Amyloid Precursor Protein (APP) releases A β peptide, which in turn attains fibrillar conformation forming senile plaques at the synapses. Several studies have shown controversial involvement of autophagy pathway in AD suggesting a role in plaques formation as well as in their clearance. The main objective of the study is to examine the functional morphology of motor neuron synapses and the behavior of the flies expressing toxic A β forms. The study also aims at evaluating autophagy flux in AD motor neurons and investigating on autophagy modulation using Atg8a protein for the rescue of defective phenotypes. The project proposes that presence of A β fibrils in motor neurons causes synaptic dysfunction resulting in reduced motor ability and lifespan of the flies. It is also proposed that there may be perturbations in the autophagy flux due to A β presence and that it can possibly be overcome by induction of the pathway. The significance of the study lies in understanding the molecular pathogenesis of AD at motor neuron synapses to assess the therapeutic potential of autophagy modulation by Atg8a protein in AD.

Role of Drosophila nephrocytes in silver nitrate uptake

SL.NO	USN NO.	NAME
29	1MS18BT011	Deeksha K G
Mentor Name	External Mentor : Dr. Raghu Padinjat Internal Mentor : Dr. Prabha M	

ABSTRACT

The human kidney plays an important role in homeostasis, by filtering out various toxins from the blood and excreting them via urine. Chronic kidney disease, where the kidneys are damaged, is found to affect 10% of the population worldwide. This can be due to improper proximal tubule or podocyte function. In order to understand such kidney diseases, Fruit fly (*Drosophila melanogaster*) nephrocytes can be an excellent model, due to their similarities to podocyte and proximal tubule functions. The filtration in nephrocytes happens via the endocytic pathway. The nephrocytes clear off various toxins, including heavy metals. The difference in heavy metal uptake and clearance can be used as a parameter to identify normal and diseased nephrocytes. One of the metal tracers used as a read out of nephrocyte function is silver nitrate and its uptake is thought to be mediated by endocytosis. In this project, we look at the Clathrin mediated endocytosis, Flotillin pathway and the CLIC/GEEC pathways for some of the essential proteins involved are targeted using the UAS-RNA interference method. We focus on identifying the endocytic pathway involved in uptake of silver nitrate, which may provide further insights into the clearance of this heavy metal as well.

In-Silico Analysis of Entomopathogenic Genes and Their Insecticidal Efficacy

SL.NO	USN NO.	NAME
30	1MS18BT023	Maansi
	1MS18BT025	Meldon Annsou Dsouza
	1MS18BT028	Nikhil C
	1MS18BT032	Papiya Das
Mentor Name	Dr. Priyadarshini Dey	

ABSTRACT

Identification and understanding the mechanism of entomopathogenic genes and their insecticidal efficacy using bioinformatics tools is important. *Bacillus thuringiensis* has been widely used as a bioinsecticide. It produces insecticidal proteins or delta endotoxins that are specifically toxic to various insect larvae. These delta-endotoxins consist of several crystal proteins that are classified by their amino acid sequence homology. Cry proteins are by far the most well characterized. Several insect species have evolved resistance to Bt toxins, which seriously compromises the success of Bt-transformed crops in controlling pests. Successful pesticide resistance management involves several strategies: tissue- or time-specific expression of the toxin; a combination of different genes (gene stacking strategy); a combination of toxins with different modes of action; low doses of toxins in combination with natural enemies; mixtures, rotation or mosaics of transgenic plants. In order to develop a resistance management strategy to control tropical pests based on the co-expression of different toxins, a fully modified gene can be converted to a translational fusion gene and subjected to insect cells expression of individual receptors demonstrating the receptor utilizations of the newly modified fused gene as an effective bioinsecticide based on its docking efficiency and toxicity assay.

Digestive Enzymes in healthy and stunted Drosophila gut

SL.NO	USN NO.	NAME
31	1MS18BT006	Aliya Shaik
Mentor Name	External Mentor : Dr. Megha Internal Mentor : Dr. Ahalya N	

ABSTRACT

Malnutrition being defined as a whole host of deficiencies in the intake of nutrients, with research conclusively showing that the effects of early life malnutrition may not entirely be erasable in the adult stage of an individual. The organism *Drosophila melanogaster* is being used as a model to study early life malnutrition, bringing into focus the activity of the digestive lipases and lipid metabolism. Genome-wide transcriptome profiling has revealed nutritionally regulated effectors of lipid metabolism. The method used for detection of digestive lipase activity in the gut of healthy and malnourished flies is by means of a colorimetric assay where the absorbance of the product formed due to coupled enzymatic reactions is detected and correlated to the amount of lipase activity in the gut. Furthermore, RT-PCR analysis of the genes responsible for lipid metabolism would give insights into their regulation in response to nutrient deprivation. Exploring the potential of digestive enzymes and regulators of lipid metabolism as biomarkers of malnourishment can aid in the understanding of metabolic responses to the type of diet.

Characterizing disease-associated mutations in RNA helicase protein DDX3X

SL.NO	USN NO.	NAME
32	1MS18BT034	Pooja H M
Mentor Name	External Mentor : Dr. Keshavardhana Sannula Internal Mentor : Dr. Priyadarshini Dey	

ABSTRACT

DDX3X is a DEAD-box RNA helicase that has been implicated in multiple aspects of RNA metabolism including translation initiation and the assembly of stress granules (SGs). Recent genomic studies have reported recurrent DDX3X mutations in numerous tumors including medulloblastoma (MB), but the physiological impact of these mutations is poorly understood. The syndrome predominantly occurs in females about 1% in western countries and also in males, Developmental delay / learning disability , Speech and language difficulties , Behavioral difficulty, Sensory processing and motor difficulties. The developmental and molecular mechanisms by which DDX3X mutations impair brain function are unknown. The objectives of the project are: Generation of stable cell expressions for selected mutations , Functional characterization of NLRP3 inflammasome, pyroptosis and stress granule formation and in-vivo studies in BMDM cell lines. The mutations considered here are of importance in causing both cancer and neuro-degenerative disorders those are :1.L559H- Breast invasive carcinoma 2.T532M- Skin cutaneous melanoma 3.R326H- Acute myeloid leukemia 4.R480G- Head and neck carcinoma. Work flow of the project goes like Using PLVx-DDX3X-mCherry as the template 4 sets of mutational primers, PCR using Prime STAR/overlap, PCR clean up, Transformation, Plasmid isolation and electrophoresis, Sequencing, Transfection to human cell lines, Characterizing phenotypes.

DEPARTMENT OF **CHEMICAL ENGINEERING**



Project Abstracts

2021 - 2022

Denitrification Performance of Modified Clays in Continuous Column

SL.NO	USN NO.	NAME
1	1MS18CH011	Anju Maria Mathew
	1MS18CH022	Ishani Agrawal
	1MS18CH038	Neha Rao P S
	1MS18CH048	Sandeep Raman P
Mentor Name	Dr. Archna, Dr. Rajeswari M Kulkarni	
ABSTRACT		

Nitrate is one among the most pollutants of groundwater in many countries. Sources of nitrate contamination are found from agricultural runoff, municipal, industrial effluents which mainly includes fertilizers and pharmaceuticals. Nitrate is potentially harmful to human health, causing Blue-baby syndrome, hypertension, increased mortality rate, goitre and is considered carcinogenic. It also affects the environment as the industries release the contaminated water and leftover wastes that are harmful to the marine plants, animals and indirectly to humans. Due to these increased risks, the WHO has set the limit as 10 mg/L of drinking water for nitrate concentration. The different methods suggested for the removal of nitrate includes reverse osmosis, electrodialysis and ion exchange. The present work aims at nitrate removal from water using modified clays i.e., kaolin and fuller's earth in a packed bed column. On the basis of batch study conducted previously, the best suited range is thus selected for the continuous operation. Different mathematical models such as Bohart-Adams and Thomas were used to predict the dynamic behavior of the columns. The continuous column studies and breakthrough analysis are an important criterion for scale up and column design to be carried out and to also understand the influence of operating parameters (flowrate and bed height of the column) on the nitrate adsorption removal. The column studies were analyzed based on the performance in the lab scale. The lower values of mass transfer zone and adsorption exhaustion rate have a better sorption process for the column.

Synthesis and Characterization of CuO/Go-Epoxy Nanocomposite

SL.NO	USN NO.	NAME
2	1MS18CH010	Anika Carol Noronha
	1MS18CH029	Likith Lavu
	1MS18CH053	Sreya Bhaduri
	1MS18CH059	Vaishnavi Pandey
Mentor Name	Mr. J S Sagar	
ABSTRACT		

Epoxy resins have various application in the field of aerospace, automotive, construction and manufacturing industries because of its mechanical, dielectric and corrosion resistant properties. But epoxy resin flammable in the air and causes smoke production and has less tensile strength. The effect of graphene oxide and copper oxide nano-particles on epoxy is being investigated in the present study. Copper oxide is synthesized by Glycine nitrate process and XRD of the CuO nano-particles is observed and it reveals that the synthesized CuO nano-particle is pure, crystalline and has monoclinic structure. Graphene oxide Nano-particle is synthesized by Hummers method and XRD reveals that graphene oxide is amorphous in nature. Polymer nano-composite is synthesized using different concentrations CuO nano-particle from 0.5-2.5 wt% and 0.2 wt% of GO nanoparticles in 150 mL of epoxy as the base material. The materials will be characterized using SEM, XRD, FTIR, TGA, and the mechanical (compression and tensile strength) and dielectric properties of the composites will be analyzed to test the suitability for diverse applications.

Simulation Study of Divided Wall Distillation Column

SL.NO	USN NO.	NAME
3	1MS18CH012	Arshad Shafi Khan
	1MS18CH023	Jenuward Basumatary
	1MS18CH052	Soummo Ghosh
	1MS18CH062	Vinay Anil Revankar
Mentor Name	Dr. Brijesh	

ABSTRACT

The focus these days is on energy-saving innovations. Several ways have been developed to improve the efficiency of the distillation process; one of these techniques is the dividing-wall column. Distillation columns are typically connected in series to separate multi-component mixtures into multiple product streams with strict purity requirements. The dividing-wall column, on the other hand, divides the central section into two sections by placing a vertical wall in the vessel at an appropriate location. The feed is fed into the wall on the pre-fractionator side. The main column has a side stream deleted. As a result, a ternary mixture can be separated into three pure product streams using a single dividing wall column. The intermediate boiling component of the ternary combination is mostly present in the side stream. The current research has constructed a mathematical model of the separating wall column that integrates material balance, energy balance, and equilibrium relationships. Using aspen Plus, this model was created by simulating four columns in an analogous divided wall distillation column sequence. The separation of three ternary combinations was investigated using this design.

Process Modelling and Simulation of Methanol Synthesis Using Syngas Obtained from Biomass

SL.NO	USN NO.	NAME
4	1MS18CH033	Manish Kumar Singh
	1MS18CH067	Praveen Kumar Gupta
	1MS18CH050	Shashwat Nilay
	1MS18CH063	Vipul Bhardwaj
Mentor Name	Dr. Ranjeet Kumar Mishra	

ABSTRACT

The non-renewable energy sources are the main foundation for sustainable energy production. But their limit contrast with their high energy density, they will dwindle until eventually disappear. The gasification of biomass producing syngas and its transformation into methanol can be an interesting route for present and future energy picture. Thus, the aim of this study is to analyse the performance of simple plants for the production of methanol, by feeding syngas produced from biomass through pyrolysis. Using Aspen Plus V11, the performances of the process loop with as fresh feed with two different flows (2E and 2D), the stoichiometric coefficient is optimized to be 1.790 and 0.232 respectively. Also, without considering the economical feature, the simulation is performed on the stream 2E brought as result of the methanol productivity 262.50 kmol/h with 828.6 kmol/h as fresh feeds with two reactors in series. The simulation of stream 2D involved an addition of pure hydrogen can be acceptable. Further, 1160 kmol/h and 1100 kmol/h of fresh hydrogen is added, the methanol productivity results 607.56 kmol/h. Overall, the present work is to provide the base for a profitability assessment in order to understand whether methanol can be produced with this method.

Synthesis and Characterization of 2D MXenes ($Ti_3C_2T_x$) for Energy Applications

SL.NO	USN NO.	NAME
5	1MS17CH028	Harshitha C
	1MS18CH032	Manikeshwari
	1MS19CH400	Manjunatha
	1MS19CH402	Shetty Akash Dayanand
Mentor Name	Dr. Ravi Sankannavar	
ABSTRACT		

Two dimensional materials have attracted significant attention in the past decade for their high application potential to address some of society's most pressing issues such as energy storage and scarcity of portable water. One of the latest and relatively large, family of 2D materials is transition metal carbides and nitrides, called MXenes. In this report, we overview the structure, synthesis and chemistry of MXenes with examples of their properties and applications that partially explains why these materials have become so popular. This report gives the details of synthesis and characterization of 2D MXene by hydrofluoric(HF) etching method. The report begins with an introduction and detailed literature review about 2D MXenes including its properties, applications and its growth and demand. The report then describes the various processes that are available for its synthesis and also deals with the basic raw materials required. It further covers the important aspects of the process selection and the selected process is described in detail along with the flow chart. Furthermore, we describe the experimental method and best practices we use to synthesis the most studied MXene, titanium carbide ($Ti_3C_2T_x$), by HF etching method. We also characterized the synthesized 2D MXene to know further applications.

Green Synthesis of Carbon Quantum Dots for The Detection of Heavy Metal Ion

SL.NO	USN NO.	NAME
6	1MS18CH024	Karthick A
	1MS18CH030	M Manoj Kumar
	1MS18CH043	Prasanth G
	1MS18CH044	Pruthvi Teja S
Mentor Name	Dr. G M Madhu & Dr. Nagaraju Kottam	
ABSTRACT		

Carbon dots (CDs) are very popular in the research world because of their properties like fluorescence, water solubility, low toxicity, small size, biocompatibility, and ease of modification. Earlier CD's were synthesized by chemical precursors, as these precursors are not economical. The use of an eco-friendlier method to synthesize high- quality CDs is still an arduous task waiting to be solved. The CDs find their application in sensing metal ions, bio imaging, solar cells and catalysis. IN the present work CDs were synthesized by hydrothermal method. The precursor used were Papaya, Indian Borage (Mexican Mint Plant), and Black nightshade. The prepared CDs were characterized by UV spectrophotometer, Photo luminescent, FTIR, SEM-EDX, TEM to generate structural, morphological and optical properties of CDs. The UV visible spectrum of CDs having its highest peak was observed in ultraviolet region. The UV absorption peak of CDs was located between 230-270 and 300-330 nm. From FTIR studies the following functional groups are observed on the peaks- OH/NH, CN, CO, OH bonding. Further studies on fluorescence properties reveal that C-dots displayed the characteristic.

Optimization of Process Parameters Using Mixture Design for Evaluating Rheological Properties of Commercially Available Thickening Agents

SL.NO	USN NO.	NAME
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	1MS18CH037	Neha Mary Eldho
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Mentor Name	Dr. Ramasivakiran Reddy	

ABSTRACT

The International Dysphagia Diet Standardization Initiative (IDDSI) flow test is useful for the global standardization of food consistencies of dysphagia patients. In clinical practice, different compositions of food thickeners are commonly used, directly influencing viscosity parameters and swallowing physiology. The present study deals with comparison of the IDDSI thickness levels, remaining volume in the syringe (RVS), and viscosity parameters of different food thickeners. As a secondary objective, mixture design of experiments is applied for the Gum-based thickeners. Characteristics of mixture design are studied by simulating the results using ANSYS software. Additionally, the cost analysis for preparing 250 ml thickened drinks using the studied thickeners was also explored.

Investigation of The Structural, Mechanical, Electrical and Thermal properties of Polyvinyl Alcohol (Pva) – Polyaniline (Pani) Films Doped With Zinc Oxide (ZnO) Nanoparticles

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ABSTRACT

Zinc oxide (ZnO) nanoparticles have been synthesized in the lab by sol-gel process and dispersed in polyvinyl alcohol (PVA) - Polyaniline (PANI) matrix in varying amounts by weight. Subsequently, PVA-PANI/ZnO nanocomposites have been synthesized to investigate the effect of ZnO nanoparticles on the structural, thermal, and electrical properties of PVA-PANI films. Structural properties were analyzed by Fourier transform infrared spectroscopy (FTIR), and X-ray diffraction (XRD) techniques. Differential scanning calorimetry (DSC) was used to investigate the thermal properties of PVA/PANI/ZnO nanocomposites. Electrical properties were measured by using a high-frequency LCR meter and were found to be strongly dependent on frequency and nano ZnO content. The dielectric constant decreased with an increase in frequency and with the increase in nanofiller concentration. AC conductivity and dielectric loss increased with frequency and decreased with an increase in nano ZnO content.

Simulation and Techno-Economic Studies for the Production of Syngas

SL.NO	USN NO.	NAME
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	1MS18CH028	Lakshya Anand
	1MS18CH047	Tanmayi Tanusri
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ABSTRACT

Energy and waste minimization are two challenges of the future that need to be addressed and solved. This paper lays emphasis on the method of gasification to solve these problems. A comprehensive process model is developed where simulation studies are performed using ASPEN PLUS on the gasification of the biomass involved. Reactor configurations are varied, Temperature is altered and different raw materials are used as substrate (agricultural waste, forest waste). The simulation studies were carried out with an equilibrium model to find the optimum conditions of operation to maximize the efficient production of syngas. Parameters such as equivalence ratio, S/B ratios, gasification temperature are varied in the optimum ranges to optimize the process. A higher calorific value of syngas is obtained with high hydrogen content; thus, the steam-to-biomass ratio is directly proportional to an increase in the content of hydrogen and carbon monoxide. Experimental results at varying operating conditions are used to validate the results obtained from the model and can be verified.

Optimization Studies and Techno-Economic Analysis for Catalytic Conversion of Levulinic Acid to Biofuel Additive using Sulphonated Titania Zirconia Nanocomposite

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10	1MS18CH008	Akul Shetty
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ABSTRACT

Butyl Levulinate (BL) is a biofuel additive produced from the esterification reaction between lignocellulosic biomass-derived levulinic acid and n-butanol. It is a completely renewable diesel additive that can replace diesel in traditional engines by up to 30%. BL outperforms corresponding ethyl levulinates owing to its low vapor pressure, low solubility with water, complete miscibility with diesel fuel, and high lubricity. Various catalysts have been used for the reaction, all of which have drawbacks in terms of reusability, production costs, and limited activity. The aim is to address these concerns and improve on factors such as surface area, acidity and mechanical robustness. In this study, sulphonated TiO₂-ZrO₂/SO₄²⁻ nanocomposite was prepared and characterized using techniques XRD, FTIR, TGA, SEM-EDX, TPD, and BET to confirm nanocrystal structures and sulfonated acid sites. The full factorial method was used to optimize experimental entities such as mole ratio, catalyst loading and temperature to achieve high yield with enhanced quality. The effect of various process parameters was studied and the results showed that the chosen catalyst had an excellent catalytic performance. A kinetic model was developed and the activation energy was determined. Aspen Plus was used for the continuous production of BL and techno-economic feasibility studies.

Acetylation of Glycerol using Lipase Catalyst in Microwave Reactor

SL.NO	USN NO.	NAME
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	1MS18CH035	Karan Modhvadiya
	1MS18CH039	Sarthak Patil
Mentor Name	Dr. Rajeswari M Kulkarni	

ABSTRACT

Biofuels are sustainable and renewable source of energy. Production of biofuels also produces glycerol as byproduct. The acetylation of glycerol produces 3 products – MGA, DGA and TGA of which TGA is the most significant product as it is used as additive in biofuel. This study focuses on acetylation of glycerol using lipase as catalyst in a microwave reactor. The experiments were carried out using 1:10 molar ratio of glycerol to acetic acid, 5 wt% catalyst loading of lipase (porcine pancreas). The effect of parameters such as temperature, power level and various solvents were studied. Acetylation reaction was carried out using solvents - toluene, n-Butyl alcohol (1-Butanol), tert-Butyl alcohol (2-Methylpropan-2-ol), dichloromethane (methylene chloride). Effect of temperature on glycerol conversion was studied at 300 C, 400 C and 500 C at a power level of 900 W. Effect of power levels of 900 W and 1200 W was also studied. The volume of solvent taken was 10 mL. Experiments were carried out for a duration of 2 hours. The conversion of glycerol was higher at 900 W power level and at 400 C. The data obtained from contact time was analysed using kinetic model.

Synthesis and Property Evaluation of CuO – ZrO₂ Epoxy Nano Composites

SL.NO	USN NO.	NAME
12	1MS18CH005	Akash B
	1MS18CH009	Aman Kumar
	1MS18CH021	Hitesh Manjunath
	1MS18CH031	Madhur Mohan Shukla
Mentor Name	Mr. J S Sagar	

ABSTRACT

In this project epoxy Nano composites were synthesized. These epoxy nano composites contain CuO and ZrO₂ Nano particles in varying weight percentages (0.5, 1, 1.5, 2, & 2.5). Epoxy is a crucial engineered thermosetting polymer with wide industrial applications in adhesive, electronics, aerospace and marine systems. The modification of epoxy resin with Nano particles could give the materials with some superior properties. Previous studies have shown the potential improvement in properties and performances of fibre reinforced polymer matrix materials in which Nano and micro-scale particles were incorporated. To study the property of the prepared Nano composites, different analysis such as SEM, XRD, UTM, FTIR, TGA and dielectric breakdown test and obtained results were compared. The effect of the weight ratio of the reinforcement materials on the properties of all-polymer composites has been studied.

Generation of Spatio-Temporal Patterns with Brigg's Reaction

SL.NO	USN NO.	NAME
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	1MS18CH004	Adarsh Nayak
	1MS18CH026	Karthish D Kottary
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ABSTRACT

The Briggs–Rauscher reaction is an oscillating chemical reaction in which we can observe color change due to the change in the concentration of intermediates being produced in the reaction. The color change we observe is Amber and blue and this is because of the switching between radical and non-radical processes. The reaction ends with a purplish blue complex. Here, we are trying to understand the complex mechanism of the reaction and determining the reaction time and time periods dependency on the reaction volume. We are trying to determine the antioxidants present in different vegetables, Generation of calibration chart using ascorbic acid to find out the equivalent ascorbic acid concentration in different vegetables. The major objective of our project is to generate spatio-temporal patterns in a Petri dish by the application of reaction diffusion mechanism to understand the structural and morphogenetical diversity we observe in the nature.

Production of biochar from slow pyrolysis of low-value waste biomass: Studies of effect of temperature and holding time on biochar yield and properties

SL.NO	USN NO.	NAME
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	1MS19CH401	Mukesh N
	1MS18CH404	Maresh T
Mentor Name	Dr. Ranjeet Kumar Mishra	

ABSTRACT

The present study addressed the formation of valuable biochar through slow pyrolysis of biomass. The biochar is produced at three different temperatures (400, 600, and 800 °C), 10 °C min⁻¹ heating rate, and with varying holding time (30, 45, 60 min). The produced biochar were tested for their thermal stability, elemental composition, functionality, water holding capacity, pH etc. The physicochemical study of biomass exhibited substantial carbon content, heating value (HHV), and lower nitrogen content. Overall, it was found that the pyrolysis temperature has the dominant role in the yield and properties of biochar. The physicochemical characterization of biochar showed that the higher temperature based pyrolyzed biochar (600 and 800 °C) enhanced the properties (thermal stability, thermal conductivity, ash content, and carbon content). Furthermore, the elemental study of biochar confirmed the substantial depletion in oxygen and hydrogen at a higher temperature (600 and 800 °C) than the lower temperature based pyrolyzed biochar (400 °C). Acidity and bulk density of biochar increased with an increase in pyrolysis temperature due to formation of purest form of biochar. Additionally, the purest form of the biochar is found at a higher temperature (800 °C) with higher thermal stability and carbon content.

Synthesis & Characterization of Polymer Nanocomposite using Nano-Silica & Nano-Titania

SL.NO	USN NO.	NAME
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	1MS18CH045	Rishin Maharoo
	1MS18CH066	Rishab Bijewar
Mentor Name	Dr. J. Koteswara Rao & Mr. J S Sagar	

ABSTRACT

SiO₂ nanoparticles were synthesized using simple solution combustion method in which sodium silicate is the precursor which reacts with concentrated HCl to form orthosilicic acid which eventually polymerizes and precipitates as silica. TiO₂ nanoparticles were synthesized using peptization process in which titanium isopropoxide is the precursor which reacts with water to produce TiO₂. Both the nanoparticles were added in varying weight percentages, that is 0.5, 1, 1.5, 2.0, & 2.5 into 6 beakers containing 125 ml of epoxy which was then sonicated at 100 Hz for 30 minutes after which 15 ml of hardener was added into the solution. The resulting solution was then poured into a mold and left for drying for 24 hours after which 3 mm nanocomposites were obtained. The XRD of nanoparticles were carried out and the results showed the SiO₂ particles to be around 30 nm while the TiO₂ particles were around 50 nm. The nanocomposites will be characterized and analyzed using SEM, XRD, UTM, FTIR and dielectric breakdown test after which the results will be compared.

Defluoridation of Water using Hydroxyapatite (Hap) and Analysis of the Defluoridised Water

SL.NO	USN NO.	NAME
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	1MS18CH058	Tejeesh V
	1MS18CH400	Amith Dsouza
Mentor Name	Dr. J Koteswara Rao & Dr. Ravi Sankannavar	

ABSTRACT

Ground water is the main source of drinking water and nowadays it is contaminated by various pollutants due to human activities and natural phenomenon. Some of the inorganic contaminants found in ground water are Aluminium, Arsenic, Barium, Chloride, Fluoride, Cadmium, etc. Among these contaminants Fluoride contamination is the major issue worldwide. So in order to reduce the fluoride concentration in the ground water we are using synthetic Hydroxyapatite (HAP). The HAP mimics the natural process of fluoride uptake by bones in human body by three possible mechanisms (i) Surface adsorption (ii) Substitution in HAP crystal lattice (iii) Dissolution- precipitation. The experiment contains the synthesis of the synthetic HAP and defluoridation of water using HAP which is performed in a continuous column study. In the laboratory experiments, it was found the synthesized HAP has better defluoridation capacity than BC for defluoridation. XRD is used to analyze the structural properties of the synthesized HAP. It was also observed through continuous flow packed bed-column study that amendment of calcium and magnesium into fluoridated water increases HAP's defluoridation capacity and improves the quality of treated water by controlling pH increase and reducing residual phosphate concentration. Phosphate in treated water sample was below detectable limits in most of the samples.

Syngas Generation by Oxy-Steam Gasification using Agro Residue as Fuel using Simulation

SL.NO	USN NO.	NAME
17	1MS18CH001	Aadarsh Bharti
	1MS18CH016	Darshan K B
	1MS18CH019	Gangadhar Dalawai
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ABSTRACT

Biomass gasification is the oxidation and reduction reactions at high temperatures that convert organic materials into some energy gas rich in hydrogen and carbon monoxide. Estimating the composition of the fuel gas under various situations is critical in determining the best-operating parameters for gasification systems. Gasification modelling and simulation, in this way, provides an analysis of the process performance, allowing for resource and time savings in pilot-scale process operation by predicting the behavior and analyzing the effects of various variables on the process. As a result, the focus of this research was on modelling and simulation of biomass gasification processes utilizing Aspen plus chemical process software, as well as employing the simulator database's facilities to accurately mimic downdraft gasifier operation behavior. The research was carried out on two types of residual biomass (forest and agricultural) in order to forecast the composition of syngas produced. By minimizing Gibbs free energy, the reactors simulated gasification. The equivalency ratio, steam to biomass ratio, and gasification temperature were the major operating parameters (independent variables). A sensitivity analysis was performed in the simulations, where the effects of these parameters on the syngas composition, syngas flow, and heating value (dependent variables) were investigated in order to maximize these three variables in the process with the selection of the best operating parameters. The model is competent to assess the behavior of the independent parameters in the gasification results and can anticipate the gasifier's performance.

Electrochemical Sensing of Emerging Contaminants

SL.NO	USN NO.	NAME
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ABSTRACT

Electrochemical sensing is a very popular means of detecting what are generally referred to as "emerging contaminants". Emerging contaminants are synthetic or naturally occurring chemicals or any microorganisms that are not commonly monitored in the environment but have the potential to enter the environment and cause known or suspected adverse ecological and/or human health effects. They consist of pharmaceuticals, pesticides, industrial chemicals, surfactants, and personal care products. Amongst the emerging contaminants, the per/poly fluoroalkyl substances (PFAS) are ones that have garnered the interest of many. This work is focusing on one member of the PFAS family, Perfluorooctanoic acid (PFOA). Chromium, a well-established contaminant, was also looked into. Laser induced graphene (LIG) in its bare form as well as functionalized with ZnO, TiO₂ and Ag nanoparticles have been used for this work. The nanoparticles were synthesized by means of a solvothermal method. Polyethersulfone (PES) was polymer chosen to make films that would undergo laser scribing by a CO₂ laser. Strips of LIG served as the working electrode in a typical 3 electrode system. Voltametric techniques such as CV were used to perform electrochemical analysis. Integration of LIG with molecularly Imprinted polymer (MIP) technology produced electrodes that had limit of detection (LOD) in the nanomolar range.

Solar Driven Membrane Distillation		
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ABSTRACT		
<p>Solar-driven membrane distillation (SDMD) is a developing desalination technique with a promising potential to address the global fresh water scarcity issue. However, this technique still faces challenges like minimal vapor flux, temperature polarisation, low conversion efficiency and membrane fouling. Herein, we fabricated polyethersulfone membranes that are doped with photothermal materials like TiO2, Fe3O4 and ZnO nanoparticles. The nanoparticles were compared based on their efficiency of absorbing sunlight and converting it into thermal energy that is utilized to heat up the feed water. The membranes were coated with laser induced graphene which further enhanced its photo absorptivity and also acted as an antifouling agent. Several trials were conducted before we arrived at the optimum lasing parameters (Speed, power, frequency) to ensure that the base polymer did not disintegrate. After the membranes were fabricated we began the experimental trials and noted down the salt rejection% and the vapor flux for each membrane with different concentrations of photothermal material. Lastly, we compare the performance of the membrane we fabricated to the commercially available membranes.</p>		

DEPARTMENT OF **CIVIL ENGINEERING**



Project Abstracts

2021 - 2022

Development of sustainable construction materials using the construction and demolition wastes

SL.NO	USN NO.	NAME
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	1MS18CV119	Vishwas R
	1MS18CV110	Suhas Padasalagi
	1MS18CV084	Rithik D R
Mentor Name	Dr. Anil Kumar R	
ABSTRACT		

Construction and Demolition (C&D) materials consist of the debris generated during the construction, renovation and demolition of buildings, roads, and bridges. Construction and demolition waste (CDW) is described as a material which is indispensably arisen from construction and demolition (C&D) activities and ought to be effectively managed, otherwise, its improper management can produce negative economic, environmental, and social impacts. Effective management of CDW leads to the corroboration of structures and leading to an authentic impact on natural systems. Therefore, it is vital to consider a potent concept capable of analysing effective construction and demolition waste management. This study aims at Repurposing the construction and demolition waste to employ these wastes in new construction activities such as buildings, road construction and landscaping. Optimize the Management of construction and demolition waste. Efficient model for the industry and society for the sustainable and economic usage of construction and demolition waste.

Application of Artificial Intelligence in Disaster Mitigation

SL.NO	USN NO.	NAME
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	1MS18CV118	Vishwanath M S
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ABSTRACT		

Nowadays the frequency of occurrence of natural disasters has increased rapidly. Due to this sudden rise, loss of life and property, damage to the buildings etc., is observed and more people are getting affected. This could affect the growth of any country. Proper and efficient mitigation measures could reduce these losses. In this project work, an attempt is made to study the damage levels in the buildings through the concept of artificial intelligence. A number of damaged building images were collected and an AI based model has been trained and building images were analyzed based on the geographical information. Based on the results, the building can be categorized as very severely damaged, moderately damaged or the damage level is mild in the buildings which will helps us adopt the proper restoration techniques to make the building usable. The study also aims at providing the suitable strengthening techniques which will reduce the loss of life during major natural calamities.

Experimental Studies on Utilisation of Bauxite Mine Residue in Production of Sustainable Eco Friendly Bricks

SL.NO	USN NO.	NAME
3	1MS18CV064	Naveen N
	1MS18CV066	Ningraj G
	1MS18CV089	Sagar S
	1MS18CV059	Mudit Sulwarka
Mentor Name	Ms. Nagashree B	

ABSTRACT

Plastic plays a predominant role in reusable in this era, as it is compact and light in weight. Common plastic items that are used are covers, bottles, and food packages. Plastic is very common material made of polymer chemicals and are non-bio-degradable substance which takes thousands of years to decompose that creates land as well as water pollution to the environment. In this project these waste plastics are effectively utilized in order to reduce the land space required to dump these wastes. This creates the prevention from various harmful diseases. From the advantages of plastic recycling procedure is used. Washed and pounded bauxite is treated with a solution of hydroxide at a raised temperature and pressure. This procedure brings all the recoverable alumina from bauxite into solution and the deposit known as red mud. For each piece of alumina delivered by this procedure, generally a part of red mud generated is discarded as a waste. Up until now, the different employments of red mud created incorporates, tiles, coatings and red mud polymer composites panels as wood substitute, iron rich cement and so on. Basic studies conducted for the extraction of iron oxide or titanium oxide are accounted for to be monetarily unsustainable and there by red mud in the capacity has been utilized for different applications. In perspective of above, there is an incredible breadth to advance inventive methodology and to create novel practical uses of red mud based materials, for compelling use of red mud. In this study, waste plastic from industries will be utilised along with proportionate mix of bauxite industrial by product viz. Red Mud.

Potential use of Plastic as Construction Material

SL.NO	USN NO.	NAME
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	1MS18CV120	Vivekanand
	1MS18CV052	Manjunath Patil
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Mentor Name	Ms. B Suguna Rao	

ABSTRACT

The project aims at use of recycled plastic in concrete as a partial replacement of fine aggregate to obtain eco-friendly light weight concrete. In this work fine aggregates are replaced by 5%,10%,15%,20% by volume with recycled plastic waste to arrive at optimal replacement which provides strength. Utilizing waste plastic also helps in meeting goal of sustainability by reducing amount of waste reaching landfills. In this study concrete prepared with the inclusion of plastic waste is compared with conventional concrete of M20 grade prepared using IS 10262; 2019 code of practice. In this study 15 cubes are prepared of size 10 x 10 x10 cm to understand the compressive strength, 4 cylindrical moulds of 100mm diameter and 200mm height are tested to know the split tensile strength and 4 prisms are tested to determine the flexural strength for replacement 0% (for reference),5%,10%,15%,20% of fine aggregate by waste plastic. The mechanical properties of concrete are studied for 1,3,7,14,28 days and are reported accordingly. This study will benefit the utilization of waste plastic in concrete to be used as a construction material.

Studies on Fundamental Time Period of RC Framed Structure

SL.NO	USN NO.	NAME
5	1MS18CV115	Varun Kumar J
	1MS18CV123	YatharthUpadhayay
	1MS18CV124	Yatin G
	1MS18CV125	Yatish K
Mentor Name	Mr. Santosh D	

ABSTRACT

As per the Indian Standards, time period of the building is a function directly related to the height of building (which is indirectly the number of floors in a building). Here in this work, the analysis is done to calculate variations of natural period according to various other parameters of the buildings, for e.g. mass, stiffness, building's behavioural shifts under various loading conditions, etc. As the buildings undergo oscillations at the time of earthquake, this analysis of natural time period is an important factor for designing of earthquake resistant structures. In this study, seismic analysis is performed for varied conditions like with different number of stories, different span etc on the ETABS software. Finally with different time period obtained are compared with IS Code Book (IS 1893 (part 1): 2016) through graphical analysis. It was found that with the increase in number of stories, time period increased, due to increase in overall mass of the building. Also there was a rise in time period of building, with the increment in span.

Condition assessment and monitoring of RC Structural elements subjected to Earthquakes and high temperature due to fire adopting IoT wireless sensor systems

SL.NO	USN NO.	NAME
6	1MS18CV096	Sarayu Gundlapalli
	1MS18CV085	Ritu K Lohar
	1MS18CV087	Roshan S
	1MS18CV068	Nishanth M Gowda
Mentor Name	Dr. Y K Guruprasad	

ABSTRACT

Structural Health Monitoring is the process of continuous monitoring, inspection, and damage detection of structures with involvement of minimal labour and adopting automated systems. Monitoring of the structure will provide information on the structure condition by periodically collecting data from suitable sensors that allow to identify the damage and denote the health status of the structure. The project aims to develop an IoT based system for structural health monitoring of real time damage detection in reinforced concrete (RC) structural elements with the use of accelerometer and thermocouple sensors. For this purpose, a wireless sensor network consisting of an ADXL345 accelerometer was designed using ESP32 Wi-Fi/BT enabled microcontroller was designed to detect and analyse storey displacement in an RC structure and monitor the status to prevent catastrophic failure. A cloud server is used for data recording and analysing with the help of MATLAB. To test the functionality of the system, a scaled 3D steel frame model is mounted on a shake table and subjected to scaled earthquake loads (from existing data). The sensor node consists of k-type thermocouple and ESP32 microcontroller, and a similar cloud-based network is used for data acquisition and storage. The system is tested on reinforced concrete beams of M25 grade which are exposed to high temperatures of 450°C and 600°C adopting a furnace of required dimensions. These beams are then subjected to 4-point loading in displacement control mode up to failure to assess the load carrying capacities of such thermally damaged RC beams. Finite Element Analysis is carried out to validate the material and finite element models in comparison with the experimental results of displacements and temperature measured adopting wireless sensors to further carry out parametric studies.

Durability Studies on EPS Light Weight Concrete		
SL.NO	USN NO.	NAME
7	1MS18CV001	Abhishek Acharya
	1MS18CV094	Santosh Reddy
	1MS18CV065	Nikhil Patil
	1MS18CV093	Sanjaya P Goudar
Mentor Name	Mr. Harish M L	
ABSTRACT		
<p>In this present project We mainly focus on Durability tests on Light weight EPS concrete. In this project we are preparing the light weight concrete by completely replacing the coarse aggregates and partially replacing the cement. In this we have used 60%of cinder and 40% of EPS beads. We have got this ratio by previous studies. This is the ratio at which concrete has maximum strength comparatively to the other ratios. Also we have partially replaced the cement by 20% of silica fume. In this project we are mainly focusing on the durability properties of this light weight concrete. We will be conducting three durability tests and they are Acid resistance test, Sulphate resistance test and Chloride resistance test. And also we are testing the corrosive property of the concrete. We will be preparing around 36 normal concrete cube moulds and 36 light weight concrete cube moulds. And also we will be preparing 2 normal concrete cylindrical moulds and 2 light weight cylindrical moulds. The EBS concrete behaviour under durability studies is compared with the control concrete behaviour under the same conditions.</p>		

Fibre Reinforced Mortar		
SL.NO	USN NO.	NAME
8	1MS18CV004	Afra Aga
	1MS18CV005	Akhilesh
	1MS18CV0107	Sathvik L
	1MS18CV104	Shreyas M
Mentor Name	Ms. Lakshmi H S	
ABSTRACT		
<p>Fiber materials such as glass fiber, polymer or technical textile were used quite popular in the technology of fabricating the building materials with advantageous features as high bending and tensile strength, proper slenderness of panels for practical applications. The research based on reliable results of previous illustrative studies of many groups and authors about the proportion, type of fiber reinforcement; these results were acquired through supplementing many kinds of fiber to mortar mixes at varying content. In the scope of this project, the researches were carried out to investigate the properties of fiber reinforced mortar which use a specific type of glass fiber reinforcement with the content varies within a considerable limit, from 0 to 1.25 percent. The results of verifying the properties of reinforced mortar were used as reference data of the process of producing of decorative panels and the installation on the building. The project aimed to figuring out a calculating model and designing the decorative panels which meet the aesthetic and quality requirements. The fabricating process and the installing of panels was defined and optimized by the practical work.</p>		

Effect of sodium and potassium carbonates on Alkali activation

SL.NO	USN NO.	NAME
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	1MS16CV418	Raghavendra
	1MS19CV404	Hemanth Kumar H P
	1MS19CV410	Roshan
	1MS17CV074	Niroop Darshan B C
Mentor Name	Dr. Lakshmikanth S	

ABSTRACT

In this study, the naturally cured NaOH/Na₂SiO₃ alkali-activated fly ash and alkali-activated fly ash-slag blended binder mixes were assessed with alkali concentration of 9 wt% Na₂O, and 10 to 30 wt% of slag, and compared with binder mixes with 9 wt% Na₂O, and 10 to 30 wt% of slag along with 2 wt% Na₂CO₃. The effects of sodium carbonate were assessed using compressive and split tensile strengths were determined post activation. X-ray diffraction and Fourier transform infrared spectroscopy, and thermo-gravimetric analysis was performed to analyze the phase changes in binder pastes after activation. The increased slag content facilitated the formation of C-A-S-H gel and enhanced both the chemical and mechanical properties of binder pastes. Furthermore, the inclusion of slag content also led to the reduction of the open porosity and efflorescence formation. Subsequent exposure of binder specimens to efflorescence conditions aided the formation of carbonate products, degradation of N-A-S-H and N-(C)-A-S-H gel,

Utilisation of Coal Ash used in Burning of Bricks in Manufacturing of Bricks

SL.NO	USN NO.	NAME
10	1MS18CV003	Adarsh R
	1MS18CV050	Charan M
	1MS18CV061	Muzamil Adnan
	1MS19CV408	Pranav M
Mentor Name	Mr. Nandeesh M S	

ABSTRACT

India is the second largest country in utilization of coal with a global share of 12% coal ash is the waste produced by burning of coal. In India about 50% of coal ash is produced from unorganized and small-scale industries, which lacks the separation techniques of coal ash to fly ash and bottom ash and hence acting as a major source of pollution. In this project Coal ash produced by burning of bricks was used as raw material to replace clay to make fired bricks. Fired clay bricks were manufactured using a commercial clay and different coal ash ratios (0 – 60 wt. %). The effect of Coal ash and its optimum dosage effects on firing parameters and properties of bricks were studied. The results indicate the variation of coal ash percentage and relative strength parameter. The fired bricks with coal ash is expected to have high compressive strength, low water absorption, less efflorescence and high resistance to fire parameters. Reduction in weight was also observed in these bricks which would lead to overall weight reduction of the structures. Finally, it can be concluded that bricks incorporating coal ash can be helpful in producing more sustainable bricks leading to economical solution.

An Investigation on Mechanical and Durability Properties of Scgpc using Recycled Aggregates

SL.NO	USN NO.	NAME
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	1MS19CV403	Hamsashree S
	1MS18CV054	Margo Jongkey
	1MS17CV138	Miding Jongkey
Mentor Name	Dr. Mourougane R	

ABSTRACT

An attempt has been made to study on mechanical and durability properties of Self compacting Geo-Polymer concrete (SCGPC) with replacement of recycled aggregate. The recycled aggregate being the waste of construction and demolition(C&D)works, a major environmental concern world wide. Robust engineering properties of these C&D waste, after the opportunity to get efficient construction materials by their appropriate recycling. We evaluate the capacity of recycled aggregates as partial replacement for achieving SCGPC. such specimens are prepared using GGBS, Flyash, Natural and Recycled aggregate at varying contents (0-100%) under constant alkaline liquid / binder ratio 0.35 by B.V.Rangan method. Sodium hydroxide and sodium silicate gels (alkaline solutions) are used to activate flyash and GGBS. Performance evaluation of the developed SCGPC samples are made using several tests including Workability, Durability, Flexural, Compressive , Splitting tensile strength. The test results are compared with conventional concrete of same grade.

Sustainable Utilization of iron ore tailings in Smart dynamic concrete

SL.NO	USN NO.	NAME
12	1MS18CV063	Narendra Kumar Dewasi
	1MS18CV029	Gururaj S Y
	1MS18CV105	Shreedhar Malipatil
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ABSTRACT

Traditional construction materials such as clay, sand, stone, gravels, cement, brick, timber and steel etc are being produced from the existing natural resources and cause damage to the environment due to their continuous exploitation. Considering the importance of conservation of resources, recycling the solid wastes is now becoming an important research area to achieve sustainable development. In India, more than 200 MT of non-hazardous inorganic solid wastes are being generated every year, out of which 80 MT are mine tailings/ ores of iron, copper and zinc mines, etc. In order to reduce emissions of CO₂ from cement production and avoid severe environmental pollution from the deposition of mine wastes, it is proposed to investigate the possibility of utilizing mine tailings of iron as a partial replacement in various percentages for aggregate sand cement in Smart Dynamic Concrete (SDC). Constructing fully-fledged and pre-engineered houses is a relatively new concept in India. It is estimated that India needs more than 27 million urban houses. Better understanding of concrete has resulted in more effective use of available raw materials & resources. With a new and innovative Superplasticizer and Viscosity Modifying Agent (VMA) it's now possible to achieve formerly unseen stability & robustness levels in SDC mixes, despite low fines contents. Such admixtures can make ordinary concrete extraordinary and meet some of the challenges faced in Mass Housing projects. The study aims at proposing a new mix design for SDC incorporating mine tailings as supplementary aggregates and cementitious materials. It is also proposed to develop empirical formulae for compressive strength, Modulus of Elasticity and Flexural Strength of SDC as the present IS 456-2000 gives the empirical formulae only for Conventional Concrete.

An Experimental Study on Inclusion of Basalt Fibre in GGBS Blended Concrete

SL.NO	USN NO.	NAME
13	1MS14CV066	Dhruv Arjun Devaraya M
	1MS19CV411	Shoaib Khan
	1MS19CV412	Shivumurthy E
	1MS19CV413	Siraj
Mentor Name	Mr. Raje Gowda	

ABSTRACT

The use of basalt fibres to improve the hardened properties of concrete has increased in recent times. The incorporation of these fibres into concrete results in a change in the hardened state of concrete. However, these fibres also influence the corresponding fresh and hardened properties of concrete, in this study basalt fibre is used in the proportion of 0.25%, 0.5%, 0.75% and 1% of the volume of concrete. Recycled fine aggregates (RFA) are sustainable materials for constructions. RFA content and porosity are major factors that influence the durability of concrete. Durability of concrete increased with the age of the concrete irrespective of RFA content. In this study fine aggregate is replaced with 25% and 50% RFA. In this study cement is partially replaced with ground granulated blast furnace slag (GGBS) by 40%. optimum values of compressive strength are observed in literature papers for 40% replacement. Therefore, it is critical to understand how the incorporated cubes, cylinders and prisms are tested for compressive strength, split tensile strength, flexural strength.

Experimental investigation on flexural performance of RC hollow core slab

SL.NO	USN NO.	NAME
14	1MS18CV056	Mohamed Faizan
	1MS18CV070	Pavan R Gowda
	1MS18CV072	Prathvik Nayak
	1MS18CV077	Puneeth K R
Mentor Name	Mr. Nambiyanna B	

ABSTRACT

Due to rapid growth of urbanization, this in return increases the dependency on natural resources. Keeping in mind of depletion of natural resources, we opt for alternative technique for the structural components of a building. In construction industry, the major portion of concrete is consumed in slabs. So by reducing the concrete in slabs by hollow cores without compromising in strength would save the natural resources and reduce self-weight of building. Keeping hollow core slab as main objective, cavity is formed using a poly vinyl chloride (PVC) pipe which is one of the best alternative of hollow core material due to its cost effectiveness, its recyclability and its handling. PVC pipes are embedded in slab and is expected not to reduce the bending strength of slab. In this experimental investigation we compared the flexural behaviour of solid slab with a hollow core reinforced slab with same thickness and compared well with hollow reinforced slab with an equivalent volume of concrete. The effect of different spacing of pipes has been investigated in this study including diagonal and longitudinal arrangement of pipes. All testing slabs have the same length and breadth with same reinforcement arrangement. The hollow core slab under load deflection behaviour performed well when compared over solid slab with equivalent volume of concrete.

Decentralization of Solid Waste by RS and GIS		
SL.NO	USN NO.	NAME
15	1MS18CV018	B Nikhil
	1MS18CV057	Mohit Patil
	1MS18CV067	Nischith C G
	1MS16CV099	Sumanth K
Mentor Name	Ms. Jyothi M R	
ABSTRACT		
<p>Efforts were made to identify suitable locations for the safe disposal of domestic solid waste generated in Bangalore district. The use of GIS and remote sensing is used to locate open dump sites, as is economical and efficient than traditional techniques. The selection of an appropriate site is suggested by considering number of factors to ensure minimum environmental impact due to solid waste disposal. Solid wastes that are generated from industrial organizations and urban areas create serious environmental problems. At present, there are various techniques being used for solid waste management such as land filling, thermal treatment, biological treatment, and recycling. Open dumping is the most common mode of solid waste disposal used in many countries. Open dumping is the most cost- effective system of solid waste disposal for most urban areas in developing countries. The methodology includes collecting data which comprises of primary and secondary data, and undergoes a series of process such as Ground truth analysis, Geo referencing, Digitization, Route mapping, GIS analysis and finally composing the Maps. Where Evaluation of waste disposal in study areas, interpolating relation between population density and waste generated through regression, Locating Dump sites affecting environment negatively, and finding the optimum site for disposal of solid waste by RS and GIS are the major future outcomes of this project.</p>		

Studies on quality interrogation of ground water in Hebbal Area using GIS		
SL.NO	USN NO.	NAME
16	1MS18CV040	Jayesh Hada
	1MS18CV041	Jayraj Rai
	1MS18CV044	Kshitiz
	1MS18CV075	Priyadarshini M S
Mentor Name	Dr. H U Raghavendra	
ABSTRACT		
<p>Good groundwater quality is very much essential for soil productivity and crop yield as well as for drinking purposes. Over exploitation of groundwater by unchecked industrial and human activities would be detrimental for all kinds of life in general. This study deals with the assessment of groundwater quality for drinking and agricultural purposes in Hebbal area situated in the North zone of Bangalore, Karnataka, India. The important physicochemical properties like turbidity, electrical conductivity, total dissolved solids, chlorides, calcium and magnesium hardness were assessed. The geochemical parameters like Residual sodium carbonate, Sodium adsorption ratio, etc. were deduced and statistical analysis using correlation matrix was made. Using ArcGIS software, thematic maps of different parameters were generated. The parameters analysed were compared with Bureau of Indian Standards(BIS) and World Health Organisation (WHO) standards. The results of the study show that the quality of groundwater varies both spatially and temporally.</p>		

Analysis of Subsurface features for the Civil engineering works using comprehensive software in the Hebbal area, Bangalore

SL.NO	USN NO.	NAME
17	1MS18CV021	B Shivakumar
	1MS18CV034	Harshitha H M
	1MS18CV035	Hitaishi R
	1MS18CV088	Sachin Keshri
Mentor Name	Dr. H U Raghavendra	

ABSTRACT

Subsurface is the stratum or strata below the Earth surface .One of the most valuable reasons for learning about the subsurface is to understand the materials below the man-made structures. Since from past decades the study on modelling of building superstructure were given more importance. The aim of our work is to study and characterize the subsurface i.e. the study below the ground. The study comprises the lithological, hydrological properties of the investigated area and the environmental status of the underground area. Our work aims to identify hydrological, engineering and mineralogical conditions of the Hebbal area, Bangalore. Our study reduces the risk and uncertainty in urban planning by predicting ground environmental conditions and also solves issues related to failure of construction elements. For this we require number of shallow land drillings which can be obtained from drilling sites, exploratory fields and groundwater drillings which have already done by Government agencies such as CGWB, DMG, NIRM etc. Comprehensive software is used for creating 2D, 3D maps of subsurface of our study area. These maps are analysed to characterize the subsurface features of the Hebbal area, Bangalore.

Quantitative Estimation of Solid Waste in Metropolitan Area of Bengaluru, Karnataka

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	1MS19CV406	Irayya Sangayya Hanchinalamath
	1MS19CV407	K Basavaraja
	1MS19CV409	Mahesha B
Mentor Name	Mrs. Jyothi M R	

ABSTRACT

Solid waste is a waste, which is discarded as a useless and unwanted material resulting from day to day activities in the community. The BBMP with an area of 2196 km² and a population of about 14.30 million generates around 5000 MT per day of waste at an average generation rate of 0.5 kg per capita per day. Now a day Bengaluru facing severe problems in all aspects such as social and environmental, due to more number of illegal open dumpsites. In this study the actual data from BBMP is used to estimate the future population and waste generation. In other hand survey has done regarding solid waste generation and windrose diagram is plotted by wind data, GIS maps are plotted from population, area, density and waste generation to eradicate the above problems by adopting suitable locations for open dumpsites which does not affect the community. For example preventing the spreading of waste, control the pollution effect on the community, to promote the social awareness and suggestion of new management techniques for solid waste.

Influence of Water Source on Carbon Sequestration of Irrigated Agriculture

SL.NO	USN NO.	NAME
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	1MS16CV092	Shubham Dhabu
	1MS16CV099	Shambhavi Yelmeli
	1MS16CV007	Aman Debnath
Mentor Name	Dr. Jyothi Roopa S K	

ABSTRACT

As there is development of industries and rise in pollution, Green House Gasses (GHG) emissions have led to air pollution, which is an alarming concern about deuteriation of soil wealth. So, in order to counteract the above-mentioned problems, carbon sequestration through irrigated agriculture is one of the upcoming methods in the endeavour of treating the soil. In this method, CO₂ from the atmosphere is taken up by plants (of agriculture/ forest) through photosynthesis process and is transferred to the soil through root system while some part of it stored in the plants as biomass. Thus, reducing the CO₂ levels in the atmosphere and increasing Soil Organic Carbon (SOC) content in soil. Since treated wastewater and raw wastewater is used in this method for irrigation, the aim of observation is to check the changes that takes place with plants irrigated in treated wastewater, raw wastewater compared to irrigation water. Thus, the overall strategy is to reduce CO₂ levels in the atmosphere and increase SOC content of the soil which essential for the foundation of both micro and macro nutrients to make soil heathy and suitable for proper growth of plants. This method is efficiently used for carbon sequestration of irrigated agriculture leading to a sustainable solution to reduce air pollution to a certain extent.

Quantification of Gas Emission from Municipal Solid waste Through BMP Assay Method using waste water Sludge as Inoculum

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20	1MS18CV092	Sanjana Mathpati
	1MS18CV108	Sowmya M D
	1MS18CV109	Srushti D
	1MS18CV114	Varnit Rathore
Mentor Name	Dr. Santhosh L G	

ABSTRACT

Landfills are one of the major sources of greenhouse gas emissions. Decomposition of organic content in Municipal solid waste (MSW) generate enormous amount of gas called as Landfill Gas or LFG. LFG mainly consists of Methane and Carbon dioxide. The present study aims at quantifying the gas in the laboratory conditions using waste water sludge as inoculum to enhance decomposition rate. Physical composition analysis of MSW collected from nearby landfill, its particle size distribution, physio-chemical analysis of waste water sludge (WWS) obtained from the treatment of institute were studied. Small scale reactors were prepared at varied percentage of inoculum and incubated for a period or approximately 60 days. Quantity of gas generated was monitored using water displacement method. Use of WWS could be one of the sustainable option to enhance degradation and decomposition rates in landfills.

Advanced Treatment of Wastewater using Constructed Wetland Systems

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21	1MS18CV002	Abhishek R
	1MS18CV062	Naman Jain
	1MS18CV058	Mohit Vijay Kashyap
	1MS18CV071	Prateek Jaiswal
Mentor Name	Dr. Jyothi Roopa S K	
ABSTRACT		

Eutrophication in natural water bodies is a serious issue in the ecosystem/environment due to increasing nutrients in water bodies and drying up of existing fresh water sources. The major cause of this problems is due to the inclusion of nutrient rich wastewaters into the system, primarily Nitrogen and Phosphorus, which accelerate algal growth in turn disrupting the balance of the ecosystem. The source of these wastes is usually from agricultural run-off, animal manure and detergents commonly found in households. Constructed Wetlands is a reliable wastewater treatment technology for various types of wastewaters including Eutrophic waters which is the focus of the project. Constructed wetlands are classified into several categories depending on vegetation type and direction of flow among which we have selected a hybrid system with emergent and sub surface vegetation. The system includes a mechanical pre-treatment setup for removal of debris and suspended solids, followed by the nitrogen removal with the help of Acorus calamus which are set up in a hydroponic system. Phosphorus removal is achieved by means of Canna setup in a vertical flow system. The efficiency of removal of nitrogen and phosphorus in this technology is based on the wastewater parameters namely pH, BOD, COD, and Total Suspended Solids. The tests are being done with a hydraulic retention time of 7 days before each test. Expected efficiencies Of removal of Nitrogen and Phosphorus to reduce Eutrophication using this technique is beneficial for the society and improves the quality of wetland.

Quantification of Gas Emissions from Municipal Solid Waste Through Bmp Assay Method using Leachate as Innoculum

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22	1MS18CV045	Lavanya R
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	1MS18CV014	Asha HN
	1MS18CV036	Hitha Shekar
Mentor Name	Dr. Santhosh L G	
ABSTRACT		

Landfill sites generates mixture of hundreds of different gases. These are formed by the decomposition of organic and other biological waste by bacteria. Methane is the biggest component of landfill gas (45% to 60%), followed by carbon dioxide (40%-60%). Landfill gas makes a significant contribution to man-made global warming. About 16% of the world's methane emissions come from landfills – a powerful greenhouse gas. The bioreactor landfill is still a new concept in the Indian MSW management sector. Leachate generated the landfill will be recirculated to the MSW heap at specific rates in the bioreactor landfill concept. In the present study, gas generation has been quantified using leachate as the inoculum media. Preliminary tests were conducted to understand composition and particle size distribution of MSW samples. In addition, chemical characteristics of the leachate was also conducted. Small scale bioreactors were prepared at varied percentages of inoculum, incubated for 60 days and monitored the gas generation upto 60 days.

Self-Cleansing Windows		
SL.NO	USN NO.	NAME
23	1MS18CV081	Ranjan B R
	1MS18CV053	Manoj P Shet
	1MS18CV086	Rohit Shrihari
	1MS18CV103	Shreyas M
Mentor Name	Mr. Manjunath R	
ABSTRACT		
<p>Eco-friendly materials in construction industries reduces pollution in air, water and soil. Opting recycled materials, Smart materials having less embodied energy leads to healthier and safer environment. An attempt is made in our project to synthesize and produce smart materials like self-cleansing windows. These are the windows that are made of specific type of glass with a surface that keeps itself clean and free of dirt and grime. Here we have used hydrophilic method of coating. Self-cleaning windows effectively conserves water, improves the appearance of the environment and reduces the energy, laundry cost and time as well. Generally self-cleaning glass are coated with TiO2 which will cause a secondary pollution as it is metal oxide, hence we used G-C3N4 (Graphitic Carbon Nitride)coating on glass surface which oxidizes dirt/organic compounds into simpler natural gases. G-C3N4 is produced from pyrolysis of urea which will be coated on glass surface using TEOS, ethanol and other chemicals compounds by Dip coating technique. Tests like X-ray photo-electron spectrometer test, contact angle measurement, thickness of the coating and ellipsometer test are carried out to check the chemical composition, optical transperence etc. Further this glass surface is kept in different environmental conditions to determine its performance and durability. This is novelty product that can be commercially produced and manufactured. This technology can be used in windows, spectacles, camera-lenses etc.</p>		

Irrigation Water Quality Analysis and its Effect on Soil - Crop Health		
SL.NO	USN NO.	NAME
24	1MS18CV019	Basavarasa R Sajjanshetty
	1MS18CV028	Gouri Prakash Aldi
	1MS18CV128	Charan S
	1MS18CV131	Kushalraj
Mentor Name	Ms. Shilpa D N	
ABSTRACT		
<p>Various resources of water are used for the irrigation of crops such as runoff water, groundwater, treated wastewater etc. Yield quality and soil quality is greatly affected by the type of the water which is used for the irrigation. The produce from the field is sometimes directly consumed by living organisms (vegetables, fruits etc) which makes it obligatory to use water which satisfies the safe permissible limits. Four different water sources are used to grow spinach (spinacia oleracea) i.e., groundwater, tap water, treated wastewater, bore water. Quality analysis of these water samples are conducted, and comparison of both crop and soil quality is established with different irrigational sources. Soil pH, electrical conductivity, heavy metal analysis is done for quality analysis of soil whereas heavy metal analysis and N, P, K analysis is conducted on the spinach samples. Yield quality is also compared.</p>		

Integrated Hydrological investigation in Mattikere and Malleshwaram ,Bengaluru

SL.NO	USN NO.	NAME
25	1MS18CV017	B.K Hemsagar
	1MS18CV024	Dheeraj U
	1MS18CV025	Ganesh
	1MS18CV082	Ranjan G R
Mentor Name	Ms. Shilpa D N	

ABSTRACT

Due to increase in the population and decrease in natural resources there is a huge gap created between availability of resources and its usage. Groundwater is one among such resources. Hence conservation and proper usage of it is must. Over exploitation of groundwater possesses a severe threat to food, water and livelihood security in India. Behaviour of groundwater in different locations is the most dynamic field of research in the present world, since there are continuous fluctuations in the groundwater level it is quite difficult to study and analyse it. Our work involves a scheme of image processing and GIS techniques to monitor the study area using which groundwater potential zone maps are created. It also involves hydrological and socio-economic analysis of groundwater by which groundwater stress zones are identified.

Assessment of land use and land cover changes and future prediction analysis using ANN technique: A case study Ramanagaram Dist of Karnataka

SL.NO	USN NO.	NAME
26	1MS18CV010	Ankesh Anand
	1MS18CV073	Pratyush Gupta
	1MS17CV068	Md Hamza Khan
	1MS16CV053	Taha Moula
Mentor Name	Dr. T R Nisar Ahamed	

ABSTRACT

Although India is one of the less urbanized countries of the world with only 27.78 per cent of her population living in urban agglomerations/towns, this country is facing a serious crisis of urban growth at the present time. Urbanization is a process which is on a continuous rise... The rapid growth of urban population both natural and through migration, has put heavy pressure on public utilities like housing, Water supply & sanitation ,transport, electricity and so on. This has directly and obviously lead to the Land use and land cover change (LULCC). For monitoring and future prediction of these changes, GIS and Remote sensing techniques are proven to be effective and viable approach The present study aims to assess the LULC changes and predict future trends in Ramanagaram Dist of Karnataka State. The study utilizes Landsat 8 images with spatial resolution of 30m covering 1991-2021. In addition to Landsat images, road network, stream/river, soil map, and DEM data was also used for change analysis. For LULC classification and prediction, QGIS 3.22 has been utilized. Images were classified into 6 different LULC classes. For future prediction of LULC 2030, CA-ANN methodology within the MOLUSCE plugin of QGIS were utilized. The analysis of results showed that there is an increase in urbanization activities in Ramanagaram dist, leading to decreasing in agriculture. In the term of projected LULC 2030, the result suggests a significant increase in residential and public building area. The study suggests that this integrated technique is powerful tools for monitoring and modeling land use and change in land cover

Landuse-Landcover change detection and Analysis adopting ArcGIS and QGIS Software Solutions

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	1MS18CV013	Aryan Raj
	1MS18CV031	Haritabh Harsh
	1MS18CV032	Harsh Raj
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ABSTRACT

Human activities on the earth's surface and its adaptation around the sphere is commonly known as land use and land cover (LULC). Human activities and increasing population impact on finite resources of cultivated area, forest field, urban area, and manufacturing industries. More area of agricultural land is required to be cultivated with growing human inhabitants which will also affect and shrinkage in quality and quantity of resources of the earth. Unfortunately, traditional methods and techniques for land cover mapping especially in developing countries such as India are very poor, time-consuming and costly. Considering these difficulties, the attention of researchers/Planners/ entrepreneurs has been directed towards adopting GIS and Remote Sensing technology based LULC changes. The main objective of this study is to examine LULC changes, impact and analysis on urban growth between 2010 , 2015 and 2022 for Mandya district of Karnataka State adopting QGIS and ArcGIS software solutions and to estimate the effectiveness of classification using Sentinel-2B image data, and other spatial data. This process was carried out using geospatial tools available in Q-GIS & ArcGIS. The study also covers studying the change detection using sentinel data and google earth data of 2022 using both GIS solutions. The results are expected that an increase in urbanization while decreasing in agriculture by both solutions, while variations in terms of percentage of changes noted using Google data The study emphasis that the use of latest high resolution images with GIS Techniques has become a strong tool for analyzing and interpreting the LULC changes and analysis.

Effects of Charcoal Ash on Behavior of Soil

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ABSTRACT

An experimental study was conducted to characterize the effect of charcoal waste on the strength characteristics of soil. Locally available soil is used in the present study. The soil is classified as clayey sand as per Indian standard classification system. Charcoal ash which is obtained from manufacturing of burnt wood in Chitradurga is used. Initially, laboratory investigation was carried out on soil to determine the index properties of soil such as specific gravity, natural moisture Content, Particle size distribution curve of soil and charcoal ash, Consistency limits and swell properties of soil. XRD analysis was carried out to understand the grain size and other constituents in charcoal ash. Standard Proctor's Compaction test was conducted to determine the optimum mix of charcoal ash. Further, Unconfined Compression Test (UCS), California Bearing Ratio (CBR) tests were carried out on soil alone and soil mixed optimum percentage of charcoal ash.

KEY WORDS: Soil, Charcoal ash, Unconfined Compression Strength, California Bearing Ratio.

Stabilization of Expansive Soil with Organic and Inorganic Amendments

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	1MS18CV090	Sahil Shrivastava
	1MS18CV011	Ankit Ranjan
	1MS18CV130	Kaamini Prasad
Mentor Name	Dr. J Sumalatha	

ABSTRACT

The expansive soils are one of the most problematic soils due to their high swelling and shrinkage properties which cause heaving of soil below the foundations and sometimes leads to foundation failures. To study the swelling behaviour of the black cotton soil, the index and engineering properties of this soil were tested. Due to its high plasticity characteristics, it was proposed to study the behaviour of this soil with various organic amendments such as arecanut fiber, coconut fiber, crumb rubber and raintree pod powder. The soil is blended with the varying percentage of stabilizers and laboratory tests were conducted on the amended soil samples to evaluate the effectiveness of stabilizers. The free swell index is estimated for all the amendment mixtures to know the variations with different amendments and their percentage. A series of consistency limits tests, compaction tests, permeability tests and shear tests are conducted. The results are compared among the additives and the best amendment mixture is identified which can be used to stabilize the black cotton soil in the field. Content of the Abstract: Soil Stabilization with Crumb rubber, Arecanut fiber, Coconut fiber and Rain tree pod powder

Investigation on Utilisation of Reclaimed Asphalt Pavement in Cement Concrete

SL.NO	USN NO.	NAME
30	1MS18CV100	Sharath B Valimiki
	1MS18CV113	Ullas M
	1MS18CV117	Vidyasagar Badiger
	1MS19CV414	Vasanth Kumar
Mentor Name	Mr. Charan Prasad M	

ABSTRACT

The rampant and extensive usage of natural aggregates in cement concrete as created an enormous pressure on the nature. The increasing cost of production of natural aggregates due to rising fuel prices is concern of point. Widespread white topping of urban roads has created massive reclaimed asphalt pavement(RAP) generation, the minimal utilization of RAP is leading into this material being dumped into landfills. The carbon foot print due to use of conventional natural aggregates in cement concrete is very high and the need arises to reduce the carbon foot print. The objectives of the study are to reduce the utilization of natural aggregates and to reuse the reclaimed asphalt pavement(RAP) in cement concrete. The study emphasizes on optimizing the strength characteristics of the concrete mix prepared by adding various percentages of RAP aggregates as a substitute to natural aggregates. Special importance would be done to carry out the strength characterization of concrete mix exposed to higher temperature of 100⁰c, 200⁰c, 300⁰c and 400⁰c respectively.

ITS-Application possibilities in India using Zoning, STCS, EWT and COW		
SL.NO	USN NO.	NAME
31	1MS18CV101	Shashwat Mishra
	1MS18CV008	Amit Kumar Raut
	1MS18CV016	Ashutosh Kumar
	1MS18CV006	Akshat Jain
Mentor Name	Mr. Niranjan G Hiremath	
ABSTRACT		
<p>Study of active and proposed ITS application around the globe and giving a possible replication of it for Indian conditions in order to provide more efficient and better crowd-managed metro-cities in India.</p> <p>The study focuses on</p> <ul style="list-style-type: none">(I) City zoning(II) Traffic Light preemption(III) QSI(Quality of service indicators) of public transport using data analysis in report form. <p>Aim is to introduce the audience with vast scope and necessity of ITS in the near future and at the same time provide them with the above mentioned solution in order to manage a city traffic scenario. Required data will be collected from government agency, which is currently under expansion of its available ITS system and will used for analyzing and calculating EWT and COW (Estimated waiting time , Chance of waiting) of their existing public transportation system. Concept of zoning is planned to be implemented and different zones will be created based upon traffic congestion, land use and traffic characteristics. Along with this, a smart traffic control system(STCS) will also be analyzed for catering the needs of traffic preemption, following which minimum EV distance calculations will be made on a short span of road using the available data(cycle time, average vehicular speed) in Urban setup.</p>		

Analysis of Driver's Brake Reaction under mix Traffic Flow Condition		
SL.NO	USN NO.	NAME
32	1MS17CV075	Nitin M R
	1MS17CV100	Rohan S
	1MS18CV030	Gyati Unya
	1MS18CV097	Saurabh Kumar Painkara
Mentor Name	Mr. Niranjana G Hiremath	
ABSTRACT		
<p>The aim of study is to analyse driver's reaction time under traffic flow condition. Driver's survey would be conducted, and driver need to react on reaction test and on basis of four class of vehicle – two-wheeler, cars, lmv/auto vehicle /loads and hmv/buses. The rection time of each tested driver will be measured. The result gives reaction time based on their rection to the test along with the eight parameters of testing i.e., age, gender, education, profession, marital status, children, health issues and type of vehicle. Through the survey input/output model can be arrived which can be used for recruitment of drivers.</p>		

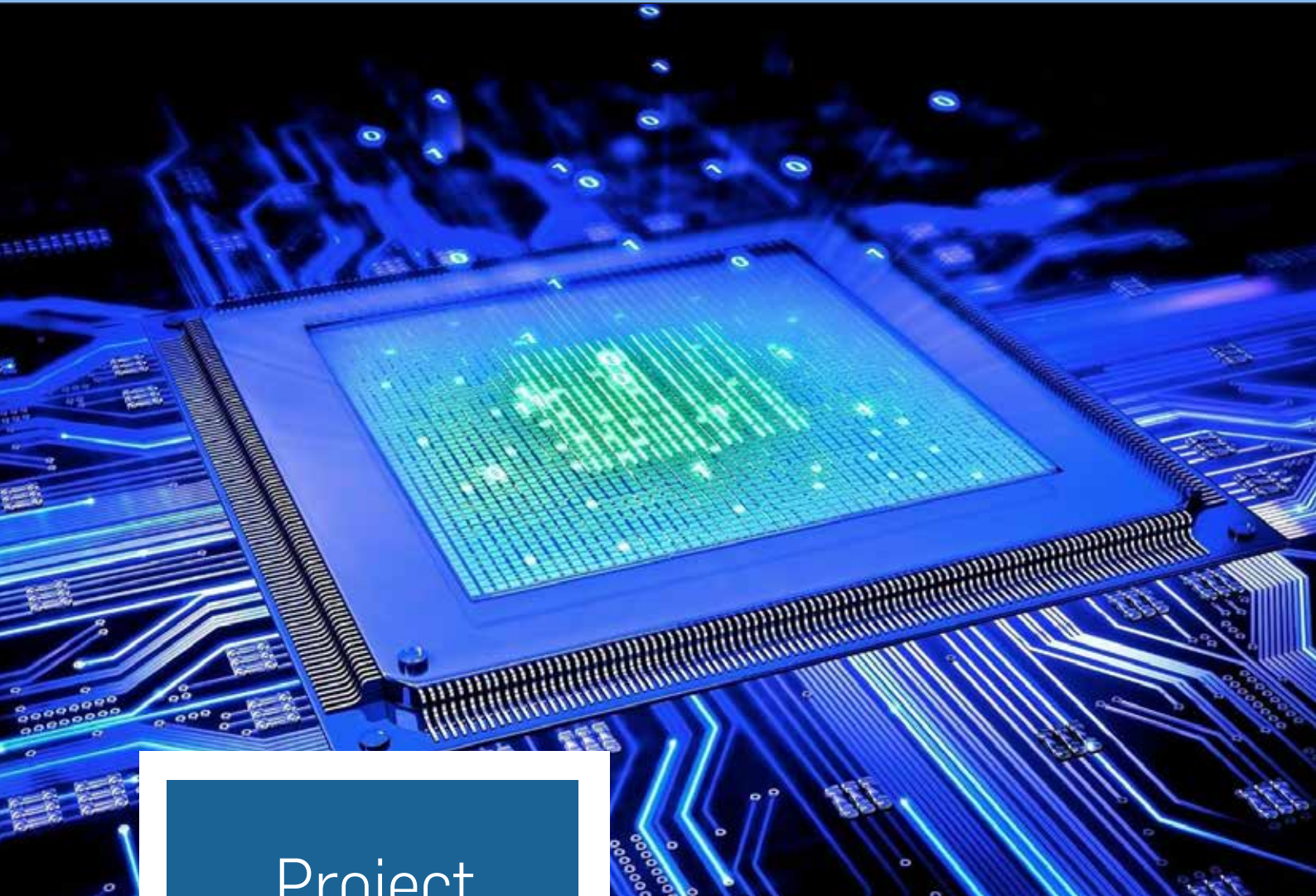
Analysis of Signalized Intersection near Ramaiah Hospital in MSR Nagar Bangalore – A Case Study

SL.NO	USN NO.	NAME
33	1MS19CV400	Aamir Rasool
	1MS18CV127	Shaik Numan Aadeel
	1MS19CV405	Imtiyaz Hussain Mir
	1MS18CV129	Obaid S Mulla
Mentor Name	Dr. Vivek R Das	

ABSTRACT

One of the main element in the road network is the intersection which is considered as critical because of conflicts. Intersections are of two types i.e Signalized and Unsignalized. The present study involves the estimation Level of Service at a signalized intersection near Ramaiah Hospital, MSR Nagar, Bangalore. Since frequent delay is observed at this intersection a performance study was conducted. Preliminary survey work was carried out to collect traffic, geometric and control characteristics of intersection. Indo-HCM was used to measure the delay and evaluate the level of service for all approaches of intersection. Based on the study suitable improvement measures are proposed.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING



Project
Abstracts

2021 - 2022

PlasPickr: An Intelligent Plastic Detector and Classifier

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ABSTRACT

Segregation of waste in India, especially plastic waste, is a cumbersome and taxing process. Most dry waste centers don't have the ability to manually segregate all the waste received, causing mindless dumping of recyclable waste into landfills. To aid the workers in such centers, we aim to develop PlasPickr, an intelligent modularized plastic segregation solution that will have the ability to detect and classify different types of plastic, enabling easier segregation. The model will utilize state-of-the-art image classification and detection techniques such as TACO detection and visual sensors i.e. cameras on smartphones. The model will initially be built using CNNs and several pre-trained networks which will later be optimized using reinforcements. PlasPickr consists of three modules namely waste detection, primary waste segregation, and plastic segregation. A foreseeable roadblock in the execution of the model is the lack of relevant data available. Since PlasPickr, a one-of-a-kind solution will be developed to function in real-time at dry waste centers, it is important to train the AI models on accurate data. Therefore, the proposed work will consist of both the collection of data to form a relevant dataset from Bangalore's dry-waste centers as well as the development of the AI model, PlasPickr.

Authentication by Encrypted Negative Password

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ABSTRACT

For data confidentiality and data integrity, there are few typical password protection schemes such as the hashed password, salted password and key stretching, But the hashed password protection scheme would be gradually eliminated because of its vulnerability for precomputation attacks. For the salted password it could resist precomputation attacks, it also introduces an extra element (i.e., salt) and could not resist dictionary attack. As for the Key stretching schemes, they are used to defend against dictionary attack, although key stretching schemes provide stronger password protection than salted password under dictionary attack, they impose an extra burden on programmers for configuring more parameters. In our proposed framework, a password protection scheme called Encrypted Negative Password is proposed, which is based on the Negative Database, cryptographic hash function and symmetric encryption, and a password authentication framework based on the ENP is presented, in the ENP, the secret key is the hash value of the password of each user, so it is almost always different and does not need to be specially generated and stored. Consequently, the ENP enables symmetric encryption to be used for password protection, the ENP also guarantees the diversity of passwords by itself without introducing extra elements

IoT Based Smart Door and Switches for Differently-abled using Real-time Video Based Eye Ball Tracking Technique

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ABSTRACT

As a very fast growing field in computer science, the internet of things (IoT) is gaining its popularity in these years because of its ease of accessing smart devices with a single application or a device. Some IoT devices even perform fully automated functionalities. But, we noticed that many of these devices needed to be operated through a remote controller, a mobile phone or a personal computer. Think about the people who are in special needs and cannot get up and move around in the house as a normal person and unable to access the device on their own. We work, mainly focused on such a group of people and developing a smart home with a smart system (for door, TV) in it. In IoT the security is a major field of concern, here in the proposed system, we are planning to implement a smart door system which has more secured features for the people in special needs, Since the target users count is also high and also the proposed system is going to be affordable and reliable (since, added more security functionalities), it is very relevant to the field of computer science.

Multi-Factor based Nutrient Management and Recipe Recommendation System

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ABSTRACT

Nutrient management in the context of this project aims to quantize the consumption of essential nutrients in an efficient format such that it leads to a healthy and balanced lifestyle. Increased consciousness towards one's health has recently been in the limelight which creates the need for an intelligent system specially customized for the individual that can analyze your consumption's quality and suggest options that could essentially fulfill your body's need to lead a healthy lifestyle. The project's main goal is to create an intelligent recipe recommender that would aid in the development of a diet that allows all users to make healthy choices in their daily lives while still enjoying food and keeping healthy. The recommender system, once implemented as a mobile or web application, can help users who have nutritional deficiencies to maintain a healthy well balanced diet by suggesting various recipes to the users in video format with additional relevant information which will improve the user's well-being and quality of life.

E-voting system based on blockchain to reduce ddos attacks for it

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ABSTRACT

Online voting is a trend that is gaining momentum in modern society. It has great potential to decrease organizational costs and increase voter turnout. It eliminates the need to print ballot papers or open polling stations. Voters can vote from wherever there is an Internet connection. Despite these benefits, online voting solutions are viewed with a great deal of caution because they introduce new threats. A single vulnerability can lead to large-scale manipulations of votes. Electronic voting systems must be legitimate, accurate, safe, and convenient when used for elections. Nonetheless, adoption may be limited by potential problems associated with electronic voting systems. Blockchain technology came into the ground to overcome these issues and offers decentralized nodes for electronic voting and is used to produce electronic voting systems mainly because of their end-to-end verification advantages. This technology is a beautiful replacement for traditional electronic voting solutions with distributed, non-repudiation, and security protection characteristics. The following article gives an overview of electronic voting systems based on blockchain technology. The main goal of this analysis was to examine the current status of blockchain-based voting research and online voting systems and any related difficulties to predict future developments.

Detection and Mitigation of Low and Slow DDoS Attacks in an SDN environment

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ABSTRACT

SDN is a new and emerging architecture that separates the data plane and the control plane and makes the network directly programmable. This feature makes SDN more popular to be used in data centers and enterprise networks. However, SDN environments are prone to Distributed Denial of Service (DDoS) attacks. Volume based DDoS attacks are easy to detect and mitigate since the volume of packets they send will be unusual. Low and Slow DDoS attacks, however exhaust resources by keeping the connection open for a long time and hence are difficult to detect. In this work we propose to implement a novel way of detecting such attacks in SDN environment by observing the time duration for which a flow rule exists in the flow table on the open flow switch. The traffic pattern generated by the malicious host is also observed to confirm the attack. After the attack is detected, the mitigation is done by installing appropriate flow rules to drop the packets from such hosts.

Cloud based System for managing placement related information

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ABSTRACT

Presently, all the information about the placements is being received through emails. This makes keeping track of all the placement related information difficult, which might lead to overlooking some critical placement related details. There is also a need for structured presentation of data, based on the branch, the CTC offered, the company etc. Better presentation makes it easier to identify offers that are relevant to each student and can immediately convey the required information. Additionally, there is no information available to the students about the previous companies that have visited the college and their CTC. A system that addresses the above issues is proposed. The cloud platform would maintain placement information, interview experiences, experiences of seniors and alumni and would also provide better visualization and presentation of placement related data, auto-filling of forms and much more. Hence, the objective of the work is to develop a system for the placement activities that can be used by the college students, placement team and the companies that visit the college for placements.

An open source mapping and localization framework for Autonomous Vehicles using Cameras

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ABSTRACT

Due to recent advancement in processing power and advanced algorithms autonomous vehicles are on the rise. More and more vehicle manufacturers are coming up with their own interpretation on autonomous vehicles systems. At the forefront there are LIDAR systems which use lasers and visual systems which use cameras. The purpose of the project is trying to solve the most fundamental problem of autonomous navigation, Localization. This is highly important when an external source such as GPS fails to provide location data. Ability to withstand an external reference failure is a highly desirable feature. In this project we will try to develop a mapping and localization pipeline using cameras. We want to use cameras because of their high availability and their cost, as LIDAR systems cost significantly more than cameras. In this project we will discuss methods such as SLAM (Simultaneous Localization and Mapping), particle filtering for faster localization and sensor fusion to get a precise position of a vehicle in an environment. On success of this project we will be able to map and navigate an unknown environment. Ability to localize on previously mapped environments. Ability to withstand GPS failure and odometry failure. All of this would be done on off the shelf hardware and with significantly less processing power.

Analyzing and Automating of Customer Service Queries and Feedback Encounters of a Product in Twitter

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ABSTRACT		

Recently, several products have turned to social media to analyze customer satisfaction and provide customer service to disgruntled customers. Product Twitter handles are flooded with tweets every day. Customer service professionals struggle to find and resolve complaints from numerous tweets, which results in high wait times for a response, huge costs for the company and frustrated customers. Customer service can be provided either by customer service personnel or through automation. Automating Customer services involves the use of Artificial Intelligence (AI) and Natural Language Processing (NLP) to emulate customer service offered by professionals. Existing technologies can be improved with new machine learning models, training existing models more and ensuring that responses generated resemble human interactions. The system delivers personalized, real-time customer service and the reduced customer churn ensures brand loyalty. The use of an orchestrator ensures that all bots are loaded equally. The models must be trained such that they accurately label tweets and are able to provide accurate responses for a high percentage of complaints/queries. The proposed system requires UiPath Studio for development and UiPath Orchestrator for orchestrator services.

Multimodal recommendation engine for advertising using object detection and natural language processing

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ABSTRACT		

In today's world, there is an explosion in online advertising due to the high levels of activity of users online. With this, comes an inherent challenge of advertising a particular product or service to the right set of users without invading their privacy. Our project intends to solve this issue by making use of a multimodal recommender system that consists of two components. The first component detects the objects and their corresponding frequencies of occurrence in a particular video being viewed by a user. The second component identifies text using Natural Language Processing from the audio of a particular video being viewed by the user. The results from these two components are combined and passed through a recommender engine to recommend the most relevant advertisement to the user. By virtue of design, during the entire process of recommendation, the personal data of the user isn't employed for the recommendation. In this way, the proposed model not only recommends the advertisements in a novel manner, aimed at improving the relevancy of the advertisement relative to the video being viewed, but also attempts to solve the pressing issue of privacy of netizens while browsing their favorite video streaming sites.

Analysis of MRI-based images for the detection of brain tumor using convolutional and generative adversarial neural networks

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ABSTRACT

Brain tumors are the most frequent and severe cancer, with a life expectancy of only a few months in the most advanced stages. MRI images are used to diagnose brain tumors in particular in this work. However, it has several limitations (for example, reliable quantitative measures are only available for a restricted number of photos). We have chosen this topic as many people have been admitted to hospitals being diagnosed with brain tumor and this will help doctors as it will ease their work and help detect the brain tumor in its early stages. In this project we will build a telemedicine portal that can assist (not altogether remove medical personnel) in the early detection of early-stage brain tumors by using an MRI scan(image) as an input into our Convolutional Neural Network (CNN). The model should be able to diagnose which stage the brain tumor is in and shall help the doctor in his counsel. To help further the accuracy of the model we will use a Generative Adversarial Network(GANs) that will help us generate images of the MRI Scans (apart from the ones provided by the original dataset). The input MRI scan images can also feed these images into CNN.

Internet Of Things Based Intelligent Smart - Apartment Security System

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ABSTRACT

Apartment security should be top concern for everyone who owns an apartment. An apartment security system is one line of defense against intruders. Moreover, a safe and secure residential space is the necessity of every individual as most of the family members are working. The apartments are left unattended for most of the daytime and home invasion crimes are at their peak as constantly monitoring the home is difficult. The apartment security system is thus applicable and desirable for resident's safety and convenience. Water leakage is a common problem. Our system consists of a water-level detection system using IoT technology. Our system provides security against these by detecting abnormal sounds and motion detection. We are going to design a system that helps to inform the security and owners of possible fire, and gives them early warnings. The objective of our system is to implement security systems using the internet of things (IoT) and to create awareness regarding the security measures. Especially with its advancement in technology using the internet of things, one does not need to get a security guard to be watching over the environment needed to be protected.

Read Intensive Distributed NoSQL Database		
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	1MS18CS027	Archit Nitin Latkar
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ABSTRACT		
<p>Data is growing today at a faster rate and efficient methods are required for processing it. Tools like Hadoop are available but they get limited by the data access from the storage, more reads are done in Online Analytical Processing (OLAP). NoSQL databases are built to store large volumes of non-relational databases in the form of documents. A distributed implementation of such a database is such that the read operation is costly whereas write operation is fast as compared to OLAP DB. Faster reads from the database with faster searching will help in increased performance of these tools. In this paper, we present a new approach to distributed NoSQL databases in which we perform read operations with lesser latency using improved data structure. Along with this, we will implement a Quorum based write operation to ensure fault tolerance and few other features to achieve consistency and partition tolerance while trying to maintain acceptable standards of availability.</p>		

Virtual Reality based physical rehabilitation for cerebral palsy patients		
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ABSTRACT		
<p>Cerebral palsy (CP) is a neurological condition that causes a person's mobility, balance, and posture to be affected. This is caused by a person's inability to regulate his or her muscles as a result of abnormal brain development or harm to the growing brain. Severe cerebral palsy patients may require special equipment to walk or may be unable to walk at all, necessitating lifelong care. A patient with moderate cerebral palsy, on the other hand, may walk awkwardly but does not require help. Through immersive virtual reality environments, the proposed system will assist cerebral palsy patients in physical rehabilitation therapy and keep track of their progress in a variety of activities within the virtual world. Functional training and performance can be aided by virtual reality. Virtual reality training is both rigorous and motivating. It allows for the use of a wide range of interactive environments as well as sensory feedback. Disabled people who use this technology are able to converse with others, create social relationships, and obtain independence. Virtual reality opens up new opportunities for cerebral palsy rehabilitation teams, as the combination of active therapy and incentive, as well as functional use, allows for the reduction of motor issues.</p>		

Child Safety Real Time Monitoring System using IOT and Augmented Reality Technique		
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	1MS18CS130	V G Nandan
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ABSTRACT		
<p>Child safety is one of the major and unsolved issues all over the world. Due to the lack of security and safety measures, the crime rate with respect to child abuse has been increasing at an unprecedented rate in India. This rate is increasing continuously every year. In today's era, Computer Science is growing with the latest trends and technologies like IoT and Augmented Reality. These technologies help in solving modern problems in a much more efficient way. When these technologies blend together they solve problems with real time data exchange with live interactions. Augmented Reality is one such area of technology which allows us to experience a real world environment in an interactive way. The proposed system makes use of IoT and augmented reality technology to navigate child safety. When the sensor which is located in the device detects a child's cry, the proposed system makes use of IoT to capture the image of the attacker. Then with the help of Augmented Reality, the live location of the child will be tracked. Finally, alert messages will be sent to the parents through a mobile application. Thus this would provide security to the children and also secure the feelings of parents.</p>		

Automated Mental Health Analysis from Speech Signals with Data Augmentation in a Secured Fog-Based Environment		
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ABSTRACT		
<p>Depression and anxiety disorders are tremendously common across the world, imposing an undue strain on family, people, and society. According to studies, early recognition of mental health disorders can help with successful therapies. In the past few decades, DLL features based on neural networks have outperformed hand-crafted characteristics in a variety of domains. Thereby, we propose a system that combines both the characteristics to accurately assess the degree of mental health illness based on speech signals with the help of CNN. Preserving the secrecy and unlawful disclosures of massive healthcare data during transmission across diverse sectors, is a key problem. Using cloud designs it is impractical to transport huge amounts of diverse data for storage, processing and ensuring security. Thus, Fog computing is used which is an architectural technique that provides application-specific logic for network components between devices and the cloud. Here data confidentiality is enforced using AES algorithm which is one of the best cryptographic algorithms. SpecAugment is implemented on a neural network's feature inputs. The augmentation approach requires distorting the features, masking blocks of frequency channels, and masking locks of time steps. We use SpecAugment on audio signals to inspect if a person is suffering from depression.</p>		

A Federated Learning Approach for Dynamic Traffic Management using Residual Neural Network and Edge Computing

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ABSTRACT

Presently, centralized training is used for dynamic traffic management where all traffic images are sent to a single server and the model is trained there with that data. The demerits of such a classical approach are that the sheer amount of data being sent to the server may exceed its bandwidth limit, the central server requires complex hardware to handle the huge data, the sensitive information being sent over the internet is vulnerable to cyber-attacks etc. Thus, we propose a Federated learning-based technique by which a copy of our central ResNet-based model is sent across multiple decentralized edge devices where it is trained using local traffic images. The trained weights at each edge device are then aggregated in the global model without ever exchanging information, thus solving data privacy, data security, bandwidth bottleneck issues. Additionally, the model training time is optimized due to distributed training. The above cycle repeats, which ensures multiple decentralized devices to have a common view of traffic conditions and manage traffic dynamically with their robust local ResNet model in real-time.

IoT based Smart Greenhouse with Recommendation Engine for plant disease detection

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ABSTRACT

Rapid increase in population has placed immense pressure on the agricultural community. This is compounded by the growing demand for chemical free vegetables from the population. Farmers are evolving from traditional farming methods to various advanced techniques. This paper discusses the automation of the greenhouse by creating a dashboard which monitors the temperature, humidity and soil moisture with immediate redressal in case of abnormal conditions. Along with controlling these environmental conditions, the dashboard is integrated with a plant disease detection system and a recommendation engine. Disease detection is done using ML algorithms. Once a disease is detected, the recommendation engine provides accurate solutions to tend to these diseases. Overall, the main goal of this paper is to understand how an individual can use this system to monitor his crops to obtain a high quality crop yield to cater to the community.

Traffic Accident Detection and Alerting in Real time		
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ABSTRACT		
<p>A Recent Report by the Comptroller and Auditor General (CAG) has pointed out the crucial shortcomings in ensuring road safety. The Report highlights that in a staggering 90,000 cases in Karnataka, accident victims did not receive timely medical care. It becomes very essential for the government to come up with a solution to provide immediate relief to accident victims. Our approach to this solution is to utilize the traffic cameras installed by the government and to develop a model that utilizes the concept of Image Processing and Machine Learning algorithm to detect road accidents and report them to the nearby police station and Hospital. It becomes very essential to look out for this approach since manpower is limited and CCTV Cameras can be abundantly installed with this approach. With this approach, we can alert the ambulance and police station and can directly send pictures of the incident sites to the nearby police accident and they can manually analyze the situation. This solution works in a way that can be enhanced over time and more accuracy can be achieved with very great precision.</p>		

Cloud Storage Monitoring System analysing through File Access Pattern		
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ABSTRACT		
<p>Cloud computing is a critical technology for today's high-demand corporate needs, and it has emerged as an inescapable technology. Every year, the use of IaaS Service storage for Cloud Computing grows exponentially. Cloud storage is popular among cloud users since it is less expensive than alternative storage options. The replication of files allows users to have easy access to files with high availability, which reduces total file access time, but it also takes up more storage space, resulting in higher storage costs. The cloud user has multiple times the amount of storage that he requires. It is critical that a system be developed to locate unneeded files in the cloud and to optimize storage space by measuring file access frequency. This work proposes a Cloud Storage Monitoring (CSM) system that monitors IaaS storage consumption and analyses file access patterns using multiple parameters to determine file access frequency, size, future access prediction, and file replication in cloud storage. This assigns each file a ranking and predicts future access patterns. This provides a recommendation dashboard for the user, who may choose between operations like reorganizing, deleting, or archiving data, as well as removing duplicate files from cloud storage to free up space for future usage.</p>		

Hamnosys based Sign Language Automation System		
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ABSTRACT		
<p>Sign Language is a form of communication for those who have trouble with their hearing and speaking. To bridge the gap between these two modalities, spoken language to sign language conversion is required. The Hamburg Sign Language Notation System is a collection of fundamental movements that may be used to make gestures for signed language. There are a few existing models to convert sign language to text and speech. Gnosys, a smart phone application which uses AI to convert sign language to text and speech in real time, was developed by a Netherlands based start-up called Evalk in 2017. In our model individual ISL video gesture movements are extracted and encoded using HamNoSys notation, then translated into a custom XML file called SiGML. For the depiction of animated Sign movements, SiGML files are utilized to manipulate the multiple control points of a JASigning AVATAR. So we will be taking a video as input from which we will be extracting the text, which will later be mapped into corresponding hamnosys notation. The Hamnosys notation will be stored in a SiGML file which will be used by the avatar to convey the text from input video using sign language</p>		

Cloud Based Integrated Application Hosting Platform		
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	1MS18CS037	D Sanath Kumar
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ABSTRACT		
<p>Content of the Abstract: As programmers, we create a variety of projects to demonstrate our abilities, try out new ideas and learn new concepts. Nonetheless, we want these initiatives to be widely accessible to the rest of the world, but hosting them can be difficult, especially on a low budget and no access to any friendly platforms. Our goal is to make an application hosting platform that is useful, accessible, and easy-to-use for beginners and experts alike, we also want to scale the user's application whenever necessary by changing the amount of resource allocated to it. By using containers as a service, we can create an interface for developers to create, deploy and host their applications without investing in separate infrastructure. Having the application run on a stand-alone server will be difficult as there may be power failure or system failure due to which the application may not be available for some period. We want to develop a platform for hosting web applications and will be using the latest resource management and allocation techniques to provide the service and scale the user's application according to the needs.</p>		

Development of hybrid heuristic algorithm for complex optimization problems in high dimensional data clustering

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ABSTRACT		

The major aim of this work is to study, analyze and find better solutions in order to solve complex optimization problems through hybridizing nature inspired meta-heuristic algorithms. We compute and verify the efficiency of this improvised algorithm by combining the three meta-heuristic algorithms: Artificial Bee Colony (ABC), Whale Optimization Algorithm (WOA) and Differential Evolution (DE) algorithm and thereby implement clustering techniques. After hybridizing the algorithms, we test and analyze this algorithm on different datasets. The resultant hybridized algorithm may help us in solving real world problems like scheduling, cancer analysis, traveling salesman.

Recognizing and Categorizing Human Poses from Multimedia

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ABSTRACT		

Human pose estimation from multimedia is essential in various applications, including measuring physical activities, sign language recognition, and full-body gesture control. Human Pose Estimation is a complex yet well addressed field. Pose may be characterized as the unique arrangement of human joints. As a result, the topic of Human Pose Estimation may be characterized as the localization of human joints or preset landmarks in photos and videos. Pose estimation is necessary in applications such as human activity detection, sports activity, yoga poses, sign language application, motion capture in AR/VR, and so on. We are making use of the MediaPipe API in our project. The MediaPipe Posture is a machine learning (ML) solution for high-fidelity body pose tracking that infers 33 3D landmarks and a background segmentation mask on the entire body from RGB video frames using our BlazePose research, which also drives the ML Kit Pose Detection API. This model identifies and monitors body component motions and classifies human poses.

Blockchain Based Vehicle Data Monitoring and Analysis

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	1MS18CS137	Wasim Memon
	1MS18CS095	Prashanth P
Mentor Name	Dr. Sowmya B J	

ABSTRACT

Vehicle Monitoring is an integral aspect of modern-day inspection and maintenance. Data is collected from sensors within the Vehicle, for users to detect issues in their vehicles. This data can be in form of temperature, Voltage supply, etc. This allows for precise servicing of damaged parts of the vehicle, preventing potential accidents. However, in wrong hands, this data can be manipulated by hackers, causing danger to the user. Even with advances in system security, there are flaws, where data packets can be intercepted and manipulated. Modern security systems like Blockchain, provide fortified authentication and security of data. Hence we propose the usage of secure cryptographic technologies such as Blockchain, to secure vehicle data, by transmitting the packets as Blockchain transactions, hence assuring strong security. This data can be integrated to an online dashboard, which provides an interactive method for monitoring and sending the data to service centers for servicing. It also provides an efficient means for the service personnel to accurately detect issues, without having to inspect the whole vehicle, saving time and money. Hence, this system handles most of the major issues faced by modern vehicle monitoring methods, providing security, and simplicity to the users.

Intelligent Disease Detection System Using Machine Learning Approach

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ABSTRACT

When one suffers from particular symptoms, he/she needs to visit the doctor even when the symptoms are mild, visiting doctor, taking appointment consumes a lot of time and money too. There are many models evolved in this field which tried to predict the result (diseases) from the symptoms but the major lack which observed was "efficiency". The main reason for lower efficiency is the dataset which other models considered, which is very limited. And even some models have chosen methods which are not efficient in classification of these symptom-based diseases. So, this project objective would be to develop an efficient system for detecting diseases based on symptoms by considering large dataset. Proposed method, identifies the user's disease based on the symptoms that the user provides as input. The method examines the user's symptoms as input and returns the disease's likelihood as an output. Disease identification is accomplished using the random forest classifier, Decision tree and naïve bays classifier. Finally, the best model will be chosen to integrate with web application.

Exploratory Analysis on the Natural Language Processing Models for Task Specific Purposes

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ABSTRACT		

Natural Language Processing is a widely used technology for understanding and analyzing human speech. It is frequently used for a variety of text processing tasks like summarization, semantic analysis, question-answering, natural language inference, classification etc. There's always a dilemma in choosing the model for our purpose and this becomes a roadblock. In this work, we try to understand which state-of-the-art NLP models are better suited for the tasks listed above by benchmarking them on datasets like GLUE and SQuAD. The models used in this study include OpenAI's GPT-3, SBERT, RoBERTa, ALBERT and distLBERT for comparison. We aim to understand how the underlying architecture affects the use case and to understand where it falls short.

Cryptography Using Anonymous Number Systems

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ABSTRACT		

AES, DSA remain the most used cryptographic algorithms used in the modern day data transmission with confidentiality over an unreliable channel. However, these algorithms are highly complex with at least a dozen transformations that data has to go through and computationally expensive and on top of that, there are ways to comprise the system if one has access to some critical information. Our cryptography system is a symmetric key cryptography system based on conversion of numbers from one Number System to another by treating given plain text as a number in an anonymous Number system and then converting that number into another anonymous Number system. Hence making the output our cipher text which would be unreadable and the order of characters in these Number systems would be the key. On the decrypting side of the system, the cipher text would be converted into an earlier Number system and the data would be decrypted. We would implement a command line tool for the encryption algorithm for Linux based systems and the same can be used to build encrypted file systems and password less logins.

Analysis of Summarization Results using Jiang Semantic Similarity Matrix and Linear Regression

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ABSTRACT

Text Summarization is the process of summarizing the information in large texts into a small summary which is easy to consume without losing any vital information. One of the techniques used for text summarization is "Jiang Semantic Similarity Matrix". It operates by generating matrices for two sentences at a time and then computing the similarity scores. By using these scores, it can co-relate two sentences and extract the Keywords/context from it which can then be used to generate new sentences. However, this technique cannot be used on all types of datasets. We aim to analyze this algorithm on various types of datasets like articles, trading data, heavy statistical data, e-newspapers, novels etc. and give a comparative study of the performance of the algorithm in different types of testing environments. By the end of the project we aim to provide a ready-reckoner for the use cases of the algorithm.

A Quantum Approach for text based Steganography

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	1MS18CS009	Adarsh Kumar Jha
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ABSTRACT

This project presents the work on text based steganography. Maintaining the security of secret information has been a great challenge in our day to day life. Senders can send messages abtually through a communication channel (like the Internet), drawing the attention of third parties, (hackers and crackers), perhaps causing attempts to break and expose the unusual messages. Steganography is a talented province which is used for secured data transmission over any public media. Extensive amount of research work has been established by different researchers on steganography. In this project, a text steganography procedure has been designed with the help of xor-based symmetric cryptography and quantum circuits. Here the quantum approach also incorporates for increasing the security level. This project will use the mapping technique of quantum gate truth table for the embedding's of secret and cover message.

Lightweight Cloud Based Solution For Digital Education And Assessment

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Mentor Name	Dr. Geetha J	

ABSTRACT

There are many colleges and institutions that are present in a remote set up. These institutions have insufficient funds to provide a proper lab setup. Moreover, difficult times like Covid-19 have shown us the importance of having a setup that can be used by people at the comfort of their home. Our main goal is to design and develop an online cloud based educational system that can easily be upgraded so that it is relevant with changing times as well as scalable so that we are able to reach a wider audience and include a larger segment of students on demand. To achieve this, we will be using open source tools like open stack, docker and kubernetes as they are suitable for distributed systems and will make our server highly scalable and reliable. Our objective is to develop an user friendly automated assessment tool for computer science courses to aid skill development, to establish a cloud computing facility and deploy the web application using containers in cloud and to provide cost efficient access to course instructors and students in the institution and to other educational institutions on subscription basis to run virtual labs and supply necessary instructions for usage.

Developing a spell check tool using Symspell for Indian regional language

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ABSTRACT

Spell checking interpretations range widely, from simple token correction implemented by lookup tables to widely used research such as formal/informal tone identification, sentiment classification, and recommending similar alternative approaches. The spell-checker predicts the word the user intended to write down by trying to combine smart data structures and algorithms with established dictionary definitions to find the correct spelling and recommend similar words with different distance metrics like distance metrics. Spelling correction solutions are critical for a wide range of applications and NLP tools, including Intelligent tutoring systems, message typesetting, optical character recognition, pre-editing or post-editing for parsing and computational linguistics, and so on.

Enhancing the Face Detection by using MLOPS

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	1MS18CS070	Mayank Sharma
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ABSTRACT

India is growing at a very fast rate and people are becoming less patient day by day. They want the things to be done in a faster manner. So if we talk about the Police Station, many cases are left unattended for a long time and ultimately leads to closure of that file. So we are trying to optimize this whole process and make it more efficient and effective. In order to implement the project, we are building a virtual police station and we will be building an alert system that uses some of the graph algorithms to trigger a nearby station whenever a device detects a person with accuracy of more than 85. In the future we will be using the same tech to cater other serious problems. After successful implementation of the version 1 of the project we will be going to work on the other version of the project and make it available for the society.

Conversational AI Customer Support Platform Powered by ML

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	1MS18CS129	Tushar Mittal
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ABSTRACT

Thousands of people are employed for handling customer service calls and resolving user queries. This is very time-consuming for the users as they need to wait for a customer service executive to connect and answer them, sometimes taking more than 15-20 minutes. Companies lose more than \$62 billion annually due to poor customer service. And after one negative experience, 51% of customers would never do business with that company again. In 2020, the customer experience management market was valued at \$7.6 billion. The present system also wastes a company or organization's resources as the customer service executives spend a lot of time answering simple user queries and ultimately costing them more money. All of this can be automated using a smart voice-based virtual assistant powered by artificial intelligence and machine learning saving both parties involved time, resources, and money. The virtual assistant acts like a real human with its voice capabilities and answers user queries with the help of neural networks. The system offers natural human-like interactions and provides real-time support to the users. This decreases the costs for the company and increases customer satisfaction.

Blockchain Based Solution for Mitigating Drug Counterfeit and Illegal Drug Abuse using Prescription Verification

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	1MS18CS078	Muskan Gupta
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Mentor Name	Dr. Meeradevi A K	

ABSTRACT

Drugs should be dispensed by the chemist only on the prescription of the doctor and in prescribed quantities. The completeness, authenticity, and legality of the prescription shall be verified before dispensing the drugs by the pharmacist. Prescribed medications and their constituents are increasingly being diverted for illegal drug recreational use. There is currently no full-fledged system in place to track the flow of these pharmaceuticals as well as the validity of their delivery to end users. Our proposed solution can overcome many challenges as it will trace and track the drugs while in transit, give transparency along with robust security and will ensure legitimacy across the supply chain. It provides a reliable certification process as well. Hyper ledger Fabric architecture is used which is permissioned and private. QR generation and scanning are provided as a functionality for its easy accessibility to make it more secure and reliable. The objective of our solution is to provide substantial solutions to the supply chain stakeholders in record maintenance, drug transit monitoring and vendor side verification. The solution will be in the form of a cross platform software application and will ensure that the drugs are delivered only to the person with doctor's prescription.

Project Title : Identification of emotion using face and body gestures using Deep Learning

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	1MS17CS006	Akshay Mohan Revankar
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Mentor Name	Ms. Shilpa H	

ABSTRACT

The project can be used to detect face and body language's; it could be used in the education sector to detect if students are engaging with their homework. It could also be used for security purposes, it's also a great tool to gather feedback about products and customer services, machines could be able to produce more accurate insights from video and speech than just text. The emotion of human beings is an integral way in the way we choose to communicate and describe our emotions. It could help employees and make better decisions on managing stress and it could give employers valuable insights, it could help therapists and psychologists make better choices based on their client's emotions. In conclusion, emotion recognition would offer a surplus of benefits

Handwritten Character Recognition using Quantum Machine Learning

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ABSTRACT

Quantum image processing (QIP) is a branch of research in quantum information processing that deals with taking advantage of the principles of quantum mechanics to convert an image into a quantum image and then perform various image operations. A quantum image is an image that is encoded in a quantum computer, rather than a classical one. Quantum state entanglement and superposition allow one to achieve high levels of parallelism. Using quantum mechanics, we can improve the speed of the process and reduce the storage requirements. Convolutional Neural Networks are neural networks that are used to classify images and they have been successful to do so. For using a CNN, a lot of data is required for training, and it takes a lot of computational power to do so. Manual labeling and availability of data are major issues in this case. Alternatively, quantum computing can help by training a network that requires less training data. In this project, we aim to identify different ways of QIP, and its advantages over classical image processing and build a mobile and web end-to-end solution which recognizes handwritten characters. Further, we will use the processed images to classify them into English characters.

Dataset Generation using Image Classification and Data Augmentation

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ABSTRACT

Many decision-makers are unaware of what is required to build, train, and launch a machine learning algorithm successfully. The mechanics of collecting data, creating a dataset, and labeling specifications are overlooked. A dataset is a collection of data utilized by a computer in the form of a single unit for the purpose of analysis and prediction. In the proposed model the dataset is created using image classification and web scraping, allowing the user to define the required data elements for each dataset with the inclusion of sample images. The similarity scores between the images are determined to include appropriate elements into the dataset. Web scraping using Selenium makes use of bots to automate the process of the extraction of web data from the specified websites and store it for later use, thereby delivering faster results by eliminating the requirement of manual data entry and other human errors. We aim to create a seamless interface that allows users to input the dataset to be generated, enter the number of data elements to be obtained by including sample images and using tools like selenium to perform web scraping and obtain the desired elements, all integrated using a flask application.

Hand Gesture Recognition of Indian Sign Language for People with Speaking and Listening Disabilities

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ABSTRACT

Conversing with people that have listening or speaking disabilities has always been tough. The most common solution to overcome this communication barrier has been using a standard sign language. However, since most people are not versed in sign language, people with speaking and listening disabilities get less opportunities and encounter extra hurdles. One solution that has recently risen for this problem of accessibility has been the use of image processing and artificial intelligence, specifically with deep learning. There has been a lot of work in this field in the past few years, however most of it has been with American Sign Language(ASL), whereas the standard sign language for India is the Indian Sign Language. In this project, we will create a model that converts ISL hand symbols to text, making it easier for people without the knowledge of ISL to communicate with people with listening and speaking disabilities.

Analysing and Automating of Customer Service Queries and Feedback Encounters of a Product in Twitter

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	1MS19CS410	Vaishnavi Jadhav
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ABSTRACT

To automate twitter customer services, We collect tweets from a customer service twitter handle of a product and identify which tweets are complaints or queries. Each Tweet is labelled with the issue associated with it. A pre-trained model takes each query and attempts to answer it by replying to the user's tweet. Each software robot (bot) is loaded with the models and workflows to handle a user request. An orchestrator is used to schedule jobs over a group of robots as user requests start pouring in. The system delivers personalized, real-time customer service and the reduced customer churn ensures brand loyalty. The use of an orchestrator ensures that all bots are loaded equally. The models must be trained such that they accurately label tweets and are able to provide accurate responses for a high percentage of complaints/queries. The proposed system requires UiPath Studio for development and UiPath Orchestrator for orchestrator services.

Multi-Level Video Analytics for Identification of Duplication

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ABSTRACT		

In the present time, one can search for videos in the internet by providing the keywords. The internet might have videos that have the required keywords but the video in itself might not be much relevant to the user's needs. If videos would be analyzed for the contents, then be displayed to the user. The resulting videos would be very relevant. This project attempts to build a platform for video search based on multi-level deduplication using transcripts, video analysis, and voice deduplication. The aim is to provide a convenient, effective and better way of searching for videos on the internet. Identify similarities between two videos so the user does not spend time watching different videos for different content using multi core architecture such as CUDA.

DEPARTMENT OF **ELECTRONICS & COMMUNICATION ENGINEERING**



Project
Abstracts

2021 - 2022

Plant Leaf Image Analysis for Detection and Prediction of Diseases using Deep NN

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ABSTRACT

Plants act as an important resource for everyone in terms of food. So it is very important to notice that the plants are not affected by any diseases. Plant diseases are a major threat to food supply, but their rapid identification remains difficult in many parts of the world due to the lack of the necessary infrastructure. So this project aims to identify the diseases in early stage with the help of deep neural networks. Plant village dataset with potato and peach plants have been considered for study. Potato leaves have been classified with potato early blight, late blight, healthy. Peach leaves are classified with bacterial and healthy leaves..All the images and their diseases are labelled manually through labelIMG, a free and open source tool for graphically labelling images. YOLO V3(you only look once version 3),a real time object detection algorithm is used for detection of plant leaves diseases. YOLO V3 is made of darknet-53 architecture and is used for plant diseases detection and prediction with at least 85% accuracy. The results are compared with Convolution Neural network model.

Anomaly Detection In Crowded Scenes

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	1MS18EC015	Ayush Aripirala
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ABSTRACT

Any event in a crowded scene can be classified to contain normal or abnormal behaviour displayed by an individual or groups of individuals present in the scene. Smart camera-based surveillance systems are much more capable than manual monitoring of CCTV as there is a chance that the staff-in-charge may miss the occurrence of an abnormal activity. Deep neural networks can be used for many applications like violence detection, crowd behaviour, object identification. This project proposes to employ the use of Deep Neural Networks to detect different kinds of anomalous behaviour in stationary-camera video footage. The proposed solution to detect anomalous behaviours like punching, kicking, chasing etc is implemented by calculating the Optical Flow. Initially, Optical Flow features are used to train Random Forest classifier on the BEHAVE dataset. This yielded a testing accuracy of 87% .The BEHAVE dataset consists of over 20000 frames of total footage containing various actions captured from a stationary camera. It contains actions like hitting, chasing, group fight, meeting, walking past, casual interactions. To increase the accuracy, a hybrid model is proposed. This model consists of a combination of Siamese Convolutional Neural Network (SCNN) and Resnet architectures.

Glaucoma Detection using Artificial Intelligence

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	1MS18EC007	Aman Raj
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	1MS18EC040	Jyotindra Gunj
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ABSTRACT

Glaucoma is a disease that affects the optic nerve. This disease, over a period of time, can lead to loss of vision. There are several methods in which the disease can be treated, if detected at an early stage. It is definitely not possible for any technology, including artificial intelligence, to replace a doctor but early stage detection helps in better treatment. The objective of this project is to make use of image processing and Artificial Intelligence for early detection of glaucoma. Glaucoma can be detected by the analysis of cup-disk ratio and the project aims to find an efficient method to segment the optic cup, disc and further machine learning classifiers are used for detection. With secondary peak threshold and Naïve Bayes detection accuracy of 73.07% has been achieved. The algorithm has been tested on Drishti-GS dataset. The project aims to propose different Convolution neural models to improve accuracy. With adaptive threshold and CNN accuracy of 67% has been achieved. U-Net Convolutional Neural Network will be used to obtain segmented optic disc, cup and using pre-trained model glaucoma detection accuracy will be improved.

Corona Data Analytics using Deep Learning Algorithms

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ABSTRACT

Artificial intelligence in the field of medical sciences is performing really excellent in recent times, but provides a great challenge for Covid-19 pandemic. Large amounts of official data published and updated daily has motivated various mathematical models to predict the evolution and plan effective control strategies. Due to intrinsic complexity of data, predicting the evolution and peak or end of the pandemic is a challenge. Tests like RT-PCR used for detection are less effective with new variants. In this project, a deep learning based approach with image processing is considered for detecting and differentiating between normal, Covid, lung opacity and viral pneumonia affected chest x-rays. A RESNET based CNN model is trained with histogram equalization and unsharp masking based image pre-processing with an accuracy of 95.01%. Further the approach is to consider other image pre-processing algorithms and various CNN models in combination and find the best model. Combining image pre-processing with deep learning can improve the prediction performance. The best model is trained on data augmented with GAN and the performance is analyzed. Further, analytics is performed on the spread and prediction of number of cases based on R0 number and other region based approaches.

OCR for Printed Kannada Text using Multi Column Deep Neural Network

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ABSTRACT

Optical Character Recognition (OCR) is basically converting an image containing text into an editable text format. It is an age old technology but still finds tremendous application in Industry domain. State of the art is not perfect as OCR's shows 99% accuracy only with cleanly printed pages. Therefore for a country to be completely digitized it is very important that each and every section of society should be able to interact with technologies (banking sectors, health care industries) comfortably. The objective of the project is to develop an OCR system that can recognize Kannada characters and convert them to machine-readable format. Main focus is to build the Multi-Column Deep Neural Network(MCDNN) to recognize Kannada characters efficiently. The dataset consists of 340 classes of Main akasharas and 32 classes of Vattu Akashara, an average of 50 characters per class, a total of 17,000 samples of Main Akshara, and 1600 samples of Vattu Akshara. The model is trained using 70% of the total samples and validated with 10% of the samples. The model with minimum validation loss was saved and the saved models were tested with 20% of the samples. Simulation result

Online Kannada Character Recognition using CNN model

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ABSTRACT

Online Kannada Character recognition has gained more importance because of advancement of internet and technology. Smart devices with touch screens are gaining more popularity and have become a part-and-parcel in most of the countries. When these touch screens are used as input medium in such devices, real time online recognition of handwritten characters is required. Online recognition of characters refers to the processing of the characters as and when it is written on the digitizer and recognizing the class which it belongs to. The iball 5540U Pen Tablet is used to collect the handwritten character samples and to build the database. Kannada script consists of 863838 characters. The complexity is reduced from 863838 to 151 characters by segmentation approach. 50 samples of each character totalling to 7550 samples are used to build the database. The objective of the project is to improve the efficiency of recognition of Kannada characters using Convolutional Neural Network (CNN). A detailed analysis about the effects of using different kernel variations, pooling strategies, and activation functions in the CNN architecture has been performed. The model is trained using 70% of the total samples and validated with 10% of the samples. The model with minimum validation loss was saved and the saved models were tested with 20% of the samples. Simulation result revealed that CNN model with four layer architecture is the best model for recognition of online Kannada characters.

Electromagnetic Noise Shielding in X Band using Graphite Metal Composites and MWCNT

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	1MS18EC110	Sinchan Hegde
	1MS18EC125	Thejas Basavarajappa
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ABSTRACT

Leakage of electromagnetic wave in various communication system leads to electromagnetic interference. EMI is a problem owed to the rapid rise in high speed electronic systems and equipment such as computers, mobile phones and electronic appliances in almost all the fields. Shielding materials reduce the external electromagnetic waves from disturbing the functioning of electronic equipment. Cost effective shielding materials with minimum thickness is still in demand. In the recent years, many researches have been carried out for EMI shielding Nanomaterials. For this purpose, we have chosen to test out different weight ratio composites of surface-coated Iron, MWCNT, Graphene with LDPE as a matrix. Consequently, the Shielding Effectiveness and many supporting parameters will be reported.

Smart Water Meter

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	1MS16EC011	A M Aditya Shiva
	1MS16EC100	Shashidhar hattigoudar
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ABSTRACT

The present system of water distribution slabs is based on tariff. As we move to higher slabs there is significant increase in tariff approximately up to 40% where there is no limit in usage of water. The high purchasing power of consumers led to the failure of this system, no perceptible reduction in the volume of water consumed and its wastage. All bills are generated at the end of the month and there is no regulation incorporated. Our project, the Smart Water meter using wireless networking, proposes a new slab system based on total volume to be supplied. Limits are set by the water board (BWSSB). After reaching a predetermined cap water supply is terminated completely for that month automatically. The consumers are given prior warnings through SMS system and email. The meter is completely automatic and digitized. Any type of faults or meter tampering can be detected automatically without human interference. A database consisting of user details, water consumption details is maintained and updated on a monthly basis on the local server, cloud (IoT). The database is used for billing purposes and hence eliminates the need for third person data collection. The project proposed here will regulate water consumption in a much more intelligent way by incorporating the above mentioned features, thereby resolving the water crisis and help in conservation of water.

Monitoring of Health of Lakes of Bangalore City using Sensors and IOT

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	1MS18EC021	Chirag H R
	1MS18EC026	Dheeraj C Gowda
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ABSTRACT

Assessment of drinking water quality has become a critical issue nowadays as the water available is severely polluted and can be the cause for diseases like cholera, diarrhea, dysentery, etc. The traditional methods for water quality monitoring require a high-labor-cost and time consumption as these methods include a sample collection followed by lab-based chemical testing. In addition, the chemicals used in the testing are toxic and of high-cost. This project presents an idea that will help in monitoring the health of lakes in Bengaluru using the Internet of Things. The water quality parameters utilized for water quality monitoring are temperature, pH, turbidity and dissolved oxygen. The water quality sensors were interfaced with the designed embedded platform. The data from the sensors is loaded onto the cloud for real time monitoring. This project has attempted to build a dashboard for this data so that the stakeholders or individuals responsible will be able to see the data and take action if threshold levels are crossed. The long-term goal of this research is to ensure the users can monitor the changes happening at the site without needing to be at the site themselves and it can be done for multiple lakes at the same time.

FPGA Based Accelerator for Convolution in Artificial Neural Networks

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	1MS17EC069	Paul Santosh Kiran
	1MS17EC055	Mohammed Mujamil
Mentor Name	Dr. V Anandi	

ABSTRACT

Engineers, scientists, and researchers keep making more efforts to further improve the computer systems performance to meet the demanding requirements for many applications such as Computer Vision and Image Processing which requires a high computational power to solve data-intensive applications in real-time. Special-purpose parallel systems and, in particular, the ones referred to as systolic arrays are very attractive approaches for handling many computationally-intensive applications. These systems consist of an array of identical Processing Elements (PE) executing the same operations on a set of data. These arrays capitalize on regular, modular, rhythmic, synchronous, concurrent processes that require intensive, repetitive computations. The main obstacle to the widespread use of application-specific arrays of processors is development time, cost, and their capacity to support a single algorithm at the same time. Recently, the use of reconfigurable hardware devices in the form of Field Programmable Gate Arrays (FPGAs) has been proposed as a means to implement parallel high-performance solutions at an affordable price. These circuits provide a homogeneous surface of general-purpose logic elements which can be configured as often as desired to implement any combinational or sequential circuit. Parallel processing architectures based on FPGAs provide an alternative to faster clock performance.

Ultra-low-power integrator for Biomedical Signal Processing of Pacemakers

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ABSTRACT

Low power low-pass filters for the biomedical frequency range have many applications in sensor interfaces and biomedical signal processing units. In this paper Gm-C based low pass filter for very low cut-off frequency (i.e, ECG and EEG are 250Hz and 200Hz respectively) has been designed. This project work presents an ultra-low-power, CMOS Triode-based Transconductor, operating in a strong-inversion triode region(SI-TR). That presents the lowest Gm value usually in terms of nanoamperes/Voltage. The Gm value is adjusted by a well-defined aspect ratio (W/L) and drain-source voltage VDS, the latter a replica of the tuning voltage imposed as the drain-source voltage of input devices. The integrator can operate with supply voltage(Vdd) ranging from 1.8V to 3.3V and input voltage normally varies from 0.2-1V. And Gm values vary from 1nA/V to 5nA/V with Vtune changing from 10mV to 50mV. The Cadence VIRTUOSO environment will be used to simulate the circuit to calculate the power consumption.

Design of Approximate Arithmetic Circuits for Silicon DNN Accelerators

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ABSTRACT

Approximate computing is gaining traction as a promising method to alleviate demanding computational complexity in DNNs. Exploiting their inherent resiliency, approximate computing aims to relax exactness constraints with the goal of obtaining significant gains in computational throughput while maintaining an acceptable quality of results. Inexact or approximate computing has been adopted in recent years as a viable approach to reduce power consumption and improve overall efficiency of computations. Approximate computing in general has garnered much needed attention in the design community owing to high power saving benefits, and at the same time quick generation of results. Approximate computing as a design technique continues to offer design advantages which is recently ceased by the ever decreasing technology scaling. This project focuses on the use of approximate adder and approximate multiplier circuits in neural networks. Since NN contains hundreds of thousands of multiplications, it advantageous to introduce approximate multipliers. Multiplication is regarded as the most resource-intensive and power-hungry operations in neural networks and hence multipliers are considered as the main bottleneck of neural networks. Approximation of multiplier is considered to be an efficient technique for trading off energy against performance and accuracy.

Efficient FPGA Design for Softmax Activation Function

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ABSTRACT

This project incorporates the CORDIC algorithm to solve exponential function. This CORDIC based implementation is used for one of the most important layers of a Deep Neural Network, the SoftMax layer. A SoftMax Layer is used whenever a classification problem is modelled using a Deep Net. CORDIC is one of the hardware efficient and iteration-based algorithms that is used to implement various transcendental functions such as trigonometry, hyperbolic, exponential and so forth. It works in two modes – rotation and vector modes. For the purpose of solving exponential function, we require hyperbolic computations of cosh and sinh. This can be implemented in the rotation mode. The 16-bit BFLOAT16 format and fixed-point format are used to represent floating point numbers in the design. The CORDIC method is used for computing the exponent and the binary division algorithm for calculating the output. In this project we will be implementing the inverse SoftMax function with Verilog using the same algorithms. However, inverse SoftMax function does not have any division operation in it. This allows us to assess the efficiency of our implementation.

3D environment creation using Augmented Reality

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	1MS18EC012	Anwesh Sheety B
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ABSTRACT

Augmented Reality is a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite through mobile devices, tablets, or smart glasses. It enhances experiences by adding virtual components such as digital images, graphics, or sensations as a new layer of interaction with the real world. AR studies in maintenance show promising results in enhancing human performance in carrying out technical maintenance tasks. By using this trending technology, we aim to develop an interactive indoor navigation system. Indoor positioning has gained popularity recently due to its potential to be used in the increasing complexity of indoor environment and because GPS signals are restricted to outdoor purposes. The main objective of this work is to design a new method to develop indoor positioning navigation system through Augmented reality. The idea of this work can be broadly applied to mobile devices such as mobile phones or tablets which is easily available for a common user. The aim of the project is to develop an AR based indoor navigation system for handheld devices like smartphones, tablets etc. using image comparison to identify location with an intuitive user interface. To make indoor navigation seamless and interactive through a hand-held mobile device using AR technology. To determine of shortest path from current location to desired destination and navigate user by augmenting directions in user's real-world view captured. To explore the intuitive depiction of information as observed in augmented reality systems.

Rheumatoid Arthritis Monitoring Gloves

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ABSTRACT

Rheumatoid Arthritis (abbreviated as RA) is a chronic, autoimmune disease that severely limits the range of motion of joints of the hand. It causes inflammation and pain in the joints. Existing methods that are used to monitor the progress of RA rely on physical measurements that can be accurately taken only by a Rheumatologist, and there is a need for a reliable and streamlined method. This project provides a glove-based approach powered by an Arduino that can be easily operated, even by a patient with limited knowledge. The gloves are embedded with flex sensors, which measure the amount of deflection by varying their resistance based on the amount of bending. The patient is required to simply wear the gloves and flex the affected joints, and the system provides them with information regarding the range of motion of their joints. In the event of severe decrease in range of motion, the system recommends the user to consult a medical expert. The system is able to monitor the movements of the affected joints continuously, providing the Rheumatologist with more information which can be used to diagnose the problem more effectively.

Determining Water Quality for Productivity in Aquaculture using Information and Communication Technologies

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16	1MS18EC065	Om Roria
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ABSTRACT

In India, the aquaculture industry makes up around 1.07 per. of the GDP. The aquaculture industry generates income of approximately 334.41 billion. To increase the productivity of aquaculture, a system that determines the quality of water has been designed. The system can help in sharing the value of the parameters and control them. The sensors gather data and send it to the raspberry pi which is displayed using cloud-based services. Furthermore, the values are noted on a timely basis for the betterment of the aquaculture. The proposed system can work for any type of aquaculture system flawlessly.

Smart Ingredients Recognition and Product Recommendation System

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	1MS18EC098	Sai Prateek Sunil Pandit
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ABSTRACT

In our busy day to day lives we often tend to neglect and overlook the ingredients used in a product. There are many products in various categories like food products, cosmetics and much more, many harmful chemicals are used hidden under coded format which is difficult to understand for a layman. Majority of these ingredients are already banned in countries such as the USA, Australia and parts of Europe by FDA, EU , WHO , and JECFA but are still being used in India. These harmful products are known to have various effects on the human body on prolonged usage. Using deep learning applications of OCR to identify and classify ingredients as toxic, allergic or harmless instantly suggests if the product should be bought based on a picture of the ingredient section. The solution is implemented using an OCR engine to get the text from scanned photos and a comparison script which is run in a backend server. The frontend app is developed using flutter and dart. The list of harmful ingredients is based in accordance with the Global entities like EU, WHO, JECFA.

Digital Dashboard and App for Electric Vehicles

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ABSTRACT

With an increase in pollution and the government pushing for the use of Electric Vehicles (EV), the demand for the same has increased. Thus, leading to a requirement of Digital Dashboards. Digital Dashboards in a vehicle provide the user with streamlined efficiency, effortless flow, and visual communication of the most important elements up front. The Dashboard thus serves as a Human to Machine Interface (HMI) which can capture all the most important functions, visualizations, information and present them right away thus creating an environment where information thrives. This information, presented in a logical, design-friendly way, also allows users to perform multiple tasks at once. In an Electric Vehicle, the Dashboard is a strategically placed control center, which gives the driver instant access to information about how the various systems of the vehicle are working. These reports give the real-time data about the most important components of the system to ensure the vehicle is running smoothly. Mobile device applications (apps) are also thus becoming an important source of information, control, and motivation for EV drivers as they are portable and can be equipped with a lot of functionality.

Improved CAN Based Instrumentation Cluster For EV Retrofit Kits

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ABSTRACT

The instrument cluster or the dashboard is one of the important components in an automobile especially in Electric Vehicles (EV). The function of an instrument cluster in EV is to display vital information to the driver, such as fuel indicator, speed, distance traveled, engine state, temperature also it will assist the driver in navigation and many other information. Modern automobiles use state of the art LCD screens to display the information. The aim of this project is to develop an instrument cluster for EV to obtain and the building retrofit kits for existing two wheelers to display efficiently all vital information to the driver. The information or the data is obtained through CAN bus from various sensors from slave nodes to the controller which will be communicated to the cluster based instrument which will be displayed based on the criticality and priority of the information. The communication between the sensors and controller is achieved using the standard CAN Protocol. The complete CAN Protocol implementation is carried out for building the retrofit kits for existing two-wheelers.

Analysis of Muscle Function for Postural Correction using Surface EMG Signals

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	1MS18EC069	Pavana Anand
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ABSTRACT

An electromyograph detects the electric potential generated by muscle cells when these cells are electrically or neurologically activated. A viable solution to monitor real time kinematics and muscle coordination to understand the performance and degradation of the muscles is to come up with simultaneous multi-channel Electromyogram devices. We have prototyped one such device supporting upto 4 channels. The motivation to come up with such a system is to study postural correction on neck muscles like sternocleidomastoid (SCM), trapezius, to name a few. The device is made wearable by enabling Bluetooth (LE) for the convenience of the user and to reduce motion artifacts, thereby enhancing the quality of the signals. Following Signal Collection, a package that can do signal post processing is also been developed. Following that, the signals are subjected to multiple binary classifier algorithms to compare the results of healthy and unhealthy neck muscle data.

Tele-Consulting Device For Vitals Measurement		
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ABSTRACT		
<p>Developments in biomedical sensor technologies has resulted in more affordable devices that can monitor several vitals such as body temperature, heart rate, blood oxygen saturation level, blood pressure, and so on in recent years. A patient's vital signs are a doorway into his or her health. Taking vital signs at the start of every patient visit aids the physician in seeing patterns and making more accurate diagnoses. Early detection has the potential to save lives. In this paper, we'll look at the implementation of a device that can take vital signs and transfer the data to the cloud, where physicians can immediately access it. The information is saved on the server for subsequent use and to keep track of digital health records. The device was able to achieve the accuracy of other commercially available devices and at lower cost.</p>		

Automatic Driver Drowsiness Detection using Deep Learning Approaches		
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ABSTRACT		

Driver drowsiness is the most critical cause of traffic accidents; thus, drowsiness detection plays a vital role in preventing traffic accidents. By developing an automatic solution for alerting drivers from drowsiness, before an accident occurs, this could reduce the number of traffic accidents. This can be achieved by real-time detection of driver drowsiness. There are many ways for driver drowsiness detection. However, a majority of the studies focused on determining eyelid and mouth movements, which have revealed many limitations for drowsiness detection. Besides, physiological measures-based studies may not be feasible in practice because the measuring devices are often not available on vehicles and often uncomfortable for drivers. In this approach, It has two efficient methods for driver drowsiness systems. Earlier we applied facial landmarks to detect blinks and yawns based on appropriate thresholds for each driver using machine learning approaches. Now we are using deep learning techniques with two adaptive deep neural networks based on MobileNet-V2 and ResNet-50V2. The methods analyze the videos and detect the driver's activities in every frame to learn all features automatically. If the driver is considered drowsy an alarm/buzzer can be activated to alert the driver.

Human Action Recognition using Inception V3

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ABSTRACT

Computers are getting better at solving very complex problems, like understanding an image, due to the advances in computer vision. Models are being made wherein, if an image is given to the model, it can predict what the image is about, or it can detect whether a particular object is present in the image or not. These models are known as neural networks (or artificial neural networks) which are inspired by the structure and functionality of a human brain. Deep learning, a subfield of Machine learning is the study of these neural networks and over the time, a number of variations of these networks have been implemented for a variety of different problems. Human activity recognition (HAR) aims to recognize activities from a series of observations on the actions of subjects and the environmental conditions. The vision-based HAR research is the basis of many applications including video surveillance, healthcare, and human computer interaction (HCI). This work highlights the advances of state-of the-art activity recognition approaches, especially for the activity representation and classification methods. Indeed, most computer vision applications such as human computer interaction, virtual reality, security, video surveillance and home monitoring are highly correlated to HAR tasks. This establishes a new trend and milestone in the development cycle of HAR systems. Here the HAR system is implemented using the Inception V3 model.

Speech Quality Enhancement using Deep Learning

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Mentor Name	Mr. Sadashiva Chakrasali	

ABSTRACT

Denoising of Speech stays a most researched topic as the application is vast ranging from hearing aid, entertainment, communication to speech recognition. Due to advancement of AI based application, we need to have an efficient denoising technique. The plan would be use statistical models to build noise of interest and recover the signal. Due to the recent advancement of CNN we plan to leverage it and build a model which could extract clean signal. Our approach is to train the model with clean data and add noise and provide noisy data with noise sample so as ML model would understand the type of noise and then finally train itself to remove the noise. Classically MFCC is used when we need to leverage frequency info, but it also poses one issue i.e it removes lot of information and try to remove spatial content. Another important thing to be considered is for speech variance is not consistent hence we take STFT into consideration where we take the magnitude vectors. CNN we are considering is based on encoding and decoding architecture which also means it needs to have inverse transform. While both components have blocks of convolution, ReLU and normalization.

Extraction of Fujisaki Parameters of Kannada Speech

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ABSTRACT		

Intonation refers to the variations in the pitch level of the speech segment i.e., the temporal changes in the fundamental frequency (F0). Fujisaki intonation model is one such method used for the extraction of Fujisaki parameters and the Neural Network (NN) model is implemented for the prediction of the pitch of the utterance. Prosody (intonation and rhythm) of spoken language plays a greatest role in bestowing both the intelligibility and the naturalness in synthesized speech. According to the model, F0 contour is generated as a result of the superposition of the outputs of two second order linear filters with a base frequency value. The second order linear filters are for generating the phrase and accent components of speech. The base frequency is the minimum frequency value of the speaker. In other words, F0 contour is obtained by adding base frequency, phrase components and accent components. This work mainly concentrates on building feedback neural network using the Fujisaki intonation model for the Kannada language, one of the important languages of southern India.

Detection of Brain Haemorrhage using Deep Learning

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	1MS18EC082	Shakshi Dixit
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ABSTRACT		

Brain hemorrhage is a severe threat to human life, and its timely and correct diagnosis and treatment are of great importance. Multiple types of brain hemorrhage are distinguished depending on the location and character of bleeding. The main division covers five subtypes: subdural, epidural, intraventricular, intraparenchymal, and subarachnoid hemorrhage. The acute presentation of ICH can be difficult to distinguish from ischemic stroke. Symptoms may include headache, nausea, seizures and focal or generalized neurologic symptoms. Findings such as coma, headache, vomiting, seizures, neck stiffness and raised diastolic blood pressure increase the likelihood of ICH compared to ischemic stroke, but only neuroimaging can provide a definitive diagnosis. This paper presents an approach to detect these intracranial hemorrhage types in computed tomography images of the head. CT Angiography (CTA) is gaining increasing acceptance as a diagnostic tool in the acute setting. It is the most widely available, non-invasive technique for ruling out vascular abnormalities as secondary causes of ICH.

Analysis of ECG data to detect sleep Apnea using Deep Learning

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ABSTRACT

Many works in recent years have been focused on developing a portable and less expensive system for diagnosing patients with obstructive sleep apnea (OSA), instead of using the inconvenient and expensive polysomnography (PSG). This study proposes a sleep apnea detection system based on a one dimensional (1D) deep convolutional neural network (CNN) model using the single-lead 1D electrocardiogram (ECG) signals. The proposed CNN model consists of 10 identical CNN-based feature extraction layers, a flattened layer, 4 identical classification layers mainly composed of fully connected networks, and a softmax classification layer. Thirty-five released and thirty-five withheld ECG recordings from the MIT PhysioNet Apnea-ECG Database were applied to train the proposed CNN model and validate its accuracy for the detection of the apnea events. The results show that the proposed model achieves 87.9% accuracy, 92.0% specificity, and 81.1% sensitivity for per-minute apnea detection, and 97.1% accuracy, 100% specificity, and 95.7% sensitivity for per-recording classification. The proposed model improves the accuracy of sleep apnea detection in comparison with several feature-engineering-based and feature-learning-based approaches.

Vehicle To Vehicle Communication Using IoT

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ABSTRACT

The world is experiencing ideas which practically changed the way one lived on the basis of everyday technology. The interconnection between the things and making the system smart is one of them. V2V research directions to explore the current models, and to find out the advantages and challenges of implementing V2V. One of these directions is the Intelligent Transportation System (ITS) which is important for traffic management, and safety. One of its main points is the Vehicle-To-Vehicle (V2V) communication which is essential for the ITS fully automated process as it decreases the number of hits between the vehicles and the access points on the roads. V2V is important for developing countries which do not include Roadside Units (RSUs), so in this research we will go through This system could ensure data transfers between vehicles as they come in range hereby sharing real time road information as well as ensuring a safer better driving condition for everyone. Detecting potholes in Indian road help the autonomous vehicle and to move smoothly without getting struck in the potholes. That solves the real world problems and improves the impact on detecting objects. Knowing pothole and wetland detection for vehicles is needed badly to solve the road lay problems like: accidents, slowing down the transport system; these are solved by deep learning. The project also assembles an implementation experiment for the detection and reporting of potholes and obstacles on the road.

Video Forgery Attacks on Surround-View ADAS Camera System

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ABSTRACT

The detection of video tampering is a major issue in image processing. The purpose of video tampering detection is to determine the authenticity of a video and to expose any changes that have been made to the video. Tampering, undesirable post-processing activities, and forgeries are all common and leave digital footprints. Video tamper detection algorithms use these footmarks to differentiate between authentic and fake video. Many of the fundamental features of video change when it is forged and these changes must be identified. All forgery detection methods use the same process, which includes feature extraction, matching, and post-processing. All of these applications rely on the presence of consistent and recognizable characteristics in the image. After obtaining the appropriate characteristics, the best match of each pixel is determined for the localization of fabricated regions. Post-processing is used to limit the number of false alarms. Hence able to differentiate between the forged image and original image.

Driver Emotion Analytics on In-Vehicle Gesture Control System

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ABSTRACT

Driver drowsiness, weariness, and distraction are all common causes of serious accidents around the world. As part of the Active Safety system, Driver Monitoring System (DMS) is one of the high Automotive Safety Integrity Level (ASIL) which is required for driver aid functionalities, which continuously assists the driver. According to studies, a driver's emotions play a significant effect on his or her driving behaviour. As a result, constant monitoring of the driver's emotions and appropriate warnings to the driver will aid in preserving road safety. If the driver is feeling drowsy at the wheel, an alert is sent notifying the driver stating he is drowsy. Head-pose of the driver tells us whether the driver's eyes are on the road or is distracted. In our proposed method, we recognize the driver's emotions by detecting the driver's face in the current frame at regular intervals. Deep learning-based algorithms will be used to determine the driver's emotion, drowsiness and head pose and, if necessary, provides alerts. Based on our results, the driver's emotional state, drowsiness and head-pose can be made aware of to the driver if necessary based on the driver's perceived emotional state, eye aspect ratio and head -pose angle.

Medical Image Analysis for Classification of Skin Diseases using CNN

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ABSTRACT

Skin diseases are so common and patients being present in such large numbers medical care settings make up for the fact that ignoring them isn't a viable option. Children, especially, tend to be affected, adding to the burden of disease among an already vulnerable group. Secondly, morbidity is significant through disfigurement, disability, or symptoms such as intractable itch, as is the reduction in quality of life. The relative economic cost for families of treating even trivial skin complaints limits the conduction of therapies. Generally, families such costs are met from an overstretched household budget. Checking the skin for signs such as leprosy, yet a basic knowledge of the simple features of disease whose presenting signs occur within the skin is usually lacking at the first care level. Dataset utilizes 4,000 images of skin lesions collected from different websites. Dataset preparation for training involves assigning paths and labelling the images. Dataset is divided into training, validation and test data. By transfer learning, data is trained on fine-tuned network such as VGG-16, INCEPTION V3, DENSENET, RESNET50. The proposed system must be able to detect the disease using the dataset given to it and classify the diseases such as psoriasis, eczema and melanoma.

Multi-branch Convolutional Neural Network for Multiple Sclerosis Lesion Detection and 3D-Localization

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	1MS18EC077	Preetham Reddy
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ABSTRACT

Proposed work provide an automated approach for segmenting and 3D localizing multiple sclerosis (MS) lesions using multi-modal brain magnetic resonance data. Which attempts to automate segmentation, which is normally performed by professionals. Our method is based on a deep end-to-end convolutional neural network (CNN) for slice-based segmentation of 3D volumetric data. The architecture follows the original U-Net and enhanced variations. To leverage contextual information, we train and evaluate the proposed model utilizing orthogonal plane orientations of each 3D modality. The proposed pipeline is tested on three different datasets: the 2008 MICCAI MS Lesion Segmentation Challenge dataset, which contains 20 images for training and 24 images for testing; the Longitudinal Multiple Sclerosis Lesion Segmentation Challenge, which contains 40 images for training and 42 images for testing; and MSSEG 2016 challenge, which contains 15 images for training and 38 images for testing. Using the FreeSurfer 6.0 engine and R-software, an interactive HTML, WebGL-based 3D Viewer web page is proposed. FreeSurfer is a software suite that allows you to analyze and visualize structural and functional neuroimaging data from cross-sectional or longitudinal investigations. Easier website features an interactive 3D brain scan that depicts the region of a lesion in astonishing detail for better comprehension.

A Neuro-Fuzzy Analysis on Farmers' Suicides in India

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ABSTRACT		

Indian agriculture is engulfed into a crisis and this is evident from the phenomenon of farmers' suicides. There are many factors which are responsible for this crisis and most of them are economic and political. Many consider this crisis as policy-driven. They can range from causes such as indebtedness, changed cropping patterns, decline in public investment to the role of middle men, lack of helplines to counsel the farmers in despair and can also include natural causes such as droughts and floods and depletion of ground water resources. Hence, through the implementation of Fuzzy Cognitive Maps we model the causal relationship between the various causes that are listed in our dataset and then try to determine the hidden pattern for the listed causes and hence determine the prominent cause leading to farmers' suicides in the particular area. We then extend our methodology to strengthen our results, implement a Learning Algorithm to mask the role of experts in the map building process and use the concept of Neutrosophic Cognitive Maps to show the presence of indeterminate or interrelated causes in our results.

Gestures To Speech Conversion In Kannada

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Mentor Name	Ms. Sara Mohan George	
ABSTRACT		

Communication is the foundation of all human relationships, both personal and professional. It is one of the basic requirements for survival in a society. Verbal communication is impossible without a well-defined language that is understood by both parties. The deaf and mute people need sign language for communication. However most of the abled people do not understand sign language. India is a country with diverse languages and people from many parts of India understand only the local language. As a result, there is a compelling need to develop a system that allows the speech-impaired to communicate readily with the broader public in a local language. The proposed project is intended to build a pair a gloves which detects Kannada sign language gestures and converts them into audible speech. Various sensors and modules, such as Arduino Nano microcontrollers, flex sensors, touch sensors, Inertial Measurement Units, RF and Bluetooth modules, are attached on the gloves. The status of both hands can be characterised into a sequence of numerical values using these sensors in order to capture the gesture. This gesture is then converted to speech in Kannada using a mobile application. The sensor data is also passed through a Machine Learning classification algorithm, which improves gesture recognition accuracy.

Assistive Devices for Parkinson's Patients		
SL.NO	USN NO.	NAME
35	1MS18EC046	Khushi S Patel
	1MS18EC047	Komal G Naik
	1MS18EC063	Nikitha V Kamath
	1MS18EC066	P Chethana
Mentor Name	Ms. Sara Mohan George	
ABSTRACT		
<p>Parkinson's disease is a neurodegenerative disorder which is associated to gait impairment and high risk of falls. Freezing of gait (FoG) is defined as “an episodic inability (lasting seconds) to generate effective stepping in the absence of any known cause other than Parkinsonism or high-level gait disorders”. FoG seems to be caused by short-lasting episodes of inhibition of these brain circuits that coordinate gait. FoG affects gait pattern and are associated to fall risks. The aim of the project is to detect FoG early and provide trigger assistance. The prototype designed has two shoes fitted with FSR (Force Sensing Resistor) and IMU (Inertial Measurement Unit) in each. This footwear will be able to analyze the walking patterns of its users in real time. Each shoe has an Arduino microcontroller. The data from pressure sensors, accelerometer and gyroscope will be sent to microcontroller of each shoe. Microcontroller of both shoes are equipped with laser and vibration which will turn on and provide cues when FoG is detected. Using Thing Speak the gait data will be continuously transmitted to the cloud which will be helpful for medical analysis.</p>		

Women Safety System		
SL.NO	USN NO.	NAME
36	1MS17EC084	Rakshitha S R
	1MS17EC087	Rapaka Rakshith
	1MS17EC113	Sneha N
	1MS17EC118	Supriya S Mangalgi
Mentor Name	Ms. C Sharmila Suttur	
ABSTRACT		

Every day, many women and young girls from all walks of life are struggling to be safe and protect themselves from various unsafe situations. To counter this situation, a technology driven solution needs to be developed. We here propose a safety system that is the integration of multiple functionalities. The GPS location is fetched and sent to the pre-registered mobile number in the form of an alert message that specifies the location through google-maps link. The IMEI number is also sent along with the message, through GSM to the concerned people as a part of same message. The LED and buzzer are activated, simultaneously the Camera module clicks images of the event and sends it as a mail to the pre-registered email-ID. The same image will be stored in a micro-SD card as a valid proof for further references. In case of erroneous button click, double-clicking on the same button halts the buzzer sound and turns off the LED. Also a message saying “Falsely pressed. Women not in danger” is sent to the pre-registered numbers. We will also provide a stand-alone app that will send alert sos messages to concerned people.

IoT based Aeroponics System		
SL.NO	USN NO.	NAME
37	1MS17EC043	Nikhileswar Kasana
	1MS17EC060	M Neeraj Reddy
	1MS17EC074	Prateek K
	1MS17EC032	Lohitasrith G
Mentor Name	Ms. C Sharmila Suttur	
ABSTRACT		
<p>IOT is becoming increasingly famous everyday. Usage of IOT technologies in different fields is leading in the development of smart homes, smart cities, autonomous cars, and also in industrial work. Similarly traditional agriculture can use some change, with the help of IOT, Smart irrigation can be achieved, but for much better yield and to save more resources, farmers would have to use some non conventional methods. In this highly populated and growing world, using non conventional methods is becoming a necessity rather than a choice. Aeroponics is one of the best methods to grow plants efficiently and effectively without soil. Aeroponics is a soil less method of growing plants in air with the assistance of water vapor or mist environment, using an enriched nutrient solution sprayed as a mist. It is observed that Aeroponic systems consume up to 98% less land than traditional farming methods by making use of vertical space as well as horizontal. Also Aeroponic systems use about 95% less water than standard farming. Plants grown in these indoor gardens are known to grow as much as three times faster than those in outdoor farms. The main objective of this project is to compare the results of conventional automated farming using IOT and Aeroponics system based on IOT</p>		

Real Time Air Quality Monitoring through Machine Learning and Internet of Things		
SL.NO	USN NO.	NAME
38	1MS17EC080	Prerna Lall
	1MS17EC096	Santrupty S. Madyal
	1MS17EC068	Partha Sarathi Y B
	1MS17EC044	Kiran R. Yaragudri
Mentor Name	Dr. Roshan Zameer Ahmed	
ABSTRACT		
<p>The interpolation, prediction, and feature analysis of fine-gained air quality are three important topics in the area of urban air computing. The solutions to these topics can provide extremely useful information to support air pollution control, and consequently generate great societal and technical impacts. Most of the existing work solves the three problems separately by different models. In this paper, we propose a general and effective approach to solve the three problems in one model called Deep Air Learning (DAL). The main idea of DAL lies in embedding feature selection and semi-supervised learning in different layers of the deep learning network. The proposed approach utilizes the information pertaining to the unlabelled spatio-temporal data to improve the performance of the interpolation and the prediction, and performs feature selection and association analysis to reveal the main relevant features to the variation of the air quality. We evaluate our approach with extensive experiments based on real data sources obtained in Beijing, China. Experiments show that DAL is superior to the peer models from the recent literature when solving the topics of interpolation, prediction, and feature analysis of fine-gained air quality.</p>		

VLSI Implementation of MAC Unit

SL.NO	USN NO.	NAME
39	1MS18EC095	Rushita M
	1MS18EC111	Skandan S
	1MS18EC119	Sushmitha S Kumar
	1MS18EC120	Swathi K
Mentor Name	Mr. Roshan Zameer Ahmed, Mr. Manjunath C Lakkannavar	

ABSTRACT

Filtering, convolution, transformations, and Inner products all need the use of the multiplier and multiplier-and-accumulator (MAC). Designing an integrated circuit that is efficient in terms of power, area, and speed at the same time has become a difficult task. The goal of a good multiplier is to create a physically compact, high-speed, and low-power consumption chip in today's world. This multiplier is created by applying the Spurious Power Suppression Technique (SPST) on a modified Booth encoder controlled by an AND gate detection unit. The booth encoder has been updated. By a factor of two reduces the amount of partial products generated the SPST adder will prevent this from happening. The performance was enhanced by integrating multiplication with accumulation and designing a low-power equipped carry save adder (CSA). We used Modelsim for logical verification in this project, then synthesized it on Xilinx-ISE utilizing target technology.

Blockchain Based E-Voting System

SL.NO	USN NO.	NAME
40	1MS18EC123	Tejas G C
	1MS18EC094	Rohith Gowda R M
	1MS18EC096	Sagar Pagad
	1MS19EC408	Krishna P K
Mentor Name	Dr. Rajendra Prasad P	

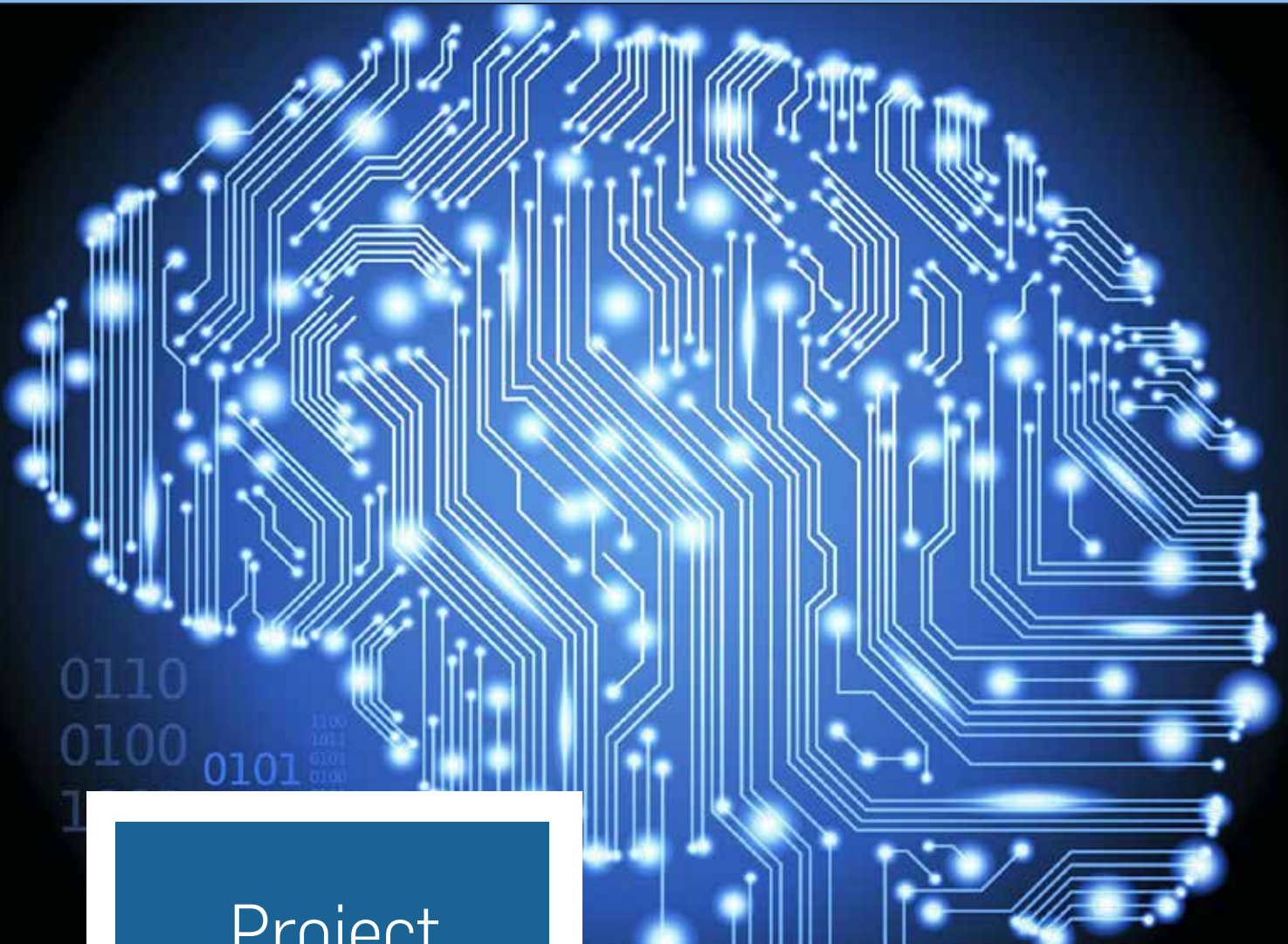
ABSTRACT

Online voting is a trend that is gaining momentum in modern society. It has great potential to decrease organizational costs and increase voter turnout. It eliminates the need to print ballot papers or open polling stations -voters can vote from wherever there is an Internet connection. Despite these benefits, online voting solutions are viewed with a great deal of caution because they introduce new threats. Electronic voting systems must be legitimate, accurate, safe, and convenient when used for elections. Block chain technology came into the ground to overcome these issues and offers decentralized nodes for electronic voting and is used to produce electronic voting systems mainly because of their end-to-end verification advantages. This technology is a beautiful replacement for traditional electronic voting solutions with distributed, non-repudiation, and security protection characteristics. This study provides a conceptual description of the intended block chain-based electronic voting application and an introduction to the fundamental structure of block chain in connection to electronic voting. For a sustainable block chain-based electronic voting system, the security of remote participation must be viable, and for scalability, transaction speed must be addressed. Due to these concerns, it was determined that the existing frameworks need to be improved.

Data (Image) security using visual cryptography		
SL.NO	USN NO.	NAME
41	1MS18EC005	Aditya Raj
	1MS18EC083	Rakesh V
	1MS18EC042	Kartik V Divate
	1MS18EC037	Himanshu Gupta
Mentor Name	Dr. Rajendra Prasad P	
ABSTRACT		
<p>Data or information is very crucial to any organization or any person. Visual cryptography techniques are secure communication privateness and regard to these various methods to encrypt and decrypt secret messages. The proposed method has employed a Blowfish-based image encryption technique. Firstly, the digital image is decomposed into several key-based blocks randomly to decorrelate the relationship between the original and processed image then each block is passed through the Blowfish algorithm. The proposed system is designed to take advantage of the powerful facility, which is supported by a chaotic map resulting in a much-improved security/performance trade-off. As a result, the proposed system offers good performance for image encryption. To ensure an improved Blowfish encryption algorithm, the implementation of both techniques has been carried out for experimental purposes which show that the original image has a flat histogram after encrypted, a decreasing correlation between adjacent pixels in all color components, and increasing entropy for the cases studied. The term “visual” in visual cryptography stands for the fact that during the decryption phase, a user can perceive the recovered secret with his/her visual system, without the intervention of machines. The significant applications of visual cryptography have also been summarized in the project.</p>		

IOT Based Smart Library Management System		
SL.NO	USN NO.	NAME
42	1MS18EC051	Malisetty Sumanth
	1MS19EC402	Balaji N Melagiri
	1MS18EC055	Manoj Kumar C
	1MS18EC058	Mohan G
Mentor Name	Dr. Parul Puri Goel	
ABSTRACT		
<p>The main focus of this project is to develop an Android application for library management systems. Android platform has become more popular and it holds a maximum number of users when compared to all other platforms. Before the introduction of the Android Operating System the access to the library documents was done only by the librarian. This project suggests a method for the library access for students in the college, that is the students can access the library database using an Android app. The Library Access Application helps the students to access their required information and queries without computers or the librarians but through their android devices which saves their time and energy. The Application retrieves the information stored in the library database through the library server for example checking whether the books are available in the library or borrowed without intervening anyone. User's access of library will be stored in the database for suggestions during a search for books.</p>		

DEPARTMENT OF **ELECTRICAL & ELECTRONICS ENGINEERING**



Project
Abstracts

2021 - 2022

Design and Development of Portable Relay Testing Kit

SL.NO	USN NO.	NAME
1	1MS18EE028	Lohith B
	1MS18EE032	Mithun Bhat K S
	1MS18EE045	Punith V H
	1MS19EE400	Gopal Y M
Mentor Name	Dr. Chandrashekhar Badachi	

ABSTRACT

One of the major elements in power system protection is a protective relay. During installation and continuous use in the system the relay has to be tested for its operating characteristics periodically. Secondary injection method is widely used for verifying relay characteristics during maintenance. Relay Testing Kits that are available in the electricity industry are largely multifunctional testers, so they tend to be complex, expensive, bulkier and heavier. These testing kits are not portable and require external power source to operate. This project is aimed to solve these problems by developing an overcurrent relay testing kit which is compact in size, portable, less expensive. The goal is to develop a simple overcurrent relay test equipment that can be used to inject a secondary current of 0 to 6A and to observe the operating time with a precision of 1/100 s, the results of which can be used for characterizing the relay.

IOT based energy theft monitoring system

SL.NO	USN NO.	NAME
2	1MS18EE012	Chethan Kumar B S
	1MS18EE040	Pramit S J
	1MS18EE050	Sanjeevkumar
	1MS18EE061	Tejas K
Mentor Name	Dr. Sridhar S	

ABSTRACT

Energy crisis is one of the major problems that the world faces today. The energy crisis can be reduced to a certain extent by properly monitoring our energy consumption and avoiding energy wastage. Nowadays people face many problems like power theft. Power theft may be a measure crime and it also directly affects the economy of our country. This system will find energy theft easily. The device is consisting of Atmega 328 microcontroller with a WIFI module for IOT connection and GSM module for mobile connection, on which users will receive information via SMS. This smart electricity meter also consists of a current sensor that sends the current reading to the microcontroller. We have to connect cell phones with the system via SMS which will help to configure with the system. In case of an emergency, the information will be shared on the configured number. We have to set costs for the unit and for which we have four buttons. With the help of buttons, we can set costs for the unit. As we start the system, it shows reading on the IOT screen. Reading will be changed with respect to time. In the case of energy theft, the theft will be caught and displayed on the IOT screen. Even the information will be received through SMS on the configured number. After receiving the alert, the operator can switch off the system using IOT to avoid theft. It also shares turn off the message of the system on the cell phone.

Performance Assessment of Different Algorithms for Maximum Power Point Tracking of Photovoltaic Systems

SL.NO	USN NO.	NAME
3	1MS18EE027	Laxmi Bellubbi
	1MS18EE044	Priya R
	1MS18EE058	Suhasini Hosamani
	1MS18EE059	Supriya Doni
Mentor Name	Dr. Sridhar S	

ABSTRACT

The Maximum Power Point Tracking (MPPT) is a key element in Photovoltaic systems (PV). It is used to maintain the PV operating point at its maximum under different irradiances. The goal of a MPPT controller is to satisfy the following performance criteria: accuracy, precision, robustness and handling the partial shading problem when climatic change variations occur. The problem of partial shading has serious effects on the performance of photovoltaic (PV) systems. Partial shading causes multi-peaks in the power-voltage (P-V) characteristics of the PV array, which cause traditional maximum power point tracking (MPPT) techniques to become trapped in local peaks. This problem has forced to search for smart techniques to track global peaks and prevent the possibility of convergence at local peaks. To achieve this goal, several techniques have been proposed ranging from conventional methods to bio-inspired methods. The Aim of the project is to simulate different conventional (Perturb and Observe, Incremental Conductance) and Optimization technique(Cuckoo Search) for different Irradiances and Cuckoo Search Optimization technique is enhanced and compared with other techniques.

Two Motors Drive System with Five-Leg Inverter

SL.NO	USN NO.	NAME
4	1MS18EE003	Abhishek Choudhary
	1MS18EE017	Ganesh Rai
	1MS18EE021	Ishit Kushwaha
	1MS18EE060	T. Yashwanth
Mentor Name	Dr. Sridhar S	

ABSTRACT

Our work proposes speed control for a dual three-phase induction motor system driven by five-leg voltage source inverter (FL-VSI) which is used in industrial manufacturing processes. Our work also investigates the performance of the drive system when the inverter switches are triggered using Sinusoidal Pulse Width Modulation (SPWM), Double Zero Sequence (DZS) and Two-Arm Modulation (TAM). Industrial applications frequently need a number of variable speed electric drives. This technique uses a five-leg inverter instead of using conventional two three phase inverters. In the majority of cases, these multi- motor drive systems need independent control of individual motors. It is shown recently that it is possible to separately control two three-phase induction machines supplied through a five-leg voltage source inverter, with one inverter leg being common to both machines. The entire performance of the speed control for the five-leg voltage source inverter fed dual-motor drive system is investigated using MATLAB/SIMULINK software.

Implementation of Assisted Living for Elderly People

SL.NO	USN NO.	NAME
5	1MS18EE043	Prithika N
	1MS18EE049	Rudransh Pratap Singh
	1MS18EE051	Saurabh Kumar
	1MS18EE066	Siri M S
Mentor Name	Dr. S Dawnee	

ABSTRACT

The elderly are considered as the treasure of our society but due to deteriorating health in their twilight years, they became dependent on others, even for the basic day-to-day activities. The proposed work makes an attempt to instil back the self-dependency and self-confidence of the older generation enabling them to continue at their desired location with independence and dignity for as long as possible. The aim is to design an AI powered smart lamp that is equipped with some of the features of assisted living that aids in their routine chores whilst keeping a mindful check on their health as well. A provision will also be made for alerting caregivers, health workers or relatives in case of distress or health issues. A modular approach is envisioned for the design that involves integration of different sensors, accurate and efficient algorithms for eliminating false positives and different types of communication channels.

Drone Defense System

SL.NO	USN NO.	NAME
6	1MS18EE001	Abdul Baquar
	1MS18EE015	Dhruv Kanthaliya
	1MS18EE019	Harsh Thamke
	1MS18EE039	Prakruthi Mohan Iyengar
Mentor Name	Dr. S Dawnee	

ABSTRACT

As drones are increasing in popularity, this brings an onset of difficulties such as attacks, accidents by colliding into people by losing control and invading secured properties. For safety purposes, it is essential for observers to be aware of an approaching drone and eliminate the threats, if any. In this project, an attempt is made to solve the issue of drones trespassing secure/restricted areas. This is done through the use of Image Processing, Deep Learning and blocking the communication signals. The system detects, identifies and jams the drone. The detection of various objects is done by a selective segmentation algorithm which comes out of the box in the OpenCV library. The identification and labeling of the detected objects is done by a VGG16 Neural Net, trained on the below mentioned dataset. Finally, the jamming is done by initiating a deauthorization or beacon attack. The dataset consists of various images of drones, our own dataset and existing public datasets. The system is proposed to be tested under various conditions and different environments.

Development of Autonomous Cleansing Algorithm for Bulk Solar Power Data		
SL.NO	USN NO.	NAME
7	1MS18EE014	Dhiraj Kumar
	1MS18EE048	Ronak Kanthaliya
	1MS18EE064	Vaibhav Pateriya
	1MS18EE069	Emaad Ahmad
Mentor Name	Mr. Victor George	
ABSTRACT		
<p>Cleaning of photovoltaic (PV) power generation data is an important step during data pre- processing stage in data analytics program to improve the quality and consistency of solar energy data. Scope of solar PV generation data analysis include solar power generation forecasting, energy management, optimal design of solar plants etc. Machine Learning (ML) applications in power sector are emerging rapidly in recent years. The intermittent nature of the output power of PV systems makes it difficult for data engineers to pre-process the erroneous solar PV generation data. The proposed data cleansing algorithm aims to help the data engineers without domain expertise to process exclusive solar PV generation data. Generalized data cleansing tools like R and Python, holds many in built tools to clean bulk data set which includes identification and replacement of incomplete, inaccurate and irrelevant solar data records. A machine learning based approach have been proposed to utilize the available tools more efficiently to handle excusive solar data without much expertise in the domain. Finally, the performance analysis of the developed algorithm is carried out using bulk solar power data collected from the roof top solar plant of MSRIT, Bangalore.</p>		

Experimental Investigation of green synthesized CeO ₂ filled aged silicon rubber specimen for high voltage application		
SL.NO	USN NO.	NAME
8	1MS18EE007	Akhil Bhartia
	1MS18EE025	Krishna Kant
	1MS18EE037	Niket Karwa
	1MS18EE041	Prateek Kumar
Mentor Name	Mr. Vinayak V Rao	
ABSTRACT		
<p>There are many HVDC schemes around the world operating at various voltage levels ranging from ±200kV to ±800kV dc. The choice of insulator types and level of insulation varies with voltage levels and environmental conditions through which the substations and transmission lines traverse. Silicone rubber (SiR) is extensively used in outdoor insulation and other applications. However, like other polymers, SiR also degrades and lessens its performance in the exposition of environmental stresses. Green synthesis usually involves the production of CeO₂ assisted by organic extracts obtained from plants, leaves, flowers, bacteria, algae, food, fruits, etc. The phytochemicals present in the organic extracts adhere to the nanoparticles and act as reducing and/or oxidizing agents and capping agents to stabilize the nanoparticles, modify the particle size, morphology and band gap energy of the as-synthesized materials, which would be advantageous for numerous applications. This experimental investigation describes test method for the evaluation of electrical insulating materials for use under severe ambient conditions by measurement of the resistance to tracking and erosion resistance, using a liquid contaminant and inclined plane specimen. They are mixed in 1,3 and 5 wt% into the polymer base.</p>		

Ageing study of barium titanate filled polymeric specimen for outdoor insulator

SL.NO	USN NO.	NAME
9	1MS19EE401	Harsha S Sedam
	1MS19EE402	Premsing
	1MS19EE404	Shashank R C
	1MS19EE405	Sumeet G
Mentor Name	Mr. Vinayak V Rao	

ABSTRACT

Outdoor insulator forms an integral part of the power system. Its failure at normal working voltage due to flashover affects the reliability of the electrical network. The environmental stresses are UV, Humidity, rain, biological growth, electrical stresses are leakage current, dry bands, corona and arcing and mechanical stress are cyclic loadings. The polymeric insulators performance under environmental conditions can be improved by incorporation of inorganic Nano fillers into the polymer base. This will improve its electrical, mechanical, hydrophobicity and thermal properties. The addition of Nano sized Barium Titanate fillers increases the electrical insulating properties of the energy storage devices. In the present work, 1 wt%, 3 wt% and 5 wt% Nano sized Barium Titanate filled specimens were prepared. Experimental investigation is done for barium titanate filled specimens in terms of tracking and erosion parameters. IPT test is conducted on both aged and virgin specimen .comparing the results in terms of tracking and erosion parameters is done in this work. IPT test is conducted for 6hrs for both the virgin and aged specimen.

Design and development of IOT based UV Accelerated weathering chamber

SL.NO	USN NO.	NAME
10	1MS18EE011	Chandana Priya H S
	1MS18EE036	Nandan S
	1MS18EE047	Rahul
	1MS18EE052	Riyaz Basha S R
Mentor Name	Mr. Ramakrishna Murthy K	

ABSTRACT

Service life predictions particularly, the weathering lifetime have been persistent problems despite nearly a century of work. When exposed to outdoor weather for long periods of time, a substance may get discoloured, distort from their original shape and also deteriorate in properties during their service life due to factors involved in degradation of polymers, like temperature, radiation of the sun, oxidation, moisture and stresses in the environment. To determine the property change of materials as a result of weathering effects that occurs when materials are exposed to sunlight and moisture such as rain or dew in actual usage, it is intended to practice and produce the exposure conditions using fluorescent UV lights and water apparatus in laboratory devices. Such a device is an accelerated UV weathering chamber wherein material is exposed to harsh and intensive cycles of irradiation and condensation for a very long duration of time to observe weathering at a better rate than natural weathering. The project objective is to design and develop an UV accelerated weathering chamber to monitor the change in property of the specimen exposed to weathering conditions. The monitoring of chamber conditions is done by integrating it with IOT.

Harmonic Analysis of Leakage Current in Polymeric Insulators Using Rotating Wheel Dip Test

SL.NO	USN NO.	NAME
11	1MS18EE023	Kartik S Patil
	1MS18EE035	Nadeem Sharief B
	1MS18EE056	Srikar J R
	1MS18EE068	Rahul Bisht
Mentor Name	Mr. Ramakrishna Murthy K	

ABSTRACT

High voltage insulator is one of the vital components in the power system and delivery. Generally, it is utilized to isolate the conductor from the grounded tower as well as provide mechanical support for the power lines. Regarding this matter, it should be noted that the performance of the outdoor insulator is highly influenced by various mechanical and environmental factors such as the type of material, installation arrangement, and pollution severity. The project presents an alternative and innovative technique to predict the severity of pollution of high voltage insulator using a higher harmonics component with up to the 7th component of leakage current. The leakage current is measured using a current sensing device. Next, laboratory test, rotating wheel dip test is conducted on polymeric insulators with artificial pollution under salt-fog pollution state. Overall, it can be concluded that the 3rd, 5th, and 7th harmonics details extracted from the leakage current act as a good indicator for the level of contamination.

Human behavior analysis from EEG signals using Machine Learning

SL.NO	USN NO.	NAME
12	1MS18EE16	Falak Naaz
	1MS18EE030	Meenakshi Lakshminarayanan
	1MS18EE055	Shwetha Rajagopalan
Mentor Name	Ms. Kusumika Krori Dutta	

ABSTRACT

Content of the Abstract: Human behaviors such as movements of different parts of the body like eye opening, eye closing, nodding head, yawning, hand, and leg movements, etc. produce different voltages (micro volts) in our brain and they can be captured in Electroencephalography (EEG) signals. EEG is the most popular clinical diagnostic test for various neurological disorders and has become popular for BCI (Brain Computer Interface) related activities. This project aims to develop EEG analyzer, a portable diagnostic device, which can analyze and interpret the EEG signals. Towards that, multi-class classification models using Machine and Deep Learning algorithms are built considering available datasets, to classify different classes of seizures (considering human physical behaviors during the same), seizure stages (pre-ictal/ictal/postictal) and eye open/close states (which is useful towards understanding mental disorders, alcoholism, etc. with proper analysis). The device acquires EEG signals through electrodes, which are then passed through various filters, amplifiers, and an analog to digital converter (ADC) to convert into digital signals which pass through our ML/DL models for testing and verification of accuracy of pre-built models. The portable device can diagnose the eye open/close state of humans.

Underground Cable Fault Location Detection System Using GPS And GSM

SL.NO	USN NO.	NAME
13	1MS18EE004	Aditya Bhaskaran
	1MS18EE062	Udit H Ashtakar
	1MS18EE065	Vittal P Bhat
	1MS18EE071	Amogh T D
Mentor Name	Ms. Mamatha G M	

ABSTRACT

In metropolitan areas, the electrical cable runs in underground instead of overhead lines. Power cables that are used to a supply electrical power are placed underground to avoid unwanted interference. This makes it very tough to determine the exact location of the faults. A fault might occur due to many reasons such as digging, earthquake, construction work, etc. The maintenance process related to that particular line is difficult due to unknown location of the fault in that particular line. In this project, a hardware model illustrating the detection of location of faults in underground power lines is presented. The voltage drop is monitored along the line at regular intervals. The voltage drop across each interval fluctuates according to Ohm's law as soon as the fault occurs. In the hardware model, an AT Mega 16 microcontroller GPS module, GSM module, buzzer and LCD is employed. This proposes greatly reduces the time and operates effectively. Using a microcontroller kit, the project identifies faults in subterranean cable cables from the base station to an exact position in kilo metres.

Development of Radar Absorbent Material for Stealth Technology Applications

SL.NO	USN NO.	NAME
14	1MS18EE033	Mohith S Gowda
	1MS18EE034	Monica Ramesh
	1MS18EE070	Pratik Kulkarni
	1MS18EE073	A Shravani
Mentor Name	Ms. Mamatha G M	

ABSTRACT

Stealth technology is a sub-discipline of military tactics, which covers range of methods used for making aircraft, submarine less visible to the radar and other detection methods. In order to achieve this, composites are employed as radar absorbed material (RAM), which are applied on the surface of the military aircraft to reduce the reflection and increase the absorption capability of electromagnetic waves, intern making them harder to detect by the radar. Here, in this project the main aim is to develop a polymer-based Radar absorbent composite for this application having high absorption capability and to operate at high frequency with additional desirable characteristic features such as lightweight, high strength, high toughness, corrosion resistance and low radar cross section which may lead to the replacement of highly Reflective, conventional metallic aircraft structures and counter radar detection system. Further, the developed composite is characterized using XRD, FTIR, SEM, TGA and is tested for shielding effectiveness.

To Develop a Digital Twin Model of Electric Vehicle using Comprehensive Lithium-ion Battery Equivalent Circuit

SL.NO	USN NO.	NAME
15	1MS18EE002	Abhijit Sahoo
	1MS18EE005	Aditya Raj
	1MS18EE020	Hruday R
	1MS18EE022	Chalukya Bhat
Mentor Name	Dr. Janamejaya Channegowda	
ABSTRACT		

Electric Vehicle numbers have rapidly increased over the past decade. There is a dire need to establish accurate simulation frameworks to model the Electric Vehicle performance. Multiple simulation model-based approaches have been proposed in literature which consider the impact of various drive cycles on vehicle characteristics. All the available Electric Vehicle simulation models available in literature use lumped battery parameters which do not capture the dynamic behavior of the vehicle. A detailed battery model considering drive cycle dynamics In Electric Vehicle Digital Twins have not been explored by researchers. Our project aims to provide tangible EV performance characteristics accounting for detailed 2RC battery model. Our project has used a two-wheeler drive characteristic driven by a 2 kW Brushless Direct Current Motor powered by a 3.2 kWh battery pack. Our project also compares the variations in battery parameters with the lumped battery model to highlight the advantages of the proposed approach. We are also performing long sequence artificially generated battery parameters for State-of-Charge estimation.

Autonomous Physiotherapy system for clenched fist syndrome in stroke victims

SL.NO	USN NO.	NAME
16	1MS18EE006	Amogh Mishra
	1MS18EE013	Deepanshu Sharma
	1MS18EE018	Gautam Sharma
	1MS18EE067	Aditya Raj
Mentor Name	Dr. S Dawnee	
ABSTRACT		

In today's era of modern technology, automation has done wonders all over the world by reducing the human effort. In this work, automation is being used in the field of healthcare aiming to help thousands of Stroke patients in the physiotherapy process without the supervision of a physiotherapist. This is achieved by building an autonomous system which can be used by the stroke patients suffering from Clinched Fist Syndrome (CFS). To demonstrate the proof of concept a 3-D Prosthetic arm is used in place of actual stroke victim. The 3-D arm comes with several servomotors attached to it for the movement of fingers and wrists. A hand glove that can be worn by anyone, employed with the Flex sensors and microcontroller is used to perform the standard physiotherapy exercise. The hand movements will be sensed by the Flex sensors which in turn will use the microcontroller to send the signals to the motors connected to the 3-D arm. The arm will mimic the same movements as done by the person wearing the glove. Additionally, it also comes with a system which can provide the patient with the feedback and the efficiency of their session in the form of a report. This is achieved with the help of a web cam and techniques such as Deep learning and OpenCV. This entire system will enable the patient to exercise anytime and anywhere they want without the supervision of a Physiotherapist and they can also keep track of the progress they have made.

DEPARTMENT OF INDUSTRIAL ENGINEERING & MANAGEMENT



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Studying & Forecasting the Urban Growth of Bengaluru using Satellite Imageries		
SL.NO	USN NO.	NAME
1	1MS18IM019	Gargi
	1MS18IM020	Haniya Fathima
	1MS18IM023	K V Alekhya
Mentor Name	External Mentor : Mr. Rahul Kumar & Mr. Vivek Kumar Gautam Internal Mentor : Dr. N D Prasanna	
ABSTRACT		
<p>Karnataka is one of the fast-growing states of India. With urbanization and increase in population, people are migrating from other states causing urban sprawl. Land use & land cover changes (LULC) are a major challenge of Bengaluru periphery. Spatial temporal LULC were observed over a span of twenty years (2001-2021).The level-1 data pertaining to satellite images obtained at equal intervals, were classified by evaluating and incorporating various multispectral built-up indices. The dichotomous maps were then leveraged with various proximity maps like distance to roads, airports, metro etc, which were examined to have an impact on the late rate estimations and the urban growth. The projected growth was calculated by integrating the input maps into a CA model, which was calibrated to give high statistical accuracies between the actual and predicted layers. The model produced detailed cartography which highlighted the land use change in key areas. While stock of land is fixed, its supply is not and that vastly depends on LULC patterns. Data trends required for land investment & management are unavailable to the public. One needs to apply several proxies to determine the price of land & take decisions. Through the study of urban built up & guidance value, this project provides a comprehensive assessment of LULC and provides a forecasting model for long term land development & real estate management.</p>		

Design and Development of Smart Material Handling Equipment for Effective Inventory Management		
SL.NO	USN NO.	NAME
2	1MS18IM037	Rajath Ganesh K
	1MS18IM039	Richa Sharma
	1MS18IM046	Sanjeev S N
	1MS18IM048	Shivangi Tomar
Mentor Name	External Mentor : Mr. Imtiyaz Khan Internal Mentor : Dr. M Rajesh	
ABSTRACT		
<p>Modern technology has penetrated industries, where the advent of 4th industrial revolution allows organizations to optimize their work channels through automation. In this work, automation is being integrated with inventory management, aiming to reduce human effort. This is achieved through Industrial IoT and Computer Vision technologies, being integrated into a material handling equipment. This equipment contains a camera for image detection, capturing images of inventory items and identifying them. This identification is used to automatically update the inventory database. Additionally, sensors and motors are integrated to increase accuracy and account for smaller inventory items. The equipment itself is designed using the principles of ergonomics combining traditional Industrial Engineering principles with new principles of Computer Science such as neural networks. This work automates the stages between material loading and inventory updation, minimizing human involvement and thus eliminating recurrent manual errors. Application of this work includes utilization of the foundation principles to design and built custom material handling equipment in various industries, from pharmaceuticals to automobile, capable of optimizing the inventory management process.</p>		

Quality Assurance in a Rail Wheel Factory		
SL.NO	USN NO.	NAME
3	1MS18IM021	Jai Saraswat
	1MS17IM002	Abhishek
	1MS17IM010	Asad Aziz
	1MS18IM031	Pramudit Upadhyay
	1MS17IM057	Umashankar Manas
Mentor Name	External Mentor : Mr. Vijay Kumar Internal Mentor : Dr. M Rajesh, Dr. Sridhar B S	
ABSTRACT		
The issue faced at Rail Wheel Factory, Yelahanka. There is has been a problem regarding quality control and the wastage occurring / rejection of Wheels and axles in the factory. We are working on maximising the total output of the factory and reduce the rejection of wheelset. This can be done by following the processes carefully and studying the material used and where the wastage occur. We are working on improving the quality of input and maximum efficiency.		

Synthesis and Characterization of Coir Sandwich Composite for Roofing Tiles		
SL.NO	USN NO.	NAME
4	1MS18IM017	Doddabassayaswami
	1MS18IM032	Pranav S Srirampur
	1MS19IM402	Sagar K
Mentor Name	Dr. Sridhar B S	
ABSTRACT		
<p>A waterproof roofing laminate comprises a banana fibre with coconut coir sandwiched layer, the fibre acts as an insulation layer located thereon, and a cover layer that reflects radiant energy such as infrared light, visible sunlight, and ultraviolet light. Increasing concernment about global warming and depleting petroleum reserves have made scientists to target more on the use of natural fibres such as bagasse, coir, sisal, jute etc. This has resulted in creation of more awareness about the use of natural fibres-based materials mainly composites. Reinforcement with natural fibre in composites has recently gained attention due to low cost, easy availability, low density, acceptable specific properties, ease of separation, enhanced energy recovery and recyclable in nature. There, is an impact of various elements like fibre diameter, fibre content, density, fibre size, geometry of fibre and coupling agents towards the automatic properties, thermal properties. Recently, lot of new composites are generated and practical and useful issues are noticed. The coconut fibres are bio-degradable and highly crystalline with well aligned structure, higher tensile strength than glass, good elasticity and excellent resilience.</p>		

Industry 4.0 IoT Integration for Monitoring of Warehouse Environment

SL.NO	USN NO.	NAME
5	1MS18IM007	Anamika Priyadarshini
	1MS18IM008	Ananya N
	1MS18IM063	Nismita Vasant
	1MS18IM044	Samarjit K
Mentor Name	Dr. Hemavathy S	
ABSTRACT		

Warehousing describes the processes and systems required for meeting the changing demands of warehouses. Warehousing in India has been evolving rapidly from being traditional “godowns” a mere four-wall-and-shed with sub optimal size and operations into modern setups with storage and handling points where raw material, intermediate and manufactured goods are collected, assorted, stored and distributed to the point of consumption/sale. Warehousing is one of the significant commercial auxiliaries. This provides time efficiency by bridging the difference in time between products being generated and consumed. It is an essential aspect of operation in the delivery of commodities through the supply chains, from raw materials and production in process to completed items. In this project, a warehouse monitoring system, which is an IoT based implementation at low cost and efficiency is built. The main part of the project is a microcontroller, which is enabled with Wi-Fi. We consider various parameters like, temperature, pressure, smoke, flame and other sensory networks interfaced to the microcontroller in order to build an efficient method to monitor a warehouse system. All the data in the warehouse is collected and stored in the cloud and then accessed using an android application for end users.

Capacity Enhancement by Line Balancing and Process Development under CKD Condition for Three Wheeler EV Assembly

SL.NO	USN NO.	NAME
6	1MS18IM024	Kavya S Gouda
	1MS18IM029	Praful Patil
	1MS18IM041	Ruthu M
	1MS18IM047	Santhosh Vasu
Mentor Name	External Mentor : Debashis Bhuniya Internal Mentor : Ms. Hamritha S	
ABSTRACT		

Line balancing is a flow-oriented production strategy for improving productivity and cost-efficiency in mass production processes. An optimal time frame is designated for the production of a particular product. Tasks are then equally distributed among workers and workstations to ensure that each operation in the line happens within the specified time frame. Line balancing techniques is applied in vehicle assembly line as well as battery assembly line to increasing productivity and efficiency of the line. In the vehicle assembly line the current Jobs Per Hour (JPH) is 4. As the demand of the electric three wheelers is increasing, the plant is planning to balance the line and increase the JPH to 6 and make the assembly of the vehicle in an efficient way. In the battery assembly line the testing of the batteries are done at the end of the line which is time consuming. In order to reduce the idle time of the worker and reduce the rework time if any, the testing equipment has to be introduced in the line. This in turn helps in more production of batteries. Further, Complete KnockDown (CKD) is constructed by using tools like Process mapping, baseline data collection, ergonomics analysis, time study analysis, cause and effect diagram which will help to assemble the parts of vehicle in less number of stages effectively.

Productivity Enhancement of Assembly Line by using 3M Model		
SL.NO	USN NO.	NAME
7	1MS18IM001	Abhay Gowda S
	1MS18IM002	Abhinav Joshi
	1MS18IM003	Aditya M
	1MS18IM010	Arun V Guraddi
	1MS18IM015	Dhruva S
Mentor Name	External Mentor : Mr. Sharaschandra M K Internal Mentor : Dr. Niranjan C A	
ABSTRACT		
The proper utilisation of available resources and appropriate time to complete a task play a crucial role to define the productivity of a line-based manufacturing industry. The high productivity is essential to meet customer demand. If the company fails to meet customer demand, it measures in terms of utilisation of available resources and time required to complete a task. An assembly line includes non-value-added activities and other wastages which lead to lower productivity. Keeping these views in this study to reduce cycle time, operation cost and maximize the utilization of man power after identification of lean wastages by using Toyota 3 M Model.		

Ergonomic design of manual assembly workstation using digital human modeling to reduce the risk of musculoskeletal disorders at final hydraulic gear pump assembly station		
SL.NO	USN NO.	NAME
8	1MS18IM028	Nagarjun S
	1MS18IM038	Reeti Sethi
	1MS18IM054	Sindhu T
	1MS18IM064	Shreya Shinde
Mentor Name	External Mentor : Mr. Sachin Gowda, Mr. Rakesh M D Internal Mentor : Dr G S Prakash, Ms. Hamritha S	
ABSTRACT		
<p>Ergonomics has recently acquired interest and acceptance among workers in various domains of employment. It has a substantial impact on employee comfort, and has a direct impact on job efficiency and production. Manual assembly workers are at risk of developing musculoskeletal diseases. Static and uncomfortable posture is the most significant risk factor among workers. The goal of this project is to use Digital Human Modeling (DHM) to create ergonomic manual assembly workstations. Companies aim to boost output while also ensuring the safety of their employees in this manner. The project intends to experimentally suggest a better assembly plan for a hydraulic gear pump assembly line in order to reduce the risk of musculoskeletal disorder and, as a result, boost productivity and efficiency of the current working hours. Digital Human Modeling is used to design and validate the engineering design. The design of ergonomic workstations implies several techniques, including</p> <p>1) Enhancing the quality of productivity, working life, and output, and</p> <p>2) Modifying work spaces to make services more accessible and faster, as well as better-maintained operations. These methods are used to improve efficiency, production, and safety. Furthermore, it will help to simplify applications, reduce human errors, tension, and weariness, increase worker workplace comfort, and ultimately job satisfaction and acceptability.</p>		

Statistical Factor Analysis of Employer – Employee Behavioural Changes in software Sector due to Work From Home Culture

SL.NO	USN NO.	NAME
9	1MS18IM050	Shreyansh Saraswat
	1MS18IM056	Sudarsana Saha
	1MS18IM058	Suhas S N
	1MS18IM062	Vishnu R
Mentor Name	Dr. M Shilpa	

ABSTRACT

The COVID-19 pandemic made working from home (WFH) the new way of working. The pandemic sweeping the world, has rendered a large proportion of the workforce unable to commute to work, as to mitigate the spread of the virus. The pandemic has changed the way people work, and more and more people are choosing to work from home (WFH). Unlike traditional work patterns, this approach has limitations and has had a significant impact on both organizations and individuals. This has resulted in both employers and employees seeking alternative work arrangements. This project investigates the impact of family-work conflict, social isolation, distracting environment, job autonomy, and self-leadership, on employees' productivity, work engagement, and stress experienced in the employees working in software industries. The work also brings about the reasons for employees to be hesitant to return to office for work. This project involves a study on the difficulties faced by the employers / managers of software industries due to WFH culture. For this study, two separate survey questionnaires for employers and employees of software sector, are prepared and survey responses are collected. 350 responses from employees and 240 responses from employers / managers of various software industries in Bangalore are collected via email, phone call and in-person meeting. The factor analysis is carried out on this big data that is collected to identify the groups of inter-related variables and understand how these variables are related to each other. The significant factors which largely contribute to the opinions of employers and employees are analyzed. Recommendations on how to address these factors are also provided

Cutting Edge Defect Control During Insert Compaction of Metal Powder using Dmaic Approach

SL.NO	USN NO.	NAME
10	1MS18IM009	Anjali P
	1MS18IM016	Dileep Ml
	1MS18IM025	M Nagalakshmee
	1MS18IM043	Sajna Tasni T K
Mentor Name	External Mentor : Dr. Shobha R Internal Mentor : Mr. Bharathkumar	

ABSTRACT

Tungsten carbide inserts are extensively used forms of machining equipment produced using powder metallurgy. This technique entails powder making, powder compaction, sintering, post sintering operations, and coating. During the compaction process, defects such as crack, powder pull out, burr, pitting, and distortion (after sintering) can be observed. To make it cost-effective and to maintain the consistency of the product near-net shape manufacturing of metal cutting inserts is used. It helps to understand the edge conditions, especially the burr formation on the insert. The present study aims to evaluate the root causes for uneven burr formation on the inserts and to maintain the burr within target specifications of 25µm and 5µm variation limits. By the application of the Six Sigma DMAIC methodology, the defect of uneven burr formation on the edge of the insert has been identified and is to be minimized. The IE tools which assist in making this are Process Mapping, Pareto diagram, Cause and effect matrix, Analysis of variation, and process capability study. From the collected data, 80% of defects has been reduced to 40%.

To Reduce The Sale Loss Of Eyebolts In Forging Industry

SL.NO	USN NO.	NAME
11	1MS18IM059	Shahid
	1MS19IM400	Honnesh K N
	1MS19IM401	Manoj S
	1MS19IM403	Shivakumar H S
Mentor Name	Dr. Shobha S, Dr. Hemavathy S	

ABSTRACT

A loss on sale is the amount that is lost by a company when the company is unable to fulfill the customer's ordered quantity on time. So, the main reason for loss of sale is assessed in a forging industry for a period of 6 months. The data analysis reveals that repetitive working, reworking and excessive unnecessary movement within organization is causing less productivity yielding sale loss to the organization. Further around 8.51 lakh is the sell loss quantified for the period of 6 months. The project work aims to reduce the unnecessary movement and re working by identifying suitable reasons. The work also aims in reducing the sale loss cost to 2.5 lakh which account for 80% reduction. Appropriate Industrial Engineering technique would be used to meet the above the expected targets.

Optimization of milling parameters for minimizing surface roughness and maximize material removal rate through Taguchi method and Utility concept

SL.NO	USN NO.	NAME
12	1MS18IM022	K Ayraz Sideeq
	1MS18IM033	Preetham Mohan
	1MS18IM052	Shubham Maheshwari
	1MS18IM057	Suhas S
Mentor Name	External Mentor : Mr. Hari Prasad Internal Mentor : Dr. M R Shivakumar	

ABSTRACT

The present study highlights a multi response optimization approach is used to determine the optimal process parameters of high carbon steel in milling process. Experiments have been conducted using three process parameters such as spindle speed, depth of cut and feed rate each at three levels for obtaining the responses like material removal rate and surface roughness. Taguchi's L9 orthogonal array is used to gather information regarding the process with less number of experimental runs. Traditional Taguchi approach is insufficient to solve a multi response optimization problem. In order to overcome this limitation, utility theory has been adopted, to convert multi-responses into single equivalent response through utility concept. The weight for each criterion (response) is obtained by analytical hierarchy process instead of using intuition and judgment of the decision maker. ANOVA analysis is also carried out to find out the significant effect of the process parameters during milling process. Finally, confirmation test has been carried out to verify the results.

Design and Development of Cooling Channels for an Injection Moulding Process

SL.NO	USN NO.	NAME
13	1MS18IM012	Bharath K S
	1MS18IM030	Prajwal M P
	1MS18IM034	Rahul Raghu
	1MS15IM067	Glen Somanna
Mentor Name	External Mentor : Mr. Sudheer D Kulkarni Internal Mentor : Mr. Swaroop Satish	

ABSTRACT

The project's stated purpose is to eliminate the most heat sources from the component in an advantageous fashion, resulting in a low-stress area of the mould with the best dimension and physical qualities. Often, this is handled at an equal rate, but in reality, the cooling may need to be different in order to extract heat from the problematic zone of the mould components and achieve a steady state outcome. Defects may include cracks, voids at edges, flow lines and sink marks. Data was collected with respect number of defective components and pareto chart was drawn to identify the significant defect. Fishbone diagram was constructed to identify the root cause for this defect and it was observed that ineffective cooling system resulted in the increased number of defective components. A cooling system consisting of conventional and rapid flexible tooling channel was designed to address this issue. It was observed that there was around 10% reduction in the number of defectives on implementation of this cooling method.

A Systematic Approach to Develop an Improved Method for Selecting a Vendor from the Pool

SL.NO	USN NO.	NAME
14	1MS18IM011	Aviral Gujrati
	1MS18IM035	Rahul Shekhar
	1MS18IM049	Shrey Rana
	1MS18IM053	Shubham Shorya
Mentor Name	External Mentor : Mr. Pradeep Garg Internal Mentor : Mr. Deepak Kumar	

ABSTRACT

Procurement is the process by which companies acquire raw materials, products, services or other resources from suppliers to execute their operations. In most of the companies, outsourcing function is performed by the third party. Therefore, effective sourcing decisions should be made in order to procure materials of right quantity and quality on time for production. In the process of vendor selection, the most important issue is to determine an effective decision making method and select the right vendor. Evaluation of existing vendors is considered as an effective for the rectification of defects, improving their ability to serve satisfactorily and as a basis for making future purchasing decisions. It considers various variables that have direct or indirect effects in the final selection of the supplier. Some variables to mention are Cost, Quality, Customer service level (CSL). These several factors are allocated with certain weightages. These weightages are customized based on the product and the industry requirement. Finally, all the parameters are gauged in accordance with the default weightage and a final score is generated. This process is followed and best vendor is given the priority in the list. Thus, this approach can help the management in selecting vendor from the pool.

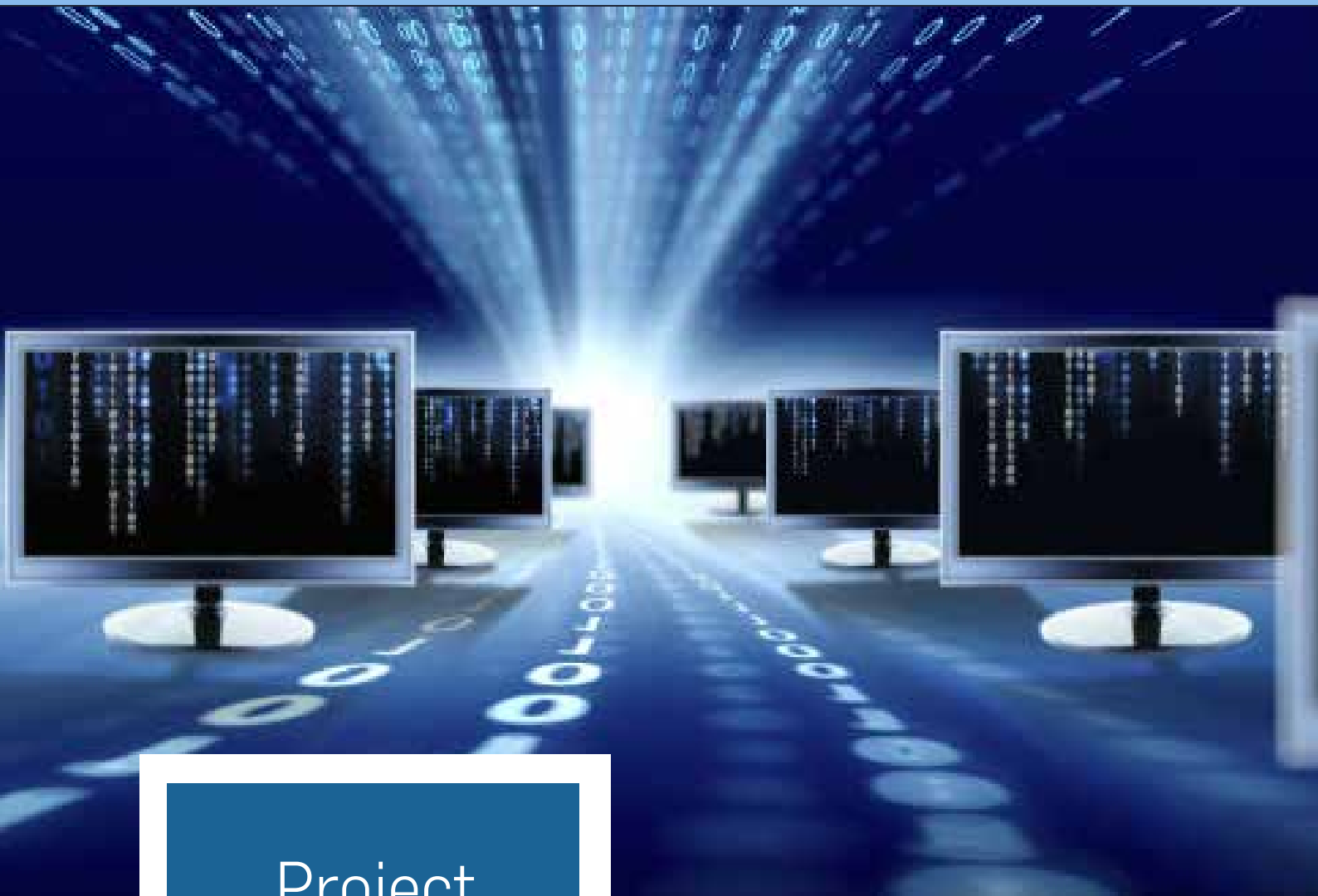
An AHP-Fuzzy-TOPSIS integrated approach for the selection of electric two-wheeler

SL.NO	USN NO.	NAME
15	1MS17IM012	B Satya Yashvardan
	1MS18IM005	Afshan J Ruhi
	1MS18IM013	Burhanuddin Shakir
	1MS18IM040	Ritik Raj
Mentor Name	Dr. Siddhartha Kar	

ABSTRACT

The world is moving toward a greener mobility system to reduce pollution and deal with future challenges of depleting energy sources. There is a boom in the sales of electric two-wheelers (E2Ws) in today's market as people have become more conscious about the environment and the consequences of dealing with fuel vehicles. The increase in fuel prices in India has changed the way people perceive E2Ws today. Earlier it was just for the environmental concerns, but today it is more about the operation and maintenance charges of a motorized two-wheeler that people are shifting to E2Ws. The present study aims to identify E2Ws' different quantitative and qualitative attributes, which play a significant role in the prospective customers in the Indian market. Characteristics related to economy, vehicle, battery, market share, and ergonomics are considered criteria. The analytical hierarchy process is utilized to determine the weights of criteria by formulating a pairwise comparison of all the criteria. The qualitative criteria are converted from linguistic to crisp values by fuzzy logic. Finally, the technique for order of preference by similarity to ideal solution is used to determine the best alternative among the variants of E2Ws.

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING



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NFT Using Blockchain		
SL.NO	USN NO.	NAME
1	1MS18IS045	Kushagra Sexana
	1MS17IS071	Nazeem N R
	1MS17IS054	Kulkarni Rahul Raghavendra
	1MS17IS139	Yasaa Usman Ahmad Khan
Mentor Name	Mr. Jagadeesh Sai D	
ABSTRACT		
<p>The Non-Fungible Token (NFT) market is mushrooming in the recent couple of years. The concept of NFT originally comes from a token standard of Ethereum, aiming to distinguish each token with distinguishable signs. This type of tokens can be bound with virtual/digital properties as their unique identifications. With NFTs, all marked properties can be freely traded with customized values according to their ages, rarity, liquidity, etc. It has greatly stimulated the prosperity of the decentralized application (DApp) market. At the time of writing (May 2021), the total money used on completed NFT sales has reached \$34,530,649.86\$ USD. The thousand fold return on its increasing market draws huge attention worldwide. However, the development of the NFT ecosystem is still in its early stage, and the technologies of NFTs are pre-mature. Newcomers may get lost in their frenetic evolution due to the lack of systematic summaries. In this technical report, we explore the NFT ecosystems in several aspects. We start with an overview of state-of-the-art NFT solutions, then provide their technical components, protocols, standards, and desired proprieties. Afterward, we give a security evolution, with discussions on the perspectives of their design models, opportunities and challenges. To the best of our knowledge, this is the first systematic study on the current NFT ecosystems.</p>		

Anomaly Detection and Analysis of Mobile Networks		
SL.NO	USN NO.	NAME
2	1MS18IS083	Saaniya Afreen
	1MS18IS106	Subodh P Rane
	1MS18IS111	Sumith S B
Mentor Name	Dr. Vijaya Kumar B P	
ABSTRACT		
<p>Traffic analysis using the internet is an activity to record data from user activities in using the Internet. This study aims to obtain packet data and analyse, to obtain the application type and users and later to monitor the results of traffic in a graphical form. It can also find out the number of users who access the Internet, type of applications they run and bandwidth usage. Real time packet capturing from the data centre using network packet capturing servers and modules are developed to evaluate the performance of the proposed methodology. This study also includes peak Internet usage time, number of users' w r t application type in each department in the Institute. The method includes the data packet filtering from the http protocol application. Since, user activity is more dominant in finding and downloading sites on the Internet. We will also be classifying packets into suitable packets to know which website is used the most. The tools used will be Wireshark & tcpdump applications which are greatly helpful with features that are truly supportive and easy to analyse networks using machine learning classification methods. This anomaly detection and analysis will help in prevention of illegal and unwanted data packets using in the college premises.</p>		

Sign Language Translator for the Vocally Challenged using Sensor based Hand Gesture Recognition (HGR)

SL.NO	USN NO.	NAME
3	1MS18IS135	Sukruth G L
	1MS18IS134	Rithvik K
	1MS18IS117	Tejas M R
	1MS18IS119	Trisha Ann Tharakan
Mentor Name	Dr. Vijaya Kumar B P	

ABSTRACT

A Human Machine Interface (HMI) for a better and a convenient manner of communication for the vocally challenged (Deaf-mute) person with an audience who are not familiar with Sign Language by implementing sensor-based Hand Gesture Recognition (HGR). As per Census 2011, in India, there were 26.8 million differently abled people, out of which more than 25% of the people faced difficulty in communication. They communicate in sign language with the abled through the Indian Sign Language (ISL). The Haptic Glove consists of the IMU/ Flex sensors which are mounted on each of the fingers and the wrist to obtain the ISL gesture that is being performed. This is collected in real time and fed into the model which will help classify the gestures into words. It is then fed as input for an Abstractive Text Summarization for Text Generation algorithm to help formulate sentences that is being conveyed by the challenged person to the spoken language. These sentences are then synthesized out in the form of text for the audience. The text to speech module then synthesises the text generated into speech.

Refreshable Braille Display

SL.NO	USN NO.	NAME
4	1MS18IS123	Vibhuti Mishra
	1MS18IS120	Vaibhav Agarwal
Mentor Name	Dr. Mydhili K Nair	

ABSTRACT

In India, there are 12 million Blind people alongside further 28 Visually Impaired people. The cost of printing a Braille Book is prohibitively high, going as much as 20 times higher than normal books. They also have only a few braille cells ranging in number of 10-30. This means that at one time only 10-30 characters are visible at once. This is not desirable for efficient reading. It is our aim to create an affordable Braille Reader with optimum number of braille cells for wholesome reading. We are creating a Low-Cost Refreshable Braille Display. This is being achieved by reducing the actuators needed in a single Braille Display. The Device will consist of Click Pen like structures where the casing is downscaled in size to fit our project. These Structures push and retract Braille Dot-like pins. 6 of these structures make a braille cell to represent a character. Multiple characters are taken in a line with their push button being upside down so that they are pushed upwards. There is a belt drive or another drive system that will drive a system of 6 solenoids arranged in the shape of a Braille Cell. As this Solenoid Arrangement goes from left to right it hammers the push buttons according to the characters on each Braille Cell Controlled by the Arduino.

Self-Learning GameBot		
SL.NO	USN NO.	NAME
5	1MS18IS079	Ritwick Raj
	1MS19IS405	Praneeth Kakathkar
	1MS19IS407	Rohan S Koimattur
	1MS18IS091	Shivam Gupta
Mentor Name	Mr. Jagadish Sai D	
ABSTRACT		
<p>It has been understood that AI is much more capable than what we think. There are certain tasks that are either boring or frustrating to do for us human beings and we can't avoid it. What if there was an AI that first learns from us and then tries to do it on its own without human interference. This not only saves our time but also reduces the cost. In the present universe of current gaming conditions bots are the intelligent agent that assumes a prominent job in the popularity of a game in the market. As these bots have gotten very unsurprising to the games. So here we are proposing an AI model for playing games with high level inputs using reinforcement learning. Algorithms work in the Atari Environment i.e. we are using 2D games. The objective is to train the AI to mimic us and get better at it over time. Here we are training the AI to learn to play games by capturing the key pressed. But in the near future we can train it to perform other tasks as well.</p>		

Design And Development of Pizza Quality Evaluation System Using Computer Vision		
SL.NO	USN NO.	NAME
6	1MS18IS118	Tejas S
	1MS18IS128	Yadukrishnan J
Mentor Name	Dr. Megha P Arakeri	
ABSTRACT		
<p>There has always been a need for quality control in food manufacturing, with the rise in food delivery services there is a need for validation for delivered food This is especially required in pizza-making and delivery. There has been research that has addressed the issue of pizza making on an industrial scale and of frozen pizza but no approaches to cooked handmade pizza intended for home delivery. Delivery companies also deal with claims made by consumers that include wrong orders as well as damaged orders, where there is no automated way of assessing this claim. We intend to create a robust system of PIZZA quality assessment and feedback on the manufacturing side and claim assessment of the delivery side using Deep Learning Computer vision approaches.</p>		

Travelwise		
SL.NO	USN NO.	NAME
7	1MS18IS028	Chinmay Bapna
	1MS18IS057	Nidhi Bhat G
Mentor Name	Mr. Shashidhara H S	
ABSTRACT		
<p>Planning for a vacation that takes into consideration all the travel preferences of an individual without having to look through at least hundreds of websites is close to impossible. Travelwise is an iOS application which aims to solve this problem by providing a single common platform to know other tourists' experiences about how they travelled to that place, their hotel and travel expenses, so a user can plan the perfect trip for themselves in their budget. It allows the user to pinpoint all the locations they travel to, hotels they stay at, and the restaurants they visit and also provide reviews and ratings. The user can use the app as a travel journal or share the trip with other users. The user can use the reviews and experience provided by other users to plan their trip. Travel wise also provides a tailor-made travel plan recommendation based on the traveller's trip details and preferences using a collaborative filtering technique called Restricted Boltzmann Machine (RBM) which returns various attraction recommendations.</p>		

Creation of Taxonomy for Cybersecurity for Security Posture Identification and Anomaly Detection on OWASP Top 10 threats		
SL.NO	USN NO.	NAME
8	1MS18IS065	Pooja P M
	1MS18IS085	Sai Pranav Dhupati
	1MS18IS103	Sneha Kulkarni
	1MS18IS122	Vandana G
Mentor Name	Mr. Karthik V	
ABSTRACT		
<p>Cyber security is the application of technologies, processes and controls to protect systems, networks, programs, devices and data from cyber-attacks. There are different types of threats that can compromise the system that results in exposing the confidential information of the system to the attackers. The attacks can be detected, resolved and prevented which increases the protection and security of the system. The main aim of the project is to detect the different types of attacks listed by web application security organization OWASP (Open Web Application Security Project). Network vulnerabilities, system vulnerabilities and server vulnerabilities can be detected as described by the OWASP organization for the TOP TEN Web Application Security Risks. For a given IP/host name the threats will be detected and a report will be generated which has the information of the list of the vulnerabilities the system is vulnerable for. The project aims to raise awareness of the security threats which helps to increase the security of the system and explains about the real time threats that can be affected to the system in real time.</p>		

Using multi-image steganography to secure digital communication

SL.NO	USN NO.	NAME
9	1MS18IS089	Saurabh Chaubey
	1MS18IS029	Chirag Goel
	1MS18IS039	Ishaan Virmani
	1MS18IS025	C Hrushika
Mentor Name	Ms. Evangeline D	

ABSTRACT

With the wide usage of the internet coming into the picture, the data on the internet has been increasing in huge proportion over the years. So, there arises the responsibility to maintain privacy which has become an essential task currently. The purpose of this project is to give a solution to data privacy and integrity using the technique known as steganography. Image hiding inside another image is a good solution to keep image data safe and private. This project is an attempt to solve the problem using minimum resources. It tries to hide multiple images in another cover image in minimum time and minimum space. The motivation comes from the fact that lots of data online is vulnerable and wrong usage of public data has to be removed. This attempts to hide multiple images in a single image using neural networks. The research background is based on combining multiple papers based on neural networks and image steganography which has been addressed in the reference section. Any image data that is sent/stored online can be secured such that its wrong usage can be prevented. The proposed model has challenges to improvise single image steganography to multiple image steganography which is more secure and also, we can hide multiple images in a single image and thus save lots of data that was not done in earlier researches.

Detection of Exoplanets Using Artificial Intelligence

SL.NO	USN NO.	NAME
10	1MS17IS002	Aasees Kaur
	1MS18IS116	Tejas C
	1MS18IS126	Navneet Kanna
Mentor Name	Dr. S R Mani Sekhar	

ABSTRACT

Ever since the first exoplanet was discovered in the early 90's, exoplanet detection has become a major field of research and as of now, over 5000 exoplanets have been discovered using various techniques. The work aims to detect exoplanets using machine learning techniques based on the transit method. As the first phase of detecting exoplanets, the proposed work uses convolutional neural networks to classify whether a light curve is that of a star with an orbiting planet or not. For verification of the detection of the exoplanet, the work uses machine learning and deep learning techniques that are computationally more efficient and that produce results better than already existing conventional methods.

Human Activity Recognition using deep learning		
SL.NO	USN NO.	NAME
11	1MS18IS034	Hanumantray Kumbar
	1MS18IS035	Harish Patil
	1MS18IS040	Jaigansheelan B Sakar
	1MS18IS414	Srinivas Yadav
Mentor Name	Mr. Karthik V	
ABSTRACT		
<p>This project “Human Activity Recognition using deep learning” is a broad field of study concerned with identifying the specific movement or action of a person based on videos data. . HAR using smart home sensor is based on computing in smart environment, and intelligent surveillance system conducts intensive research on peripheral support life. Human Activity Recognition provides valuable contextual information for wellbeing, healthcare, and sport applications. Over the past decades, many machine learning approaches have been proposed to identify activities from inertial sensor data for specific applications. Most methods, however, are designed for offline processing rather than processing on the sensor node Here We are using Deep Learning Algorithms to learn higher-order features from the videos frame by frame in specific manner. The recognition of Human activities using real - time videos recorded from YouTube. The methodology used is Long-term Recurrent Convolutional Network.</p>		

COVID-19 Detection using Chest X-RAYS		
SL.NO	USN NO.	NAME
12	1MS18IS053	Mohankumar K
	1MS18IS054	Nagaraj U
	1MS18IS060	Nitin C Kallappa
	1MS18IS064	Pavankumar K R
Mentor Name	Dr. Krishnaraj P M	
ABSTRACT		
<p>This project is developed by considering the difficulties faced by the Health and Medical Staffs in recognizing the virus. COVID-19 is a severe disease where a large number of people lose their lives on a daily basis. A clinical study of Covid-19 infected patients has shown that these types of patients are mostly infected from a lung infection after coming in contact with this disease. Chest x-ray (i.e., radiography) and chest CT are a more effective imaging technique for diagnosing lunge related problems. Still, a substantial chest x-ray is a lower cost process in comparison to chest CT. Suggested COVID-19 prediction method can improve the diagnosis accuracy and decrease the miss diagnosis error when integrated some supervised and unsupervised machine learning and deep learning techniques.</p>		

Kubernetes Deployment Manager and Autoscaler		
SL.NO	USN NO.	NAME
13	1MS18IS096	Shree Vidya
	1MS18IS097	Shreesha V S
	1MS18IS100	Shrirama A S
	1MS18IS113	Syed Ather Hussain
Mentor Name	Mr. Suresh Kumar K R	
ABSTRACT		
<p>Cloud computing has been developing in a rapid form. 'Pay for what you use' being the major advantage of cloud computing, it is one of the major concerns to use the resources only when needed efficiently. 'When we think of alternatives for service deployment in the cloud, Kubernetes is one of the best options these days. Hence, efficient use of cloud resources plays an important role. The choice of an auto-scaler for Kubernetes can significantly affect both resource consumption and QoS in cloud applications. The in-built Horizontal Pod Autoscaler (HPA) does not behave efficiently in case of abrupt change in the number of requests. We intent to improve the existing horizontal pod autoscaler so that it behaves as required during bursty traffic conditions and also aim to build a SaaS tool which encapsulates the Kubernetes software which increases the functionalities of existing, automates the repetitive deployment processes with an improved auto scaling algorithm and overall improves the usage experience.</p>		

Indian Food Image Classification with Transfer Learning		
SL.NO	USN NO.	NAME
14	1MS19IS408	Sanjana S R
	1MS19IS409	Sham H
	1MS19IS411	Sudeep Chavan
	1MS18IS407	Mamatha M
Mentor Name	Dr. Naresh E	
ABSTRACT		
<p>This project proposes a food recognition system that uses a convolution neural network as a base model for image prediction and then returns nutrition facts such as calories in the given single food image. Knowing the nutrition content of the food that we are consuming helps in maintaining a balanced diet. Our work is organized in two parts. First, we trained and optimized a CNN, state- of-art model using TensorFlow 2.0, we are using CNN as the convolution layers are tweakable and easy to implement. Second, we adapt our model with GUI features as well as nutrition analysis. We also created an extension of FOOD-101 dataset by adding typical Indian food categories. Our model performed extremely well with a mean accuracy of 85% in both normal FOOD-101 dataset and in the extended version</p>		

Fake News Detection		
SL.NO	USN NO.	NAME
15	1MS18IS010	Akul Shivakumar
	1MS18IS033	Guru Prasanna Ramesh
	1MS18IS042	K Jayaram
Mentor Name	Mr. Siddesh G M	
ABSTRACT		
<p>In the present digital era information is easily available to everyone in the public domain with a single click. Along with this comes the ability to sway the public opinion. While this can be beneficial, there also lies the risk of fake news which could spread like wildfire. The consequences of this can range from following unscientific medications suggested on WhatsApp to mob lynching and riots. Furthermore, social media platforms are losing their credibility due the surge in fake news. Hence it is the need of the hour to identify and regulate the spread of fake news, especially in a diverse and developing country like India where several religions and communities coexist together. It is with this motivation in mind that we have undertaken this project to detect fake news. The relevance is magnified in the face of the current pandemic where false remedies and articles are being circulated. We are attempting to detect fake news using a CNN model and improve the efficiency using the BERT model. We believe that this model will yield better accuracy as compared to the previous implementations which include deploying NLP, Naïve Bayes etc. An added feature to this model is that it can be incorporated into social media platforms and blogs to ensure credibility of the information being posted.</p>		

Placement Management System		
SL.NO	USN NO.	NAME
16	1MS19IS400	Chandana M
	1MS19IS401	Chethan M
	1MS19IS402	Ekantha Aishwarya S
	1MS19IS404	Ganesha N Hotti
Mentor Name	Mr. Shashidhara H S	
ABSTRACT		
<p>A web-based system Is developed on the basis of storing and retrieving the information of students and companies who are registered in the system. The system maintains a large database of students with all the information of students including the personal records and the academic performance. The company information including profile of the company, eligibility criteria and facilities it provides etc. The system retrieves the data and displays as per user requirement. It has a user-friendly interface having quick authenticated access. It provides the facility of maintaining the details of the students.</p>		

Smart Traffic Management with Emergency vehicle Detection

SL.NO	USN NO.	NAME
17	1MS18IS023	Basavaprasad S Nagur
	1MS18IS038	Hritesh G Raju
	1MS18IS041	K B Naveen
	1MS18IS056	Nagraj Bidap
Mentor Name	Mr. Siddesh G M	

ABSTRACT

The problem of urban traffic congestion is constantly spreading. The increase in traffic is due to the growing number of vehicles and the limited expansion of roads. We propose a system for reducing traffic congestion using image processing by detecting blobs and tracking them. The system will detect vehicles through images instead of using electronic sensors embedded in the pavement. We also plan to provide a suitable solution for emergency vehicles stuck in traffic to clear the route by using Image Processing and Machine Learning Algorithms.

Text Encryption using Steganography Techniques

SL.NO	USN NO.	NAME
18	1MS18IS131	Yatharth Nyati
	1MS18IS037	Sourabh Chaudhary
	1MS18IS059	Sayam Pokharel
	1MS18IS063	Shreyansh Jain
Mentor Name	Ms. Savitha K Shetty	

ABSTRACT

Steganography is the technique of hiding secret data within an ordinary, non-secret, file or message in order to avoid detection; the secret data is then extracted at its destination. This can be achieved by hiding data in 4 ways - text, audio, video, image. The scope of the project is to limit unauthorized access and provide better security during message transmission. Steganography transmits secrets through images in an effort to conceal the existence of a secret. Proposing an approach for hiding the data within an image using a steganographic algorithm which provides better accuracy and quality of hiding. This project introduces a novel steganographic approach for communication between two hosts. The approach introduced in this project makes use of both steganographic as well as cryptographic techniques. We aim to propose a new algorithm which is an extension to the LSB algorithm, to secure our message more safely. As the message has been encrypted in the form of a picture so that it is more secure from the hacker.

Voice Based Email for Visually Disabled		
SL.NO	USN NO.	NAME
19	1MS18IS087	Samarth Ranjan Ray
	1MS18IS093	Shivansh Kumar
	1MS18IS102	Shubh Pathak
	1MS18IS077	Rithik Agarwal
Mentor Name	Dr. Krishna Raj P M	
ABSTRACT		
<p>Internet has become one of the basic amenities for day-to-day living. Every human being is widely accessing knowledge and information through the internet. The visually challenged people find it very difficult to utilize this technology because of the fact that using them requires visual perception. However not all people can use the internet. This is because in order to access the internet you would need to know what is written on the screen. If that is not visible it is of no use. We describe the Voice based email system architecture that can be used by a visually disabled person to access emails easily and efficiently. The contribution made by this research has enabled the visually disabled people to send and receive voice-based email messages in their native language with the help of a computer or any other electronic device. We will be using Python, Google text to speech converter, Speech recognizer in accordance to meet our goal and turning our vision into reality.</p>		

Optimized supply chain management system		
SL.NO	USN NO.	NAME
20	1MS18IS022	B Sai Sumanth
	1MS18IS121	Vaishnavi S
	1MS18IS006	Abhinav Koul
	1MS18IS115	Tanishq Soni
Mentor Name	Dr. Sumana M	
ABSTRACT		
<p>Supply chain management is a huge network and so many factors need to be seen before ordering and selling. This project aims to forecast the demand for any product and optimize the supply chain in order to meet that forecasted demand in the most cost effective way. This project aims to create a common platform where any business can come online and become a part of the global supply chain system. Another significant aspect of this project includes demand forecasting. By predicting the demand and supply, businesses can understand the market requirements and hence can make effective strategies needed to advance their business. The project will bring different aspects of supply chain management under one roof. The centralized system will make it very easy to attain stability and maintain the overall supply chain. In addition to this, this system also aims to reduce the cost involved in the process by optimizing the transportation costs, removing redundant middle-men and proper analysis of demand and supply. By also making the routing optimized, it helps save a lot of time and energy spent in comparing a number of options which are available.</p>		

Attendance Manager with Modern Facial Recognition

SL.NO	USN NO.	NAME
21	1MS18IS078	Rithik Singhai
	1MS18IS083	Rudraksh Sisodhiya
	1MS19IS406	Ranganath S
Mentor Name	Mr. Naresh E	
ABSTRACT		

Companies and Educational institutes provide their employees/students with products like laptops, accessories and many other gadgets so that they are well equipped to complete their given tasks. Such institutes expect their members to avoid personal use or misuse of these devices. So how will they monitor or keep track of their devices? The existing technology takes care of it by providing the enterprise model devices which provide us with enterprise-grade security, physical security, Biometric security, Drive recovery, and VPN services. VPN services are responsible for tracking, monitoring and alerting the respective institutes if the institute's devices are being misused. So, the problem are we facing today? In today's market, these enterprise devices and their software cost are 40-50% higher than other devices with the same specifications. So small start-ups or small educational institutes that do not require these enterprise-grade securities are not able to afford and make use of such technology.

Hate Speech Detection and Moderation

SL.NO	USN NO.	NAME
22	1MS18IS080	Rohith kumar singh
	1MS16IS081	Sachin Bhardwaj
	1MS17IS049	Hrithik Rishi
Mentor Name	Dr. Sanjay H A	
ABSTRACT		

As Social media penetration increases in our day-to-day life so does the growth of hate speech. After 2016 due to low affordability of the internet many users are on board the internet which not only increased social media interactions but also growth of hate speech; be it religion phobia, homo phobia, gender, toxicity etc. To control hate speech, we are proposing a NLP based machine learning model which uses binarized naive bayes to calculate maximum likelihood of words for labels and train the model with logistic regression. which helps us to classify hate speech and moderate accordingly.

Real Time Crypto Price Prediction		
SL.NO	USN NO.	NAME
23	1MS18IS094	Shloka Gridharan Vidi
	1MS18IS095	Shloka Prem Nair
Mentor Name	Ms. Rajeshwari S B	
ABSTRACT		
<p>The aim of this project is to create an application to perform real time predictions of cryptocurrency prices using machine learning and Kafka. Cryptocurrency is important because transactions are fast, digital, secure and worldwide, which in essence allow the maintenance of records without risk of data being pirated. Fraud is actually minimized. Apart from beneficial factors of predicting their prices like better monetary decisions, this project helps to get a better understanding of how real-time applications work with huge volumes of real time data and performs prediction using techniques like Kafka and machine learning. The main objective is to forecast the current market trends and predict cryptocurrency prices accurately. This project aim is to build a LSTM model and combine it with other models to obtain an optimum prediction result. Project scope also includes adding multiple parameters to improve accuracy of the application and better architectural design and model performance.</p>		

Plant Disease Detection: A Machine Learning Model For Sustainable farming		
SL.NO	USN NO.	NAME
24	1MS18IS133	Lakshya Aditi Sinha
	1MS18IS086	Sainya Goyal
	1MS18IS109	Sukanya Singh
	1MS18IS114	Talmiz Ahmed
Mentor Name	Mrs. Ashwitha A	
ABSTRACT		
<p>India is an agricultural country. But it is highly affected every year due to an increase in plant diseases. To prevent disease spread and promote effective management techniques, it is critical to monitor plant health and discover infections early. Primary approach for identification of disease is manual (visual) identification by agronomists and experts which is costly, time consuming and less accurate. For effective plant disease detection CNN and deep learning are widely used. The objective of this project is to accurately distinguish between healthy and infected plants, and classify the disease causing the infection. This would minimize the economic and yield losses, enhance food quality and reduce pesticide residues. We planned to create such an effective detection technique using the Convolution Autoencoder instead of a simple Convolutional Neural Network.</p>		

Face Recognition using Deep Neural Network with Liveness net

SL.NO	USN NO.	NAME
25	1MS18IS132	Akshata R
	1MS18IS027	Chaya
	1MS18IS082	S Florence
	1MS18IS088	Santina Puja F A
Mentor Name	Ms. Prathima M N	

ABSTRACT

People are increasingly relying upon technology for the completion of their daily tasks. As the usage of smart devices increases, there is a need for securing these devices against people with malicious intentions. The threat to security is high and the consequences are dire if unauthorized access is gained to such systems. Personal data, organizational sensitive information, and high risk information is not secured in such systems. Hence, properly securing these systems is essential. Face verification has become the most popular method employed for this task; however, it is vulnerable to diverse spoofing attacks. Face liveness detection, which is also referred to as face spoofing detection, has been devised to defend against spoofing attack. The emergence of machine learning, deep learning, and computer vision tools have made face liveness detection efficient and feasible for general purpose use. So, we propose a model to detect a real face in front of a camera and authorize the human being present by integrating the face recognition and Liveness algorithms.

Pharmaceutical Supply Chain on Blockchain

SL.NO	USN NO.	NAME
26	1MS18IS007	Aditya Upadhya
	1MS18IS046	Kushal Chukanatti
	1MS18IS049	M S Dharanikumari
	1MS18IS072	Ranganath R N
Mentor Name	Ms. Prathima M N	

ABSTRACT

The Pharmaceutical Supply Chain currently being in implementation suffers from lack of transparency, pharmaceutical fraud (counterfeit drugs), and non patient centric chain. Blockchain has emerged as a promising technology for a traceability system in industry, consider it an open-permissioned-distributed-ledger that all parties in the ecosystem have controlled access to. Using the capabilities of blockchain we have built a secure, easy to access and decentralized supply chain to deliver pharmaceutical products/drugs from manufacturer to the client prioritizing the originality of product. As a result every individual involved in the supply chain is able to look at the product state, health at each point of contact and confirm the originality of the drug. The solution makes the chain a transparent and easy to detect faults in case if any.

Detection and Classification of Lung Diseases		
SL.NO	USN NO.	NAME
27	1MS18IS011	Amisha Sarika Naidu
	1MS18IS014	Anjali Kumari
	1MS18IS024	C H Sravanti
	1MS18IS032	Gayathri P
Mentor Name	Ms. Shruthi G	
ABSTRACT		
<p>Many people in the world suffer from various types of lung diseases. India tops the world in death due to lung diseases. Detecting and classifying lung diseases is one of the most challenging thing in the medical field. Lung diseases include chronic obstructive pulmonary disease, pneumonia, asthma, tuberculosis, fibrosis, etc. Timely diagnosis of such lung infections is essential. The purpose of this project is to identify the different lung diseases using chest X-ray images. The domain of this project is mainly for diagnostic purposes with respect to lungs. Classifying the chest X-ray abnormalities is considered as a tedious task for radiologists; hence, we have tried to use many different types of imaging and machine learning algorithms to accurately perform this task. Different forms of existing deep learning techniques including ResNet50, VGG16 and transfer learning are applied for lung disease prediction. Our Project demonstrates diagnosis of around 10-14 different types of lung diseases with the help of chest X-ray images. This greatly helps in reducing the time taken by the medical practitioner to identify the disease, and hence the treatment for the identify disease can be done immediately, saving the patient's life without any delay.</p>		

Accident severity detection and prediction using machine learning techniques		
SL.NO	USN NO.	NAME
28	1MS18IS008	Akarsh H Simha
	1MS18IS044	K P Parthiv Prasad
Mentor Name	Dr. Rudresh Deepak Shirwaikar	
ABSTRACT		
<p>The problem of deaths and injuries as a result of accidents is acknowledged to be a global phenomenon and traffic safety has been a serious concern since the start of the automobile age. Data analysis with machine learning can help identify the major causes and help the transport authorities in improving safety requirements. Through this project we can understand how the driver's behavior, roadway and weather conditions are connected with different injury severities. This can help decision makers to formulate better traffic safety control policies, label roads with necessary signs informing drivers and pedestrians of accident risks, and design better roads.</p>		

A Machine learning approach for Crop Yield Prediction In the Precision Agriculture

SL.NO	USN NO.	NAME
29	1MS18IS015	Anusha Ashok Deshmukh
	1MS18IS016	Anushka Srivatsa
	1MS18IS018	Arpith Monteiro
	1MS18IS026	Chaitanya N Gajakosh
Mentor Name	Ms. Ashwitha A	

ABSTRACT

Agriculture is the pillar of the Indian economy. Agriculture, with its related and connected sectors, is undoubtedly the largest livelihood provider in India, more so in the vast rural areas. It also contributes a significant figure of about 17 to 18 percent to India's Gross Domestic Product (GDP). Variations in environmental conditions became a serious priority for the healthy existence of agriculture. Machine learning is one amongst the important tools for Crop Yield Prediction, this helps farmers to know what crops to grow and what to do during various seasons. Crop yield estimation is done using factors like type of crop, region, season and also provides analysis in terms of their accuracy using various machine learning techniques like SVM, Random Forest, KNN and others within the field.

Kannada Text Summarization

SL.NO	USN NO.	NAME
30	1MS17IS006	Adita Yadav
	1MS18IS048	M Prathyusha Sagari
	1MS18IS055	Nagashree
	1MS18IS084	Sai Deepshikha Ganesh
Mentor Name	Dr. Yogish H K	

ABSTRACT

Text Summarization is a method of reducing the original text document into a short description. This short version retains the meaning and information content of the original text document. It is a difficult task for human beings to generate the summary for very large documents manually. A concise and good summary can help humans comprehend the text content better in short time. There are around 50 million Kannada speakers and more than 10000 articles in Kannada Wikipedia. This warrants to develop tools that can be used to explore digital information presented in Kannada and other native languages. Based on the previous studies text summarization can be broadly classified into two different categories. Extractive Text Summarization (ETS) and Abstractive Text Summarization (ATS). Even though more works are carried out using extractive method, meaningful summary can be attained using abstractive summary techniques which is more complex. In Indian languages, very few works are carried out in the field of abstractive summarization and there is a high need for having research works in this area. The aim of the project is to generate one line summary for Kannada text document using abstractive method.

Malware Detection in Smart Device Applications		
SL.NO	USN NO.	NAME
31	1MS18IS105	Stuti Prasad
	1MS18IS047	Kushal Garg
Mentor Name	Dr. Mydhili K Nair	
ABSTRACT		
<p>In 2008, when Android was launched, it eased the path of accessibility for people across the globe to connect via smart technologies. It holds 71.7% share of the Global Mobile OS Market. This enables black hat hackers to target an enormous amount of devices by developing malware for a single operating system, This brings about an urgent need to research and develop techniques to counter these malwares. Our project focuses on detection of malignant applications, which are being loaded onto our smart devices, by analysing various factors and similarity curves between such applications. The proposed model includes an optimal combination set of static and dynamic features alongside neural network techniques to reduce computation time and increase efficiency. The model is also selected such that the size of data set can be kept at a minimum.</p>		

DECENELOR: Decentralised Ride Sharing Application		
SL.NO	USN NO.	NAME
32	1MS18IS005	Abhay Bhardwaj
	1MS28IS019	Arya Kumari
	1MS18IS020	Asmita Gauri
	1MS18IS136	Arjun Dogra
Mentor Name	Dr. Sumana Maradithaya	
ABSTRACT		
<p>The idea is inspired by how giants such as Uber and OLA have centralised all common transactions between the drivers and passengers. These "giants" collect about 25-30% of the total amount of money the passenger pays to the driver. DECENOLAR aims at removing the middlemen (Uber and OLA) and decentralising the whole process of common ride sharing platforms. This idea solves the problems that many corporate giants fail to address. The solution decentralises this service with trust-less "smart contracts" and eliminating the middleman, and the fees that come along with them. Also, users will be allowed to operate a ride sharing program similar to the likes of Uber or OLA, but quite simply, in the most efficient way possible. The solution is a "Dapp", or decentralised application, that utilises trust-less smart contracts in order to act as the intermediary for Ride Sharing. One can think of it as an automated peer managed version of Uber. Because of this, the projected costs for Rides have virtually a Rs. 0 middleman fee. This is revolutionary in the sense that disputes can be sorted out and legal liability is moved away from the Gig Workers, into trust-less smart contracts.</p>		

Remote Setup of Version Control using the Interplanetary File System and Blockchain

SL.NO	USN NO.	NAME
33	1MS17IS130	Vignesh Govind
	1MS18IS002	Aaryan Agarwal
	1MS18IS004	Abdul Muyiz Khazi
	1MS18IS013	Amrutheshwar O
Mentor Name	Dr. Yogish H K	

ABSTRACT

Most version control software are built to facilitate remote repositories over a centralised cloud network. Remote setups by providers like Github and Bitbucket are centralized and they can be prone to problems like server availability, data integrity, etc. Hence it is imperative to have a system of version control which facilitates remote setup on a decentralised network. We want to develop a version control system in which new versions can be pushed to the remote in the Interplanetary File System and track the version using the block chain. The techstack would consist of a website with React on the front end and the Ethereum network (and its smart contract) and IPFS on the backend. Metamask can also be used to uniquely authenticate users to avoid unauthorised access. The outcome of this project will allow a user to upload files to IPFS and track its version using the blockchain. The user can also download files of the version he desires using the same system.

Decentralized Finance (DeFi) Web Application

SL.NO	USN NO.	NAME
34	1MS18IS099	Shreyas J S
	1MS18IS110	Sumair Rajvansha
	1MS18IS112	Sumukha G C
	1MS18IS129	Yashvanth Babu
Mentor Name	Dr. Megha P Arakeri	

ABSTRACT

Decentralized finance (DeFi) is a blockchain-based financial infrastructure that has recently gained a lot of popularity. DeFi offers a promising financial architecture that prioritizes disintermediation and decentralization to empower an individual or a system. The term Decentralized generally refers to an open, permissionless, and highly interoperable protocol stack built on public platforms, such as the Ethereum blockchain. DeFi not only ensures robust and error free and secure transactions but also ability of nodes to verify each and every transactions recorded on blockchain network. Industry reports suggest global algorithmic trading market size is expected to grow from \$11.1 bn in 2019 to \$18.8 bn by 2024.

Fake News Detection in Social Media Networks		
SL.NO	USN NO.	NAME
35	1MS18IS124	Vijaya Madhuri T A
	1MS19IS410	Shobha D
	1MS19IS403	G Prakash
Mentor Name	Dr. S R Mani Sekhar	
ABSTRACT		
<p>The phenomenon of fake news is experiencing a rapid and growing progress with the evolution of various means of communication and social media. Fake news detection is an emerging research area which is gaining big interest. In this work, we proposed a computational technique for Fake news detection. They are used for extracting data from social media platforms. The extracted data are preprocessed and analysed using NLP techniques. The proposed model is further validated using statistical measures.</p>		

Intrusion Detection System with packet sniffing assistance		
SL.NO	USN NO.	NAME
36	1MS18IS107	Suhail Ansari
	1MS18IS125	Vinay
	1MS18IS127	Waqgas Akhter
	1MS18IS130	Yashvardhan Pandey
Mentor Name	Dr. Pushpalatha M N	
ABSTRACT		
<p>The world has witnessed the excessive growth of internet penetration rate due to which packet sniffers are extensively used for monitoring the network. Packet sniffing is a method of tapping each packet as it flows across the network. It is a technique in which a user sniffs data belonging to other users of the network. It is effective on both switched networks and non-switched networks. Packet sniffers can operate as an administrative tool or for malicious purposes. It is a technique in which a user sniffs data belonging to other network users. The design and Implementation of a Sniffer system will be to monitor and track packets traveling on the network. The system will also support an IDS for the detection of any malicious activities. The primary purpose of this project is to simplify the work of a network administrator.</p>		

Emotion Detection Using Human Speech		
SL.NO	USN NO.	NAME
37	1MS18IS012	Amitesh Kumar Singh
	1MS18IS058	Nikhil Dubey
	1MS18IS061	Parag Roy
	1MS18IS070	Rahul Singh
Mentor Name	Ms. Shruthi G	
ABSTRACT		
<p>Emotion recognition is one of the many speech recognition technologies that have developed and grown through the years. The idea is to use an end-to-end network that takes raw data as an input and generates a class label as an output. This allows authorities to detect the emotions of a person with just the use of technology. In this paper, basic emotions (Anger, Happy, Fear, Sad, etc.) are analyzed from emotional speech signals. Two databases, RAVDESS and SAVEE audio Databases are used to cross-validate the results. Features extraction is done using LibROSA library in python to help the model learn between these audio files. Convolution Neural Network is used to build the model. The idea is to always start small without adding too many layers just for the sake of making it complex. After testing out with layers, the model which gave the max validation accuracy against test data was little more than 70%. Building the model was a challenging task as it involved a lot of trial-and-error methods, tuning etc. The model is very well trained to distinguish between male and female voices and it distinguishes with 100% accuracy. The model was tuned to detect emotions with more than 70% accuracy. Accuracy can be increased by including more audio files for training.</p>		

Abstractive Text Summarization for Hindi Language		
SL.NO	USN NO.	NAME
38	1MS18IS068	Prateek Singh
	1MS18IS071	Ram Nandwani
Mentor Name	Ms. Rajeshwari SB	
ABSTRACT		
<p>Today in the era of Big Data, textual data is rapidly growing. Hence, the need for text summarization is being in the spotlight. Text summarization is the technique which compresses a large text to a shorter text which includes the important information. This is done by reducing redundancy of the text and by extracting the essence of the text. The output of summary can be of two types Extractive summaries and abstractive summaries. Extractive summaries are produced by extracting the whole sentences from the source text. The importance of sentences is determined based on statistical and linguistic features of sentences. Abstractive summaries are produced by reformulating sentences of the source text. An Abstractive summarizer understands the main concepts in a document and then convey those concepts in clear natural language. Several text summarization techniques have been proposed in past years for English and various European languages but there are very few techniques that can be found for native languages of India.</p>		

Attendance Manager with Modern Facial Recognition		
SL.NO	USN NO.	NAME
39	1MS18IS009	Akshat Shrimali
	1MS18IS037	Harshil Wadhwani
	1MS18IS059	Nilesh Prasad
	1MS18IS063	Saumya Patel
Mentor Name	Dr. Lincy Meera Mathews	
ABSTRACT		
<p>Authentication is a significant issue in system control in computer-based communication. The project describes a method for Student's Attendance System which will integrate with the face recognition technology. The system will record the attendance of the students in class-room environment automatically and it will provide the facilities to the faculty to access the information of the students easily by maintaining a log for clock-in and clock-out time. The image is encoded to obtain a simplified version of the image through the HOG Algorithm. Then the pose of the face is found by finding the main landmarks and the image is warped so that the eyes and mouth are centered. The centralized face image is then passed through a neural network that measures 128 features(metrics) of the face. A classification algorithm is used to compare the features of an image that has the closest measurements to the test face. The accuracy indicates the assurity of similarity against the existing database. The result of the classifier is the name of the person. The algorithm keeps tweaking the neural network so that it makes sure that there is a difference between the increasing number of images.</p>		

NeuroHealth Hub (Stroke and Brain Tumor Prediction Model)		
SL.NO	USN NO.	NAME
40	1MS18IS031	Gaurav Kumar
	1MS18IS036	Harsh Mishra
	1MS18IS062	Parth Vyas
	1MS18IS066	Prateek Kumar
Mentor Name	Mr. Suresh Kumar K R	
ABSTRACT		
<p>Nearly 2,400,000 people in the world suffer from a stroke each year, with about three in four being first-time strokes. 80% of the time these strokes can be prevented, so putting in place proper education on the signs of stroke is very important. This year, an estimated 250,000 adults in the World will be diagnosed with primary cancerous tumors of the brain. In this era of technology, every field is trying to automate itself through techniques such as Deep learning and machine learning. Our goal in this project would be to implement these techniques in the field of brain health. If health care could be automated, we can save lives by monitoring high risk groups and giving immediate medical attention. The Objective is to construct a prediction model for predicting brain health issues and to assess the accuracy of the model. The model proposed is simple, efficient and doesn't consume much time.</p>		

College Enquiry Chatbot		
SL.NO	USN NO.	NAME
41	1MS18IS067	Prateek Singh
	1MS18IS075	Rishabh Agarwal
	1MS18IS073	Ranjan Kumar
	1MS18IS092	Shivang Arya
Mentor Name	Ms. Evangenline Joseph	
ABSTRACT		
<p>This project "College Enquiry Chatbot" AI and web-based interactive College Enquiry Chatbot is a straightforward web application that aims to supply knowledge regarding college. The chatbot created here may be a web-based application that uses tongue Processing Libraries and AI terminology to possess conversations with humans. The College Enquiry Chatbot will engage in friendly conversations, respond to the course and college information, provide a link to the tutorial calendar, and answer frequently asked questions, among other things. This project is specialized in creating a chatbot to be employed by students to urge their queries responded to easily from the college website</p>		

Multilingual Text to Image Synthesis		
SL.NO	USN NO.	NAME
42	1MS18IS021	Aston Glen Noronha
	1MS18IS050	Madhura J Shet
	1MS18IS051	Meghna Nair
	1MS18IS101	Shruthi Iyer
Mentor Name	Dr. Pushpalatha M N	
ABSTRACT		
<p>In today's world, it is almost impossible to find a picture for every scenario. A mental image can be described in detail but to find a picture with these exact details is hard. Text description for an image is highly subjective and diverse in terms of content and choice of words. Images have a universal meaning and the information a person is trying to convey can be deciphered easily using pictures and can be understood by even illiterate people. People who are unable to read a text can be aided with pictures explaining the text, making communication easier. The emergence of deep learning and Machine learning has made this possible. In this project a framework is proposed to formulate image generation conditioned on the text input. Converting regional language text descriptions into images using Long Short Term Memory (LSTM) and Deep Convolutional Generative Adversarial Network(DCGAN).</p>		

Campus Placement Analysis Using Machine Learning

SL.NO	USN NO.	NAME
43	1MS18IS076	Rishi Magavi
	1MS18IS069	Prithvi Sagar
	1MS16IS400	Abhid Rehaman
Mentor Name	Ms. Savitha K S	

ABSTRACT

On the campus of a degree college, placement plays a vital role for students and the institution. Students most likely look at the placement data of an institution before deciding to join the same. All students aspire to be placed in their dream company, but not all students know the steps to take to get that done. The data set used is of the previous year's placement information. Machine learning concepts of classification algorithm and random forest are used to build the model, and the web development tool React.js is used to develop the interface on which the results would be displayed. This project analyses parameters and discovers trends that can help a student's chance of getting a suitable job. Students get selected based on company criteria such as education history, CGPA, and extra-curricular activities. After that, students have to clear the aptitude, technical and personal interview to get the job. Previous year placement data is analyzed and inferences are drawn based on the result, to identify the likeliness of a student being placed into a specific company.

Virtual Reality Based Immersive Motor Rehabilitation For Stroke Patients

SL.NO	USN NO.	NAME
44	1MS18IS003	Aashish G Borkar
	1MS18IS030	Dinesh Bhathad
	1MS17IS085	Radha Goenka
Mentor Name	Mr. Prashant Kambli	

ABSTRACT

Patients affected by Stroke undergo physiotherapy, psychological counselling and other rehabilitations for treatments. The project's goal is to provide a virtual experience that can provide affected demographics with a similar or better rehabilitative training experience. After suffering a stroke, patients generally lose the strength, mobility of their limbs. A great deal of the world's industries are moving towards virtualization. This birthed the idea for a solution which would not only help patients but also be more accessible and affordable. This will also allow for activities that are dangerous in real life to be carried out in VR such as crossing a road. One of the tasks involves the patient tracing the movement of the rehabilitator's finger using his/her own index finger, this task is much more convenient when in Virtual Reality. Other tasks involve stacking boxes, peg boards, wrist curls, TUG test, drawing circles etc. Through this project we should be able to achieve convenience over traditional methods. A change in mobility must be quantified, with a delta measured against baselines indicating progress. It should be easily accessible and cost effective.

Smart City		
SL.NO	USN NO.	NAME
45	1MS17IS129	Vedant Aryan
	1MS15IS096	Sachin S Rathod
	1MS17IS132	Vikhil R
Mentor Name	Dr. Lincy Meera Mathews	
ABSTRACT		
<p>SMART CITY project in Laravel is a website specially designed for the city. The website is designed in LARAVEL Framework. The objective and scope of Project Smart City is to make an online City. It will simplify the task and reduce the paperwork. The primary purpose of Smart City is to make everything online like schools, hospitals, banks etc. You can register through the website and see the view of Smart City. It increases the effectiveness of the service provided to the visitors by reducing the process time. In this project, CSS, HTML, BOOTSTRAP is used to mainly design the front end of the project and the back end is implemented on SQL Server. SQL Server software is used to design the back end mainly because we can create relational database systems easily; using SQL Server software, provide a good graphical user interface to the user of the system. SQL Server software is used to design the back end mainly because relational database system can be created easily; using SQL Server software, provide a good graphical user interface to the user of the system.</p>		

DEPARTMENT OF **ELECTRONICS AND INSTRUMENTATION ENGINEERING**



Project
Abstracts

2021 - 2022

Detection of Parkinson's Disease with the Analysis of Motor Skills

SL.NO	USN NO.	NAME
1	1MS18EI009	Anweshaa Baruah
	1MS18EI041	Sahil Roy
	1MS18EI044	Sanshrit Bakshi
Mentor Name	Ms. Elavaar Kuzhali S	

ABSTRACT

More than 10 million people worldwide are living with Parkinson's disease (PD). It is a brain disorder that leads to shaking, stiffness, and difficulty with walking, balance, and coordination. Parkinson's symptoms usually begin in middle or late life, and the risks increase with age. As the disease progresses, people may develop difficulties in performing day to day tasks and experience a loss in their neurological functions and capabilities. Currently, there exists no specific test to diagnose PD. A neurologist diagnoses the disease based on one's medical history, a review of signs and symptoms, and a neurological and physical examination. It is an expensive and tedious process to diagnose the disease. Current detection techniques don't have the replicability and greater accuracy that is needed for the detection of subtle motor differences and for the diagnosis of parkinsonism. To address these difficulties and to refine the diagnosis and assessment procedures of PD, machine learning methods shall be implemented for the PD detection by analyzing motor abilities. This solution would be feasible and affordable and would aim at achieving high accuracy since it's based on research of the most common and recurring symptoms in Parkinson's patients, namely, speech, walking, typing and ocular disabilities.

Automatic Solar Panel Cleaning Robots

SL.NO	USN NO.	NAME
2	1MS18EI006	Ankit Ahuja
	1MS18EI005	Anindo Tarafdar
	1MS17EI014	Esha
	1MS18EI051	Shubham Gupta
Mentor Name	Ms. J V Alamelu	

ABSTRACT

Solar energy is one of the most important renewable energy in the world right now with huge potential. Installation of these solar tiles to generate electricity is in itself a huge investment and a very complicated thing. The biggest problems in solar energy generation is working on solar panel efficiency, maximum energy extraction from the sun, control and power electronics. The energy is extracted through the use of solar panels. To keep extracting the maximum energy the condition of the solar panels play major role. Physical conditions like muddy rain, dust storms, etc decrease the energy extracting capacity of the panels. So keeping the surface clean all time is of utmost importance. So we are trying to develop dual motor crawler robot. It moves horizontally and cleaning brushes runs on the vertical axis.

Voice Controlled Wheelchair		
SL.NO	USN NO.	NAME
3	1MS18EI010	Arun Rajasekharan
	1MS18EI037	Rishika Mahajan
	1MS18EI038	Ritesh Sharma
	1MS18EI043	Samraddhi Joshi
Mentor Name	Dr. A Saravanan	
ABSTRACT		

Wheel chair is one of the most used mechanical devices in the world, used by aged or physically challenged people. But for using this, user needs a self-assistance by hand to move. Statistics reveals that 15% of world population which is about 0.655 billion people are suffering from different sort of physical disability. Joystick controlled wheelchair are widely used throughout the world. But the difficulty is that handicapped people having issues with finger movement are unable to control the joystick since it needs hand control. As the voice is the most common mode of communication, the proposed system aims to design a voice-controlled wheel chair. It enables the disabled people who can't move their hands and legs to move around independently using the voice recognition application which is interfaced with motors to make the movement as easy as possible. Arduino microcontroller and speaker dependent voice recognition processor have been used to support the navigation of the wheel chair. The objective of this project is to make wheelchair moving forward, backward, Left & Right with the help of voice commands. It enables the wheelchair to take left and right turns at certain standard angles. The wheelchair is also fitted with ultrasonic sensor to achieve some independent mobility when any obstacle is there in front of wheelchair.

Implementation of FHSS And OFDM using GNU Radio and analysis using MATLAB		
SL.NO	USN NO.	NAME
4	1MS18EI046	Shiv Narayan K
	1MS18EI013	Aswathy P K
Mentor Name	Dr. G Shivaprakash	
ABSTRACT		

Communication systems are becoming essential and they are advancing rapidly. The nature of wireless transmitted signals makes them prone to eavesdropping and jamming. The jamming of these signals lead to leaking of sensitive data, posing a threat to the public. Also, the wireless systems are prone to multipath fading which results in loss of data. As a result, the security and dependability of wireless systems are jeopardized. To overcome this, there are two techniques – Frequency Hopping Spread spectrum (FHSS) and Orthogonal Frequency Division Multiplexing (OFDM). The former prevents the transmitted signal from eavesdropping by hopping onto different carrier frequencies. The latter provides robustness against fading. GNU Radio is a software development toolkit to implement and simulate Software Defined Radios. Software Defined Radio approach is used to implement OFDM and FHSS since they offer better prototyping and testing. Using GNU Radio and MATLAB, FHSS and OFDM are implemented and analysed. Various modulation techniques are compared and their bit error rate vs signal to noise ratio is simulated. A comparative analysis is done for different channel models.

Heli-Safe		
SL.NO	USN NO.	NAME
5	1MS18EI018	Justin Miranda
	1MS18EI054	Stitha Raj
	1MS18EI045	Savita Tahashildar
Mentor Name	Dr. Jyothirmayi M	
ABSTRACT		
<p>As the number of two Wheeler's in the country are increasing with the increasing population the risk of death due to accidents of two wheeler are also increasing . Even though there are safety measures people don't tend to follow it. One of the most important safety measure is wearing helmets while riding but people tend to wear it just because they don't wanna get fined by the traffic police. We can avoid this vandalism with HELI-SAFE . This device detects the human head for both the rider and pillion rider; thus, making sure they both wear helmets . The helmet has an infrared thermometer which checks if the temperature is in range of human body temperature and it is also equipped with a flex sensor which measures the pressure of the head. When both these conditions are satisfied, the micro-controller allows the bike to start . When it comes to the pillion rider the bike has pressure sensing seat that detect the presence of human being and would ask the system for two helmets instead of one .This technology uses velostat matrix created using copper strips which is used to pressure-map human buttocks .This way both the riders need to wear helmet for the bike to start and if only one of them is seated then only the rider needs to wear a helmet . With the solution the problem of head injuries which can be fatal can be avoided and also would reduce the workload on the authorities.</p>		

Malaria Detection Kit		
SL.NO	USN NO.	NAME
6	1MS18EI035	Punith Darshan
	1MS18EI057	Sumant Tanwar
	1MS18EI058	Syed M Raheeb
	1MS18EI063	Yashi Mishra
Mentor Name	Dr. K M Vanitha	
ABSTRACT		
<p>Malaria is a very serious infectious disease caused by a peripheral blood parasite of the genus Plasmodium. Conventional microscopy, which is currently “the gold standard” for malaria diagnosis has occasionally proved inefficient since it is time-consuming and results are difficult to reproduce. As it poses a serious global health problem, automation of the evaluation process is of high importance. In this work, an accurate, rapid, and affordable model of malaria diagnosis using stained thin blood smear images will be developed. And using image processing and machine learning techniques we will be able to identify the malarial parasite in the blood smear. For the centrifugal process, we will be developing an easy and affordable mechanical instrument from the inspiration of the spinning top toy called the paperfuge, to separate the plasma from the RBCs in the blood.</p>		

Pulse Rate Detection using Eulerian Video Magnification		
SL.NO	USN NO.	NAME
7	1MS18EI008	Anusha K Prasad
	1MS18EI022	Partha Bharadhwaj
	1MS18EI029	Nitish Bhat
	1MS18EI050	Shreyas R K
Mentor Name	Ms. Elavaar Kuzhali S	
ABSTRACT		
<p>The global pandemic has necessitated an increase in the demand for contactless health monitoring devices. The treatment of contagious diseases puts medical staff at risk of contracting the disease. Contactless vitals measurement is an approach to reduce the exposure time of healthcare workers to infected patients. It is also vital for patients suffering from burns and patients with shaky hands & feet due to various reasons. The Eulerian Video Magnification (EVM) technique helps us take a significant step towards the non-contact measurement of vitals. EVM is a set of simple and robust algorithms that analyses video input to reveal temporal variations which are impossible to observe with the naked eye. This project aims to achieve non-contact measurement of two vitals; pulse rate and body temperature, using a small & portable setup of a processor, an IR temperature sensor and an RGB camera. Here, the EVM framework is implemented to determine the pulse rate on a diverse set of subjects with satisfactory accuracy.</p>		

Implementation of Multi Account ATM Card With Biometric Authentication Using Embedded System		
SL.NO	USN NO.	NAME
8	1MS19EI400	Adithya C
	1MS19EI402	Madhu K H
	1MS17EI041	Rohitha J P
	1MS19EI404	Shwetha A R
Mentor Name	Dr. H S Niranjana Murthy	
ABSTRACT		
<p>Nowadays there is an increase in criminal activities in ATM transactions as the system used today is having access card with PIN to identify verification. So, there is a need for improving the security of ATM transactions. The password PIN which is the main authentication in transactions of money represents the weakest security feature. So, to provide reliable security solution, this work proposes to implement Multi Account ATM Card With Biometric Authentication Using Embedded System. The ATM security system in this project work is focused on design and implementation of biometric authentication which is based on face and fingerprint detection. Also, the Multi Account ATM Card will have the details of different bank accounts of a customer in a single card. The multi account ATM card is of credit card-sized and Arduino board with open-source computer vision software is used for the image processing operation. Thus, the proposed project provides secured transaction of money in ATM machine using a biometric authentication technique.</p>		

Base of Support Estimation for Gait Analysis using CNN

SL.NO	USN NO.	NAME
9	1MS18EI020	Ketan Anand
	1MS18EI019	Kathiresan Senthil
Mentor Name	External Mentor : Prof. Viswanath Talasila Internal Mentor : Dr. M D Nandeesh	

ABSTRACT

Gait rehabilitation is a rapidly advancing field that aims to improve the lives of those with mild to moderate motor impairment. It involves comparing features such as base of support, toe-off and heel strike of those with impaired gait against normative gait. In this project, we propose a convolutional neural network-based system for base of support estimation (BoS). BoS is a vital gait parameter which contains information regarding a person's stance and stability. In those with impaired gait, deranged BoS values serve as a preliminary indicator of the nature of the impairment. Presently, BoS estimation is seldom attempted as an image processing problem and existing techniques to measure BoS are too elaborate and expensive. We put forth a sensing mechanism followed by a deep learning model that attempts to estimate BoS as accurately as possible, serving as a blueprint to medical professionals in the process of gait rehabilitation.

Detection of Fat Content and Adulteration in Milk

SL.NO	USN NO.	NAME
10	1MS18EI011	Arundhati S D
	1MS18EI030	Niveditha M
	1MS18EI033	Priyanka M V
	1MS18EI060	Tejaswini B
Mentor Name	Dr. Christina Grace, Dr. Sampath Chinnam	

ABSTRACT

Milk is a nutrient rich food that is widely consumed by human beings. However, it can be easily adulterated. Some of the common adulterants are detergents, ammonium sulphate, sodium hydroxide, sodium bicarbonate and common salt. These are added to increase the volume and shelf life of milk. Commercial milk packets are categorized based on fat content, with higher fat percentage attracting consumers in various segments. Hence, dairy industries are required to estimate both fat content and the presence of adulterants. In this project, we fabricate a PMMA coated sensor for detection of adulterants, and a Lipase + PMMA coated sensor for fat content determination (Chakraborty et al 2019). The sensor works on detection of phase angle of impedance, which changes based on the presence of adulterants or the percentage of fat content. The change in the phase angle is converted to voltage using phase to voltage converter. The sensor is calibrated by comparing the adulterated milk and pure milk in the microcontroller.

Anxiety Detection using Electro Dermal Activity		
SL.NO	USN NO.	NAME
11	1MS18EI053	Sidharth M
	1MS18EI061	Vijay B
	1MS18EI039	Ritik Khandelwal
	1MS18EI036	Raju
Mentor Name	Dr. M Jyothirmayi	
ABSTRACT		
<p>In the aftermath of Covid-19, many people are facing mental health issues such as stress, depression, and anxiety. These health problems weigh heavily on an individual's performance. Our project helps people in early detection of anxiety. When a person has panic attack, the autonomous nervous system causes the person's sweat pores to open thereby causing a change in the skin resistance. There are two components of Electro Dermal Activity Signal namely Skin Conductance Level (SCL) and Skin Conductance Response (SCR). SCL gives the base resistance of the skin (R) and SCR is the dynamic component, which keeps varying based on our sweat gland activity (ΔR) thereby causing a change in resistance of the skin. The device consists of two pairs of electrodes. One pair is placed in the part of the body where more sweat pores are present and the other is placed where fewer sweat pores are present. These two pairs of electrodes are connected to two arms of the Wheatstone bridge to measure the change in skin resistance and convert it into a voltage signal. The voltage generated by the Wheatstone bridge is too small, so it is amplified using a suitable amplifier. EDA signals have Maximum Power Spectral Density from 0.2 to 0.8Hz. The amplified signal is filtered to remove any noise that comes along with the signal. The analog signals are digitized using 16-bit Sigma-Delta ADC and stored in SD Card. Since both anxiety attack and physical activities can cause an increase in electro dermal activity, the device is integrated with an Inertial Measurement Unit (IMU) to sense physical activities like sports and running and prevents false-positive cases.</p>		

Three-Dimensional LiDAR Point-Cloud based Determination of Hazardous Terrains		
SL.NO	USN NO.	NAME
12	1MS18EI065	Sai Koushik S S
Mentor Name	External Mentor : Ms. K Kalyani Internal Mentor : Dr. Pushpa M K	
ABSTRACT		
<p>The three-dimensional point-cloud obtained from LiDAR time of flight based topographical scan is used to determine landing hazards in terrains. This is very important in the design of autonomous landing systems. The implementation feasibility of all available methods is analysed and suitable method is proposed. The traditionally available method is implemented on FPGA and is analysed from simulations. Additionally, a digital elevation map from the point-cloud is obtained and a suitable convolutional neural network architecture is designed to segment hazardous terrains and obtain the information of landing hazards in the segments of the terrains. A comparison of the traditionally implemented technique and AI based approaches is also made in this project.</p>		

Smart Battery Management System		
SL.NO	USN NO.	NAME
13	1MS18EI021	Kushaal Gaurava
	1MS18EI031	Pavan N
Mentor Name	Dr. K M Vanitha	
ABSTRACT		
<p>With the rapid development of new energy electric vehicles and smart grids, the demand for batteries, in particular Li-ion batteries is increasing. The battery management system (BMS) plays a critical role in the battery-powered energy storage systems in ensuring batteries are reliable, efficient, and capable of delivering power and energy when required, by accurate determination of battery performance, health, and life prediction. Traditional BMSs tend to have an over-equipped or under-equipped feature set and would need careful consideration before investing in a particular application. The idea here is to design a system to accommodate a variety of applications with an effective feature set such as accurate cell monitoring and protection, cell state estimation, telemetry, data logging etc. An additional goal is to also gain insights into building and integrating systems to develop a product.</p>		

Security Measures for Crops and Households using Virtual Fence		
SL.NO	USN NO.	NAME
14	1MS19EI405	Swastik H S
	1MS18EI042	Sai Chandan
	1MS19EI401	Allabhaksha L
	1MS18EI034	Priyanshi Thakur
Mentor Name	Dr. A Saravanan	
ABSTRACT		
<p>India is mainly an agriculture based country. Security of agricultural farm is of utmost importance for protecting the produce. Not being able to make the grown crops to the market is another side of the problem. Introducing machine learning to this problem paves a way to smart agriculture. The proposed system employs Raspberry Pi board to detect any malicious activities or motion in the farm land and triggers the thermal camera to take video of the scene. The captured video is fed into the trained CNN (Convolutional Neural Network) model of deep learning. And after detecting the bird, particular frequency to the corresponding birds is played at little higher frequency, so as to scare away the birds. This prototype consists of PIR sensors as a detector to detect movement from birds and using 555 timer and ultrasound module to generate sound. When intruding creatures are detected, the Bird-Away will be triggered, which will simultaneously emit a flashing strobe light and a continuously variable sound frequency of 17,000 Hz – 24,000 Hz. The unwanted birds intruding the detected area will be scared away by the flashing strobe light plus ultrasonic sounds.</p>		

Hand Gesture Detection and Conversion to Text		
SL.NO	USN NO.	NAME
15	1MS18EI016	Dhanush
	1MS18EI023	Nagesh T S
	1MS18EI025	Nikheel M K
	1MS18EI040	Manoj S
Mentor Name	Ms. J V Alamelu	
ABSTRACT		
<p>Communication is a means of transferring information from one place, person or group to another. Vocal Communication is the manner in which human being interact with others. The main modes of communication are constraint to vocally disabled individuals. For the communication of such individual's various means of communication is suggested, which are called as sign language. It is very difficult for Deaf and mute people to convey their thoughts and ideas with normal people. Most of the people does not know sign language that make it difficult for silent people to communicate with others. The proposed system will recognize American Sign language, convert it into text and display it on a LCD panel. The system is a glove-based device, which will be used for conversion of sign language to speech. The sign language glove consists of a simple hand glove fitted with flex sensors which is being used for the monitoring the amount of bend on the fingers and an accelerometer which is used to detect the acceleration, direction of the wrist. Flex means bend, these sensors change the resistance depending on the amount of bend on the sensor. Data from the sensors is send to the control unit, which is the Arduino UNO. The analog signals from the sensors are digitally converted and given to the machine-learning model to predict the letter. Further, the predicted letter output is transmitted to a display unit. Currently we are working on a simple prototype that will convert the single Alphabets and numeric gesture to text, which further can be extended to convert words.</p>		

Black Box for Vehicles		
SL.NO	USN NO.	NAME
16	1MS18EI026	Nikhilesh Patil
	1MS18EI001	A P Gurusiddesh
	1MS17EI019	Jithin B D
Mentor Name	Dr. H S Niranjana Murthy	
ABSTRACT		
<p>The purpose of this work is to develop a black box for car. The proposed work mainly involves three stages namely acquiring the vehicle parameters from sensors mounted in black box, storing the data and sending the data to cloud. This work involves developing a compact black box for installing in automobile using Arduino Uno, Raspberry pi and sensors. The proposed system uses sensors to acquire vehicle parameters such as temperature, alcohol, vibration and tilt. The data received from the sensors are stored in the SD card mounted on Raspberry Pi controller (RPi) for retrieval after the accident. Also, the system uses sensors such as camera and Global Positioning System (GPS) to collect video and location data respectively. This prototype can be designed with minimum number of circuits to make it cost effective. The Black box can contribute in constructing safer vehicles, quick treatment of crash victims, helping insurance companies with their vehicle crash investigations, and enhancing road safety in order to decrease the death rate.</p>		

IOT Pet Day Care Robot with CNN

SL.NO	USN NO.	NAME
17	1MS18EI004	Animesh Bajpai
	1MS18EI059	Tanmay Kumar
	1MS18EI047	Shrey Saxena
Mentor Name	Dr. Christina George	

ABSTRACT

People love their pets and vice versa, but there are times you need to leave your pets at day care centre. Taking care of his food and water requirements and checking him if he is doing fine can be a matter of stress and. Tracking him is he in at home or not. So this was quite a tedious process for everyone and so, we thought that we'll come up with some idea that can solve this problem. So we basically, decided to create a IOT Pet Daycare Robot with CNN. We have planned of using: Pet detection through CNN Pet Action detection With CNN Food, treat and water dispenser using load dispenser Audio and video instructions. Our objectives are basically: Remote Monitoring of your pets over IOT. Speaking to pets by Voice Commands. Timely Feeding of Cat/Dog Food and Water through Feeding Tray. Detection of presence of your pet using CNN. Also, our model consists of following things: In this system we used CNN model to train our system The tools we used for Pet Detection are OpenCV and Tensorflow Our training set consist of 2200 images of pets We have divide our test and training set in the ratio of 4:1 OpenCV is integrated with piCamera for capturing the video and detection of pets

Logistics Using RFID Technology

SL.NO	USN NO.	NAME
18	1MS16EI052	Vaibhav A
	1MS17EI033	Naresh D
	1MS17EI047	Siddhant S
	1MS17EI051	Subhanshu B
Mentor Name	Dr. M D Nandeesh	

ABSTRACT

This project provides a new generic model equipped with a "process visualizing" feature by capturing RFID logistics data to represent different logistics processes' status, and sharing them through web-based technology to supply chain parties. In order to provide logistics service companies an effective way to manage their logistics processes and help both the up and down stream supply chain parties maximize their activities linkage within the value chain, the proposed system integrates radio frequency identification (RFID) and IT applications to optimize information flow in a supply chain. In doing so, the objective of visualizing logistics process is achieved. Theft of oxygen cylinders during transportation was one of the major contributors for oxygen shortage in the covid-19 pandemic. Thus, we came up with this project to avoid such malfeasance in the supply chain process. This module tracks the desired product in terms of number of cylinders and the quantity of the gas during the transportation process ensuring timely delivery of the cylinders. Unnecessary human involvement and disruption in the supply chain can be minimized by the application of this project.

Dog Waste Cleaning Robot		
SL.NO	USN NO.	NAME
19	1MS18EI052	Sidhanth M M
	1MS18EI002	Akshay Chatra
	1MS18EI003	Keshav Kiran
	1MS18EI049	Shreyas B S
Mentor Name	Ms. Vibha Raj	
ABSTRACT		
<p>The main drawback of owning a pet in urban cities is the problem of cleaning up after the pet, another notable problem is the spreading of diseases because of the uncleaned waste. Hence, to improve the overall hygiene we are proposing a dog waste cleaning robot which detects the waste on the floor and has the capability to pick up waste in semi solid forms without leaving any trace and also store the waste in a container for disposal later. This robot will also have the capacity to pick up dry waste items from the ground such as paper and plastic waste. The robot contains four wheels for movement and a robotic arm for picking up the waste. Raspberry pi 3 is used with pi camera for capturing images in real time and image processing using Open CV. The robot is autonomous and will work independently inside a closed room. It can also be controlled with a wifi module using blynk. The waste is stored in a collection bin using rack and pinion motion for final disposal.</p>		

Intelligent Traffic Signals Control System for Ambulance and Accident Detection with Alerting		
SL.NO	USN NO.	NAME
20	1MS18EI017	Dileep Kumar N
	1MS18EI028	Niteesh Hegde
	1MS18EI055	Sudarshan A S
	1MS18EI403	Raveesh H M
Mentor Name	Dr. Shivaprakash G	
ABSTRACT		
<p>Road traffic congestion has become a major issue for highly crowded metropolitan cities. It is facing terrible road congestion in the cities. According to Times of India about 30 percent of deaths are caused due to delayed ambulance to reach at hospital and also in national highways many accidents go unidentified and this may also lead to fatal of the person. To smoothen the ambulance movement, we come up with “Intelligent Traffic Signals Control System for Ambulance and Accident Detection with Alerting”. In proposed system we are trying to reduce the delay for the ambulance, to smoothen the ambulance movement with the RF technology and microcontroller to control the traffic signals of the path. we have come up with a system to detect the accident of a person in two wheelers using vibration, force and tilt sensors, and alert or provide information about accident location to ambulance services using GPS and GSM modules.</p>		

IOT Pet Day Care Robot with CNN

SL.NO	USN NO.	NAME
21	1MS18EI004	Animesh Bajpai
	1MS18EI059	Tanmay Kumar
	1MS18EI047	Shrey Saxena
Mentor Name	Dr. Christina George	

ABSTRACT

Travelling people need a way to take care of pets that they leave back at their house. Needs of the pets include food, water, and commands from a familiar voice to ensure they don't get anxious. Also, new pet owners need an easy way to train their pets to do simple actions based on their commands. The IoT pet day care robot uses CNN based techniques to take care of the above mentioned requirements. The project implements features such as (i) Detection of pet – to ensure that they are within the safe premises at home, (ii) Training of pet using audio and video instructions, (iii) Food, treats, and water dispenser, and (iv) Detection of pet action to ensure proper training.

Analogy of Image Hashing Algorithms for Data Management

SL.NO	USN NO.	NAME
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Mentor Name	External Mentor : Mr. Subhajit Banarjee Internal Mentor : Dr. M D Nandeesh	

ABSTRACT

Image deduplication is an approach to avoid duplicate images to be stored in cloud, which is currently required to increase the efficient utilization of cloud storage. Most of the times, the images uploaded by different users of cloud storage service need not to be unique. There is a possibility of storing same images by different users. This may lead to poor usage of cloud storage. To find duplicates, various image hashing techniques are widely used. Using the hash value, we can conclude the uniqueness of the image. This can be achieved by using the "collision resistance" property of hash value. Image hashing or perceptual hashing is the process of Examining the contents of an image Constructing a hash value that uniquely identifies an input image based on the contents of an image. Given an input image, our algorithm computes an image hash based on the image's visual appearance. Images that appear perceptually similar should have hashes that are similar as well. We actually seek some hash collisions if images are similar. For any given dataset our algorithm can remove duplicates and give unique dataset, another application is image searching in a dataset or web using hash value.

DEPARTMENT OF **MECHANICAL ENGINEERING**



Project
Abstracts

2021 - 2022

The Design and analysis of wing deployment mechanism with foldable wing for tube launched UAVs

SL.NO	USN NO.	NAME
1	1MS18ME006	Adhish Palyam Venkatesh
	1MS18ME073	K Vinita Babu
	1MS18ME181	T Ananda Mukesh
Mentor Name	External Mentor : Mr. Rakesh, Mr. Prem Ranjan Internal Mentor : Dr. Raji George	

ABSTRACT

Unmanned Aerial Vehicle Technology has diversified itself in the field of the military as well as in the commercial domain. Though advancing at rates never imagined before, the UAV technology still has a broad scope for development in various domains. Our project deals with the design and analysis of foldable wings and propellers for tube- launched UAVs. In addition to improving the utility or packing efficiency of the UAV, foldable wings can result in more flexibility for various engineering applications. In this project, the design of an aerodynamically stable UAV configuration will be done and further analysis of the displacement, force, stress on the wings, and the strength required to fold the wings in order to pack the wings in the constrained tube. In addition to it, spring and bolts will also be designed and analyzed for the folding mechanism. This project requires the use of Open VSP software for the aerodynamic analysis, Solid works, and ANSYS workbench for designing and structural analysis. The main motive behind using foldable wings is to reduce the size of the UAV so that it can be transported in small concise spaces like tubes and can be carried in ships, helicopters, planes, and larger drones easily.

Key words: Unmanned Aerial Vehicle, folding mechanism, tube – launch, propellers

Auto Tyre Pressure Alert and Inflation Mechanism

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	1MS18ME029	Ateet A Kushtagi
	1MS18ME047	Ekaik H Kiran
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Mentor Name	Dr. K R Phaneesh	

ABSTRACT

Due to the legal situation in some states and the beneficial effects on vehicular safety, fuel consumption and comfort issues, tyre pressure monitoring systems became very popular in the recent years. Tyre pressure monitoring and automatic filling system provide automatic air filling into the Tyre when air pressure inside the Tyre becomes low. There occur many traffic accidents due to the malfunction of tyres that can be reduced by continuous pressure monitoring. Not in every place tyre monitoring can be done in conventional cases which can lead to fatalities. Fuel efficiency decreases due to rolling resistance. We can avoid these problems by using tyre pressure monitoring and automatic air filling system. Researching on current development for solutions. At present there are only pressure indication mechanisms. By this problem caused by drivers can be solved. Remaining problems in the manual tyre pressure refilling system can be solved by using In- Motion tyre pressure detection and inflation mechanism.

Key words: Tyre Pressure, inflation mechanism

Vibrational analysis of MILO		
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	1MS18ME078	Kirtesh Singh
	1MS18ME079	Kishan Gupta
	1MS18ME081	Kunaal Bhagtani
Mentor Name	External Mentor : Mr. Sudheer Kumar Internal Mentor : Dr. K R Phaneesh	
ABSTRACT		
<p>Mechanical systems in general consist of structural components which have distributed mass and elasticity. Examples of these structural components are rods, beams and shells. Our study of vibration is for shells in continuous systems which have infinite number of degrees of freedom. The vibration of such systems is governed by partial differential equations. A thin shell is a three-dimensional body. Shells and shell structures find application in several areas of civil and mechanical engineering. Examples of shells include rockets, submarines, etc. Thus to find the vibration experienced by the container and to balance by finding out the natural frequency of the container inside MILO using ANSYS workbench. Magnetically Insulated Line Oscillator is a relatively new type of coaxial crossed field device designed specifically to generate microwave power at the gigawatt level. Unlike other crossed-field microwave sources, the MILO uses the self-magnetic field produced by current flow in the central cathode rather than the field produced by an external magnet to cut off electron flow to the anode. Thus it is aimed at reviewing the work carried out in the area with emphasis on performance enhancement of the device and its future in the wake of rapid development of HPM sources.</p>		

Design And Development of Carbon Nanotube Sensor by Characterization of Fluid Flow		
SL.NO	USN NO.	NAME
4	1MS18ME067	Jay Porwal
	1MS18ME094	Mohammed Zaid Bankapur
	1MS18ME183	Tejas Kiran Kirdat
	1MS18ME207	Yash Kusane
Mentor Name	Dr. K R V Subramanian	
ABSTRACT		
<p>Carbon Nanotubes (CNT) are allotropes of carbon having superior mechanical, electronic, physical, and optical properties. Carbon nanotubes are unique one-dimensional systems, with sp² hybridized carbon atoms having net-zero charge at the center of the hexagon arrangement. When a fluid is passed through a nanotube, a mechanical force is exerted by the fluid on the walls of the CNT due to which a strain is induced on the surface of the carbon nanotubes. This disturbance in the symmetric hexagonal structure creates a net charge at the center of the strained hexagon. This induced polarity produces a voltage across the nanotube. The current project aims at studying the voltage characteristics as a function of the flow velocity of the nanofluid in a multi-walled carbon nanotube. Further, the project aims at drawing conclusions on the effect of the type of fluid on the voltage characteristics. A highlight on the potential application of carbon nanotubes as flow sensors can be made through this project.</p>		

Lead Free Perovskite Solar Cell

SL.NO	USN NO.	NAME
5	1MS18ME187	Tripurana Saratchandra Das
	1MS18ME178	Suteerth Mopuri
	1MS18ME190	Venkata Mahesh Reddy Guddeti
	1MS18ME182	T. Tarun Tej
Mentor Name	Dr. K R V Subramanian	

ABSTRACT

As the world is heading towards more renewable form of energy drifting away from fossil fuels, solar energy provides us the best alternative. In this study, we focus more on the perovskite solar cells. Perovskite are compounds having the formula ABX_3 form. These perovskite solar cells have shown a steady increase in their efficiencies from 3.08% in 2009 to 22.7% in 2018. The most commonly studied perovskites are $CH_3NH_3PbI_3$ and $CH_3NH_3PbBr_3$. The characteristic crystalline structure of these perovskite roots for their excellent optical and photoelectric properties, but due to the presence of lead which is a toxic element raising the safety concerns in turn hindering their commercialization. Replacing the lead, our study is based on sodium halide double perovskites and mainly on the two compounds $Cs_2NaBiBr_6$ and $Cs_2NaBiCl_6$.

Fire Fighter Robot

SL.NO	USN NO.	NAME
6	1MS18ME213	K V Dhanush
	1MS17ME003	Abhinandan Joishy
	1MS17ME019	Akshay Manjunath
	1MS17ME027	C A Pururav Nag
Mentor Name	Dr. Veeranna B Nasi	

ABSTRACT

The project is designed to develop a fire fighting robot using RF technology for remote operation. The robotic vehicle is loaded with water tanker and a pump to throw water. An 8052 series of microcontroller is used. The transmitting end using push buttons, commands are sent to the receiver to control the movement of the robot either to move forward, backward and left or right etc. At the receiving end three motors are interfaced to the microcontroller where two of them are used for the movement of the vehicle and the remaining one to position the arm of the robot. The RF transmitter acts as a RF remote control that has the advantage of adequate range (up to 200 meters) with proper antenna, while the receiver decodes before feeding it to another microcontroller to drive DC motors via motor driver IC for necessary work. A water tank along with water pump is mounted on the robot body and its operation is carried out from the microcontroller output through appropriate signal from the transmitting end. The whole operation is controlled by an 8052 series microcontroller. A motor driver IC is interfaced to the microcontroller through which the controller drives the motors.

Design and Fabrication Of LPG Level Indicator with Auto Cut - Off

SL.NO	USN NO.	NAME
7	1MS17ME156	Saurabh Sharma
	1MS17ME034	Ashutosh Singh
	1MS17ME116	Paritosh Arun
	1MS16ME136	Samarth Parthasarathy
Mentor Name	Dr. Veeranna B Nasi	

ABSTRACT

The objective of the proposed system is to continuously measure the amount of gas left in the cylinder and also detects if there is any leakage in the gas cylinder so that it can cutoff the gas supply and alert the user of the above to mentioned scenarios through a SMS alert. By knowing the exact amount of gas left in the cylinder pre-booking can be made making the process hassle free and cost effective for the user. The main components of the model are - ARDUINO Mega2560 controller, MQ4 (methane sensor), Load cell, LCD display, GSM module, dc motor, buzzer. ARDUINO provides the flexibility to write the code effectively in a convenient way and also it will provide us features like inexpensive, cross platform, simpler and clear programming. The load cell is a transducer which converts the mechanical force into electrical signal, which is used to measure the weight of the LPG cylinder accurately and feed the electrical signal to the ARDUINO. MQ4 gas sensor will detect the leakage and send the electrical signal to the ARDUINO. The LCD display will display the various signals coming from the ARDUINO in a readable format for the user.

Improvement of thermal conductivity of Aluminum 6061 and 6063 by adding Titanium

SL.NO	USN NO.	NAME
8	1MS19ME417	Yashwanth K
	1MS18ME070	K Pranav
	1MS18ME089	Manmeeth N
	1MS18ME090	Mayank R
Mentor Name	Dr. C M Ramesha	

ABSTRACT

Thermal conductivity of the materials used in heat transfer equipment's is one of the fundamental requirements. an attempt is made to improve the thermal conductivity of Aluminum 6061 and 6063 for heat sinks applications used in power transistors, opto electronics Central Processing Unit (CPU) of computers. Al6061 and Al6063 aluminum alloys were selected in this study due to its excellent extrudability, high corrosion resistance, and ability to be formed into complex shapes which is required for manufacturing a heat sink. The thermal conductivity of Aluminum 6061 and 6063 is 150 and 200 W/m-K respectively. In this work, the influence of Titanium addition on the thermal conductivity of Aluminum 6061 and 6063 alloys were studied. The fabrication of the alloy samples will be done by using stir casting process where several casting alloy specimens will be prepared with different percentage of titanium and then heat-treated by homogenization and aging treatments. The results will show an important modification in thermal conductivity value per rapport to the reference metal, depending on the percentage of titanium added when tested using heat flow meter, mean time mechanical and thermal properties of this newly developed materials are evaluated and compare with base materials.

Maglev Windmill Power Generation		
SL.NO	USN NO.	NAME
9	1MS18ME014	Akash B S
	1MS18ME001	Abhijeet
	1MS18ME015	Akash Hattarki
	1MS18ME043	Deepak Shettar
Mentor Name	Dr. C M Ramesha	
ABSTRACT		
<p>The depletion of non-renewable resources and higher energy requirement has led to a severe power crisis though there are many renewable sources and they are being harnessed to generate power wind energy is considered one among the least expensive renewable sources. Generation of energy from non-renewable sources creates various complications such as a noise pollution, water pollution and air pollution. This serves as a major region to choose wind energy to generate electricity. Wind energy is considered as green energy and it can be used to harness energy in environmentally benign manner. The efficiency of the windmill is much lower than other sources of energy. This project is aimed at improving the efficiency and to simplify the mechanism of normal windmill to produce large amount of current with the help of magnets. The magnetic lines of force generated by the nature of magnets by North and South Pole of a bar magnet creates a magnetic field. To generate electricity double rotation of wind mill blades in alternate direction is used to produce more displacement for coil windings and magnets. The power generated by this process is alternative current (AC) can be directly connected to the house main supply for the further use and it needed to be stored in batteries for emergency cases. The energy generated can be used to supply power for the seashore villages or individual houses.</p>		

Analysis Of Residual Stress In welded Plates		
SL.NO	USN NO.	NAME
10	1MS18ME108	Nilesh Sharma
	1MS18ME116	Parag Kumar Mahto
	1MS18ME100	Naman Choudhary
	1MS18ME104	Niket Amarjit Deshmukh
Mentor Name	Dr. P B Nagaraj	
ABSTRACT		
<p>The main purpose of this project is to study the effect of included bevel angle of single V butt weld on residual stresses in welded thick plates. It is known that the welding of thick plates will generate residual stress which will cause failure to the material performances in future. Thus, in order to minimize the residual stress on the welded thick plates, the included bevel angle of a single V butt weld is studied as it determines the volume of the filler material required to weld the thick plates. Theoretically, the more the volume of filler material required for welding, the more the residual stress induced as more weld penetration is required to fill the groove. In this project, a finite element method is used to determine the value of residual stresses on the plates. The different values of included bevel angle will be considered while the other parameters will be kept constant (e.g. heat input, root face, thickness, and root gap). ANSYS software will be used to model and analyze the problem as it is proven to be an effective tool for the investigation of trends affected by the change in welding parameters.</p>		

Prediction of the performance of Transmission Gears for Electric Vehicles using Computer Aided Engineering		
SL.NO	USN NO.	NAME
11	1MS18ME188	Uday G V
	1MS18ME184	Teo Shaji
	1MS18ME179	Swadesh Mishra
	1MS18ME197	Y D Gagan
Mentor Name	External Mentor : Dr. Anindya Deb Internal Mentor : Dr. P B Nagaraj	
ABSTRACT		
<p>Electric vehicles (EVs) with multi-speed transmission offer improved performances compared to those with single speed transmission system in terms of top speed, fast acceleration, or grade ability along with driving range. In EV power train, the only torque generator component is electric motor, which is not equally efficient throughout wider speed range. To the other end, vehicles need to run at different speeds in diverse driving conditions. We intend to show that multi-speed transmission system enables efficient operation of electric motor by choosing an appropriate gear at different driving torque-speed demands and thus contributes to achieve desired vehicle performances at minimum energy consumption. Apart from additional mass, gear ratio selection and torque interruption during gear shifting are major obstacles to improve drive train efficiency and riding comfort in EVs with multi-speed transmission system. For optimal gear ratio in transmission system, genetic algorithm (GA) is found to be implemented in most cases. It is also observed that variable shift schedule needs to be considered during the optimization process to get the paramount gear ratios. Through our project we want to analyse how multi-speed transmission technology can outperform the single speed system within EV platform and what the inherent challenges are.</p>		

Eight-Legged Bot Using Theo Jensen Linkage		
SL.NO	USN NO.	NAME
12	1MS19ME402	Kalmesh M S
	1MS18ME071	K Rohith
	1MS19ME415	Vijayakumar
	1MS18ME121	P Akhil
Mentor Name	Dr. B P Harichandra	
ABSTRACT		
<p>It is outstanding that creatures can go over a rough terrain at speeds which are remarkably higher than practically possible with wheeled vehicles. Indeed, even an individual, by getting down on each of the eight legs, if necessary, can travel or climb over terrain which is inaccessible for a wheeled or followed vehicle. It is therefore of immense enthusiasm to realize what machines for land locomotion can do if they are intended to imitate nature. Legged robots can be utilized for space missions on extra-terrestrial planets and in risky places, for example, within an atomic reactor, giving autonomous legged robots a great potential. Low power consumption and light weight are further advantages of walking robots, so it is important to use the minimum number of actuators. In this context, the objective of this project is to learn and design a prototype of the Theo-Jansen eight leg strolling robot. The goal is to develop a new mechanical automated walker utilizing bar link mechanism. The essential Theo Jansen device is a 13-bar framework that strolls when a crank is rotated. So, utilizing linkages we attempted to imitate nature and put together certain strolling robot which will suite off-road.</p>		

Design automation of washer and Integration into manufacturing process

SL.NO	USN NO.	NAME
13	1MS18ME018	Ankit Kumar
	1MS18ME021	Anurag Pandey
	1MS18ME037	Chetan Rathi
	1MS18ME061	Ishan Singh
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ABSTRACT

The industry revolution is towards automation in various ways. Automation also exists in designing of components. This project will attempt to automate the designing of different variations of a washer, an instrumental component in the industry and used in multiple places. The aim is to create the rules and constraints that are fundamental in its design and allow for need-based modifications in all non-fixed parameters. Furthermore, the project will also use cloud-based technology to host this automation principle on a website, so that users can comfortably simulate their required design and get a price quotation of their request. With this, not only is the target to contribute to automation within the industry but also look to increase its outreach by allowing greater access and therefore allow a step-up in the manufacturing process, by making it time efficient and on-demand

Design and Fabrication of Peltier Refrigerator using Water Cooling System

SL.NO	USN NO.	NAME
14	1MS18ME143	Rudresh P R
	1MS19ME413	Siddalinga Swamy B N
	1MS19ME406	Naveen Kumar S N
	1MS19ME405	Muttaraju H G
Mentor Name	Dr. Niranjan Murthy	

ABSTRACT

A conventional cooling system such as those used in refrigerators utilizes a compressor and working fluid to transfer heat. Thermal energy is absorbed and released as the working fluid undergoes expansion and compression and changes face from liquid to vapor and back respectively. Semiconductor thermoelectric coolers (also known as Peltier cooler) offer several advantages over conventional system. They are entirely solid-state device with no moving parts. This makes them rugged, reliable and quite. They use no ozone depleting chlorofluorocarbons, potentially offering a more environmentally responsible alternative to conventional refrigeration. They can be extremely compact, much more so than compressor based system. Precise temperature control can be achieved with a Peltier cooler. Thus, they are used in applications where their unique advantages outweigh their low efficiency. Although some large-scale applications have been considered (on submarines and surface vessels), Peltier coolers are generally used in applications where small size is needed and the cooling demands are not too great, such as for cooling electronic components.

Effect of Knurling Impressions on Fluid Flow Properties

SL.NO	USN NO.	NAME
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	1MS18ME039	Chirag Hirinja G J
	1MS18ME038	Chethan Reddy G
	1MS18ME028	Astle Anthony Dsouza
Mentor Name	Dr. Mohandas K N	

ABSTRACT

Mechanical elements such as axils, bearings and shafts are subjected to periodic wear and effective lubrication of them is difficult. This will deplete the machine element life however, by conducting design analysis considering surface roughness as a factor the actual life of the machine element can be predicted. This study aims to build a mechanical model with uneven surface condition and to study the flow properties such as velocity, turbulence, drag force and pressure profile. In this study the main variable constrains include distance (h), inlet pressure, and type of fluid and surface condition. This study also aims to develop a mathematical model and to study the flow properties for the above conditions. The effect of surface roughness is also captured under a high resolution camera. The simulated and the observed effects are compared and a mathematical equation is developed. With the aid of this equation the life of the machine element can be predicted in the design phase.

Studies on GFRP reinforced SE-SMA Wires subjected to Impact

SL.NO	USN NO.	NAME
16	1MS18ME158	Sathvik R
	1MS18ME170	Skanda Subramanya K
	1MS18ME173	Sujay M
	1MS18ME194	Vikram Vaidya
Mentor Name	Dr. Sunith Babu L	

ABSTRACT

Composite Materials are used in a wide range of applications such as aerospace, automotive, consumer electronics etc. Composite materials are used due to their lightweight and high strength properties followed by better corrosion resistance. Glass fiber composites are being used widely as compared to other types of composite materials, mainly due to their abundant availability. The present work focuses on developing GFRP reinforced composite for impact applications. Impact of composite materials is an important domain since the strength of composite materials degrades drastically when subjected to impact. The internal structure of the composite material changes and is a pressing issue that researchers are working extensively on. Most of the composite are brittle in nature and can absorb energy in elastic deformation but not via plastic deformation. So, it becomes important to consider the impact loading and influence of parameters to improve the resistance to damage due to impact on composite structures and to enable this, the composites are reinforced with SE-SMA wires and the effect of such Nitinol Wires can be studied.

Keywords - Low Velocity Impact, Nitinol Wires, GFRP

Urban Air Mobility		
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	1MS18ME118	Partha M M
	1MS18ME136	Rakshith K Salian
	1MS18ME189	Vedarth Raghatate
Mentor Name	Dr. Sunith Babu L	
ABSTRACT		
<p>The growth traffic all over the world has imposed several problems suchas traffic congestions, environment pollution, increase in fuel prices andalso accidents. In Urban air mobility (UAM) we aim to extend transportation to 3 dimensions by enabling vertical take-off and landing while keeping in mind few factors like safety, reliability and efficiency. UAM offers significant advantage over other means of transportation as it reduces the time taken to travel even if there is traffic congestion as it won't affect air transportation. It is expected that the UAM vehicles(E-VTOLs) will be widely used in the city area in the future for various purposes, such as cargo delivery and emergency medical supply delivery. This also requires it to have low noise emissions and this is achieved by using an electric motor and DPS (distributed propulsion system).In this project we will be conducting the conceptual and preliminary design followed by detailed design. We will also fabricate a small-scale functioning prototype of the project.</p>		

Reciprocating Wear analysis of AZ91 Mg Nano Composites		
SL.NO	USN NO.	NAME
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	1MS18ME052	Gosala Vishwanath
	1MS18ME066	Jatin Gumme
	1MS18ME138	Revanuru Shivarama Krishna
Mentor Name	Dr. T Anil Kumar	
ABSTRACT		
<p>Magnesium and its alloys reinforced with nano-size reinforcement's display improved mechanical properties. AZ91 Mg-MMNC with Al2O3 nano-particles (< 50 nm) as a reinforcement in three weight percentages (Base Alloy, 1% and 1.5%) was fabricated using stir casting technique. XRD analysis was carried out to authenticate the fabrication process. Dry sliding wear tests are performed using tribometer apparatus at loads ranging from 2N to 6N and frequency ranging from 5 Hz to 15 Hz. The applied load, sliding distance, reciprocating velocity and percentage of alumina weight in composite are the four important and controlling factors; counter surface temperature has a minor effect on the wear of the composite specimens in dry condition. The wear resistance of the composites improved with increasing amounts of reinforcement, which were particularly effective under the higher sliding speeds. The wear rate of Nano composite is decreased with increasing the amount of the reinforcement. The properties of these Nano composites will be discussed in terms of microstructure, grain size, hardness, corrosion and wear. To determine the wear mechanisms of the surfacing magnesium alloys under different experimental loads, the wear surface and wear debris morphologies were analysed with SEM.</p>		

Effect of hole fabrication methods on tensile properties of open hole steel plates.

SL.NO	USN NO.	NAME
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	1MS18ME050	Girimallayya S Hiremath
	1MS18ME059	Hrushikesh D H
	1MS18ME131	Raghu A Somannavar
Mentor Name	External Mentor : Dr. Niranjan C A Internal Mentor : Dr. T Anilkumar	

ABSTRACT

Steel plates with open holes are commonly used in structural components to enable an assembly with bolts. The gusset plates and cross-frames are components which can be regarded as examples of such types. As evidenced from the basic configurations of these components, the weaknesses of the components are determined by fabrication methods as well as clamping conditions, which become an important issue for fatigue loading cases. For the sake of evaluating the mechanical characteristics of the components with hole fabrication, tensile and fatigue tests have been widely used in obtaining the basic mechanical properties of the connections. From fatigue and tensile testing of punched open hole steel specimen Chesson and Munse concluded that punching reduced the ductility of the net section which causes the early arrival of ultimate stress near the holes and thus limits the effectiveness in strength development.

Design and Manufacture of Retractable Winged-Ornithopter

SL.NO	USN NO.	NAME
20	1MS18ME193	Vigneshwar T
	1MS17ME170	Shweta Joshi
	1MS18ME191	Vennila P
	1MS18ME074	Kartik R K
Mentor Name	Mr. Venkatesh D	

ABSTRACT

Nowadays, bio-inspiration plays an important role in unmanned aerial vehicles, giving rise to robotic birds called ornithopters. This project presents a folding mechanism for ornithopter's wings. Unlike the existent creations, it is intended to allow control of the wing retraction while perching. The mechanism has been implemented using rods and joints to replicate wing performance of bird flight. A stepper motor, controlled by a microprocessor, drives a runner, attached to a toothed-belt, which aids in the expansion and contraction of the wings. In this sense, bio-inspiration has been the baseline of the design but also requirements such as lightweight and integration with the current platform have also been considered. Simultaneous flapping motion of two wings is actuated by a gear box, which is powered by a low rpm and high torque DC motor, with the required gear arrangement. Accurate control over pitch, roll and yaw motion is achieved by tail steering mechanism, where two servo motors are used in different combinations to achieve all the three degrees of rotation. The major application of this project could be in the field of military like espionage, spying without alerting the enemies that they are under surveillance.

Eight leg Kinematic Walking machine(octabot)

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21	1MS18ME180	Syed Riyaz
	1MS18ME176	Sumith Ranjan
	1MS18ME096	Mudassir Ahmed
	1MS18ME103	Nihar Chandra K
Mentor Name	Dr. Jyothilakshmi R	

ABSTRACT

This project presents the kinematics of the movement for an eight- legged robot, inspired from the living world, as well as the command and control system, which allow the robot to move on different surfaces with different speeds. For generating the movement, through a control system, dc motors and bars are used. This project deals with the kinematic model and absolute gait simulation of an eight legged walking robot that mimics the locomotion of the stick insect. Thus the direct and inverse kinematic analysis are formulated for each leg mechanism in order to develop the overall kinematic model of a twelve-legged walking robot and thus to perform the absolute gait with robot to the ground in different operating condition. A frame, connecting rod, crank and a lever constitute to obtain the required motion. In this project, the application of simple four bar mechanism is used. Since mechatronics and robotics found a vast application in implementing the concept of running a robot model using motors and drives, since it needs more amount of energy to run the robot model

Development of an Automated Photogrammetry Rig for 3D scanning

SL.NO	USN NO.	NAME
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	1MS18ME042	Darshan
	1MS18ME145	Chitreshan Shanmugam
	1MS18ME185	Tharun Raj
Mentor Name	Dr. Nagesh S N	

ABSTRACT

A photogrammetry studio consists of a large number of cameras set at particular angles directed towards the object with proper lighting focused at the object. To overcome the disadvantages of the photogrammetry process and to create an easy solution for any layman to use the process, the process of photogrammetry needs to be automated. This can be achieved by the automated photogrammetry rig. Photogrammetry is a 3D scanning technique in which a set of 2D photos of an object is used to create a virtual model of it. It is the science of making measurements from photographs in which the photogrammetry software measures and collects the matching features between different photos resulting in a virtual 3D model of the object. The photogrammetry process is usually carried out using a single camera to move around the object to take photos at different angles. The object can also be rotated at regular intervals keeping the camera still to take the photos. The present work aim to enhance the working of this device by introducing different and better ways to perform 3D scanning at higher accuracy to meet the requirement of the future users. The work involves exploring various effective design types, manufacturing processes, and analysis methods.

Process parameters optimisation of external hydraulic gear pump used in earth moving equipments using Power BI software

SL.NO	USN NO.	NAME
23	1MS18ME214	Akanksh V N
	1MS19ME408	Pranav Hegde
	1MS19ME412	Shyamsundar T
	1MS19ME414	Siddharth Shirale
Mentor Name	Dr. Vishwanath Koti	

ABSTRACT

Industry 4.0 is transforming the manufacturing industry and the economics of value creation. The manufacturing sector is under constant pressure to increase profitability in a growingly competitive international market in which differentiation is not tied to manufactured products or utilized technologies but to business processes optimization. Business analytics offer the opportunity to harness the knowledge and value hidden within enterprise information systems to innovate and enhance supply chain management, production, marketing and sales. In the present work, a pathway to attain market leadership through the effective use of business analytics has been considered by focusing on three increasingly challenging barriers as "standardization" of collection, aggregation and storage of data. An "organizational culture evolution" that outgrows intuition and embraces data-driven decision making is needed to create the perfect ecosystem for business analytics to produce actionable results and recommendations. Power BI has taken the world of business intelligence, data visualization and analytics by storm. Hence it is effectively used for extracting the processing parameters of external hydraulic gear pump such as pressure, temperature, flow rate, visualizing and sharing developed reports and dashboards with other users in organization.

Review on Thermophysical properties of Nanofluids containing Magnesium Oxide.

SL.NO	USN NO.	NAME
24	1MS18ME105	Nikhil B R
	1MS18ME106	Nikhil Gowda K
	1MS18ME120	Pavan R Kodikar
	1MS18ME123	Prahlad V
Mentor Name	Dr. Vishwanath Koti	

ABSTRACT

This paper summarizes the important results regarding the improvement in the thermophysical properties of nanofluids containing Magnesium Oxide. The influence of important parameters like metal oxide quantity, base fluid type, temperature, additives, and pH value will be considered. There are many reports on the influence of parameters on thermophysical properties and the literature in this field is widespread. This paper aims at finding the thermophysical properties of MgO nanoparticles with three base fluids and different iterations and to propose the quantity of MgO and the type of base fluid which have better properties. The literature survey of the paper also emphasizes the application of nanofluids in industries and other major sectors.

Evaluation of Mechanical and Microstructural behaviour of Al2024 reinforced with silicon & boron carbide for engineering application

SL.NO	USN NO.	NAME
25	1MS19ME404	Manjunath A B
	1MS19ME409	Sanjay C N
	1MS18ME085	Mallikarjun
	1MS18ME201	Gopal Krishna
Mentor Name	Dr. Jyothilakshmi R	

ABSTRACT

Aluminium is one of the most common used material in almost all automotive and aircraft application, to add strength for material mechanically and physically reinforcement technique is adopted which is a addition process for base metal (ALUMINUM) in a ration of wt.% such as 2, 4 & 6 so on... in this research process AL2024 grade is selected as base metal & reinforcement is made as Silicon Carbide which adds strength to alloyed aluminium. The addition process is made using stir casting technique and casted reinforced alloy is poured in dies which is of cylindrical shaped die, casted parts are machined as per ASTM standards. Once the component is done with machining those components are tested under various conditions such as tension, hardness, compression, wear, fatigue & microstructural behaviour to know its capability of usage in actual conditions & obtained data's are compared with respect to their wt. ratios using graphs and respective values.

Mechanical and Microstructural studies of AZ91 Magnesium alloy processed through Equal Channel Angular Pressing (ECAP)

SL.NO	USN NO.	NAME
26	1MS18ME023	Ashir Nayak
	1MS18ME110	Niranjan Bhandarkar
	1MS18ME117	Paresh S V
	1MS18ME135	Rajesh Yandigeri
Mentor Name	Dr. Siddaraju C	

ABSTRACT

Magnesium and its alloys are attractive to Automotive Industry, Aerospace Industry for their inherent light-weight and specific strength which leads to fuel efficient design. However due to poor formability, poor wear and corrosion resistance, its use has been restricted in automotive applications such as in engine components and bio medical applications such as bio degradable implants. This project aims to enhance the formability, wear and corrosion properties of AZ91 without compromising the specific strength through Equal Channel Angular Pressing (ECAP) which is capable of producing ultra-fine grained micro-structures and improves the mechanical properties of the material. Homogenized and non-homogenized material is processed through ECAP by varying process parameters such as die angle, die temperature, length of the specimen and the plunger velocity. The specimens processed through ECAP is studied under the scanning electron microscope under the influence of four different etchants for understanding the changes in grain structure and compared to the micro-structure studies conducted prior to the ECAP. Further, the specimens are checked for their corrosion resistance, hardness, wear resistance and ductility. The results showing the best combinations of the desired properties are identified.

Self-Balancing of Two Wheeler using Gyroscope		
SL.NO	USN NO.	NAME
27	1MS18ME083	Kunal Khandelwal
	1MS18ME056	Hasnain Sheikh
	1MS18ME063	J Sadhvy Tejas
Mentor Name	Dr. R Kumar	
ABSTRACT		
<p>The project is about the design of a two-wheeler self-balanced bike. The two-wheeler vehicle would be able to balance itself and can be stabilized against any impact and in zero velocity as well. The project is implemented with a heavy rotating disk with hub motors at the chassis to compensate for the tilt of the vehicle and get it stabilized. The gyroscopic arrangement of the joints at which the motor is attached moves opposite to the movement of the 2 wheeler in turn balancing it. The amazing self-balancing characteristics of a gyroscope helps in balancing the body by just altering the speed of the disc Using the signals. The vehicle is balanced by controlling the motor from the Sensors which determine the tilt direction of the rotating disks. This vehicle is designed to provide safety that a two-wheeler vehicle does not have during an impact. Our aim is to design a safe, cost-effective and fuel-efficient vehicle.</p>		

Design and analysis of hydrokinetic twin turbine		
SL.NO	USN NO.	NAME
28	1MS18ME055	Halli Anand
	1MS18ME102	Neeruganti Jagadeesh
	1MS18ME124	Pranav P S
	1MS19ME403	Kulkarni Phaniraj
Mentor Name	Mr. Naveen Kumar B K	
ABSTRACT		
<p>As a renewable and reliable source of energy, hydropower provides around 12% of the electricity production in India. The use of hydrokinetic power doesn't require large civil engineering works since hydrokinetic turbines can be installed with no or small modifications to existing infrastructure. Research of utilizing hydrokinetic energy is mainly focused on large applications such as a tidal power, rather than small scale river applications. Thus, project aims at designing a hydrokinetic twin turbine applicable to zero head and less flow water bodies such as canals, there is a case to be made for the installation of such devices when designed cost efficiently. The main objective of this research is the development of a three-dimensional Computational Fluid Dynamic (CFD) model of a hydrokinetic turbine. The goal is to be able to provide accurate power predictions from CFD modelling to evaluate the cost and efficiency of more complex scenarios in advance to committing to such installation projects.</p>		

Detection of Precision Manufacturing defects on Surfaces using Artificial Intelligence

SL.NO	USN NO.	NAME
29	1MS18ME088	Manish Gautam
	1MS18ME157	Sanskar Sharma
	1MS18ME093	Mohammed Sahil
	1MS18ME140	Rishan Nasar
Mentor Name	Dr. Jaya Christiyen K G	
ABSTRACT		

This Project develops a machine learning application for efficient detection and classification of surface defects of various components. Previous techniques, which are based on either visual inspection or hand-crafted features, are both inaccurate and time-consuming. With the help of Artificial Intelligence architecture, we cannot only classify manufacturing defects but also localize them with high accuracy. Compared to traditional techniques, Artificial Intelligence can learn, in a supervised manner, the visual features that achieve the best performance. Our experiments on a database of real images demonstrate that our approach overcomes the state-of-the-art while remaining computationally competitive. We are using python as a programming language, Machine learning concepts such as pandas, NumPy, Jupyter notebook, Matplotlib, Tensorflow, OpenCV are used for the development of the Machine learning algorithm such that it can be able to inspect the surface defects on the flat surfaces of steel with image segmentation. Higher accuracy in the manufacturing, high production rate and high quality of the product is achieved having lesser defects.

Design and Analysis of Welding Fixtures for CE-20 Engine

SL.NO	USN NO.	NAME
30	1MS18ME002	Abhijith Joy
	1MS18ME031	Basavaraj I Birajadar
	1MS18ME044	Devesh
	1MS18ME049	Gagan Gaurav B M
Mentor Name	External Mentor : Mr. K Hanuman Manoj Internal Mentor : Dr. Aruna Kumara P C	
ABSTRACT		

Welding fixtures are a holding devices that helps to join two or more materials according to the requirements. They are used in all types of industries, there are different in types of fixtures according to the operations carried out. Fixtures are reusable, they are not permanently fixed, just for temporary clamping, position and to avoid distortions during welding, drilling and other such processes. We are designing a welding fixture for a CE-20 engine, which is a part of satellite. Solid works software is being used to design the fixture with improvements for optimized working with respect to materials used and avoid wastage of materials and analysis of the heat input region, stresses created, deformations. Followed by comparative study with the hypothetical design and analysis data available.

Study of mechanical properties of Al 2014-T651 alloy TIG welded joints along longitudinal and transverse directions

SL.NO	USN NO.	NAME
31	1MS18ME082	Kunal Jain
	1MS18ME101	Neelabh Menaria
	1MS18ME057	Heramb R Gadgil
	1MS18ME075	Kartikeya Pandey
Mentor Name	Dr. Aruna Kumara P C	
ABSTRACT		

Aluminium alloy 2014-T651 is an alloy with coppers as the main alloying element. It is one of the strongest commercially available aluminium alloys. Typical applications of aluminium alloy 2014 are high strength components especially for use in the aerospace and defense industries (heavy duty forgings, extrusions for aerospace fittings, tanks etc.). To make components out of this alloy, welding is required. It is very important for the designers of these components to have knowledge about the mechanical properties of the welded joints. Lot of research about the mechanical properties of this aluminium alloy is already performed but a comparative study between TIG welded joints in longitudinal and transverse direction is not present. In this project our aim is to perform and study the mechanical properties of Al 2014-T651 alloy welded joint, in which the weld is in longitudinal and transverse direction. Mechanical properties will be obtained by performing Vickers micro-hardness test, tensile test, bending test etc. Data obtained from this mechanical analysis will give comparative data about Al 2014-T651 TIG welded joints along longitudinal and transverse direction which will be of great importance to the designers of these components. This data will especially be of great importance to aerospace/defense industries.

Analysis of Parameters and Facility Setup of Machining of Aluminium-Lithium Alloys

SL.NO	USN NO.	NAME
32	1MS18ME020	Anoop Bagali
	1MS18ME033	Bhuvan D
	1MS18ME034	Bose J S
	1MS18ME051	Gnyaneshwar Nayak
Mentor Name	External Mentor : Mr. Mohan H, Mr. Swapnil Kumar Soni Internal Mentor : Dr. Rajeesh S	
ABSTRACT		

Aluminium lithium alloy will soon become the material of choice for military aircraft and aerospace applications due to its low density with high strength and modulus. The addition of Li to the Al matrix is responsible for their outstanding characteristics. The properties of the component after machining, such as surface roughness, residual stresses, and chip formation, were examined with varied iterations of feed, speed, and depth of cut in a dry machining environment. Post analysis, according to the experimental results, the optimal setting levels of cutting parameters, chip thickness, depth of cut and lubricant is determined. Finally, the experimental verification tests were performed. According to these data, the facility setup can be planned. According to the literature, a similar machining specification can be applied for conventional aluminium alloys and the Al-Li alloys. It comprises scope of using cryogenic coolant while machining in order to achieve good surface finish and reduce stresses. Consequently, in order to reduce the experimental cost and time, the optimum setting levels of process parameters proposed in this work could be applied in the machining of Al-Li work pieces which are used in aircrafts and aerospace components.

Design and Analysis of Impact Attenuators for safety of vehiclechassis

SL.NO	USN NO.	NAME
33	1MS18ME169	Siddharth H
	1MS18ME171	Sree Hari V
	1MS18ME161	Shaina Bantwal
	1MS17ME108	Nikhil Praveen
Mentor Name	Dr. Rajeesh S	

ABSTRACT

According to the NCRB (National Crime Records Bureau), India has around 480,000 traffic collisions every year on average. Frontal crashes account for 48% of all car collisions. In the case of a collision, passengers are protected by internal airbags. There are no exterior safety measures or impact absorbers, however, to limit impact energy passed to the vehicle's chassis and body frame. An impact attenuator is a structure that can be installed between the bumper and the car's chassis to minimise the amount of energy transferred to the body frame. Design and analysis are used to determine the best material and structure combination for impact attenuators. By analysing the impact attenuator's design to establish the distribution of forces during impact and the amount of impact energy absorbed by the attenuator, and then executing various tests to evaluate the attenuator's actual deformation. This project makes three different contributions. First, in the event of a front-end accident, reduce the impact energy imparted to the chassis. Second, provide gradual deceleration to reduce the G forces experienced by passengers. Third, replacement impact attenuators at a reasonable price.

Efficiency Enhancement of Solar PV Cells using Heat Sink

SL.NO	USN NO.	NAME
34	1MS18ME045	Dhananjay Chaudhary
	1MS18ME046	Dheeraj H N
	1MS18ME200	Sanjeev Kumar
	1MS18ME053	Guttala Ravi
Mentor Name	Mr. Pradeep Kumar K V	

ABSTRACT

After 140 years of Solar cells invention, it's efficiency is still 15-20% for commercial use. Solar radiation that reaches a photovoltaic cell is partially converted into electricity, whereas a large proportion of solar irradiation is converted into heat. Solar cells are designed to convert energy of these photons with wavelength around 1100nm. All other wavelengths of sunlight are not converted to electricity. Not only these spectrum losses alone cause 52% loss in efficiency, they cause the electrons to vibrate and increase the temperature of the Photo Voltaic cells. As its surface is continuously exposed to sun, solar cell efficiency decreases about 0.5% for 1°C surface temperature increment. A rise in temperature diminishes the performance of the PV systems and shortens their lifespan. Passive active cooling systems have been proposed by researchers. Since an active cooling system absorbs the generated current, this project considers the passive system as the cheapest one. Air cooled heat-sink cooling system is proposed and designed to utilize the natural convection of air to cool down the PV cells and improve its performance. The difference in power output will be analyzed under different temperatures between identical PV panels and will be compared to theoretical values.

Study of Nano Fluids		
SL.NO	USN NO.	NAME
35	1MS18ME009	Agni Deb Roy
	1MS18ME022	Apoorva Dubey
	1MS18ME205	Sameer
	1MS17ME126	Pratyanshu Tomar
Mentor Name	Ms. Bijayalakshmi Das	
ABSTRACT		
<p>Heat transfer contains any or all of several kinds of phenomena, considered as mechanisms that convey energy and entropy from one location to another. The specific mechanisms are usually referred to as convection, thermal radiation, and conduction. Water doesn't have much thermal conductivity as compared to nanofluids. Experimental works were conducted to investigate the effect of copper-oxide (CuO) and Aluminium Oxide (Al2O3) nanoparticles volume Concentration and the operating temperatures on the rate of nanofluids heat transfer in Thermal Conductivity of Liquids. CuO& Al2O3 nano particles was mixed with distilled water at 0.01g, 0.02g and 0.03g of Sodium Lauryl Sulphate (SLS) powder was added to enhance the mixing process and stabilize the dispersion of the nano fluids. Experiment were conducted at varying operating temperatures which include the runs for water as a base fluid, CuO-water & Al2O3-water at 40 and 50 degree Celsius. The results indicate that by adding 1g, 2g and 3g of CuO& Al2O3 nanoparticles into water as the base fluid, the rate of heattransfer andconvectionheattransfercoefficientwouldincreasesat40and 50 degree . It was also discovered that CuO & Al2O3 nanofluids with 2% volume loading produces greater increase in rate of heat transfer.</p>		

Fire Fighting UAV (Unmanned Air Vehicle)		
SL.NO	USN NO.	NAME
36	1MS18ME141	Rishi Singh
	1MS17ME010	Aditya Suresh
	1MS16ME058	S Jithesh
Mentor Name	Ms. Bijayalaxmi Das	
ABSTRACT		
<p>With the growth of technology and massive city development, firefighting services have become more challenging to cope with a smart-city concept. One of the challenges that firefighters are facing is reaching the top floors of high-raised buildings. Firefighters need heavy and oversized pieces of equipment to reach top floors, which they sometimes fail to deliver on time due to big cities' traffic. They also need to take the stairs since elevators may be inaccessible, and after they reach their target floor,the flames might spread everywhere and cause a disaster. The firefighter drones (UAVs) mainly focus on monitoring the site with a camera and do not have a standalone mechanism for fire extinguishing purposes with the vast technology upgrades, there is a demand for improvement in fire fighting services.</p>		

Dynamic Wireless Charging using Mobile Energy Disseminators

SL.NO	USN NO.	NAME
37	1MS18ME139	Rimpal Jain
	1MS18ME137	Reese J Briggs
	1MS18ME113	Nolan Mascarenhas
	1MS18ME150	Samarth K S
Mentor Name	Dr. Vishwas D K	

ABSTRACT

Vehicles running on fossil fuels cause a significant amount of air pollution. In order to reduce the carbon-emission to environment, electric vehicles are coming up as one of the preferred alternatives. However, the major drawback of electric vehicles is the need to charge them frequently. Therefore, long-distance travel with an electric vehicle is a challenge. Thus, it necessitates the need for an eco-friendly charging system for electric vehicles. An Electrical vehicle can make use of a power transfer system to charge the on-board Rechargeable Energy Storage System (RESS – the battery) or use wireless power transfer using charging pads to charge the batteries. Both of these solutions are adequate for charging at home or in car parks but still require the vehicle to stop in an appropriate location to charge the battery. We propose an eco-friendly wireless charging system for electric vehicles that enables wireless charging while running on the highways. The proposed system can also be used for charging cars in the shopping malls and other parking places. This project also includes an inter-vehicle communication system to facilitate eco-rerouting and V2V power transfer using mobile energy disseminator. It benefits the user, without the need for large batteries.

Electricity Generation on Flat Surfaces using Piezoelectric Material

SL.NO	USN NO.	NAME
38	1MS18ME011	Aishwary Gupta
	1MS18ME017	Anish Avalakki
	1MS18ME019	Anmol Dhandhan
	1MS18ME030	Rahul Manuvinakurake
Mentor Name	Dr. Mahantesh S Matur	

ABSTRACT

The title of the present work is taken as "Electricity Generation on Flat Surfaces Using Piezoelectric Material. The main objective of the present work is to produce additional energy to support conventional methods of electricity generation. Piezoelectric materials are smart materials which converts mechanical energy into electric energy on the application of stress or strain and vice-versa. To fulfill the set objective, a scaled model is fabricated in which a suitable piezoelectric material will be tested and chosen to convert mechanical energy into electrical energy. Transducers would be used for conversion of electricity into different types (AC, DC). Due to this, electricity generated through conventional methods (Coal Power Plants) will be reduced and hence less Green House Gases emissions to environment will be achieved. Stress due to pressure difference on the flat surfaces is the motive behind the generation of electricity. Greater the tensile force you apply, which is parallel to the direction of polarization, the polarization vector will extend because of increasing separation between opposite charges. Thus amount of polarization generated and hence the potential difference generated in a piezoelectric device depends on the amount of the stress applied since they are directly proportional to each other. As the force is applied on piezoelectric material, electric charge is generated across the faces of the crystal, creating a potential difference which can be measured as voltage. This produced voltage can utilized for various purposes.

Outdoor Air Purifier for Automotive Emissions Powered by Solar and Wind Energy Sources

SL.NO	USN NO.	NAME
39	1MS18ME126	Praveenkumar S Chabbi
	1MS18ME125	Praveen Hiremath
	1MS18ME087	Mandar Patwardhan
	1MS18ME165	Sharan Mungarwadi
Mentor Name	Dr. Girish V Kulkarni	

ABSTRACT

People living in metropolitan cities have to make their way to anywhere through traffic every day. In traffic areas like signals, narrow roads, bazars etc, there is a very high concentration of air pollutants due to automobile emissions. The air pollution these days is a serious environmental concern. Faster escape solutions are required than permanent over the time changing solutions. In some cities like Delhi the air quality index has reached to an irrefutable level. To avoid such problems, we came through an idea of an Outdoor Air Purifier in heavy traffic areas which would efficiently decrease pollutants emitted by automobiles. The Air Purifier consists of layers of HEPA and Activated Carbon filter. The propeller fans mounted in the suction chamber sucks the atmospheric air into the chamber. Then air sucked by the fans pass through the layers of filters where it absorbs the particulate matter as well as VAC and other gaseous chemicals like NO_x and SO₂. Then the purified air is left into the atmosphere hence decreasing the Air Quality Index. In addition, we utilize solar panel and wind turbine which are mounted on the unit, so that battery runs on renewable energy such as solar and wind.

Design and Fabrication of Plastic Shredder Machine – Phase 2

SL.NO	USN NO.	NAME
40	1MS18ME072	Kajivineeth
	1MS19ME407	Pradeep K B
	1MS18ME069	Jnanesh B S
	1MS18ME068	Jayanth B S
Mentor Name	Dr. Loksha	

ABSTRACT

Adopting plastic recycling process is one of the most effective contribution to reduce the environmental pollution. In the present study an approach is proposed to adopt a system to reduce the discarding of reusable plastic products. The work is focused on design and fabrication of cost-effective plastic shredder machine which can be used by small and medium enterprises. The project work is carried out in two phases, Phase 1: Design and analysis, Phase 2: Fabrication and testing. As the phase 1: Design and analysis has been finished in our mini project. Now the present work is focused on fabrication and testing. This machine is used for cutting the reusable plastic in to small pieces, which are in irregular shaped flakes. These cut pieces of the reusable plastic material are further used as raw material for some of the products made with the recycled plastic materials. As the design and analysis work has been finished the core focus of the present work is fabricate and test the machine. The machine consists of motor, shaft, blade, spacers, bearing, gear box, transmission elements, electronic circuit etc. So the main work is to assemble this components and testing the shredder machine.

Standalone Drinks Vending Machine		
SL.NO	USN NO.	NAME
41	1MS18ME168	Shreedhar R Malashetti
	1MS18ME146	Sahanesh R
	1MS18ME172	Srihari
	1MS18ME134	Rajendra Prasad P
Mentor Name	Dr. Lokesha	
ABSTRACT		
<p>In today's world, vending machines which are meant for dispensing the soft drinks are adopted at general stores, railway stations, bus stands etc. These vending machines are maintained through the electric power supply and in case of failure of the driven power supply, the system will breakdown and vending machine will not serve its purpose. Considering the short falls of the present system, an effort has been made to incorporate a renewable energy source - solar energy, to maintain and operate the vending machine. The proposed renewable energy source will be incorporated in line with the electrical power supply and this makes the system more robust in its functioning and reliability. The proposal also includes the operating the system through Internet of things (IoT) concept to facilitate the user to avail the digital transaction of the payment and other information related to soft drinks. The IoT adoption to the system also enables the customer to know the required quantity of drinks and respective amount of money.</p>		

Android Based Material Handling System		
SL.NO	USN NO.	NAME
42	1MS18ME086	Manav T Nichani
	1MS18ME058	Hrithik T Nichani
	1MS18ME198	Syed Faizan
	1MS17ME171	Siddhant Srihari
Mentor Name	Mr. Bharath M R	
ABSTRACT		
<p>The project is an android based transportation and housekeeping system that will be used to order the transportation of goods at any given point in time and place via vehicles. Android is an open source operating system designed for mobile devices. It is known to have a very comprehensive software architecture. The entire infrastructure required for software specialists is available in a large library when using android based systems. Today, Android operating system is more commonly used than any other operating systems. The application of the transportation system including shifting of all the household goods and industrial goods with an added housekeeping concept. The aim of this study is to prove android based mobile applications can be used to ease transportation systems at a given time while housekeeping helps clean the working environment.</p>		

Preparation and Characterisation of Non-Ferrous Alloys by Precipitation Hardening Technique

SL.NO	USN NO.	NAME
43	1MS19ME411	Shivam Dhaduti
	1MS19ME410	Sarthak Badavane
	1MS18ME151	Sameer D Nadaf
	1MS18ME152	Sameera Badada
Mentor Name	Mr. Rajendra P	

ABSTRACT

Aluminium is most commonly used material in aerospace and automotive industry. A century has elapsed since Alfred Wilm made the accidental discovery of age hardening in aluminium that became known as Duralumin. His work and the gradual realization that hardening arose because of the presence of fine precipitates which provided barriers to the motion of dislocations. A brief account is given of the development of age hardenable aluminium alloys and the way that modern experimental techniques allow precipitation processes to be understood on an atomic scale. Some contemporary issues in age hardening are then discussed.

Studies on open hole tensile test of inter layered hybrid composites

SL.NO	USN NO.	NAME
44	1MS18ME027	Ashwin S Nair
	1MS18ME036	Chetan B Shivshette
	1MS17ME194	Harinath Reddy
	1MS16ME183	Yogendra A
Mentor Name	Mr. Pradeep Kumar K V	

ABSTRACT

The objective of the proposed project is to conduct the open hole tensile test of pristine composite materials and inter layered hybrid composite materials and determine Residual strength of drilled and repaired inter layered hybrid composite materials. The damage mechanisms of the open hole tensile test of pristine and hybrid composite materials are studied. The specimens are made up of Bidirectional woven glass fibers, Bidirectional woven kenaf fibers, Epoxy resin and hardener. The specimens are fabricated using Vacuum Bagging Process and using different stacking sequences of natural and synthetic fibres. The specimens are prepared using the standard ASTM D5766. The obtained laminate of dimensions is cut in smaller pieces using Waterjet Cutting. Nesting is done to get maximum number of pieces of required dimensions. Then the open hole tensile test is performed to the specimens to get the required results. The test results obtained for open hole tensile test of pristine composite materials and inter layered hybrid composite materials with different stacking sequences are compared to find the better composite and combination.

Development of an Automated Waste Segregation Device

SL.NO	USN NO.	NAME
45	1MS17ME139	Rohith K S
	1MS17ME137	Rohan K R
	1MS16ME154	Sudheesh P V
	1MS18ME107	Niilesh Kumar
Mentor Name	Mr. Ashok Kumar K	

ABSTRACT

Waste segregation is an important component in the waste management chain as it makes it possible to realize effective Reuse, Recycling and Recovery (RRR). Unfortunately, it has received little attention and is normally informally practiced in most of the developing countries. It is also affected by lack of awareness, weak regulatory frameworks and enforcement, lack of economic incentive and a low priority in planning. With existing government rules in place it is also observed that most of the times people leave the garbage unsegregated due to lack of time or sheer laziness. In this project an attempt is made to build a model of waste segregation and check the feasibility of it and to understand and improve the waste segregation process.

Travelling Wave Thermoacoustic Refrigeration

SL.NO	USN NO.	NAME
46	1MS18ME160	Shaheen Abdulla
	1MS18ME166	Shekar Das
	1MS18ME041	Chris Soares
	1MS18ME111	Niranjan R
Mentor Name	Dr. Balasubramanya H S	

ABSTRACT

The use of hazardous refrigerants in current refrigeration systems and their impact on environment have spurred much research into alternative technologies. Thermo-acoustic refrigeration is considered as one of the potential solutions to the current search for environmentally friendlier technology because of the absence of harmful refrigerants in the system. Thermo acoustic systems use high-intensity sound waves to realize the conversion between heat and acoustic power. The basic principle of operation is using sound waves to produce heat separation, with the help of a stack, thereby creating a cooling space similar to the one seen in conventional refrigerators. The working fluid experiences changes in temperature when it oscillates along the stack in the pipe. The configuration of Travelling-Wave Refrigerators is complex, and their efficiency is higher than Standing-Wave Refrigerators efficiency, they operate in a nearly reversible manner in terms of heat transfer within the engine core. The work done by the system would be maximised, and the heat consumed by the system would be minimised, leading to a maximum efficiency.

Design and Fabrication of Hubless E-Bike		
SL.NO	USN NO.	NAME
47	1MS18ME114	P R Mayur Singh
	1MS18ME119	Pavan Prakash Mesta
	1MS18ME133	Rahul Kumar Mahto
	1MS18ME147	Sahil Shreshtha
Mentor Name	Mr. Vinayak Talugeri	
ABSTRACT		
<p>Transportation has changed the face of the world as we know it. It has helped to change the lives of millions of people through facilitating trade, travel and exchange. There are many modes of transportation, but in metropolitan cities like Bengaluru, Mumbai etc, transportation is challenging because of congested space and the cost of fossil fuels is inflating day by day. Nowadays, we see that there is a sudden surge of Electric Vehicles in the market because of their excellent efficiency, pollution-free, low noise, and compact size compared to traditional vehicles. E-bikes or electric bikes, are one of the easiest and most effective modes of transport in such cities. We intend to make the existing E-bike even more efficient while being compact and aesthetic by using Hub-less wheel mechanism. The hub-less wheel has lots of advantages over conventional wheel designs, such as requiring less torque to power the wheel, storage space within the wheel, and looking futuristic. Our idea is to combine the advantages of electric vehicle technology and hub-less wheel technology to create the ultimate E-bike. Altogether, these contribute to enhanced performance, better safety, increased storage and mind-blowing visual appeal of the E-bike.</p>		

Predicting Surface Roughness of Mild Steel under Vertical Milling Machining using Artificial Neural Network		
SL.NO	USN NO.	NAME
48	1MS18ME076	Kavya K
	1MS18ME084	Likitha V C
	1MS18ME122	Pragnya Patil
Mentor Name	Mr. Nishanth R Acharya	
ABSTRACT		
<p>The difficulty of ensuring predefined product quality, such as surface roughness, is met with the given limited machining capacities, resources and time is a persisting problem in the current Manufacturing Industry. This project aims to create an Artificial Neural Network model to predict the Surface Roughness of Mild Steel under Vertical Milling Machining provided Spindle Feed, Feed Rate and Depth of Cut are defined. An experiment is conducted, 100 samples of data concerned with Vertical Milling operation are recorded based on a two-level DOE 2k analysis. The data recorded were conducted on Mild Steel using a 16 mm Carbide End Mill tool and all data samples were tested using a Mitutoyo Surface Roughness Tester. This project will investigate the modelling of the Surface Roughness of the data using a Feed for ward back propagation Algorithm to obtain a Surface roughness measure close to the experimental value. As a result of the prediction, the recommended combination of cutting conditions to obtain the best surface roughness value will be resolved.</p>		

Pedal Operated Lawn Mower		
SL.NO	USN NO.	NAME
49	1MS18ME065	Janardhan Muralidhar
	1MS18ME202	Rithvik Sastry R
	1MS18ME208	Vinay N
	1MS18ME209	K D Prahlad Kushalappa
Mentor Name	Mr. Nishanth R Acharya	
ABSTRACT		
<p>Lawn mower is an essential tool for the maintenance of yards. They vary in size, mode of operation and power. The power source riding mowers are usually powered by a gasoline engine and are ridden and steered by the operator, but they are expensive. Therefore, our design objective is to come up with a lawn mower cycle that is durable, cost effective and easy to operate. The lawn mower is pedal powered. The power required to push the mover is obtained from a chain-driven bicycle. This project attempts to combine a cycle and a mower. The mower cycle consists of three main wheels with two of the wheels at the front. Between the two front wheels, a cutting mechanism is made with internal spur gear system which transfers the torque to the mower by spiral mechanism. The cutting mechanism is made of a flat blade rigidly fixed to the frame behind the spiral arrangement which is configured to contact at least one reel bar of the spiral blades during the rotation of the spiral mechanism. There are primarily two types of mowers: Reel mowers and Rotary mowers.</p>		

Design, Analysis and Development of a Beach Cleaning Machine		
SL.NO	USN NO.	NAME
50	1MS18ME004	Abhishek Jeason
	1MS18ME005	Adarsh Ashok
	1MS18ME132	Rahil Thakkar
	1MS18ME204	Vaibhav Harinarayan
Mentor Name	Mr. Gururaj	
ABSTRACT		
<p>Nature is the most celestial creation around living things. Mankind and Nature are both conjointly progresses. It has bestowed on us with water, air and plants that enable us to survive on this planet. Beaches are one of the most visited touristic destinations as it is an exhibition of beauty in nature. Most commonly found wastes on beaches are plastic nets, bottles and packets. In order to clean our beaches, the present work focused on design and analysis of a beach cleaning machine that can resist the corrosive beach environment. The machine has the potential to locomote, collect and store the wastes on a beach surface. A simple chain and hook assembly lifts and collects the wastes from the beach surface. It steers on a two-wheel drive mechanism enabled by DC motors that is controlled using a smart device with the help of a Bluetooth module and Arduino Uno. The use of solar panel helps in tapping the abundant solar energy in a beach environment. Composites on the body work and wheels have made the machine lighter and efficient. A vibrating sand-separator mechanism enables the machine to offload the sand from the collected waste.</p>		

Metal organic frameworks for the application of water extraction from the atmosphere		
SL.NO	USN NO.	NAME
51	1MS18ME064	JJS Pravallika
	1MS19ME416	Vinay G
	1MS19ME400	Akshatha Chandrashekar
	1MS18ME159	Satya Swarup Barik
Mentor Name	Dr. Prakrathi S	
ABSTRACT		
<p>Problems considering the availability of fresh drinking water, irrespective of the demographic regions and the climate which sometimes makes it even harder. The presence of the water vapour is something that is known for centuries as well as the utilization of this by plants and some animals directly from air is something that inspired us to identify the new material for the same. Of the many approaches, metallic organic frame works simplify the process without giving a second thought about the robustness of the equipment as well as the capital costs. The hydrogels that are highly hydrophilic in nature and have high water holding capacity, with having the sensitivity towards the sunlight making it easier for the extraction of the water collected. The present study aims in synthesis of the metal organic frame works. The synthesized frame works along with hydrogels are combined for the extraction.</p>		

Effect of heat treatment on mechanical and tribological behaviour of A390 reinforced with Silicon Carbide (SiC) and Graphite		
SL.NO	USN NO.	NAME
52	1MS18ME155	Sandeepkumar Shedabale
	1MS18ME156	Sanju Shirahatti
	1MS18ME153	Sammed Siddappa Hemagiri
	1MS18ME098	Muttu Yangi
Mentor Name	Mr. Pavan Kumar M V	
ABSTRACT		
<p>Aluminium is one of the most common used materials in almost all automotive and aircraft application, to add strength for material mechanically and physically reinforcement technique is adopted. In this project A390 is used as the base metal which is reinforced with Silicon Carbide (SiC) and Graphite by varying weight% (0,5,10,15 and 9) of SiC with fixed 2% Graphite. Composites are produced through stir casting method and casted parts are machined as per ASTM standards and once the component is done with machining those components are tested under various conditions such as heat treatment, hardness, wear& microstructural behaviour to know its capability of usage in actual conditions & obtained data are compared with respect to their weight% ratios using graphs and respective values.</p>		

Nuclear Energy Source for Celestial Body Exploration		
SL.NO	USN NO.	NAME
53	1MS18ME130	R Karan Beeshm
	1MS18ME115	Pannaga S
	1MS18ME112	Nishant Kumar Garg
	1MS18ME128	Pruthviraja Reddy V
Mentor Name	Dr. Sriharsha Sripathi	
ABSTRACT		
<p>We, humans are creatures with great curiosity and have zeal for exploration, this has led to many discoveries and inventions which has benefited mankind. Right now, humans are trying to set their foot beyond earth on other celestial body (Mars, Titan, etc), which has a hostile environment. In order to survive these challenging environment humans, need energy to power essential lifesaving machines and scientific equipment. And Nuclear energy is the optimal source to generate electricity where solar energy is not feasible. Therefore, we are proposing a nuclear reactor which uses a high assay low enriched uranium in the form of Tri-structural Isotropic particle fuel. Where the heat generated by the reactor core is passively transferred to a Stirling engine power converter using sodium heat pipe and the additional heat is dissipated using titanium-water heat pipe radiators.</p>		

Metal and Explosives Detecting Robot Dog		
SL.NO	USN NO.	NAME
54	1MS18ME163	Shamith Raj Shetty
	1MS18ME167	Shivu H R
	1MS18ME177	Suprit P Kutagamari
	1MS18ME196	Vishal Ganji
Mentor Name	Mr. Nandeesh H L	
ABSTRACT		
<p>We, humans are creatures with great curiosity and have zeal for exploration, this has led to many discoveries and inventions which has benefited mankind. Right now, humans are trying to set their foot beyond earth on other celestial body (Mars, Titan, etc), which has a hostile environment. In order to survive these challenging environment humans, need energy to power essential lifesaving machines and scientific equipment. And Nuclear energy is the optimal source to generate electricity where solar energy is not feasible. Therefore, we are proposing a nuclear reactor which uses a high assay low enriched uranium in the form of Tri-structural Isotropic particle fuel. Where the heat generated by the reactor core is passively transferred to a Stirling engine power converter using sodium heat pipe and the additional heat is dissipated using titanium-water heat pipe radiators.</p>		

Characterization of Al5052 Metal Matrix Composite Using Sic and B4C As A Reinforcement using Stir Casting

SL.NO	USN NO.	NAME
55	1MS18ME077	Kevin A G
	1MS18ME091	Mohammad Ashrof
	1MS18ME092	Mohammed Ameen J
	1MS18ME099	Nair Vishnu
Mentor Name	Mr. Deepak S	

ABSTRACT

Metal matrix composites are advanced material used for light weight high strength applications in aerospace and automobile sector. Among the various techniques employed in fabricating hybrid metal matrix composites stir casting technique is simple and economical. The metal matrix choice was Aluminium 5052 and the reinforcement are Silicon Carbide and Boron Carbide respectively. Aluminium 5052 is chosen due to its excellent cast ability, compatibility and application in aerospace and automotive sector. The average size of the reinforcing particle was 100-120 microns in order to obtain good bonding with metal matrix. The various test consists of, Micrography study which reveal the availability of reinforcement particles in the matrix phase. Tensile strength test will be prepared as per ASTM-E8 standards. Hardness test will be performed using BHN as per the ASTM standards results will be compared with As-cast alloy.

Stirling Engine

SL.NO	USN NO.	NAME
56	1MS18ME203	Ujjwal Soni
	1MS18ME206	Aniket Singh
	1MS18ME210	Kavyansh Tiwari
	1MS18ME192	Vicky Singh
Mentor Name	Dr. Puttabore Gowda	

ABSTRACT

The Stirling engine is an external combustion engine in which heat energy is applied to the outside of the device. These engines use pistons but the engine itself is sealed to the atmosphere. They can be supplied with heat from a variety of different sources including combustion fuels, waste heat and from solar heat energy. There are a range of different Stirling engine designs but all rely on two pistons for each cylinder or unit. If a Stirling engine is driven mechanically it can act as a refrigerator. A free piston engine is another type of reciprocating engine, one that does not have a crankshaft of any mechanical constraint on the motion of its piston(s). The engines are often simple and potentially more efficient than crankshaft engines but they are more difficult to engineer and exploit successfully. In rural area electricity problem, but its cost effective to supply electricity. Thus in project we make simple stirling engine by that we can generate electricity here we demonstrate it for simple battery charger. Stirling engine when heated, there will mechanical motion in engine. From that by rotating motor we generate 12V for battery charging or another application.

Study on Electric Vehicle Battery Thermal Management System		
SL.NO	USN NO.	NAME
57	1MS18ME109	Niranjan Bharadwaj D S
	1MS18ME186	Thejas R Gowda
	1MS18ME211	Karthik R
	1MS18ME212	Suhas SPatel
Mentor Name	Dr. Putta Boregowda	
ABSTRACT		
<p>The performance of the whole car depends upon the performance of the battery pack. The Li-ion batteries used in vehicles have peak performance in the optimal temperature range between 20°C to 40°C. But due to internal resistance, there are I²R losses which are dissipated in the form of heat. The temperature can rise due to a short circuit. In that case it can happen that the metal parts make a bridge between the plus and the minus pole of the battery and gets an external short circuit and generate a lot of heat. This decreases the efficiency. Along with the decrease in the efficiency, it radiates heat to the other parts of the Electric Vehicle which may cause explosion or fire. It may also cause cosmetic damage the processor and other components permanently. It can also cause damage to other vehicles and people. This project's main aim is to find solutions to these problems by including the analysis and design of multiple variations of components used and checked through thermal simulation on ansys, solid works and other such software, which leads to find the best variation for us to develop a model.</p>		

Fabrication of Air Brake System using Exhaust Gases		
SL.NO	USN NO.	NAME
58	1MS17ME175	Srinivasrbayari
	1MS17ME036	Babhinandanraj
	1MS17ME088	Manish B N
	1MS17ME174	Srinivas Choudhari
Mentor Name	Dr. B P Hari Chandra	
ABSTRACT		
<p>Vehicular transportation has become a subject of distinct interest in recent years due to the huge demand for pollution-free vehicles. Since there has been less exposure to engine exhaust gas and its usage, the title of the present project work is “Fabrication of braking system using engine exhaust gas”. The main objective of the project is to reduce the workload of engine drive and thus to operate the stress-free engine compressor. The turbine is placed in the path of exhaust and is connected to a dynamo. A battery stores this charge and this is used by the DC Air compressor. Compressed air is used as a working fluid in this braking system through the action of the solenoid valve. To fulfill these objectives, a model is fabricated that consists of an exhaust gas pipe, turbine,dynamo, power generation unit with compressor, air tank, and braking system. On performing the model, the outcome expected is 4W power with 0.6A current when the velocity of exhaust gas is 28.14 m/s. Thus, we expect the project to conclude with there mark of reducing the work load on the engine by creating a separate system to run an air compressor that assists the braking operation.</p>		

DEPARTMENT OF MEDICAL ELECTRONICS ENGINEERING



Project
Abstracts

2021 - 2022

Classification of ECG Signal Using SVM Model		
SL.NO	USN NO.	NAME
1	1MS18ML025	Naveen N
	1MS18ML028	Prajwal S
	1MS18ML057	Tanmay Mahajan
	1MS19ML401	Pradeep A R S
Mentor Name	Ms. Tejaswini S	
ABSTRACT		
<p>Among various illness human being has suffered from, heart diseases are still one of the important problems known to mankind. Early detection and proper medical treatment of diseases pertaining to heart can save lives of patients in cases of sudden death. ECG signals are comprised of P wave, QRS complex, and T wave. They are designated by capital letters P, Q, R, S, and T. The main parameters included for inspection in heart-patients are the shape, the duration, and the relationship with each other of P wave, QRS complex, and T wave components and also R-R interval. The changes in these parameters signify an illness of the heart that may happen by any reason. The entire irregular beat phases are commonly called arrhythmia and some arrhythmias are very dangerous for a patient. The analysis of ECG is basically recognizing its' pattern and classifying abnormality in real-time. To date, several researchers have made attempts to use SVM and various other classifiers to classify electrocardiograph beats. Many algorithms have been proposed over previous years for developing the automated systems to accurately classify the electrocardiographic signals. There are three well-known and most widely used SVM based methods. Today's powerful machine learning method is Support Vector Machines (SVM). It provides better performance for a wide range of relapse and classification task. Classifier defines the disease from the acquired ECG signal. SVM aims to maximize the separation between two classes by maximizing the distance between parallel margin hyper-planes without any effective consideration to class distribution. SVM Classifiers offer good accuracy and perform faster. They also use less memory because they use a subset of training points in the decision phase. SVM works well with a clear margin of separation and with high dimensional space. We, in this study aim to classify ECG accurately with improvised SVM model</p>		

Development of a Cost Effective Audiometer (RASP-AUD)		
SL.NO	USN NO.	NAME
2	1MS18ML024	Monisha D
	1MS18ML035	Raga Satarasi
Mentor Name	Dr. Basavaraj V Hiremath, Dr. Narayanappa C K	
ABSTRACT		
<p>RASP-AUD proposes the development of a cost-effective audiometer, to be used to assess the threshold of hearing in human Beings using a Raspberry pi processor and relevant interfacing devices. Raspberry pi is cost effective and includes all the features which are required such as, Audio jack to output audio signal, four USB ports, Ethernet cable port as well as Wi-Fi connectivity is available. The entire protocol has been developed in Python platform. The audiometer has been developed using Modified Hughson Westlake procedure. This procedure is used to implement automated audiometer. The proposed hardware module intends to be cost-effective with a simple user-interface based design. Prior to the actual test familiarization is done to familiarize the participants with that particular pure tone audio signal. The results are obtained in audiogram as well as in .csv format. The incorporation of a noise-cancelling headphone nullifies the requirement of a sound proof environment to perform the test. This hardware module is being tested and is found to work similarly, as the conventional clinical audiometer devices. This could be an apt replacement for the existing hardware module with an integration of cloud platforms as well.</p>		

Early Detection of Heart Disease		
SL.NO	USN NO.	NAME
3	1MS17ML406	Nithin Jain
	1MS18ML014	Hunain Syed R
	1MS19ML402	Surabhi R
Mentor Name	Ms. Tejaswini S	
ABSTRACT		
<p>Mortality rate increases all over the world on daily basis. The reasons for this could be increase in the numbers of patient with cardiovascular disease. When considering death rates and large number of people who suffers from heart disease, it is revealed how important early diagnosis of heart disease. Traditional way of predicting Heart disease is doctor's examination or number of medical tests such as ECG, Stress Test, and Heart MRI etc. Nowadays, Health care industry contains huge amount of health care data, which contains hidden information. This hidden information is useful for making effective decisions. Computer based information along with advanced Data mining techniques are used for appropriate results. Neural network is widely used tool for predicting Heart disease diagnosis. In this Project, a heart disease prediction system and algorithm comparison method used which uses artificial neural network backpropagation algorithm, Linear Regression and Support Vector Machine is proposed. 13 clinical features were used as input for the neural network and then the neural network was trained with backpropagation algorithm to predict absence or presence of heart disease with expected accuracy of 95%.</p>		

An Intelligent Healthcare System to Identify /Predict Autism Spectral Disorder		
SL.NO	USN NO.	NAME
4	1MS18ML037	Rhea Panwar
	1MS18ML046	Shipra Kariappa
Mentor Name	Dr. Basavaraj V Hiremath	
ABSTRACT		
<p>Autism, also known as infantile autism, is a kind of nervous system disorder disease, and normal onset was in 0-30 month, and main manifestations is development of speech obstacle in various degree, social disorder, interest is narrow and way of act is mechanical. This disease prevalence has and increases trend, has a strong impact on infant, child physically and mentally healthy, brings heavy burden to family and society. However, with today's standard clinical techniques, it is not easy to ensure early diagnosis of autism .Currently, in the diagnosis of autism by specialists, interviews are used to make empirical judgments based on appearance, and component tests are performed by collecting blood. However, appearance judgment requires a wealth of experience by specialists, and there are problems such as difficulty in quantification. Furthermore, there is a serious problem that the parent is unaware of whether the infant has autism and consultation with the doctor itself is not performed or is delayed. Therefore, our aim is to detect autism effectively. We aim to create a machine learning model using random forest tree classifier as a tool to solve the above problems. We will extract structural as well functional time series of CSV files for detection of autism. We will also create a mobile application with questionnaire related to autism that needs to be filled out.</p>		

Design and Development of a Dry Biosensor using Conductive Nanomaterials for Physiological Monitoring Applications

SL.NO	USN NO.	NAME
5	1MS18ML003	Amira Vaseem
	1MS18ML041	Sanjana Patil
Mentor Name	Dr. N Sriraam	

ABSTRACT

The project is aimed at developing a conductive nanomaterial-based biosensor in the form of a wearable device that is capable of detecting and measuring ECG signals. Biosensors are analytical devices aimed at producing a measurable signal proportional to the concentration of the target analyte using a biological sensing element derived from biological interactions. The sensor is also developed as a dry electrode as it allows for long term monitoring with lesser interference. It is essential for the usage of nanomaterials due to its high electrical conductivity, sensitivity, as well as the vital attribute of being biocompatible. The sensor is to be designed as a wearable as it is portable and convenient for long term monitoring of bio-signals with an ease in operation. Wearable biosensors are attracting considerable interest due to their vast potential to provide continuous, real-time physiological information in an array of healthcare related applications. The approach taken towards this project is to fabricate the nanomaterials and perform their subsequent impedance tests so as to determine their characteristics and ensure the features obtained are desirable to our requirements. The nanomaterial is selected after thorough tests done using devices such as the LCR meter and the impedance analyzer over a wide range of frequencies. This helps in determining the most advantageous material to be incorporated and finally implemented. This sensor is also required to have an apt analog front end or a processor designed with an equitable filtering and amplification needs. Once the material is chosen, it is essential to integrate it along with the processor. The material is finally fabricated as a collaboration with the chemistry department. This undergoes further performance evaluation criteria and should be adept in the monitoring of ECG signals.

Designing a Force Myography(Fmg) System for Hand Gesture Detection

SL.NO	USN NO.	NAME
6	1MS18ML029	Pranika Sudhir Prabhu
	1MS18ML038	Risha Nayaz
	1MS18ML048	Shradha M Rotti
	1MS18ML063	Vishwas G
Mentor Name	Dr. Sweeti, Dr. N. Sriraam	

ABSTRACT

Gestures play a vital role in human-computer interaction, Electromyography (EMG) and force myography (FMG) are two commonly-adopted wearable sensing modalities for gesture recognition. As FMG has proven to be more stable over the years and also utilizes fewer sensors we thus propose to design an FMG acquisition system using 04 force resistive sensors (FSR) which will be located over the forearm in the form of a band. The circuitry consists of the sensors interfaced with a microcontroller to obtain the digital data. This band will be placed over the extensor and flexor muscles to record the gestures of wrist such as flexion, extension, adduction and abduction. FSR data collected data will be processed to extract the features for different gestures. Performance of the designed system to classify different gestures will be analyzed and compared using different machine learning algorithms including Support Vector Machine (SVM) and Neural Networks (NN). Results in terms of gesture identification and accuracy of the model will be obtained. Further improvements can be done in the proposed setup for its application in post-surgical rehabilitation and continuous monitoring of the patient.

Classification of Human Emotions Using EEG		
SL.NO	USN NO.	NAME
7	1MS18ML007	Ayush Mani
	1MS18ML018	Kabya Sharma
	1MS18ML019	Kiran B M
	1MS18ML047	Shobhith S K
Mentor Name	Dr. Sweeti	
ABSTRACT		
<p>Emotions are mental states brought on by neurophysiological changes, variously associated with thoughts, feelings, behavioral responses, and a degree of pleasure or displeasure. With this study, we aim at classifying human emotions using EEG signals. Emotion Detection has been a topic of significant research in the last few decades and plays a very important role in establishing a human-computer interface. EEG records brain activity and it detects emotions arising from our mind which are independent of external features like gestures or facial expressions. In this project, we are using the DEAP dataset where the EEG and peripheral physiological signals of 32 participants were recorded as each watched 40 one-minute long excerpts of music videos. In this work, time-frequency domain analysis is done and features are extracted for 04 frequency bands. Emotions of arousal and dominance are classified in the low and high levels using machine learning algorithms. Classification accuracy of different classifiers including k-Nearest Neighbor (KNN), Support Vector Machine(SVM), and Multilayer perceptron (MLP) is compared to achieve best results. These results can be used in design and development of different BCI (brain-computer interface) applications</p>		

Development of General Purpose Physiological Monitoring System		
SL.NO	USN NO.	NAME
8	1MS18ML023	Mamatha K
	1MS18ML045	Shifa Nazeema
	1MS18ML055	Sushma J R
	1MS18ML059	Tejaswini N Reddy
Mentor Name	Dr. Uma Arun	
ABSTRACT		
<p>Patient monitoring is a crucial part of the health care system nowadays, either at hospitals or at home. By making use of IoT technology, it is possible to overcome the problems faced by physically unstable patients and poor people in consulting a doctor on a regular basis. The basic idea behind the project is, it implies that whether a person is at home, on a trip, or at his work place, he/she can stay connected with the doctors. Our project presents IoT Based Patient monitoring system, which consist of wearable sensors that collect information on different parameters affecting the health of patients. These sensors were connected with Node MCU Microcontroller and on top of that, Wi-Fi Module is present, which is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The doctors fetch the health information of patients via a user interface (smart phone).The ongoing action of the Internet of Things (IoT) idea is cultivating the advancement of a plenty of uses, running in different spaces, for example, home and modern computerization, human services, brilliant frameworks, car, health, and numerous others. Among these, the utilization of the IoT idea to the patient health monitoring is winding up increasingly interest.</p>		

Psychoacoustics – Assessment Of The Variations In The Auditory Perception In Human Beings

SL.NO	USN NO.	NAME
9	1MS18ML009	C Bhavya Manjusha
	1MS18ML040	Rohan Aradhya
	1MS17ML041	Raksha Gururaj
Mentor Name	Dr. Basavaraj V Hiremath, Dr. Narayanappa C K	
ABSTRACT		

The ability to interpret information that our different senses receive from the environment. In fact, this interpretation is an active process that depends on our cognitive processes and prior knowledge. Loudness is the subjective measure of perceived sound intensity. This sensation, which is mainly related to sound pressure, allows us to distinguish between loud and soft sounds. One of the ideas of the project is to analyse the auditory perception in sportspersons and non-sportspersons. Concentration and cognitive ability are required in order to excel in sports. The auditory threshold of musicians and non-musicians is also analyzed with the help of psychoacoustics tool box. The tool box is run on MATLAB. The obtained threshold values are normalized and converted into decibels. The project also aims to comment on the auditory perception of individuals based on the usage of ear phones. The analysis is done by using statistical representations. Machine learning algorithms are used to categorise the threshold values. The accuracy of the algorithms in order to classify these threshold values is also taken into consideration. The end result would be to regard one of those algorithms to be appropriate to classify the threshold values correctly.

Cough Classification

SL.NO	USN NO.	NAME
10	1MS18ML031	Pranjal Rawat
	1MS18ML033	Pratiksha Shetty
	1MS18ML036	Ramendra Bhardwaj
	1MS18ML051	Shristy Goyal
Mentor Name	Dr. Narayanappa C K, Dr. Basavaraj V Hiremath	
ABSTRACT		

A cough is the body's way of responding when something irritates the throat or airways. An irritant stimulates nerves that send a message to the brain. The brain then tells muscles in chest and abdomen to push air out of lungs to force out the irritant. Cough is classified into three types based on the duration: acute, subacute, and chronic cough. Acute cough is defined as cough lasting for <3 weeks, subacute cough lasts 3–8 weeks, and chronic cough persists for >8 weeks. Cough can also be categorized as dry and wet cough, and a wet cough is defined as sputum volume >10 mL per day. Different types of coughs have a spectrum of different underlying causes. The cause of cough can be misdiagnosed and inappropriately treated. Clinical differentiation for pathological respiratory conditions takes into consideration the history of the presenting respiratory symptoms as well as clinical signs such as pyrexia (i.e., raised body temperature), respiratory rate, shortness of breath and chest auscultation of pathognomonic breath sounds. Hence, there is a growing interest in characterizing acoustic features to allow objective classification of cough sounds originating from different respiratory conditions. In cough classification here, first the dataset is collected from the online source. Then after the data is collected then feature extraction takes place. At the initial stages of algorithm development, many features has to be extracted from the audio signals to study their discriminating abilities. There are various features that can be extracted from the signals, few of them are: MFCC, energy, amplitude, Crest Factor, Spectral Spread (SSp). After the feature extraction is done then classification takes place. There are various types of models that can be used for classifying signals. Hence, here KNN model is used for classification. After classification is done then we can differentiate between various disease using cough signals.

Multimodal Semantic Query System Over Health Records		
SL.NO	USN NO.	NAME
11	1MS18ML011	Dhanyatha Y
	1MS18ML020	L Sreekanth
	1MS18ML022	Majula A
Mentor Name	Mr. Mahendra S J, Dr. C K Narayanappa	
ABSTRACT		
<p>Multimodal/multisource data collections, such as measurements, photos, and free texts, are common in electronic health records (EHRs). The variety of such data sources, as well as the growing volume of medical data produced annually by healthcare institutions, provide substantial hurdles in data mining. A semantic model will be described knowledge extracted at the lowest level of a data mining process, where information is represented by multiple features, such as measurements or numerical descriptors extracted from measurements, images, texts, or other medical data, forming multidimensional feature spaces. Multimodal means that the information can be in any kind of mode. Some examples of Health records: Images (CT images, MRI images), Electronic Health records(EHRs), Electronic Medical Records(EMRs). Here we mainly use tumour images. Semantic query system is used for comparison of images for classification of images as one with tumour or not. Here we mainly focus on the image dataset and we have specifically chosen Brain tumour images. An algorithm will be developed to know the size and the features of the brain tumour through segmentation. A single tumour image can be taken as a reference and can be compared if the tumour is either small or large in size. The motivation of this project is mainly that there is a vast number of data related to the records of patients available. Accessing and analyzing this data will be difficult for the doctors, hospital management, secondary research use etc. This can be used to reduce time and effort in analyzing health records.</p>		

Base Line Data Analysis of Thermographic Patterns of the Upper Limb		
SL.NO	USN NO.	NAME
12	1MS17ML006	Amaljith R
	1MS17ML040	Rahul Raj R
	1MS18ML005	Amrutha Varshini M
	1MS19ML400	Amritha S Udupi
Mentor Name	Dr. Prabha Ravi	
ABSTRACT		
<p>Thermography is an imaging technique used to detect infrared radiation emitted from the surface of an object. Using thermographic techniques, which are non-invasive, skin temperature may be measured without direct contact, thus providing quantification of cutaneous heat radiation. Thermography examination was performed using a FLIR thermal imaging camera. The subjects were asked not to drink alcohol, coffee, or caffeinated drinks for 24 h, not to smoke for 2 h, and not to do physical activity 1 day before measurement. The thermography examination included fingers of both hands from the dorsal and plantar planes comprising the thumb, index finger, middle finger, ring finger, and little finger. Firstly, we took steps for the acquisition of reliable thermographic data. Secondly, the processing of the images acquired by the thermos-vision sensor will include pre-processing techniques, such as conversion of a thermal image into a greyscale image and improving the grey image in order to obtain a clear border between the object and the background. This project is aimed to provide the base line study of the data of Thermographic pattern of upper limb. It is a fast and straightforward method, safe, flexible, and portable. Current sensors have sufficient thermal resolution. Within this study, we aim to demonstrate that IR thermography can be used to detect different thermographic patterns of the upper limb, which could be helpful in diagnosis, and treatment of patients with an equivocal clinical examination. Future work extended towards clinical diagnosis and presenting new image processing techniques to enhance ROI detection from infrared thermal images.</p>		

Detection of Skin Disorders using Deep Learning		
SL.NO	USN NO.	NAME
13	1MS18ML004	Amrutha A
	1MS18ML026	Neha Bhagavathi B
	1MS18ML054	Sunaina R
	1MS18ML060	Tejaswini S V
Mentor Name	Dr. Narayanappa C K, Dr. Basavaraj V Hiremath	
ABSTRACT		
<p>Study of skin, science of dermatology, has undergone significant transformations throughout the centuries. Contact with environmental triggers, such as allergens or another person's skin cause skin allergy. Diagnosing skin cancer correctly is challenging. Recently, deep learning algorithms have emerged to achieve excellent performance in various tasks. This project presents a review on deep learning methods and their applications in skin disease diagnosis. The data consists of images of 5 types of skin diseases taken from http://www.dermnet.com/dermatology-pictures-skin-disease-pictures. The total number of images are around 5000, out of which approximately 1500 have been split in training set and remaining in test set and images are in JPEG format. Resolutions vary from image to image, and from category to category, but overall these are not extremely high resolution imagery. Here 70% is trained,10%is evaluated and 20% for testing and in Pre-Processing Gamma Correction and Contrast Enhancement had been used and image resizing to 224x224x3(RGB) and obtained the mean accuracy of 93% and maximum accuracy is 95-96%. The disease has been correctly detected, we have done it in the offline Matlab and also tried acquiring real-time data using Real time data using USB camera and tried to achieve the same accuracy, therefore gives scope to achieve accuracy to 100%.</p>		

Computer Aided Tool for Diagnosis of Non-Alcoholic Fatty Liver from CT Images		
SL.NO	USN NO.	NAME
14	1MS18ML002	Akarsh K J
	1MS18ML012	Hetesh S T
	1MS18ML027	Niharika P Bhatt
Mentor Name	Dr. Prabha Ravi	
ABSTRACT		
<p>Non-Alcoholic Fatty Liver Disease (NAFLD) is a health condition in which there is excess fat deposition in the liver tissues and abnormalities in liver enzymes that is not caused by alcohol. It is more prevalent in people who are obese or have other medical conditions like diabetes or prediabetes. It is usually asymptomatic in the early stages but can lead to more serious conditions like Non-Alcoholic Steatohepatitis (NASH), Fibrosis or Cirrhosis. It can be diagnosed invasively through blood tests and the Gold Standard Liver Biopsy and non-invasively through imaging techniques like Ultrasound, Computed Tomography (CT) or Magnetic Resonance Imaging (MRI).This project aims to develop a Computer Aided Diagnosis (CAD) tool on an open-source platform to aid in the diagnosis of NAFLD. The axial CT DICOM images were converted into 3D volumes and pre-processed to improve the quality of the images. Later, the 3D volumetric images were fed into the Convolutional Neural Network (CNN) architecture pipeline, which consists of two different CNN architectures, one for volumetric liver segmentation and the other for classification of segmented liver volumes as normal or non-alcoholic fatty liver. The entire algorithm was developed in Python 3 and integrated into a user-friendly Graphical User Interface (GUI) using the Qt framework.</p>		

DEPARTMENT OF **ELECTRONICS AND TELECOMMUNICATION ENGINEERING**



Project
Abstracts

2021 - 2022

Crop yield estimation of tomato plants in Karnataka using IoT

SL.NO	USN NO.	NAME
1	1MS18TE005	Adnan Touheed
	1MS18TE012	Chandrika C H
	1MS18TE058	Varun Jhavar
	1MS18TE040	Rishabh Kumar
Mentor Name	Dr. S G Shivaprasad Yadav	

ABSTRACT

This project involves the design and implementation of an IoT based crop yield estimation using a novel machine learning framework by collecting spatio-temporal remote sensed data. Tomato plants are widely grown in humid areas and especially in Kolar, Chikkaballapur and Belagavi districts of Karnataka. The growing season for tomatoes in Karnataka is May to August. Usually in huge farms it becomes difficult to manually count the number of vegetables and to check if they are healthy or not. The project involves collection of datasets of tomato farms and using machine learning to train and test the model. YOLO algorithm is applied on the dataset containing videos of the tomato crops which helps in estimation of the crop yield. Given an input of the video of the tomato crop, count of the tomatoes will be computed using the designed machine learning framework using the Embedded DSP Processor such as Raspberry Pi. This approach of estimating the yield of tomato crop can help to ease the work of farm laborers by giving a count and it can further be improved by identifying the status of crop health.

An Enhanced Chaos Based Image Encryption System

SL.NO	USN NO.	NAME
2	1MS18TE009	Ananya K
	1MS18TE028	Meghana S
	1MS18TE039	Rashmi Harish
	1MS15TE047	Sameeksha Kamath
Mentor Name	Dr. Shobha K R	

ABSTRACT

Efficient image encryption is the process of securing data contained in an image against unauthorised access ensuring authentication and privacy. A strong image encryption algorithm ensures that information is secured against attacks such as brute force, side channel and statistical attacks. Chaos is a mathematical phenomenon that has been widely studied. Image encryption using chaos has proved to be a strong encryption technique. Logistic maps are 1D discrete-time maps that record the chaotic behaviour of a polynomial. Fractals are patterns that emerge from chaotic non-regularities. Employing logistic maps and fractals for image encryption results in a highly uncorrelated encrypted image. The strength of image encryption is measured by sensitive and statistical parameters such as PSNR, correlation and histograms. This work aims to implement an efficient image encryption and decryption algorithm based on strong cryptographic principles and the mathematics of chaos theory.

Hostile Post Detection in HINDI

SL.NO	USN NO.	NAME
3	1MS18TE011	Annapoorneshwari B L N
	1MS18TE013	D G Soumya
	1MS18TE042	Rithika D Patil
	1MS18TE044	Rupali K
Mentor Name	Mr. Venu K N	

ABSTRACT

Hostile content on social platforms is ever increasing. This has led to the need for proper detection of hostile posts so that appropriate action can be taken to tackle them. Though a lot of work has been done recently in solving the hostile content posted online using the English language, similar works in Indian Languages are quite hard to find. Our project aims to present a transfer learning based approach to classify social media (i.e Twitter, Facebook, etc.) posts in Hindi Devanagari script as Hostile or Non-Hostile. Hostile posts are further analyzed to determine if they are Hateful, Fake, Defamation, and Offensive. Harnesses attention based pre-trained models fine-tuned on Hindi data with Hostile-Non hostile task as Auxiliary and fusing its features for further sub-tasks classification. Through this approach, we establish a robust and consistent model without any ensembling or complex pre-processing

Design and development of Volcano Smoke Filtenna

SL.NO	USN NO.	NAME
4	1MS18TE019	Gaana H
	1MS18TE055	Trupthi Raj
	1MS18TE056	Vanshika Gupta
Mentor Name	Ms. Akshata S K	

ABSTRACT

In this project, we design a volcano smoke filtenna for ultra-wide band application using a novel filtenna technique by integrating Bandpass Filter and Volcano smoke antenna into a single subsystem to achieve compactness as well as high performance. It is believed that the volcano smoke antenna (VSA) topology offers the unique advantages of simplicity, exceptional bandwidth (BW), and azimuthal omni-directionality over and against the other current approaches to broadband antennas. If this is implemented with compact size, it will be a novel study and can be implemented in 5G systems. This filtenna offers 10:1 bandwidth range which is wider bandwidth for Ultra-Wideband Application. Here, it is necessary to suppress the radiation characteristics outside the specified frequency band as this may cause interference to other communication systems. This is achieved with the help of bandpass filters which can discard any undesired signal and provide high roll off factor. Ultra-wideband technology is for the frequency band 3.1 GHz to 10.6 GHz available for commercial applications. The advantage of UWB technology is that it allows high speed communication with less power consumption than its contemporary narrowband communication techniques. With this novel technique we focus on tunability for better efficiency in the mentioned range.

Embedded System Security Using Blockchain

SL.NO	USN NO.	NAME
5	1MS18TE017	Divya Kandpal
	1MS18TE018	Divyashree K S
Mentor Name	Ms. Kusuma S M	

ABSTRACT

The nature of embedded systems is changing and the number of possible attack vectors is growing exponentially. Attacks that impair code integrity by injecting, data theft and manipulation are one of the major security issues. Trust among nodes in a network becomes necessary. Here is where Blockchain can be introduced to record the transaction. It provides verified, immutable records of actions across distributed systems with robust security capabilities. The blockchain part of the system that ensures and keeps tracks of data ingested and stores it on immutable ledgers is built using hyperledger fabric. The API service used to interact between ESP32 and the chaincode of Blockchain is built using Node.js. The embedded devices interact with API via MQTT protocol. It is a lightweight protocol suitable for IoT applications and ensures scalability. Further ESP32 can be secured by the security features- Secure Boot and Flash Encryption. We propose to build a model where the embedded system cannot be accessed by unauthorized users to maintain the integrity of programs running on the device and integrity of data ingested and sent across by the device. Also record the data and firmware updates on to the blockchain to prevent any sorts of manipulation

Real Time Visualization and Analysis of Financial Markets

SL.NO	USN NO.	NAME
6	1MS18TE006	Aishvarya Ramesh
	1MS18TE0021	Ishita Erica Pinto
	1MS18TE057	Varshitha M
	1MS18TE001	A Shravanee
Mentor Name	Dr. Viswanath Talasila	

ABSTRACT

The project is about developing an application to visualize the stock market with candlestick charts and to estimate engulfing candlestick patterns and to build a Conversational AI Chatbot for the analysis of the stock market. The application is built in python using Plotly and Dash modules which can be used to plot candlestick charts of NSE and BSE stocks, plot technical indicators including engulfing patterns, compare different stocks and plot candlestick charts in multiple time frames. Random Forest algorithm was used to train a model to estimate the bullish and bearish engulfing candlestick patterns. The model was tested and found to have an accuracy of 97.36%. The training data for the chatbot consists of 3 parts: NLU data which has the possible queries which are labeled under specific intents, part 2 is the responses for the different queries and the last part is the Stories where the queries are mapped to their respective responses. The chatbot can be used to get basic information on Stock market, know the live price of the stocks and to open the visualization application for any particular stock for any time period and interval along with different financial indicators through simple textual or speech commands.

Smart Assistive Technology for Visually Impaired		
SL.NO	USN NO.	NAME
7	1MS18TE023	Keerthana A
	1MS18TE024	Keerthana V
	1MS18TE054	Tejaswini T R
Mentor Name	Mr. S J Krishna Prasad	
ABSTRACT		
<p>Among all senses vision is one of the important sense for human community to connect to the external world. Unfortunately millions of people are deprived of this gift. According to a recent report of WHO India is the home of nearly 30% of total blind globally. To enhance the esteem of blind person there are many assistive technologies, researchers are innovating globally. Our effort in this project is to develop a prototype model to enable blind people of smart assistive aid with the help of Raspberry Pi, image and speech processing techniques. The contextual knowledge of the surroundings will be transformed as a voice message to blind people enabling them to maneuver easily in their day to day activities. A pi camera framework will continuously capture the context of the surrounding and eventually sends a voice message to the blind. With the help of this prototype model the blind are enabled with complete knowledge about the surrounding context and can navigate independently. It is expected to reach an accuracy of up to 90%.</p>		

Design and Development of a Controller for Piezo based Fast Steering Mirror		
SL.NO	USN NO.	NAME
8	1MS18TE064	Mayur S Gowda
Mentor Name	Internal Mentor : Dr. H R Ramya External Mentor: Mr. Ravikumar Keshavappa	
ABSTRACT		
<p>This project aims at designing, developing and testing of a Control system for a piezo-based fast steering mirror (FSM). To establish a link between the transmitter and the receiver satellites, Pointing, Acquisition, and Tracking (PAT) systems are used. The PAT system is normally composed of three components: coarse pointing assembly (CPA), fine pointing assembly (FPA), and point-ahead assembly (PAA). The FPA detector provides more precise faster Line of Sight (LOS) alignment and a narrower steering angle. To accomplish this, FPA employs an FSM and a position-sensitive detector which is a quadrant PIN photodiode (QPD). The Fast steering mirror present in FPA is adjusted with the help of FSM drive (actuators) which are controlled with the help of a PID control system that has been designed. The analog signals sensed by the QPD sensors are passed through the ADC converter which then provides the equivalent digital values or signals using which the required position or coordinates are calculated and then the coordinate values are passed through the designed control system to reduce the error. Further, the digital signals are converted back to analog signals using the DAC converter which is fed to the FSM drive to accurately position the FSM's.</p>		

IOT Based Smart Cattle Farm		
SL.NO	USN NO.	NAME
9	1MS19TE400	Anburaj B
	1MS19TE403	Kushal Vittal M
	1MS19TE404	Manjunath S
	1MS19TE405	Srikanth T R
Mentor Name	Dr. B K Sujatha	
ABSTRACT		
<p>The main aim of this system is to make infrastructure of cattle farming smarter and to implement the cattle need to be fed. The implementation of automatic cattle feeding system resonates with every cattle producer to make this necessary task easier for farmers. IOT based smart cattle farm is a system which consists of motor operated dispenser capable of feeding and equal amount of feed. The feed is manually loaded in the feeder and it senses the tray and then drops the feed by a food releasing mechanism which includes adequate water supply to the cattle using the water pump and this system takes the attendance of the cattle in the farm. To ensure the precise timely and adequate feeding of cattle of each group, this project is applicable in an agricultural countries where the lack of man power in cattle farming has adverse effect on dairy production.</p>		

Network Monitoring Webapp (NetRecon)		
SL.NO	USN NO.	NAME
10	1MS18TE007	Akash Bhardwaj
	1MS18TE008	Anant Garg
	1MS18TE033	Prashant Chauhan
	1MS18TE041	Rishav Ranjan
Mentor Name	Dr. S G Shivaprasad Yadav	
ABSTRACT		
<p>NetRecon is a software which illustrates network automation and network programmability. Our software solves the problem of network engineers who have to spend a lot of time typing all the CLI commands and do manual configuration and security checks device by device. This web application software monitors the devices, hosts, and services that have been configured or discovered in the network. The NetRecon server, which provides most of the NetRecon functionality, runs as a flask application, and is built following the tutorial examples that exist in the flask documentation. When the server is running it starts gathering values of environment variables for monitoring intervals for devices, hosts, services, configurations, discover, etc. The features of this software include device monitoring, this includes two different threads, one for monitoring device status (availability, response time, CPU and memory utilization), as well another thread for monitoring compliance (software version and configuration). It also does host monitoring, the thread attempts to ping the hosts, and records their availability and response time. Additionally, we have achieved service monitoring, the service monitoring thread attempts to access the defined services, using mechanisms appropriate for the service. Currently only these services are implemented, but more could be added.</p>		

Virtual Reality environment development for physical rehabilitation

SL.NO	USN NO.	NAME
11	1MS18TE026	Kumar Vaibhav
	1MS18TE060	Vikash Kumar
	1MS18TE059	Vibha Narayan
Mentor Name	Dr. Viswanath Talasila	

ABSTRACT

Virtual rehabilitation comes under the wider domain of Virtual Reality Therapy, which is the use of virtual reality technology for psychological and occupational therapy. Making the system immersive by using virtual reality technology helps to improve motivation of the patient. The aim of this project is to describe the development of virtual reality game environment for rehabilitation purposes. The main objective is to develop a rehabilitation platform for patients of Bilateral Spastic Cerebral Palsy for the age group of 5-15 years. The environment has been critically designed to be used by the children by making it a game environment rather than a normal environment. The rehabilitation training involves motor and balance rehabilitation. With the integration of sensor modules, the individual is able to interact with the environment using 3-dimensional motion.

A system to assist ALS paralyzed Patients using Video Oculography

SL.NO	USN NO.	NAME
12	1NS18TE010	Anithalakshmi R
	1MS18TE027	Meghana E R
	1MS19TE401	Anjali N
	1MS17TE053	Somik Sen
Mentor Name	Dr. G S Karthikeya	

ABSTRACT

The main aim of this project is to remove difficulties faced by completely paralyzed patients suffering from Amyotrophic lateral sclerosis (ALS). Paralyzed patients cannot communicate as they suffer from speech disorder, the only part that remains unaffected is eyes and communication is possible only through their eye movements. The proposed system is based on a Video Oculography (VOG) technique which is efficient when compared to other existing techniques. In this system methods like face detection, eye blink detection and image processing are employed to communicate the needs of patients to the concerned person through an audio message. Segmentation based on threshold algorithm is used for face and eye recognition to gain details about the eyes. An eye blink detection method is done based on the eyelids movement whether it is open or closed, this design that converts the eye blinks to voice message with more accuracy compared to existing system. The eye blinks that are detected can be helpful in applications such as health assistance, SOS, basic utility.

Health Monitoring Mask using Wearable Antenna Technology

SL.NO	USN NO.	NAME
13	1MS18TE025	Kumar Shubham
	1MS18TE043	Rooyel Mukherjee
	1MS18TE048	Shivam Gupta
	1MS18TE051	Saurabh Patravale
Mentor Name	Ms. Nisha S L	

ABSTRACT

The design and implementation of this project is to monitor the health, parameters like body temperature, pulse rate, blood oxygen level, of a person using a mask. The development of a health monitoring mask with wearable antenna technology is designed and implemented. Wireless Body Area Network is used which include the use of wearable antennas for transmitting and receiving of the data for healthcare systems. A micro strip patch antenna is designed which is integrated on the mask, this will help in transmitting the data. Temperature sensor and a pulse sensor are integrated on the mask along with the antenna. Sensors are connected to a microcontroller (adafruit's flora microcontroller) to which the data is sent and the microcontroller sends this data to the antenna which then transmits this data. At the receiving side, Arduino's Wi-Fi shield is used to receive the data transmitted by the antenna. The health monitoring mask has great potential in monitoring the health of a person and is very useful in very crowded places like malls, public events, schools, colleges, offices, etc.

Remote monitoring and control of pet food dispenser using IoT

SL.NO	USN NO.	NAME
14	1MS18TE062	Vrishanka P N
	1MS18TE014	Devika Shet
	1MS18TE401	Ameen Shamshir
Mentor Name	Dr. Parimala Prabhakar	

ABSTRACT

Overweight dogs and cats account for over 55% of all population, posing major health hazards such as heart and lung problems, kidney disease, and diabetes. The proposed machine will provide a solution to this as it aids in weight management by providing the portioned feedings that pets require. Here, the pet food dispenser is implemented using Arduino Uno, RTC module to track time and manage feeding schedules, a distance sensor to monitor food level, a servo motor SG90 with a wide-angle servo to control the flow of the food dispensed and ESP 32 which is a series of low-cost, low-power system-on-a-chip microcontrollers with integrated Wi-Fi and dual-mode Bluetooth which helps to communicate with applications to infer and draw analysis on different pets and their eating habits. Hence catering to personalized needs of different pets as no two pets are the same. When compared to previous editions, this design has a lot of new features. The feed time, the time difference between consecutive feeds and the quantity of feed supplied can all be adjusted in this design. In addition, an RFID tag can be used in pet collars, which allows to identify the pet identity in case of multiple pets.

IoT Based Medical Assistant for Efficient Monitoring of Patients

SL.NO	USN NO.	NAME
15	1MS18TE016	Disha Kulkarni
	1MS18TE020	Gautham Ram
	1MS18TE032	Pramod Krishna
	1MS18TE034	Prathamesh G. Hirekodi
Mentor Name	Dr. Umesharaddy	

ABSTRACT

Developed a complete model for monitoring patients at regular intervals through an interconnected network among the doctors, nurses and patients with a view to minimizing the workload of the doctors and nurses, reducing the chances of medical professionals being infected by COVID-19 type of contagious disease and increasing the overall efficiency of patient monitoring in hospitals. In the proposed project bio-medical sensors interfaced with microcontroller are used to collect the data of heartbeat rate, body temperature and body movement to get an overview of the present health condition of the patient. The recorded data are stored in an excel file and updated automatically to the internet via OneDrive in every 30 seconds. In case of any large deviation from the normal condition, an automated alarm system will notify the assigned doctor about the condition of the patient. A medication reminder system is added to notify the patient to take the medicine prescribed by the doctor at proper time by an alarm system and a reminder is also sent to the guardian regarding the stock and availability of medicines.

Tumor Metabolism Color Coding with Fusion of Co-registered PET & CT Data

SL.NO	USN NO.	NAME
16	1MS18TE035	Preetham Rakshith P
	1MS18TE004	Abhishek M
	1MS18TE061	Vikram Nag R C
	1MS15TE030	Muhammad Hashim K
Mentor Name	Dr. Shobha K R	

ABSTRACT

Efficient image encryption is the process of securing data contained in an image against unauthorized access ensuring authentication and privacy. A strong image encryption algorithm ensures that information is secured against attacks such as brute force, side channel and statistical attacks. Chaos is a mathematical phenomenon that has been widely studied. Image encryption using chaos has proved to be a strong encryption technique. Logistic maps are 1D discrete-time maps that record the chaotic behavior of a polynomial. Fractals are patterns that emerge from chaotic non-regularities. Employing logistic maps and fractals for image encryption results in a highly uncorrelated encrypted image. The strength of image encryption is measured by sensitive and statistical parameters such as PSNR, correlation and histograms. This work aims to implement an efficient image encryption and decryption algorithm based on strong cryptographic principles and the mathematics of chaos theory.

IoT Based Hydroponics System

SL.NO	USN NO.	NAME
17	1MS19TE402	Kushal C P
	1MS18TE003	Abhishek J
	1MS18TE031	Purneeth Banerjee
Mentor Name	Dr, Arvind Kumar G	

ABSTRACT

Hydroponics is the science of growing plants without soil. Plants are grown in solutions containing necessary minerals and elements. The dependency on the dosage of liquid fertilizers to the water solution determines the healthy growth of the plant. Two lettuce cultivars, Butter crunch and Black Seeded Simpson, will be subjected to different nutrient concentrations of N, K and Ca. the effectiveness of the plant growth in terms leaf health will be studied to the optimal nutrient concentrations. Hydroponics is one of the farming technologies using water media to meet the needs of plant nutrition. Water that has been mixed with mineral nutrients needed by plants streamed continuously to the plant roots. Another advantage of this method is very suitable to be applied in a limited area such as urban home environments, the use of the existing space in the house. In the everyday activities of urban residents spending more time outside the home to work, school, shopping and other activities. Thus, the observation of hydroponic systems remotely be important to be done from anywhere. Availability, temperature, and pH of the water are some of the factors in hydroponic systems that need to be observed periodically to determine the appropriate action.

24/7 Ambulatory Blood Pressure Machine

SL.NO	USN NO.	NAME
18	1MS18TE038	Rahul N
	1MS18TE035	P Abhinav
	1MS18TE050	Siddhart Raju
	1MS15TE045	M D Nihal
Mentor Name	Dr. Karthikeya G S	

ABSTRACT

Ambulatory Blood Pressure Monitoring (ABPM) is when your blood pressure is measured as you move around. It is measured for up to 24 hours. A small digital blood pressure monitor is attached to a belt around your waist and connected to a cuff around your upper arm. It is small enough not to affect your normal daily life and you can even sleep with it on. By measuring your blood pressure at regular intervals up to 24 hours, your doctor is able to get a clear idea of how your blood pressure changes throughout the day. Also, because you are able to carry on with your normal routine, it avoids the problems of 'white coat' syndrome. ABPM devices typically give an alert about 30 seconds before the cuff inflates, allowing patients to sit or stand still with their arm straight during the BP readings. Patients are otherwise advised to go about their usual activities and remove the device only for bathing or vigorous exercise. After the 24-hour period, BP readings are uploaded from the ABPM device using software that calculates BP and pulse averages, minimums, and maximums throughout awake, asleep, and total 24-hour periods.

Microcontroller based Battery Management using Monitoring and Control

SL.NO	USN NO.	NAME
19	1MS18TE002	Abhigna D J
	1MS18TE015	Dhruv Jain
	1MS18TE052	Swapnal Srivasatava
	1MS18TE053	Swapnil Swaraj
Mentor Name	Dr. Satish Tunga	
ABSTRACT		

The global population is expected to exceed 9 billion by 2050. The automotive industry needs more vehicles to meet the needs of a bigger population. The Internet of Things (IoT) presents a massive opportunity to make this task. The first step for this will be effectively utilising battery hence, battery management. This project is about the design and implementation of a system to manage the battery bank like Battery voltage, Load on battery, and temperature in real time. Hardware used for this project is ARM Cortex Stm32 microcontroller which is also responsible for protecting from over charging and detecting faults. The charging will automatically stop once the battery gets full charge. It uses cell balancing algorithms like shunt method and resistor bleeding balancing is a key technology for lithium-ion battery pack in the electric vehicle field. The user will be able to see all information on the I2C Module. For charging batteries, we can use a single or different charging source in this project. This complete setup for changing sources will be an automatic process. Using the IOT platform we will be able to see all this information from anywhere of world location using this IOT advanced technology.

Virtual E Dressing Room

SL.NO	USN NO.	NAME
20	1MS18TE046	Sai Tarun Koppiseti
	1MS18TE063	Yeswanth A D
	1MS18TE029	Abhinav Reddy
Mentor Name	Mr. S J Krishna Prasad	
ABSTRACT		

Globally people are adopting online e-commerce techniques to purchase their required day today products. One of the important activities is to purchase their clothing online. Difficulty in that types of purchases is to test the suitability of their size to the ready made clothing already available. To solve this problem, we decided to build an Online Trial Room Application. Our work is based on creating an application which takes a video of the user using the device camera in real time which extracts the size of user's body. Finally, we extract information on the placement of joints in the body and to transform, rotate, and scale the wearable image onto the user in real-time. The project is implemented in Flask Web application with Open CV, a Python Module. The application works on devices with an inbuilt or attached camera, internet, and web browser. The technologies used are optimized open CV tools and libraries along with React and Fire base platform. In this project, the innovation is in the development of a simpler approach where size of the body are measured in real-time compared to previous works of 2D images mapping of user's body.

EDC RIT EVENTS

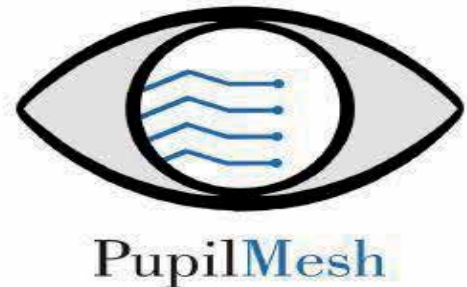
Sl.No	Dates	Event	Description
1	9/06/2022	IPR workshop	Workshop on IPR by Dr. Sarasija Padmanabhan Topic: To educate students about intellectual property rights and patent related queries and also to throw light upon on tangible and intangible properties.
2	22/04/2022	Surge hackathon and quiz	THEME: Provide students with a platform to solve some of the pressing problem we face in our daily lives. The quiz was conducted in two rounds, total of 33 teams participated in quiz.
3	29/03/2022	Panel discussion	Topic: Panel discussion Total students:150-180 In this discussion, every panellist told their stories of how they came up with the ideas for their startups and many more things. Like this, many questions were answered by the members of panel very interestingly and enthusiastically. Then one small Q&A session happened in which students asked some questions to the panel members which were answered
4	28/10/2021	My story session	My story session was held on 28-10-2021 in ESB High Tech seminar hall from 4:00pm to 5:00 pm where an approximate of 120 people attended. The chief guest of the event was Mr. Arvind Nadig who is the cofounder of Li2 and Bramha3. Bramha is the first indigeneous 3D printing technology
5	19/12/2021	Stree shakti utsav	The Stree shakti utsav was organized by the Rotary club of Bangalore. The entire E-CELL team was divided into 6 teams and each team consisted of 4-5 members.
6	3/12/2021	Idea to business	This event was organised in online format. EDC-RIT had organised "How the Business World Functions" by Raghuveer S Bhat. The Session included the skill sharing lecture, some problems solving, knowing customer needs.

7	5/05/2021	Hackathon 2021	The Hackathon was held in month of May. It was a 24 hours competition organised by the E-cell in association with DSC RIT(coding club of RIT). Total 75-80 students had participated in the hackathon.
8	06/02/2020	Idea rise workshop	Idea rise workshop was organised. Startup ideas presented by students were judged by the panel including Vijetha Shastry from TIE Bangalore. Judges emphasized the problem, solution for that problem and what bone means by good idea.
9	20/01/2020	Joint collaboration with SINE, IIT Bombay	The honourable members of the meet were Principal of RIT, Chief Executive of RIT, Dean of RIT, HOD of CSE Department and the presenter and representative of SINE Mr. Prasad Shetty. The main motto was to frame guidelines and procedures for incubation establishing a new technological business incubator.
10	3/06/2020	Workshop on business and tax laws	This workshop was presented by Ashima Arora, Shubam Jain, and Adithya Raj. Ashima spoke about the void agreement, the difference between the wagering agreement and contingent agreement, and a valid contract.
11	8/06/2020	Workshop on Economy Detailing	The workshop consisted of a fair explanation of Micro and Macro Economy as well as the difference between the two. A discussion about why the economy is dropping at times during COVID did also take place.

EDC EVENTS GALLERY



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STARTUPS

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E DRIVES



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SWACHHA
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