BAPUJI EDUCATIONAL ASSOCIATION (REGD.)

BAPUJI INSTITUTE OF ENGINEERING & TECHNOLOGY, DAVANGERE-577004.

An Autonomous Institute Affiliated to Visvesvaraya Technological University, Belagavi, Karnataka
Approved by AICTE, New Dehli and Accredited by NBA and NAAC

NIRMANA 5.0

IN-HOUSE PROJECT EXHIBITION - 2025

COMPENDIUM

17-05-2025

Vision

To be a centre of excellence recognized nationally and internationally, in distinctive areas of engineering education and research, based on a culture of innovation and invention

Mission

BIET contributes to the growth and development of its students by imparting a broad-based engineering education and empowering them to be successful in their chosen field by inculcating in them positive approach, leadership qualities and ethical values

Dr. H. B. Aravind
Principal
Bapuji Institute of Engineering and Technology, Davanagere – 577004, Karnataka

The project exhibition NIRMANA 5.0, scheduled for 17-05-2025, offers a valuable platform for aspiring engineers to present their ideas and knowledge in research and applications across science and technology. I commend all the presenters, reviewers, participants, and the organizing committee for their dedicated efforts in making this exhibition impactful and meaningful for the engineering community.

Bapuji Institute of Engineering and Technology (BIET) recognizes the significance of a holistic education and has fostered an environment where students can grow into well-rounded individuals. BIET is committed to nurturing the right attitude in young minds, encouraging them not only to achieve personal success but also to contribute positively to society. With its state-of-the-art infrastructure, experienced faculty, and a vibrant campus, BIET stands as a leading institution in Karnataka, dedicated to bridging the gap between industry and academia and promoting innovation and entrepreneurship. I extend my heartfelt gratitude to everyone involved in organizing this project exhibition. I wish NIRMANA 5.0 great success.
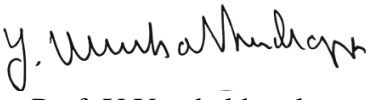
Dr. H. B. Aravind

Prof. Y. Vrushabhendrappa
Director
Bapuji Institute of Engineering and Technology, Davanagere – 577004, Karnataka

I am pleased to note that the institute is organizing the in-house project exhibition, NIRMANA 5.0, on 17-05-2025. With the rapid pace of scientific advancement, it is essential to continually update our knowledge, discuss challenges faced, and share the outcomes of our research. This exhibition serves as a valuable platform for aspiring engineering students in the fields of science and engineering to explore recent progress and future possibilities. It offers an excellent opportunity to exchange insights and experiences regarding new developments, trends, and applications among researchers, academicians, and professionals. I extend my best wishes for the grand success of this event.

Prof. Y Vrushabhendrappa

About Hosting Institute

Bapuji Institute of Engineering and Technology (BIET), Davangere, is one of the top ten self-financing engineering institutions in Karnataka, renowned for its commitment to excellence in technical education. Accredited by NBA and NAAC with an 'A' Grade, BIET is affiliated to Visvesvaraya Technological University (VTU), Belagavi, and recognized under Section 2(f) of the UGC Act.

In recognition of its consistent academic performance and institutional quality, BIET was officially granted Autonomous Status by the University Grants Commission (UGC) and VTU on January 16, 2024. As of early 2025, BIET is classified as an Autonomous Engineering and Technology Institute, offering enhanced academic flexibility to innovate and excel.

Spread across a sprawling 63-acre green campus, BIET offers state-of-the-art infrastructure and a conducive environment for teaching, learning, research, and entrepreneurship. The institute nurtures holistic development through co-curricular and extra-curricular activities and has a strong track record of producing skilled engineers and technocrats who have taken up key positions in reputed organizations in India and abroad. With a clear vision and dedicated approach, BIET continues to advance toward academic excellence and global recognition.

NIRMANA 5.0

Bapuji Institute of Engineering and Technology (BIET) proudly presents NIRMANA 5.0, its annual in-house final-year project exhibition, offering a dynamic platform for students to showcase their innovative solutions and technical prowess. Held on 17th May 2025, the exhibition features projects developed by final-year students across various engineering disciplines, addressing both Industry Defined Problems (IDPs) and User Defined Problems (UDPs).

This year's edition highlights a strong interdisciplinary approach, with students integrating cutting-edge technologies such as Artificial Intelligence, Machine Learning, and the Internet of Things (IoT) to tackle real-world challenges. From document analysis systems to smart healthcare diagnostics, the projects reflect deep technological engagement and creativity. IoT-driven innovations are featured prominently, including automated medicine dispensing units, vehicle safety monitoring systems, and environmental sensors. Projects addressing critical societal needs stand out, with impactful solutions such as vision aids for the visually impaired, AI-based autism prediction tools, and stroke rehabilitation devices.

Sustainability and eco-consciousness are central themes, with students exploring biodegradable packaging materials, green textile processing, and waste-to-resource initiatives including the transformation of PET bottles into 3D printer filament and innovative models for renewable energy generation. Advancements in automation, robotics, and smart infrastructure are also prominently featured, ranging from humanoid robots and intelligent EV charging locators to automated train operation systems. Furthermore, students demonstrate forward-thinking innovation through projects utilizing blockchain technology for secure voting and communications, and decentralized cloud storage systems for data privacy and resilience.

NIRMANA 5.0 is not just an exhibition it's a celebration of innovation, learning, and the spirit of engineering. It reflects the institute's commitment to nurturing creativity, technological competence, and socially impactful thinking, empowering students to shape the future with purpose and confidence.

Outcome of NIRMANA 5.0

- Extend their learning by designing projects, thereby enhancing their employability.
- Demonstrate strong technical knowledge in their chosen project topics.
- Identify, formulate, and solve engineering problems.
- Design engineering solutions for complex challenges using a systems approach.
- Communicate effectively with engineers and the broader community, both in written and oral forms.
- Exhibit the knowledge, skills, and attitudes expected of professional engineers.

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NIRMANA 5.0

In House Project Exhibition-2025

NATIONAL TECHNOLOGY DAY-2025

Chief Guest:
Sri.Pooran Prasad Rajanna
Founder CEO of 1Page

Convener
Dr. A G Shankara Murthy
Professor, Mechanical Dept.

Guest of Honor
Prof. Y Vrushabhendrappa
Director

President
Dr. H B Aravind
Principal

Date : 17ᵗʰ May 2025   **All are Cordially Invited**   Time : 10.00 AM

VENUE: SKILL DEVELOPMENT CENTER, BIET, DAVANGERE

NIRMANA 5.0

List of Staff Coordinators

Sl.No.	Name of the Staff Coordinator	Designation	Department
1.	Dr. A G Shankara Murthy	Professor and Convenor	Mechanical Engineering
2.	Mr. Supreeth	Assistant Professor	Civil Engineering
3.	Dr. Vinayaka Patil A B	Assistant Professor	Mechanical Engineering
4.	Dr. Basavarajappa S R	Associate Professor	Electrical & Electronics Engineering
5.	Mr. Yogesh K O	Assistant Professor	Electronics & Communication Engineering
6.	Dr. Gururaj T	Associate Professor	Computer Science & Engineering
7.	Mr. Sheikh Imran	Assistant Professor	Information Science & Engineering
8.	Mr. Puneeth B H	Assistant Professor	Computer Science-Business System
9.	Mr. Srinidhi Kulkarni	Assistant Professor	Chemical Engineering
10.	Mr. Nandeesh R S	Assistant Professor	Textile Engineering
11.	Mrs. Shruthi S R	Assistant Professor	Bio-Technology

NIRMANA 5.0

List of Experts/Judges for Evaluation of In-house Project Exhibition

| Sl No.	Name of the Expert/Judge	Designation	Stream of Project Evaluation
1.	Dr. Rakesh L	Director, Ada Lovelace Software Pvt. Ltd., Bengaluru	Electrical & Electronics and Electronics & Communication
2.	Sri. Pooran Prasad Rajanna	Founder CEO 1Page, Bengaluru	Computer Science & Engineering and Information Science & Engineering
3.	Mrs. Prathima D S	Senior Manager-International Business, Strand Life sciences Pvt. Ltd., Bengaluru	Bio-Technology and Chemical Engineering
4.	Sri. Kishan M R	Entrepreneur, Mayur Textiles, Industrial Area, Davangere	Textile Engineering
5.	Sri. Chandrashekhar N G	Entrepreneur, Mallikarjuna Motors and Scooters, Davangere	Mechanical Engineering and Civil Engineering
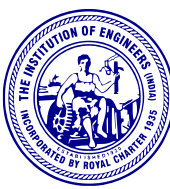
Bapuji Institute of Engineering & Technology, Davangere-577004
NIRMANA 5.0

BRANCH WISE PROJECTS

1. Biotechnology

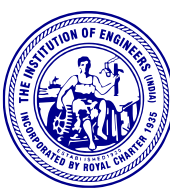| Sl. No	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD22BT009	Nayana G Singh	Biochemical Assessment and Comparative Evaluation on Nutritional Significance of Fermented Foods Used Mixed Rice Varieties	Dr. Vasudeva Nayaka K B L	Innovative Project
	4BD22BT008	Mangala D M			
	4BD22BT010	Nithya G R			
2	4BD22BT017	Vaishnavi V Rao	Extraction of salve from mimosa pudica	Prof. Manasa M B	Innovative Project
	4BD22BT018	Veeksha K V			
3	4BD22BT001	Amrutha VN	An integrated approach to develop a body lotion having anti-oxidant and anti-aging properties	Dr. Manjunath N S	Innovative Project
	4BD22BT002	Anusha AV			
	4BD22BT004	Deepika S			
4	4BD22BT011	Priya M	Uncovering the pharmacological prospects of - Tridax procumbens : a comprehensive study phyto chemical and cytotoxic potential	Prof. Shruthi S R	Innovative Project
	4BD21BT012	Lavanya			
5	4BD22BT015	Sumedha P	Screening Fruit Waste For Cellulolytic Yeasts: A Molecular Approach	Prof. Bilwasri H	Innovative Project
	4BD22BT016	Swathi K M			
6	4BD21BT011	Lakshita M Oswal	Phytochemical Profiling And In Vitro Studies Of Anti-Cancer, Antioxidant, And Antimicrobial Potentials Of Ixora Coccinea Extract	Dr. Vasudeva Nayaka K B L	Innovative Project
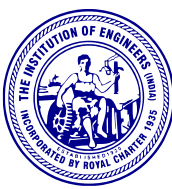
7	4BD21BT001	Ankita Arunkumar Shetty	In Siloco Insights Of Proteins And Xenobiotics	Dr . Veena Kumara Adi	Innovative Project
	4BD21BT003	Chinmayi M S			
	4BD21BT013	M Sriram			
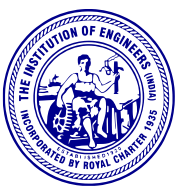
2. Chemical Engineering

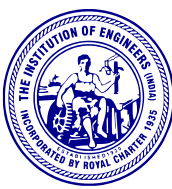| Sl. No	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD21CH007	Keertidhwaj Upadhye	Extraction of Ethyl Alcohol from Fermented Glucose Through the Enzymatic Hydrolysis of Polysaccharides in Maize: A Sustainable Bioprocess Approach	Srinidhi R Kulkarni	Institute Funding
	4BD22CH401	Santhosh Kumar			
	4BD22CH402	Tapassimha P B N			
2	4BD21CH008	Manjula C	Extraction of Caffeine from Tea Powder	Shashikala K J	Innovative Project
	4BD21CH010	N M K Shanthveer			
	4BD21CH015	Shrinidhi H N			
3	4BD21CH006	Gagana. M. B	Biodegradable Food Packaging Using: Biodegradable Paper and Cellulose	Srinidhi R Kulkarni	Innovative Project
	4BD21CH016	Shrusti. V. Ladwa			
	4BD21CH018	Suheena. N. P			

3. Computer Science and Engineering

Sl. No.	USN	Student Name	Project Title	Guide	Sponsorship
1.	4BD21CS013	Anannya Praveen Anvekar	GenCircular: AI-Driven official Circular Generator	Dr. Nirmala C R	Innovative Project
	4BD21CS001	Aarya B Anapur			
	4BD21CS004	Adarsh N			
	4BD22CS402	Amulya P			
2.	4BD21CS133	Samrudh B S	VisionAID:AI Powered Image Caption Generator for Visually Impaired	Prof. Rachana G Sunkad	Institute Funding
	4BD21CS117	Renuka Prasad V G			
	4BD21CS048	Inchara Patel M S			
	4BD21CS114	Ranjitha H G			
3.	4BD21CS180	Vinayaka K	Real time Sketch Recognition System	Dr. Santosh K C	Innovative Project
	4BD21CS147	Shreyas S Hajare			
	4BD21CS150	Sinchana V			
	4BD21CS174	Varshitha R Honnur			
4.	4BD21CS158	Srushti Choudhari	Travel Planner with Multi-AI Agents	Prof. Vishwanath V K	Innovative Project
	4BD21CS149	Siddesh N D			
	4BD21CS161	Suhas Malipatil			
	4BD21CS173	Varsha P S			
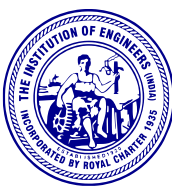
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5.	4BD21CS019	Anusha G D	AI and NLP-based suicidal ideation prediction	Prof. Madhu N Hiremath	Innovative Project
	4BD21CS031	Chandana H S			
	4BD21CS034	Darshitha R			
	4BD22CS407	Puneeth Gowda			
6.	4BD21CS140	Shashidhar V Somasagar	Explainable AI for Enhancing Decision-Making in Precision Agriculture	Dr. Naseer R	Innovative Project
	4BD21CS152	Snehan			
	4BD21CS146	Shreya S B			
7.	4BD21CS079	Mohammed Ruman Malik	Saviour: An Women Safety Android Application.	Dr. Naveen H M	Innovative Project
	4BD21CS088	Nikhita Shashikant K			
	4BD21CS094	Pallavi A R			
	4BD21CS097	Prajwal H P			
8.	4BD21CS041	Divya A Hiremath	LegalEase AI: Intelligent legal document analyzer with Agentic Explainable AI	Prof. Radhika Patil	Innovative Project
	4BD21CS026	Bi Bi Safiya			
	4BD21CS071	Manoj G M			
	4BD21CS190	Ojhas C S			
9.	4BD21CS165	Tasbiha Tazeen	Cyberbullying prediction using deep learning	Prof. Rahima B	Innovative Project
	4BD21CS168	Thejaswini C R			
	4BD21CS171	Vachan C			

10.	4BD21CS002	Aashish Kumar Jha	MetaMask Integrated Decentralised Cloud Storage Using IPFS	Dr. Chetana Prakash	Innovative Project
	4BD21CS078	Mohammed Nihar N R			
	4BD22CS412	Sankalpa J			
11	4BD21CS009	Amit Kumar Yadav	Sugarcane Disease Detection Using Deep Learning and LIME	Prof. Drusti S Shastri	Innovative Project
	4BD21CS003	Abhishek G M			
	4BD21CS006	Aisiri S V			
12.	4BD21CS029	Champa B G	Adaptive Region Based Normalization in CNN for Image Restoration	Dr. Gururaj T	Innovative Project
	4BD21CS017	Anjana Reddy			
	4BD21CS035	Deeksha G			
	4BD21CS038	Devendr Harijan			
13.	4BD21CS063	Kruthik R	Blockchain Based End-to-End Encrypted Chat & File Sharing App	Dr. Jyothi G C	Innovative Project
	4BD21CS066	Maddela Guna Naga Vishnu			
	4BD21CS033	D H Prajwal			
14.	4BD21CS049	Inchara Y S	Code Generator using Agentic AI	Prof. Mohammad Muthahir	Institute Funding
	4BD21CS055	Karthik Kadam			
	4BD21CS058	Kavitha N Y			
	4BD22CS409	Ranjitha S			
15.	4BD21CS154	Spandana K N	A Multilingual explainable AI model for autism prediction	Dr. Abdul Razak M S	Innovative Project
	4BD21CS093	P Vasudev			
	4BD21CS102	Priyanka P S			
	4BD21CS081	Nandana R			
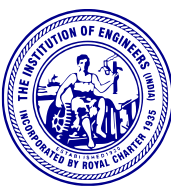
16	4BD21CS179	Vinay V	SixthSense AI: An Android - Based Real-Time Assistance and Monitoring System for Visually Impaired Users.	Dr. Naveen H M	Innovative Project
	4BD21CS191	Chethan E U			
	4BD21CS182	Vismaya S M			
	4BD21CS176	Vijaydeep P			
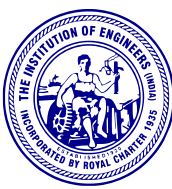
4. Civil Engineering

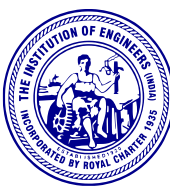| Sl. No	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD21CV076	Shashank B Reddy	An Experimental Study on Effect of Slag and Fine aggregates on Fresh and Hardened properties of Self Compacting Concrete	Prof. Savan R G Basavaraj	KSCST
	4BD21CV083	Suhas S			
	4BD21CV084	Suma P C			
	4BD22CV423	Priyanka N			
2	4BD21CV085	Swathi K V	An Experimental Study on Traffic Synchronisation in One Direction for Existing Major District Road in Davanagere	Prof. Supreeth	Institution funding
	4BD21CV089	Vadiraj P			
	4BD21CV091	Varun M			
	4BD22CV429	Shekharagouda V K			

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NIRMANA 5.0

5. Electronics and Communication Engineering:

SL No	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD21EC063	Niveditha N S	Optimization Of Designing Of Smart & Secure Single Atm Card For Multiple Bank Account	Poornima G N	Institute Funding
	4BD21EC074	Raksha P			
	4BD21EC109	Uma M R			
	4BD21EC121	Shreya K S			
2	4BD22EC407	Khushi V	Smart Shop Cart	Vanishree H V	Innovative Project
	4BD22EC416	Pooja D Rao			
	4BD22EC417	Uzma Naaz			
	4BD22EC418	Varun H S			
3	4BD21EC070	Prajwal S	Optimization Of Humanoid Robot	Dr. Shubha V Patel	Institute Funding
	4BD21EC072	Raghavendra V Revankar			
	4BD21EC080	Renukaradhya M S			
4	4BD21EC002	Aaliya khan	Air Quality Monitoring And Billing System For Industries	Dr Pavan Kumar D	Innovative Project
	4BD21EC003	Abdul khadar jilani			
	4BD21EC010	Ankita R			
	4BD21EC060	Nikita S Suryawanshi			

5	4BD21EC056	Neha D	Optimization Of Auomatatic Medical Dispacther With Dynamic Tele Monitoring System Usin Iot In Rural Areas	Savitri G R	Innovative Project
	4BD21EC076	Rakshitha Pawar			
	4BD21EC092	Shalini C			
	4BD21EC122	Kruthika Rani DS			
6	4BD21EC085	Sahana K	Optimization Of In-Cab Signalling And Traffic Management System Using Automated Train Operator	Yogesha K O	KSCST
	4BD21EC086	Sahana T			
	4BD21EC088	Sanjitha M S			
	4BD22EC405	Dhananjaya H			
7	4BD21EC107	Tejaswini T	Smart Aquaphonic fish tank using IoT	Dr Nirmala S O	Innovative Project
	4BD21EC113	Vikas H H			
	4BD21EC114	Vishal S B			
	4BD21EC116	Yasha M			
8	4BD21EC029	Deekshitha G A	Development of Dynamo solar powered E-bicycle	Dr Leela G H	Innovative Project
	4BD21EC087	Salma Faiza			
	4BD21EC101	Smitha K M			
	4BD21EC103	Soujanya Patil			

6. Electrical and Electronics Engineering

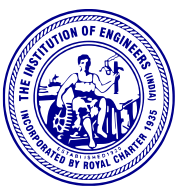| Sl. No.	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD22EE401	Akasha G. C.	Electrical Power from Air Walker	Shilpa S. K.	Institute Funding
	4BD22EE402	Divakara D.			
	4BD22EE404	Faizal Ahamed			
	4BD22EE415	Yasmeen Taj			
2	4BD22EE403	E. H. Akash	Dynamic Wireless EV Charging System	Dr. Shivakumara Swamy G. M.	Innovative Project
	4BD22EE406	Hemanthachar S.			
	4BD22EE409	Manoj A. H.			
	4BD22EE412	Sagar K.			
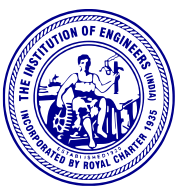
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NIRMANA 5.0

7. Information Science and Engineering:

Sl. No.	USN	Student Name	Project Title	Guide	Sponsorship
1	4BD21IS006	Aishwarya B S	Automated Medicine Dispensing Conveyor for hospitals using IoT	Dr Patil N S	Innovative Project
	4BD21IS060	Manasa K M			
	4BD21IS086	Pratiksha M K			
	4BD21IS115	Sanjana S			
2	4BD21IS005	Aishwarya A M	Vision AI: An Intelligent Voice Assistant for the Visually Impaired	Prof. Sushma C	Institute Funding
	4BD21IS023	Chandana M			
	4BD21IS077	Pavan Kumar J S			
	4BD21IS120	Shivaprasad P Patil			
3	4BD21IS061	Manish S Chikmath	IoT Based Smart System for Autonomous Vehicle Safety	Dr. Bhuvaneshwari K V	Institute Funding
	4BD21IS083	Prajwal S Mallur			
	4BD21IS117	Shankar N Hulagut			
	4BD21IS157	Yaligar Ravi Teja			
4	4BD21IS034	Dhanush A G S	Automated Traffic Law Enforcement: Helmet Detection and E-Challan System	Prof. Roopa D E	Innovative Project
	4BD21IS145	Tharun H			
	4BD21IS110	Sararth U			
	4BD21IS097	Renuka Prasad D			
5	4BD21IS092	Rakshitha LG	Garbage management system for smart city	Prof. Sheik Imran	Innovative Project
	4BD21IS104	Sahana BR			
	4BD21IS113	Sanjana GK			
	4BD21IS128	Sinchana RB			

6	4BD21IS062	Manoj M N	Blockchain Based Voting System	Dr. Poornima B	Innovative Project
	4BD21IS066	Nandan S			
	4BD22IS403	G Manjunatha			
	4BD22IS404	H M Tejas Kumar			
7	4BD21IS154	Vidya K M	Deep Learning and IOT based Forest Fire Detection and Alert system	Prof. Manjushree K R	Innovative project
	4BD21IS071	Nikitha G N			
	4BD21IS114	Sanjana R			
	4BD21IS009	Akshatha K M			
8	4BD21IS031	Darshan V M	Credit Card Fraud Detection Using Machine Learning	Prof. Rekha B H	Innovative project
	4BD21IS026	Chinmay H R			
	4BD21IS072	Nithish Kumar N			
	4BD21IS029	Darshan K G			
9	4BD21IS008	Akash P	Smart EV Station Locator and Slot Booking App	Prof. Puneeth S P	Innovation project
	4BD21IS032	Deeksha M			
	4BD21IS039	Gagan J K			
	4BD21IS132	Sneha T R			
10	4BD21IS042	Geethanjali B P	Enhancing Stroke Rehabilitation using Wearable Sensors and ML-Powered Analytics	Prof. Santhosh T	Innovation project
	4BD21IS049	Kavya M Patil			
	4BD21IS057	M Rashmi			
	4BD22IS401	Chandana P			
11	4BD21IS151	Vaishnavi Desai	An EEG-Based Braille Interviwing System For Blind Individuals And Cognitive Assessment Using Machine Learning	Dr. Ashoka K	Innovation Project
	4BD21IS063	Mehek N			
	4BD22IS412	Simran Banu			
	4BD21IS079	Pooja P S			

8. Mechanical Engineering

Sl No	USN	Name of the student	Project Title	Guide	Sponsorship
1	4BD21ME006	M J Rakshith	S.M.A.R.T Portable Fruit Preservation System	Dr. G Manavendra	AICTE
	4BD22ME007	Madhu R Gouli			
	4BD21ME010	Nikitha D M			
	4BD21ME022	Yashwanth N V			
2	4BD21ME014	Rajiv M H	Outdoor Air Quality Management and Gas Leak Detection Monitoring Using IoT	Dr. A.B.Vinayaka Patil	Innovative Project
	4BD22ME409	Ganesha T M			
	4BD22ME413	Kirankumar S P			
	4BD22ME415	Mahesh G S			
3	4BD21ME012	Pruthviraj P	Development of Advanced Car Door Opening Technology for Accident Prevention	Dr. S. Kumarappa	Institute Funding
	4BD21ME011	Prajwal A B			
	4BD21ME016	Siddarath H C			
	4BD21ME20	Vinay G H			
4	4BD21ME002	Aditya D	Design And Development Of Hot Plasma Device	Dr. Sharan A S	NAIN-2.0
	4BD21ME004	Annappa N N			
	4BD21ME013	Rahul Raj K P			
	4BD21ME023	Yogesh P S			
5	4BD22ME403	Akhilesh G R	Design and Development of a Six-Legged Spider Robot	Dr. N R Pradeep	Innovative Project
	4BD22ME425	Nithin K P			
	4BD22ME429	Sandeep J			
	4BD22ME436	Vasudevachari R			

6	4BD22ME422	Nagaraja E R	Eco Printing: Transforming PET Bottles into 3D Printer Filament	Dr. K C Devendra	Innovative Project
	4BD22ME423	Nagaraja K			
	4BD22ME424	Nandeesh Basavaraj Balli			
	4BD22ME434	Siddesh N			
7	4BD21ME021	Vinodakrishna A S	Design And Fabrication Of Electrical Fertilizer Spreder	Dr.Prashanth S J	Innovative Project
	4BD21ME003	Ajay Kumar H K			
	4BD21ME008	Manjunath H R			
	4BD21ME009	Manu H M			

9. Textile Technology:

Sl No	USN	Name of the student	Project Title	Guide	Sponsorship
1	4BD21TX003	Chaitra D R	Comparing Cotton Fabric Dyed with Mineral Dye (Coffee) in Different Ratios	Mrs Kavya L	Innovative Research Project
	4BD21TX020	Thanushree D			
	4BD22TX403	Girish G S			
	4BD22TX407	Srinivas D B			
2	4BD21TX001	Aditya kiran M. S.	Development of flame retardant and wrinkle resistant cellulosic fabric using Eco-friendly finishing agents	Dr Dinesh Y N	Innovative Research Project
	4BD21TX004	Deepak Dewasi			
	4BD21TX010	Srujan. N. H			
	4BD22TX406	Smitha GM			
	4BD22TX408	Sritej R Kandakur			
3	4BD21TX007	Lavanya Bisati	Development of table top fiber opener	Mr. Nandeesh R S	Institute Funding
	4BD21TX019	Tejaswini BS			
	4BD21TX023	Yashodha G			
	4BD22TX405	Jayanth B K			

BIOTECHNOLOGY
BIOCHEMICAL ASSESMENT AND COMPARATIVE EVALUATION ON NUTRITIONAL SIGNIFICANCE OF FERMENTED FOODS USED MIXED RICE VARITIES

Project Associates: Nithya.G.R , Mangala.DN
Project Guides: Dr . Vasudeva Nayaka

ABSTRACT:

This study examines how fermenting mixed rice varieties—both traditional and pigmented—affects their nutritional value. Fermentation was found to improve protein content, amino acid profiles, vitamins, minerals, antioxidant levels, and enhance the presence of beneficial microorganisms such as lactic acid bacteria. Nutrient levels varied depending on the rice combination used, indicating that diversity in rice varieties can significantly enhance the health benefits of fermented foods.

INTRODUCTION:

Fermentation is a traditional process that improves food's shelf life, flavor, and nutritional value through microbial action. It enhances digestibility and boosts beneficial compounds in foods. Rice, a global staple, provides varied nutrients, especially when using mixed types like white, brown, red, and black rice.
Pigmented varieties are rich in antioxidants, fiber, and micronutrients. Fermenting these can improve the bioavailability of proteins, amino acids, vitamins, and minerals while reducing anti-nutrients. It also promotes probiotic growth, adding functional health benefits.
This study examines how fermentation affects the nutritional and functional properties of mixed rice varieties, focusing on key improvements in overall health value.

OBJECTIVES:

- Biochemical: Track nutrient changes during fermentation
- Microbial: Identify microbes and their benefits
- Nutritional: Check bioavailability, antioxidants, probiotics

METHODOLOGY:

A. Sample Preparation: Wash and select different rice types
- Mix in set ratios (e.g., 50:50, 70:30)
- Cook using standard procedures

B. Fermentation Process: Natural: Ferment at room temperature
- Controlled: Add selected microbes under sterile conditions
- Optimize conditions: 25°C–37°C, 24–72 hours

C. Biochemical Assessment**:** Carbohydrates**:**
- Benedict's Test (color change)
- Anthrone Test (absorbance at 620 nm**)**
- Proteins: Lowry method
- Lipids: Standard protocols

D. Comparative Evaluation:
- Analyze nutrient differences in:
1. Non-fermented rice
2. Fermented single varieties
3. Fermented mixed varieties

CONCLUSION:

The study on the biochemical assessment and comparative evaluation of the nutritional significance of fermented foods using mixed rice varieties demonstrates the profound potential of fermentation as a tool for enhancing the nutritional and functional properties of rice-based foods.

BIOTECHNOLOGY

EXTRACTION OF SALVE FROM MIMOSA PUDICA LEAVES

Project Associates: Veeksha K V, Gladys Sonia P, Sudha S Koppad
Project Guides: Prof. Manasa M B

ABSTRACT:

This study involves formulating a topical salve using bioactive compounds extracted from *Mimosa pudica* leaves. The extract was obtained through methanol maceration of air-dried, powdered leaves and combined with beeswax and coconut oil in a 1:4:2 ratio. The final salve was evaluated for pH, organoleptic properties, and spreadability to ensure quality and skin compatibility. Microbial analysis confirmed the formulation was free from harmful pathogens, supporting its potential as a safe herbal product.

INTRODUCTION:

Allopathy remains the dominant system in modern healthcare, especially in urban regions, offering rapid and standardized treatment options. However, traditional medicine systems like Ayurveda continue to play a significant role, particularly in rural areas where access to mainstream healthcare may be limited. Ayurveda emphasizes the use of natural herbs and plant-based formulations, many of which have been scientifically proven to possess therapeutic properties.

In recent years, there has been a renewed global interest in herbal remedies due to growing concerns over antibiotic resistance, side effects of synthetic drugs, and a shift toward sustainable and eco-friendly healthcare practices. Among the various medicinal plants, *Mimosa pudica*, commonly known as the "Touch-me-not" plant, has gained attention for its anti-inflammatory, antimicrobial, and wound healing properties. Traditionally used in Indian medicine, its leaves are rich in bioactive compounds that support skin regeneration and infection control. This project focuses on the formulation of a topical salve using *Mimosa pudica* leaf extract blended with beeswax and coconut oil. The goal is to create a skin-friendly, natural preparation that can be used for treating minor cuts, wounds, and potentially oral infections. Evaluating the salve's pH, spreadability, sensory qualities, and microbial safety ensures it meets basic pharmaceutical standards while retaining its natural benefits.

OBJECTIVES:

1. Extraction of Active Compounds.

2. Formulation of salve.

3. Antimicrobial activity.

METHODOLOGY:

Fresh *Mimosa pudica* leaves were collected, washed with distilled water, and air-dried in an oven at 40–50°C to preserve bioactive compounds. The dried leaves were ground into a fine powder, and 10–20 g of the powder was macerated in a 1:10 methanol ratio for 24–48 hours. After filtration, the extract was concentrated by evaporating the solvent below 40°C. Beeswax (10 g) and coconut oil (40 mL) were melted using a double boiler, then mixed with 20 mL of the extract. The final mixture was poured into containers and refrigerated for 10–15 minutes to solidify.

CONCLUSION:

The salve was successfully formulated using *Mimosa pudica* extract, beeswax, and coconut oil in a 1:4:2 ratio for optimal consistency. It solidified within 20–30 minutes at room temperature and showed good spread ability for topical use. The natural ingredients ensured skin compatibility and therapeutic potential. Quality tests, including pH and stability checks, confirmed the salve's reliability.

BIOTECHNOLOGY
AN INTEGRATED APPROACH TO DEVELOP A BODY LOTION HAVING ANTIOXIDANT AND ANTIAGING PROPERTIES

Project Associates: Deepika S, Amrutha V N
Project Guide: Dr .Manjunath N S

ABSTRACT: The growing demand for skincare products with natural, multifunctional benefits has propelled the exploration of plant-based oils in cosmetic formulations. Mango kernel oil, a byproduct of mango seed processing, has garnered attention due to its rich composition of bioactive compounds. These constituents confer potent antioxidant and anti-inflammatory properties, making it a promising candidate for skincare applications. This study presents an integrated approach to developing a body lotion enriched with mango kernel oil. Additionally, in vitro and in vivo assays were conducted to assess the antioxidant capacity (using DPPH and ABTS assays) and anti-inflammatory activity (via inhibition of pro-inflammatory cytokines such as IL-6 and TNF-α). The optimized formulation demonstrated excellent skin-feel, hydration, and stability, with a significant reduction in oxidative stress markers and inflammation in tested models.

INTRODUCTION: The increasing shift toward natural and sustainable ingredients in skincare has led to a surge in the use of plant-based oils for their therapeutic and cosmetic properties. One such ingredient gaining popularity is mango kernel oil, extracted from the seeds of *Mangifera indica* (mango fruit). Often discarded as industrial waste, mango kernels are now recognized as a rich source of bioactive compounds, including essential fatty acids, polyphenols, and tocopherols, all of which contribute significantly to skin health.

Mango kernel oil exhibits remarkable antioxidant and anti-inflammatory properties. Its high content of phenolic acids and flavonoids helps combat oxidative stress by neutralizing free radicals, which are known contributors to skin aging and damage. making it a suitable candidate for use in lotions designed to address conditions like dryness, sensitivity, or inflammatory skin disorders. provides antioxidant protection. This study employs a holistic approach to formulation by incorporating mango kernel oil into a topical body lotion and evaluating its antioxidant activity through DPPH and ABTS assays, and anti-inflammatory potential via inhibition of pro-inflammatory cytokines such as IL-6 and TNF-α in both in vitro and in vivo settings.

The aim is to create a skin-friendly formulation that not only offers cosmetic appeal (good spreadability, texture, and absorption) but also delivers tangible therapeutic benefits, thus aligning with the growing consumer preference for naturally derived, effective skincare solutions.

OBJECTIVES:

1. Analyze the chemical composition of mango kernel oil to identify bioactive compounds responsible for antioxidant and anti-inflammatory properties.
2. Design and development of a stable body lotion formulation incorporating mango kernel oil as the key active ingredient.

METHODOLOGY:

Mango kernel oil + Cream base + Glycerine

Final product
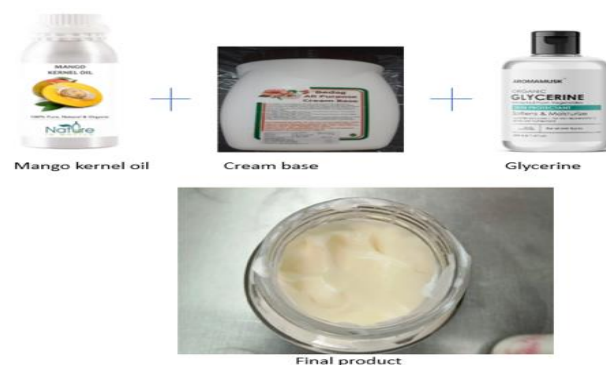
CONCLUSION: Formulating a body lotion with mango kernel oil & vanilla essence, offers a promising approach to promoting skin health. Mango kernel oil provides essential moisturization contribute potent antioxidant and anti- inflammatory properties.

BIOTECHNOLOGY

UNCOVERING THE PHARMACOLOGICAL PROSPECTS OF *TRIDAX PROCUMBENS*: A COMPREHENSIVE STUDY ON PHYTOCHEMICAL AND CYTOTOXIC POTENTIAL

Project Associates: Ms. Lavanya K M, Ms. Priya M
Project Guides: Prof. Shruthi S R

ABSTRACT: This study evaluates the medicinal potential of *Tridax procumbens*, a widely recognized herb in traditional medicine renowned for its anti-inflammatory, antimicrobial, antioxidant, and wound-healing properties. Phytochemical screening of the methanolic extract revealed a rich presence of bioactive compounds including flavonoids, alkaloids, and tannins, which are known to contribute to therapeutic efficacy. The extract demonstrated potent antioxidant activity with IC_{50} values of 63.87 µg/ml and 47.78 µg/ml in DPPH and ABTS assays respectively, indicating strong free radical scavenging ability. Furthermore, antimicrobial assays showed significant inhibitory effects against clinically relevant pathogens such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans*. Cytotoxicity tests revealed promising anti-cancer activity against breast cancer cell lines, with an IC_{50} of 87.02 µg/ml. Complementary molecular docking studies supported these bioactivities by demonstrating strong binding affinities of key phytochemicals like quercetin and luteolin to target proteins involved in inflammation, microbial resistance, and oxidative stress pathways. These comprehensive findings underscore the therapeutic potential of *T. procumbens* and provide a strong basis for further investigation into its development as a plant-based medicinal agent.

INTRODUCTION: *Tridax procumbens*, commonly known as "coat buttons," is a medicinal plant widely used in traditional medicine for its wound healing, anti-inflammatory, and antimicrobial properties. Rich in bioactive compounds like flavonoids, alkaloids, and tannins, it shows strong potential in modern therapeutics. Due to rising interest in natural remedies, this study explores the phytochemical, antioxidant, antimicrobial, and cytotoxic properties of *T.procumbens*, along with molecular docking analysis to evaluate its interaction with disease-related proteins. The findings suggest its promising role in developing plant-based drugs.

OBJECTIVES:

- To perform molecular docking with target proteins.
- To assess its antimicrobial ,anticancer and antioxidant activities.
- To evaluate its cytotoxic effects on breast cancer cells.

METHODOLOGY:
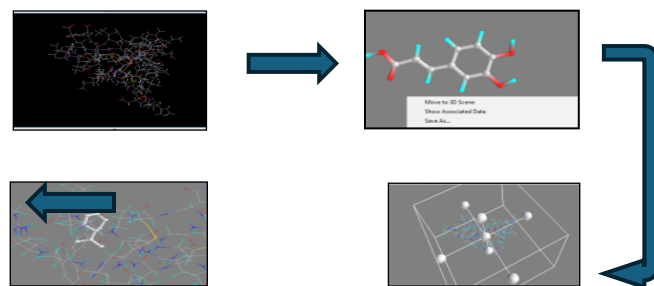
CONCLUSION:

Tridax procumbens shows strong pharmacological potential with significant antioxidant, antimicrobial, and anticancer properties. The presence of bioactive compounds like flavonoids and alkaloids supports its traditional medicinal uses. Its effectiveness against pathogens and breast cancer cells suggests it could be developed further for therapeutic applications, pending more detailed studies.

BIOTECHNOLOGY

SCREENING FRUIT WASTE FOR CELLULOLYTIC YEASTS: A MOLECULAR APPROACH

Project Associates: Sumedha P, Swathi KM
Project Guide: Prof. Bilwashri H

ABSTRACT:

Fruit waste, a major component of agro-industrial residues, is rich in lignocellulosic material and represents a valuable but underutilized resource for microbial bioprospecting. Yeast isolates were obtained through selective enrichment techniques and screened for cellulase activity using carboxymethyl cellulose (CMC) agar and Congo red staining. Enzymatic activity values were calculated to assess cellulolytic potential. These findings highlight the potential of cellulolytic yeasts as biocatalysts for waste valorisation and the development of sustainable bioprocesses for the utilization of fruit waste.

INTRODUCTION:

Fruit waste, a major component of agro-industrial residues, is rich in organic matter, including cellulose and hemicellulose, making it a valuable substrate for microbial exploration. Cellulolytic yeasts produce enzymes to break down cellulose i.e. a promising alternative to traditional cellulolytic microbes due to their rapid growth, tolerance to extreme conditions, and compatibility with industrial fermentation processes.

This study focuses on the screening of various fruit wastes to isolate and identify yeast strains with cellulolytic activity. Using a molecular approach, the isolates will be characterized to determine their genetic diversity and potential for cellulose degradation.

OBJECTIVES:

1. To isolate yeast strains from fruit wastes.
2. To screen the isolated yeasts for cellulolytic activity.
3. To perform biochemical characterization and molecular identification of cellulolytic yeasts.

METHODOLOGY:

CONCLUSION:

This study successfully demonstrated that fruit waste serves as a viable and rich source of cellulolytic yeasts. Six yeast strains capable of cellulase production were successfully isolated, and in these we got CDY1, CDY2, CDY3, CDY5, CDY6 which contains highest enzyme activity i.e. cellulase. Molecular characterization through sequencing and genetic analysis identified cellulolytic activity. These findings support the use of fruit waste not only as a substrate for microbial growth but also as a sustainable resource for isolating industrially valuable microorganisms. Further studies are focused for bioethanol production, and enzyme bioprocessing.

BIOTECHNOLOGY

PHYTOCHEMICAL PROFILING AND IN VITRO STUDIES OF ANTI-CANCER, ANTIOXIDANT, AND ANTIMICROBIAL POTENTIALS OF IXORA COCCINEA EXTRACT

Project Associate: Lakshita M Oswal
Project Guide: Dr. Vasudeva Nayaka K B L

ABSTRACT

The present study investigates the phytochemical composition, antioxidant potential, antimicrobial efficacy, and cytotoxic effects of *Ixora coccinea* plant extract. Standard qualitative assays revealed the presence of carbohydrates, tannins, terpenoids, saponins, and flavonoids. Antimicrobial activity was assessed using Minimum Inhibitory Concentration (MIC) and well diffusion methods against bacterial strains such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *E. coli*. Antioxidant activity was evaluated using ABTS and DPPH radical scavenging assays, with percentage inhibition and IC_{50} values calculated to quantify free radical neutralization capacity. Additionally, cytotoxicity was determined using the MTT assay on the human breast cancer cell line MCF-7, showing dose-dependent effects compared to the standard drug Doxorubicin. The findings highlight the therapeutic potential of *Ixora coccinea* as a natural source of bioactive compounds with significant antioxidant and anticancer properties.

INTRODUCTION

Ixora coccinea, commonly known as Jungle Flame or Flame of the Woods, is an ornamental evergreen shrub from the Rubiaceae family, native to tropical Asia and widely found in India. Traditionally used in folk medicine, this plant has attracted scientific attention due to its rich phytochemical profile and diverse pharmacological activities. It contains active constituents known for wound healing, antimicrobial, antioxidant, and anticancer properties. With the increasing demand for natural therapeutic agents, *Ixora coccinea* presents a valuable candidate for further investigation.

OBJECTIVES

- To analyze the phytochemical constituents of *Ixora coccinea* extract.
- To evaluate its in vitro anti-cancer, antioxidant, and antimicrobial activities.
- To explore its potential as a natural source for novel therapeutic agents.

METHODOLOGY
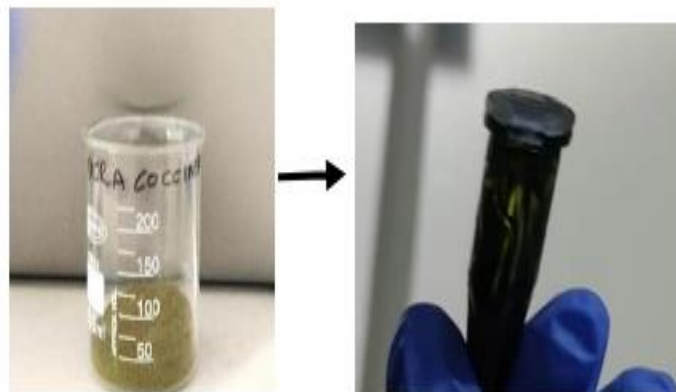
Extracted plant powder   semi solid form of the sample

CONCLUSION

The methanolic extract of *Ixora coccinea* demonstrated a rich phytochemical profile and significant in vitro antioxidant, antimicrobial, and cytotoxic activity. These results indicate its potential as a natural source of bioactive compounds that may contribute to the development of plant-based therapeutic agents for treating infections, oxidative stress, and cancer

BIOTECHNOLOGY

"IN SILOCO INSIGHTS OF PROTEINS AND XENOBIOTICS"

Project Associates: Ms. Ankita Arunkumar Shetty , Ms. Chinmayi M S ,Mr.M Sriram .
Project Guides: Dr . Veena Kumara Adi

ABSTRACT

The accumulation of xenobiotics in the body is a significant health concern, as these toxic compounds disrupt biological processes, cause organ damage, weaken immunity, and contribute to chronic diseases and disorders.In this study, bioinformatics tools, including molecular docking, were employed to analyze the interactions and potential of accumulation of xenobiotics in the body. A set of 19 xenobiotics (DDT, Chlordene, Toxaphene, Mirex, Kepone, Lindane, Imidacloprid, Chloropicin, Chlorothalonil) and organophosphate pesticides (Malathion, Parathion, Diazinon, Fenthion, Dichlorvos, Chlorpyrifos, Ethion, Triazophos, Dimethoate, Dicrotophos) were docked counter to 4 major blood proteins—albumin, globulin, fibrinogen, and hemoglobin—as macromolecules.
On the basis of binding scores, chlordane has the strongest interaction with the blood proteins compared to other 18 xenobiotics, which concludes that it has more potential to accumulate in the body. Albumin and globulin showed the strongest binding affinity for most ligands in contrast to other blood proteins and ligand interaction.

INTRODUCTION

The rising global population has led to increased agricultural productivity, heavily relying on pesticides. However, excessive use of pesticides—especially organochlorines and organophosphates—has caused widespread environmental pollution and health risks, as these chemicals persist in the environment and bioaccumulate through the food chain. Blood, a crucial body fluid, contains proteins like albumin, globulin, fibrinogen, and hemoglobin that perform vital functions such as oxygen transport, immune defense, clotting, and maintaining fluid balance. Pesticides can bind to these proteins, disrupting their normal functions.
This study uses in silico molecular docking to investigate how selected organochlorine and organophosphate pesticides interact with major blood proteins. The aim is to predict binding affinities, identify strongly binding compounds, and understand their potential to accumulate in the human body—highlighting the risks posed by long-term pesticide exposure.

METHODOLOGY:
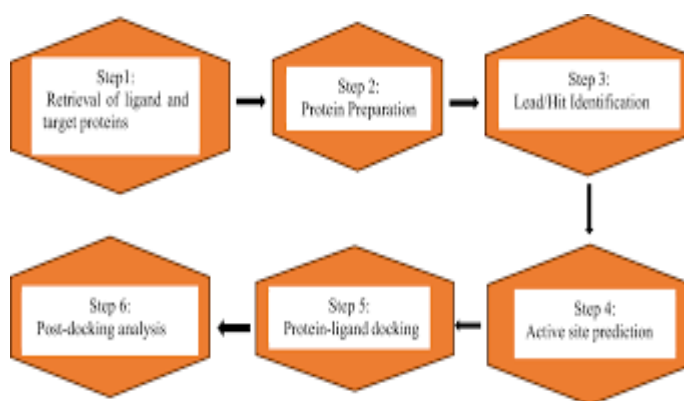
CONCLUSION

Our study reveals that organochlorines showed greater binding affinity towards the blood proteins compared to organophosphates. The organochlorines, including DDT, chlordane, and mirex, demonstrated stronger binding affinities to all proteins, particularly to albumin and globulin.
These interactions suggest the potential for xenobiotics to influence protein structure and function, which can lead to disruption of physiological processes in humans. Albumin showed the strongest ligand interactions, suggesting its critical role in transporting these xenobiotics through the bloodstream, increasing their systemic toxicity. Globulin exhibited strongest affinities, indicating possible impacts on immune functions. Hemoglobin showed lower binding affinity, though interactions could impair oxygen transport. Fibrinogen exhibited moderate affinities, indicating moderate interaction levels.

CHEMICAL ENGINEERING

EXTRACTION OF ETHYL ALCOHOL FROM FERMENTED GLUCOSE THROUGH THE ENZYMATIC HYDROLYSIS OF POLYSACCHARIDES IN MAIZE: A SUSTAINABLE BIOPROCESS APPOROACH

Project Associates: Santhosh Kumar, Tapassimh P Bn, Keertidhwaj Upadhye
Project Guides: Mr. Srinidhi. R. Kulkarni
Funding Agency: Institute Funding 5000/-

ABSTRACT: The findings of this project aim to provide valuable insights into the industrial-scale manufacturing of ethanol and propose recommendations for process optimization and innovation. The study concludes that the wet corn milling process remains a competitive and sustainable approach for ethanol production, aligning with global efforts toward renewable energy and circular economy principles. Additionally, the economic feasibility and environmental impact of the process are evaluated, considering factors such as raw material availability, process efficiency, energy consumption, and emissions. Comparative analysis with alternative production methods, such as dry milling, is also included to underline the advantages of the wet corn milling process.

INTRODUCTION: Ethanol, a renewable and sustainable biofuel, has emerged as a critical solution to some of the world's most pressing energy and environmental challenges. As a clean-burning fuel, ethanol plays a vital role in reducing greenhouse gas emissions, which are primary contributors to global warming and climate change. When blended with gasoline, ethanol decreases the release of harmful pollutants such as carbon monoxide, nitrogen oxides, and particulate matter, leading to improved air quality and public health benefits. These attributes position ethanol as a cornerstone in the global transition to cleaner energy sources. reduce production costs and enhance their industrial applicability.

OBJECTIVES:

1. **Process Understanding:** To provide a detailed understanding of the steps involved in the wet corn milling process, including steeping, grinding, separation, fermentation, distillation, and dehydration.

2. **Economic Evaluation:** To assess the economic viability of the process, including an analysis of raw material costs, energy consumption, and market opportunities for ethanol and by-products.

3. **Environmental Assessment:** To evaluate the environmental impact of the process, focusing on energy efficiency, water usage, emissions, and waste management.

METHODOLOGY:

Wet-Mill Ethanol Process
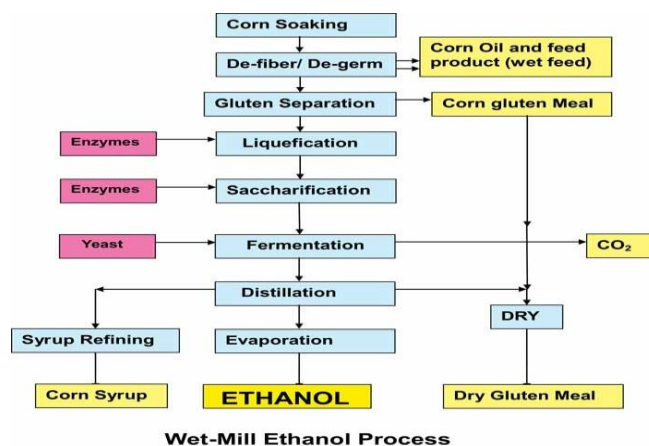
CONCLUSION:

The production of ethanol from maize is a widely used and efficient process that holds significant potential as a renewable energy source. In this project, the conversion of maize, a starch-rich feedstock, into ethanol was explored through a series of critical steps: wet milling, enzymatic hydrolysis, fermentation, and distillation. The findings of this study demonstrate that ethanol production from maize is not only feasible but also economically viable when executed with optimized conditions. However, further improvements in process efficiency, sustainability, and economic competitiveness are needed for industrial-scale operations.

CHEMICAL ENGINEERING
EXTRACTION OF CAFFEINE FROM TEA POWDER

Project Associates: Ms. Manjula.C, Mr. N M K Shanthveer & Mr. Shrinidhi H N.
Project Guides: Mrs.Shashikala.K. J.

ABSTRACT:

Caffeine (3,7-Dihydro-1,3,7 trimethyl-1H-purine-2,6-dione) is a widespread naturally occurring xanthine derivative found in a variety of plants but commonly found in coffee beans and tea leaves. Caffeine containing products have been consumed for hundreds of years for their taste, aroma and CNS stimulating properties. We estimated the amount of caffeine present in tea and coffee, which people consume regularly. We extracted caffeine from these using 'liquid-liquid separation' method. As an extracting solvent, we have used chloroform in which caffeine is highly soluble than in any other solvent. Thereafter chloroform from extract was evaporated until only white crystals remained, which were considered to be pure Caffeine.
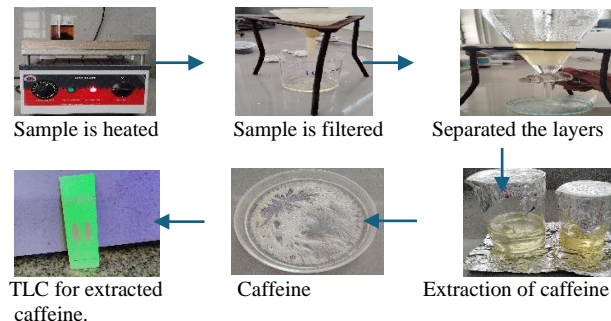
INTRODUCTION:

Caffeine(3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione) is a widespread naturally occurring xanthine derivative found in a variety of plants but commonly found in coffee beans and tea leaves. Caffeine containing products have been consumed for hundreds of years for their taste, aroma and CNS stimulating properties. We estimated the amount of caffeine present in tea and coffee, which people consume regularly. We extracted caffeine from these using 'liquid-liquid separation' method. As an extracting solvent, we have used chloroform in which caffeine is highly soluble than in any other solvent. Thereafter chloroform from extract was evaporated until only white crystals remained, which were considered to be pure Caffeine.

OBJECTIVES:

1. Isolate caffeine from the complex mixture of compounds in tea.
2. study extraction techniques such as solid-liquid extraction and solvent partitioning.

METHODOLOGY:

Sample is heated

Sample is filtered

Separated the layers

TLC for extracted caffeine.

Caffeine

Extraction of caffeine

CONCLUSION:

In this study, caffeine was successfully extracted from tea powder using a standard extraction method. The process involved utilizing a solvent (typically water or Chloroform) to isolate caffeine from the tea powder, followed by purification and quantification of the extracted caffeine. The extraction process demonstrated that tea powder is a viable source of caffeine, and the yield was sufficient for analysis. The purity of the extracted caffeine was confirmed through methods such as Thin Layer Chromatography (TLC), which verified the presence and concentration of caffeine in the final extract. Overall, the extraction method proved effective, efficient, and suitable for both qualitative and quantitative determination of caffeine, making it applicable for use in quality control, research, and commercial purposes.

CHEMICAL ENGINEERING

BIODEGRADABLE FOOD PACKAGING: USING BIODEGRADABLE PAPER AND CELLULOSE

Project Associates: Ms. Gagana. M. B, Ms. Shrusti. V. Ladwa, Ms. Suheena .N. P
Project Guides: Mr. Srinidhi. R. Kulkarni

ABSTRACT: The increasing environmental concerns over non-biodegradable packaging waste have driven the need for sustainable alternatives. This project focuses on the development of biodegradable packaging materials using cellulose, a naturally abundant, renewable, and biodegradable polymer. Cellulose was extracted from plantbased sources and modified to enhance its mechanical, thermal, and barrier properties, ensuring its suitability for food packaging applications. The material was coated with a biodegradable polymer to improve water resistance and durability. Comprehensive characterization techniques, including tensile strength testing and moisture permeability analysis, were employed. The study demonstrates that cellulose-based packaging offers an eco-friendly and effective solution to reduce plastic waste.

INTRODUCTION: The growing awareness of plastic pollution and its environmental impact has led to the rise of sustainable alternatives in packaging, with cellulose emerging as a key biodegradable material. Derived from plant cell walls, cellulose is renewable, compostable, and biodegradable, making it a strong candidate to replace traditional plastics in various packaging applications. Its use can significantly reduce plastic waste, lower greenhouse gas emissions, and promote a circular economy. Companies are increasingly adopting cellulose-based materials in innovative ways, such as compostable films, composites, edible cutlery, and biodegradable bags. These materials not only decompose into nutrient-rich compost that supports plant growth and soil health but also foster sustainable agriculture by creating a closed-loop system. The shift toward cellulose-based packaging enhances brand reputation, appeals to eco-conscious consumers, and drives innovation in the industry. Additionally, cellulose paper—a durable and versatile material made from wood pulp or cotton—

has historical significance and continues to be widely used. Its structure, composed of β-1,4-linked glucose chains, gives it high tensile strength and resistance to heat and chemicals, making it suitable for sustainable packaging and other applications.

OBJECTIVES:
1. To develop biodegradable food packaging using paper and cellulose as sustainable alternatives to plastic.
2. To assess the functional and environmental performance of the developed packaging materials.

METHODOLOGY:
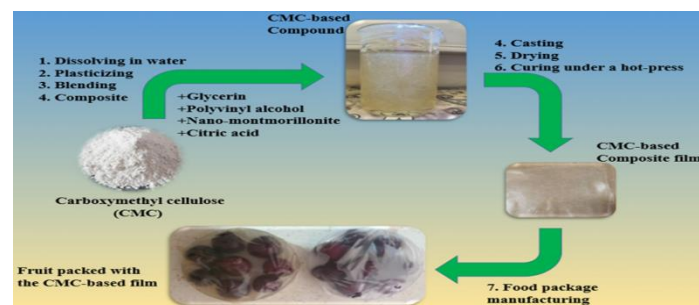
CONCLUSION:
The adoption of biodegradable packaging in the food industry marks a vital step toward a sustainable future by reducing environmental impact and reliance on non-renewable resources. It addresses the growing issue of plastic pollution, raises consumer awareness, and encourages eco-friendly choices. Biodegradable materials help preserve food freshness by maintaining optimal oxygen and moisture levels, unlike traditional plastics that can cause spoilage. This shift not only supports environmental preservation but also enhances the reputation of food companies committed to sustainable practices. As consumer demand for green alternatives grows, biodegradable packaging emerges as a practical and impactful solution for reducing waste and promoting sustainability.

COMPUTER SCIENCE AND ENGINEERING

GENCIRCULAR: AI-DRIVEN OFFICIAL CIRCULAR GENERATOR

Project Associates: Ms. Aarya B Anapur, Mr. Adarsh N, Ms. Anannya Praveen Anvekar, Ms. Amulya P
Project Guides: Dr. Nirmala C R

ABSTRACT: GenCircular is an intelligent automation system developed to streamline the creation and distribution of formal institutional communications, including event notices, examination schedules, meeting announcements, and policy updates. The system achieves a substantial reduction in communication turnaround time by generating complete circulars within seconds, compared to the manual process that traditionally takes much longer. Built on the Gemini API, it produces high-quality, grammatically correct, and contextually appropriate content with minimal need for revisions. Additional modules ensure consistent PDF formatting and reliable email delivery. User feedback has been overwhelmingly positive, validating GenCircular as an efficient, accurate, and user-friendly solution for academic and administrative communication workflows.

INTRODUCTION:

In academic and administrative institutions, clear and timely communication is essential for smooth operations. Circulars, used to share updates on policies, events, examinations, and meetings are a common tool, but drafting and distributing them manually can be time-consuming and error-prone. GenCircular addresses these challenges through a fully automated system for creating and distributing formal communications. Utilizing the Gemini API for natural language generation, it produces high-quality, professionally worded content that adheres to institutional standards. The system also features automated PDF generation and email delivery, ensuring consistent formatting and efficient dissemination .Additionally, GenCircular integrates seamlessly with institutions, allowing automatic population of key details such as dates and event information. Its scalability, strong performance under load make it a reliable and efficient solution for modern communication needs.

OBJECTIVES:

1. To automate circular generation using Google's Generative AI library.
2. To enhance internal communication by automating email delivery and minimizing manual tasks.
3. To generate context aware circulars based on customizable input fields.

METHODOLOGY:

Methodology – GenCircular: An AI-Powered Official Circular Generator
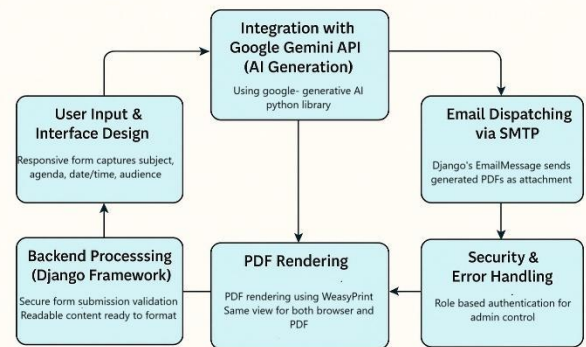
CONCLUSION:

GenCircular demonstrates a highly effective approach to automating institutional communication, offering notable improvements in speed, accuracy, and user convenience. By eliminating the inefficiencies of manual drafting and distribution, the system enables institutions to deliver timely, professional circulars with minimal effort. Its seamless integration with existing databases, dependable performance under heavy usage. The consistently positive user feedback underscores its value as a reliable, scalable, and user-centric solution for streamlining formal communication processes within academic and administrative domains.

COMPUTER SCIENCE AND ENGINEERING

VISIONAID: AI-POWERED IMAGE CAPTION GENERATOR FOR VISUALLY IMPAIRED

Project Associates: Ms. Inchara Patel MS .V, Ms. Ranjitha HG, Mr. Renukaprasad VG, Mr. Samrudh BS
Project Guides: Prof. Rachana G Sunkad
Funding Agency: Institute Funding **Amount Sanctioned**: Rs. 5,000/-

ABSTRACT:

VisionAID is an innovative AI-powered image captioning system developed to empower visually impaired individuals by transforming visual data into meaningful audio descriptions. Leveraging the power of deep learning, the system uses a pre-trained InceptionV3 convolutional neural network to extract high-level visual features from input images. These features are then fed into an LSTM-based decoder model trained on the Flickr8k dataset to generate grammatically coherent and contextually accurate captions. To ensure accessibility, the generated captions are vocalized using the pyttsx3 text-to-speech engine, allowing users to hear descriptions of images in real time. VisionAID bridges the gap between vision and understanding, surroundings more accessible and inclusive for the visually impaired community.

INTRODUCTION:

VisionAID is a system powered by AI and designed to increase visually impaired persons' independence and situational understanding. It integrates technologies like image captioning, object detection, and voice navigation into an affordable, multi-tool assistant. Leveraging deep learning models like BLIP for image captioning and YOLOv5 for real-time object recognition, VisionAID is capable of processing uploaded or captured images, creating descriptive captions, and speechifying them.The system identifies objects around the user in their environment and speaks out their names, enabling the user to navigate around obstructions and stay aware in changing environments. In addition, the smart navigation assistant offers voice guidance with the use of Google Maps API. Users can enter destinations with voice input, and the system reports back with spoken step-by-step directions.It is

Developed on Python, Flask, OpenCV, and JavaScript, VisionAID is made lightweight, real-time, and user-friendly for use across devices.

OBJECTIVES:

1. To Collect and preprocess visual data to extract key features, and train deep learning models to generate accurate and meaningful image.
2. To Convert generated image captions into natural-sounding speech using Text-to-Speech (TTS) technology, facilitating auditory understanding of visual content.

METHODOLOGY:
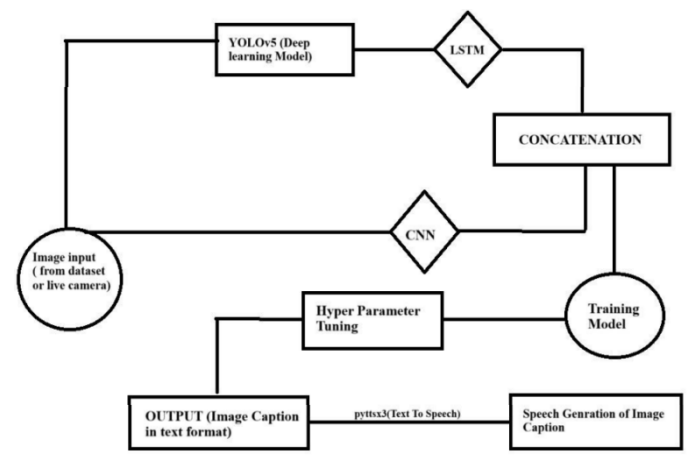
CONCLUSION:

VisionAID is a pioneering AI-driven system to facilitate visually blooded individualities with descriptive image captions and real-time voice-activated navigation. Via deep literacy models such as YOLOv5 and BLIP, the system detects objects, scenes, and conditioning from images and transfers visual data to accessible audio description.

COMPUTER SCIENCE AND ENGINEERING

REAL TIME SKETCH RECOGNITION SYSTEM

Project Associates: Mr. Shreyas S Hajare, Ms. Sinchana V, Ms. Varshitha R , Mr. Vinayaka K
Project Guides: Dr . Santhosh K C

ABSTRACT: An advanced AI-powered platform as been developed to enable real-time interpretation of sketches through an interactive and user-friendly web interface. By seamlessly integrating cutting-edge deep learning algorithms with modern responsive design principles, this innovative system is capable of transforming hand-drawn inputs into intelligent, context-aware responses. It offers a dynamic environment where users can sketch freely, while the AI continuously analyzes and interprets the drawings with remarkable accuracy and speed. This platform enhances creativity by supporting a wide range of prompting styles, making it an ideal tool for artists, designers, and developers alike.

INTRODUCTION: This project focuses on the development of an advanced AI-powered sketch analysis platform designed to bridge the gap between human creativity and machine intelligence through the real-time interpretation of freehand drawings. The system is engineered to convert rough, spontaneous sketches into dynamic and interactive digital experiences by leveraging state-of-the-art deep learning algorithms integrated seamlessly with modern responsive web technologies. This fusion of artificial intelligence and web-based interactivity opens up a broad spectrum of applications spanning creative design, digital education, visual storytelling, and collaborative art environments.At the core of the platform lies a sophisticated implementation of neural networks capable of learning and generalizing from complex patterns in hand-drawn inputs.

OBJECTIVES:
1. **To develop** an intuitive Ai platform that analyzes hand-drawn sketches in real-time using AI
2. **To implement** accurate stroke recognition that interprets various drawing styles and techniques
3. **To create** a responsive interface that enhances creativity through instant visual feedback

METHODOLOGY:
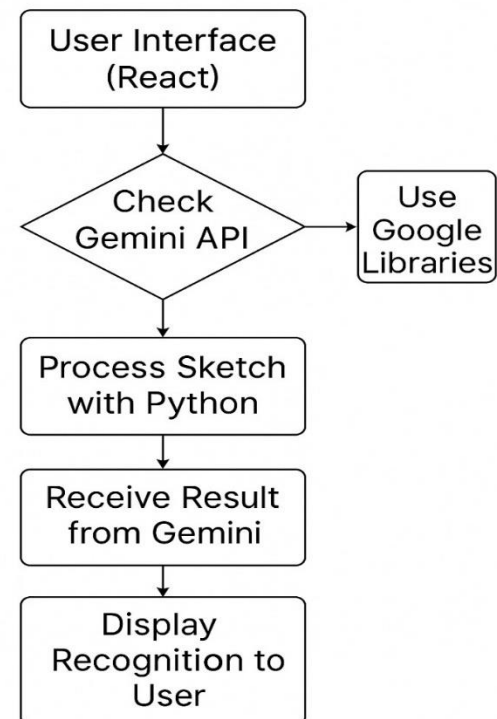
CONCLUSION:
AI-powered sketching platform successfully bridges the gap between freehand creativity and intelligent digital analysis by providing real-time interpretation of drawings while maintaining natural artistic workflows. By combining advanced deep learning with an intuitive interface, the system unlocks new possibilities for designers, educators, and artists to enhance their work through interactive AI feedback. The project demonstrates how technology can expand creative potential without compromising organic expression, setting a foundation for future innovations in human-AI collaborative tools.

COMPUTER SCIENCE & ENGINEERING
TRAVEL PLANNER WITH MULTI-AI AGENTS

Project Associates: Mr. Siddesh N D, Ms. Srushti Choudhari, Mr. Suhas Malipatil, Ms. Varsha P S
Project Guides: Prof. Vishwanath V K

ABSTRACT:

This project presents an AI-powered Travel Planner application built using Streamlit, integrating the Groq LLaMA-3.3-70B model via the phi framework alongside SerpAPI tools for live data retrieval. The system takes user-defined inputs such as destination, duration, budget, travel style, and guide preferences to generate a personalized day-by-day itinerary. It offers rich formatting, real-time trip planning, culinary recommendations, cost breakdown, and the option to hire local guides with contact information from a CSV backend. Designed with a clean UI and robust prompt engineering, this planner bridges user interaction with advanced AI capabilities to deliver insightful and actionable travel plans.

INTRODUCTION:

Travel planning typically involves extensive research across multiple sources to curate a well-balanced itinerary aligned with budget, interests, and logistical feasibility. The AI Travel Planner project aims to eliminate this complexity by building a smart, conversational assistant that automates and personalizes the entire planning process. Leveraging the phi.agent framework, the system uses the Groq LLaMA-3.3-70B model to interpret user goals and generate context-rich outputs. It also integrates SerpAPI tools to fetch live data from the internet, ensuring that recommendations are timely and location-specific. Developed using Streamlit, the web app features intuitive sidebar inputs for destination, travel days, budget level, and optional guide services, along with beautifully formatted results. Whether users are looking for a cultural getaway or an adventure-packed escape, this planner delivers practical insights, organized itineraries, and even contact-ready local guides all within a seamless, responsive UI.

OBJECTIVES:

1. To design and develop an AI-powered travel planning web application using Streamlit and phidata for a seamless and interactive user experience.
2. To enhance user satisfaction by minimizing manual effort and reducing time spent on traditional travel research and planning methods.

METHODOLOGY:
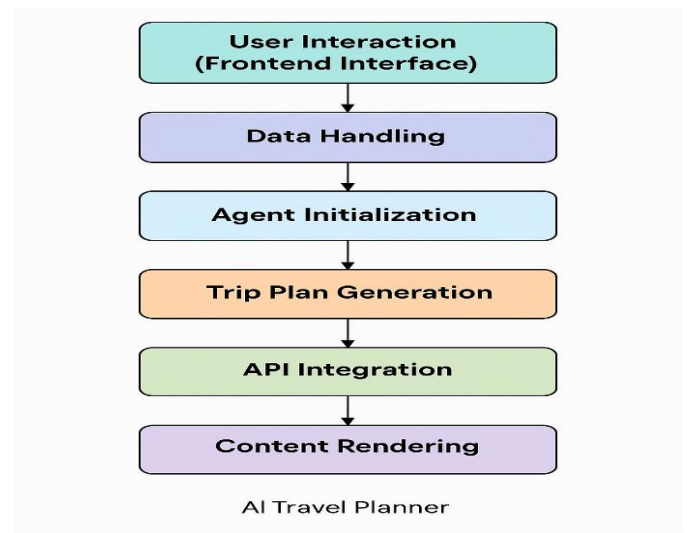
AI Travel Planner

CONCLUSION: The AI Travel Planner demonstrates the power of generative AI when combined with interactive web technologies for real-world applications. By integrating Groq's LLaMA model and SerpAPI within a Streamlit-based frontend, the tool delivers rich, context-aware travel plans tailored to user inputs. Its extendable architecture, clean design, and practical utility position it as a powerful prototype for intelligent travel planning. With enhancements like real-time hotel links, transportation tips, and local guide access, the system offers a glimpse into how AI can transform personal trip curation into a seamless and enjoyable experience.

COMPUTER SCIENCE AND ENGINEERING
AI AND NLP-BASED SUICIDAL IDEATION PREDICTION

Project Associates: Ms. Anusha G D , Ms. Chandana H S , Ms. Darshitha R , Mr. Puneeth Gowda
Project Guide: Prof. Madhu N Hiremath

ABSTRACT:

Suicidal ideation is a critical mental health issue that can lead to severe consequences if not identified and addressed early. This project presents an Al-driven suicide ideation prediction system that enables real-time risk analysis using psychological, behavioural, and textual data from individuals. Integrating Gemini Al, Natural Language Processing (NLP), and machine learning models (SVM, CNN-BiLSTM), the system supports early identification of suicidal tendencies. The Al model is embedded within a Flask web application that processes user inputs via forms or text entries, analyzes sentiment and context, and visualizes suicide risk levels for clinical intervention. Future plans include integration with social media monitoring and mobile app deployment to widen accessibility and impact.

INTRODUCTION:

Suicidal ideation, referring to thoughts of self-harm or ending one's life, poses serious challenges to public health. In recent years, technological innovations such as AI and machine learning have opened new pathways for mental health intervention. Predictive models powered by structured clinical data, behavioural surveys, and even social media posts offer reliable indicators of suicide risk. The integration of large language models like Gemini AI, advanced NLP, and real-time processing enables scalable and effective suicide prevention tools. This work aims to build a responsive, accessible, and intelligent web-based solution that flags suicidal ideation and alerts professionals for timely support. It emphasizes ethical deployment by ensuring privacy, reducing bias, and aligning with mental health standards. The proposed system also aims to promote awareness, reduce stigma, and support data-driven policy and outreach.

OBJECTIVES:

1. To develop a scalable, data-driven model for early detection of suicidal ideation, enabling timely intervention and better decision making.
2. To enhance mental health support through ethical insights, efficient resource allocation, and increased awareness to reduce stigma.

METHODOLOGY:
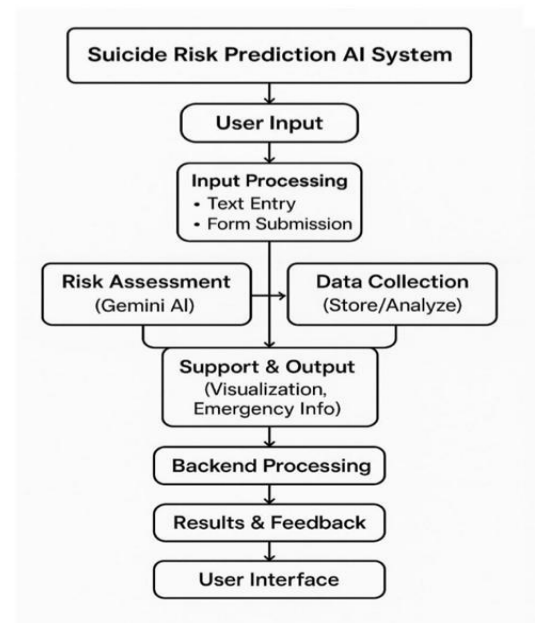
CONCLUSION:

The system is designed to expand by incorporating social media data monitoring, mobile app deployment, and advanced transformer-based models such as BERT to enhance context awareness and classification accuracy. Collaborations with healthcare professionals will play a key role in validating the system and extending its real-world applicability in clinical and outreach settings.

COMPUTER SCIENCE AND ENGINEERING

EXPLAINABLE AI FOR ENHANCING DECISION-MAKING IN PRECISION AGRICULTURE

Project Associates: Mr. Snehan , Mr. Shashidhar V S , Ms. Shreya S B
Project Guides: Dr. Naseer R

ABSTRACT:

Explainable AI for Enhancing Decision-Making in Precision Agriculture is a software solution designed to empower farmers with transparent and interpretable AI-driven insights for crop disease diagnosis, yield prediction, and pest control. By leveraging advanced image processing techniques, the system analyzes images uploaded by farmers to detect crop diseases, forecast yield, and assess pest risks. Unlike traditional AI models, this solution incorporates Explainable AI (XAI) techniques to provide clear justifications for its predictions, ensuring that farmers understand why specific recommendations are made. Through visual explanations, interactive insights, and fairness-aware models, the system promotes trust and informed decision-making in precision agriculture. By making AI more interpretable, it enhances agricultural productivity, reduces uncertainty in farming practices, and supports sustainable and efficient crop management.

INTRODUCTION:

Agriculture always remains the backbone of global food security, yet it faces increasing challenges due to climate change, pest outbreaks, and crop diseases. Traditional disease diagnosis methods are often slow and error-prone, prompting a shift toward Artificial Intelligence (AI) for timely and accurate solutions. However, many AI models lack transparency, making them difficult for farmers to trust and adopt. This project addresses that gap by integrating Explainable AI (XAI) techniques—such as LIME, and Grad-CAM—with Convolutional Neural Networks (CNNs) for crop disease detection. The goal is to build an accurate, interpretable, and user-friendly system that enhances decision-making in precision agriculture.

OBJECTIVES:

1. To develop a deep learning-based system for accurate detection of crop diseases.
2. To enhance transparency and trust in AI predictions by integrating Explainable AI techniques for visual and textual explanations.
3. To empower farmers with interpretable, actionable insights through a user-friendly interface.

METHODOLOGY:
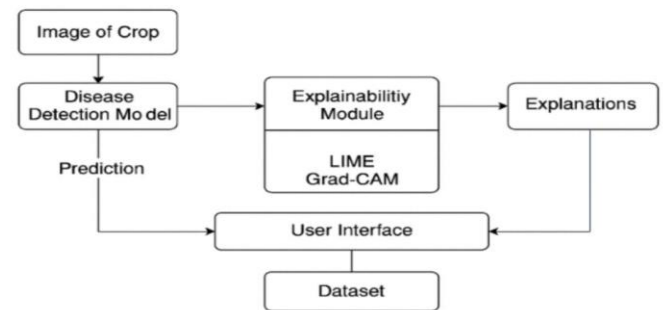
CONCLUSION:
The above project successfully demonstrates the integration of Explainable AI techniques with deep learning for crop disease detection in precision agriculture. By incorporating LIME and Grad-CAM, the system offers not only high prediction accuracy but also interpretable and transparent outputs. This enable informed decision-making and reducing reliance on excessive pesticide use. The user-friendly interface ensures accessibility, even in resource-constrained settings. Overall, the project bridges the gap between advanced AI technologies and practical agricultural applications, supporting sustainable farming practices and laying the foundation for future innovations in smart and trustworthy agricultural systems.

COMPUTER SCIENCE AND ENGINEERING

SAVIOUR: A WOMEN SAFETY ANDROID APPLICATION.

Project Associates: Mr. Mohammed Ruman Malik, Ms. Nikhita Shashikant Kulagod, Ms. Pallavi A R, Mr. Prajwal H P
Project Guides: Dr. Naveen H M

ABSTRACT:

This project, saviour app, is a comprehensive women's safety solution designed to provide reliable emergency assistance, addressing the limitations of traditional safety applications. It offers automatic SOS triggers, continuous video recording, secure cloud storage for evidence preservation, and real-time location sharing via SMS and WhatsApp. Enhanced with advanced safety mechanisms like shake detection and voice detection using TensorFlow Lite and Android's Speech Detection API, the app can automatically detect distress and trigger SOS alerts even if the user cannot manually activate them. This ensures timely emergency response and reliable evidence collection. Its user-friendly interface enhances accessibility, making it suitable for all users.

INTRODUCTION:

Existing safety apps primarily rely on manual SOS triggers, such as pressing a panic button, which may be ineffective if the victim is immobilized, unconscious, or too panicked to respond.To overcome these limitations, we developed 'Saviour,' a comprehensive Android-based safety application. Built using Kotlin in Android Studio, Saviour combines multiple advanced features, including Firebase Authentication for secure login, Firestore for data management, and Google's Fused Location Provider API for accurate real-time location tracking. It offers automatic SOS activation via shake detection and voice detection, powered by TensorFlow Lite and Android's Speech Detection API. The app also captures distress videos, securely stores them in Cloudinary, and shares location and media links with emergency contacts via SMS and WhatsApp, ensuring rapid response and reliable evidence collection.

OBJECTIVES:
1. To provide automated SOS activation through shake detection and voice detection.
2. To enable the secure recording and cloud storage of multimedia evidence (audio/video) in real-time.
3. To offer safe route navigation using Google Maps to help users avoid risky areas.

METHODOLOGY:
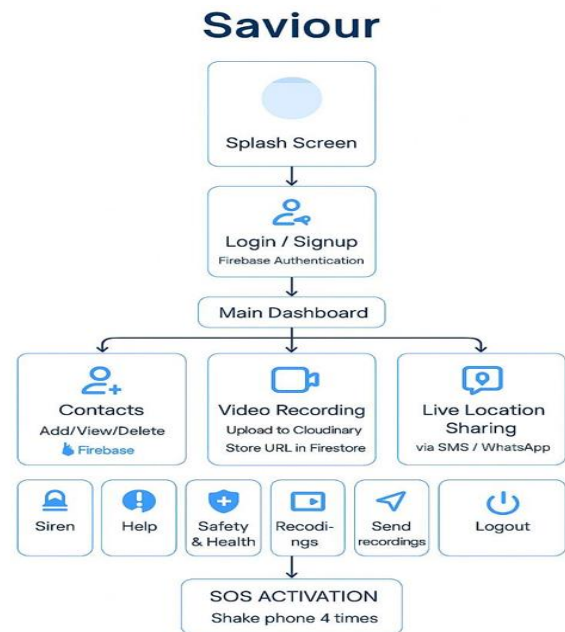
CONCLUSION:
The "Saviour" Android app empowers women with instant safety solutions, featuring shake-to-activate SOS, live location sharing, and automatic video recording. It leverages TensorFlow Lite for voice detection and Android's speech recognition to identify distress, ensuring timely alerts. Secure login and data storage via Firebase, along with Cloudinary-hosted videos, protect user data. Swift communication through SMS and WhatsApp.

COMPUTER SCIENCE AND ENGINEERING

LEGALEASE AI: INTELLIGENT LEGAL DOCUMENT ANALYZER WITH AGENTIC AI

Project Associates: Ms.Bi Bi Safiya, Ms.Divya A. Hiremath, Mr.Manoj G M, Mr.Ojhas C S
Project Guides: Prof. Radhika Patil

ABSTRACT: Legal case processing is traditionally a manual, time-consuming, and error-prone task requiring deep domain knowledge. Recent advances in Large Language Models (LLMs) have demonstrated promise in automating parts of legal work- flows, yet single-model systems suffer from static knowledge limitations, domain mismatch, and adaptability issues. This paper proposes a multi-agent, multi-model legal reasoning framework that orchestrates multiple LLMs, and live online search agents to dynamically enhance legal case analysis, categorization, and summarization. The system intelligently routes tasks to specialized agents, retrieves updated statutes and case laws, and adapts to diverse legal domains. Evaluation through human reviewers across civil, criminal, and traffic datasets demonstrates significant improvements in fact extraction quality, legal categorization accuracy, and summarization readability. The proposed framework establishes a pathway toward scalable, explainable, and adaptive AI systems for the legal industry

INTRODUCTION: In today's complex and fast-evolving legal landscape, timely and accurate legal reasoning is crucial. Legal professionals deal with vast volumes of statutes, case laws, and legal documents, making manual research labor- intensive and prone to error. Traditional tools offer limited support and lack the depth needed for nuanced legal interpretation.

With the rise of Artificial Intelligence (AI) and Large Language Models (LLMs), there is an opportunity to transform legal research and analysis. This project introduces a multi-agent, multi-LLM framework designed to automate and enhance legal reasoning. By integrating Retrieval-Augmented Generation (RAG) and live web search, the system delivers real-time, context-aware, and explainable outputs. It reduces manual effort, improves accuracy, and supports better decision-making making it especially valuable for law firms, courts, and legal institutions

handling complex and high-volume legal data.

OBJECTIVES:
1. To Automate Legal Document Analysis using AI to extract key clauses and detect risks.
2. To Improve Decision-Making by assisting users with AI-driven legal suggestions.

METHODOLOGY:
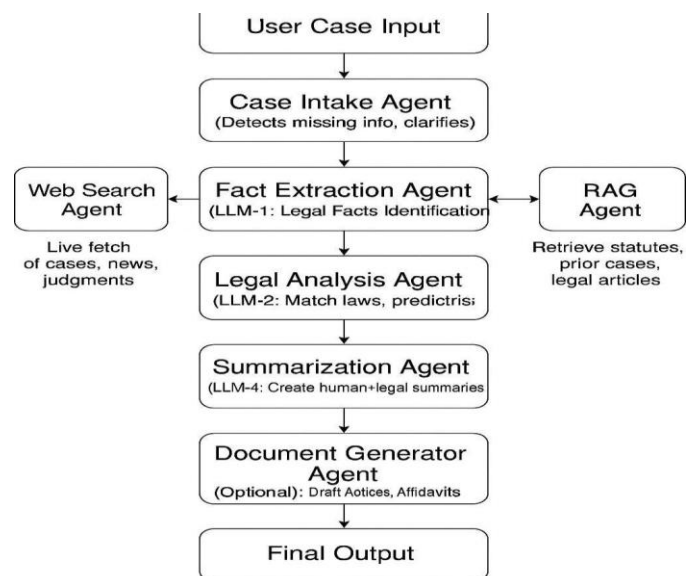
CONCLUSION: The AI-Driven Official Circular Generator represents a significant advancement in automating formal document creation, ensuring efficiency, accuracy, and consistency in organizational communication. Traditional methods of circular drafting are time-consuming, error-prone, and lack standardization, whereas the proposed system leverages Generative AI and Hugging Face Transformers to create structured, contextually relevant circulars with minimal human intervention. As AI continues to evolve, this system can be further enhanced with real-time learning, making it a future-ready solution for modern office automation.

COMPUTER SCIENCE AND ENGINEERING
CYBERBULLYING PREDICTION USING DEEP LEARNING

Project Associates: Ms. Tasbiha Tazeen, Ms. Thejaswini C R, Mr. Vachan C
Project Guide: Prof. Rahima B

ABSTRACT:

In recent years, the rise of social media and online communication has led to a significant increase in cyberbullying, threatening users' emotional well-being. Manual detection is impractical due to the massive and growing volume of content. This project develops an automated cyberbullying detection system using deep learning. Text inputs like comments are processed and classified as bullying or not, using NLP for cleaning and preprocessing. A Deep Neural Network (DNN) performs the classification based on learned patterns from a labeled dataset. This solution offers a scalable and efficient approach to identifying harmful content and promoting safer online spaces.

INTRODUCTION:

Cyberbullying refers to the act of using digital platforms to harass, threaten, or embarrass individuals, often causing severe emotional and psychological harm. Traditional methods of detecting cyberbullying rely on manual reporting or basic keyword filtering, which are often ineffective due to the complexity and evolving nature of online language. Moreover, cyberbullying content may be subtle, sarcastic, or disguised in slang, making it challenging to detect with conventional techniques. This project focuses on building an intelligent system capable of automatically detecting cyberbullying in textual data using deep learning techniques. The proposed system leverages Natural Language Processing (NLP) for text preprocessing and employs a Deep Neural Network (DNN) to classify user-generated content as either bullying or nonbullying.

OBJECTIVES:

1. Collect and prepare a dataset of social media comments labeled as cyberbullying or non-cyberbullying for model training and testing.

2. Preprocess the text using cleaning, tokenization, padding, and NLP techniques to format it for deep learning.

3. Build and train a CNN-BiLSTM model for comment classification, and deploy it via a Flask web app for real-time use.

METHODOLOGY:
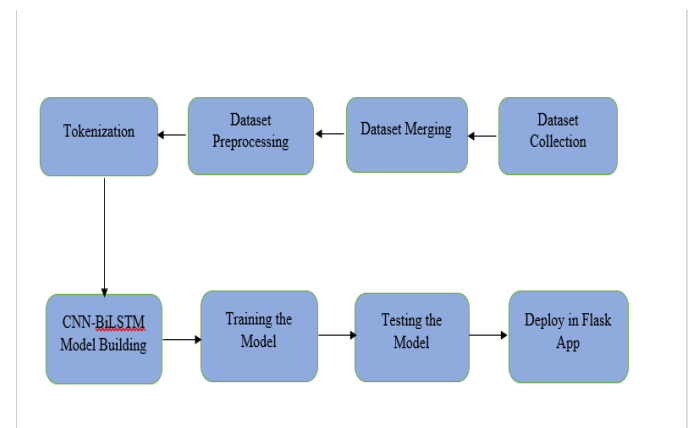
CONCLUSION:

The Cyberbullying prediction system holds strong potential for future enhancements. Adding multilingual support can enable detection across regional and global languages. The model can be expanded to analyze images, audio, and video through multimodal learning. Real-time monitoring integration with social media platforms can enable live detection and response. Accuracy can be improved using advanced NLP techniques like transformers and pretrained models from Hugging Face. An explainability module can be added to show why content was flagged, increasing transparency. Features like fake website detection, phishing email analysis (including image-based), and spam call number identification can be integrated for broader cyber safety. A mobile application and adaptive learning can further enhance usability and performance.

COMPUTER SCIENCE & ENGINEERING

METAMASK INTEGRATED DECENTRALIZED CLOUD STORAGE USING IPFS

Project Associates: Mr.Aashish Kumar Jha, Mr. Mohammed Nihar N R, Ms. Sankalpa J
Project Guides: Dr. Chetana Prakash

ABSTRACT: As data becomes central to digital finance, reliance on centralized cloud storage raises concerns about security breaches, costs, and loss of control. This paper explores a Decentralized Cloud Storage (DCS) framework using the InterPlanetary File System (IPFS) and Ethereum smart contracts to address these issues. The proposed system enhances security and availability through AES-256 encryption, data sharding, and decentralized metadata management. A working prototype built with React.js, MetaMask, Ethers.js, and Solidity demonstrates the feasibility of decentralized storage. Experimental results show improved security and reliability, supporting further research in decentralized architectures.

INTRODUCTION: The exponential growth of digital data has created an urgent need for secure, scalable, and efficient storage solutions. While traditional centralized cloud storage systems are widely used, they present significant limitations, including scalability constraints, single points of failure, security vulnerabilities, and limited user control over data.

Decentralized Cloud Storage (DCS) has emerged as a viable alternative, leveraging blockchain technology to enhance security, privacy, and resilience. This shift reflects a broader global trend toward decentralization, supported by advancements in distributed systems. Policy frameworks such as the EU's GDPR and reports from India's MeITY emphasize the need for privacy-centric and decentralized digital infrastructure, underscoring the relevance and urgency of DCS adoption.

OBJECTIVES:

1. To design and implement a decentralized cloud storage system that ensures a generic UI for efficient use while addressing existing limitations like latency and user adoption.

2. To enhance security and privacy through encryption and access control

METHODOLOGY:
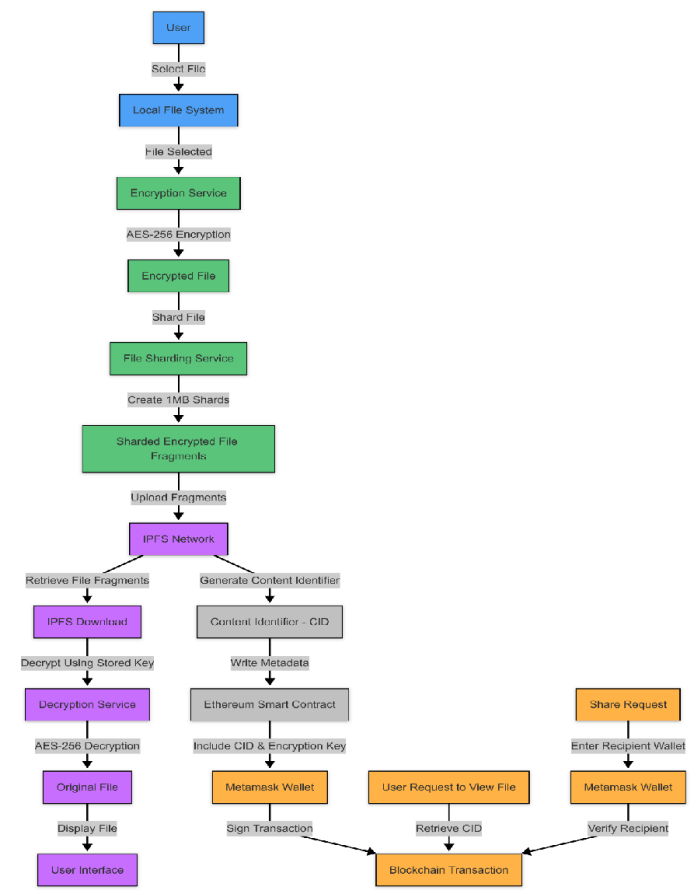
CONCLUSION:

This project successfully demonstrates a decentralized cloud storage system using IPFS, AES-256 encryption, and Ethereum smart contracts for secure, distributed data management. Integration with MetaMask and a React.js UI ensures a user-friendly and secure experience, addressing key issues of centralized storage. Experimental results confirmed the system's effectiveness in file encryption, sharding, and access control.

COMPUTER SCIENCE & ENGINEERING

SUGARCANE DISEASE DETECTION USING DEEP-LEARNING AND LIME

Project Associates: Mr. Amit Kumar Yadav, Ms. Aisiri S V, Mr. Abhishek G M
Project Guides: Prof. Drusti S Shastri

ABSTRACT:

Crop diseases greatly impact yield and quality. This project presents a deep learning-based sugarcane disease detection and alert system using EfficientNet, achieving 97% accuracy after 150 epochs. Preprocessing (cropping, rotation, enhancement, etc.) and data augmentation improved model performance. LIME was used for interpretability, explaining individual predictions. A user-friendly web interface enables image upload, diagnosis, and treatment suggestions. The system demonstrates AI's potential to enhance disease management and support smarter, scalable farm-level decisions.

INTRODUCTION:

Agriculture is vital to India's economy, with sugarcane as a major commercial crop in states like Uttar Pradesh, Maharashtra, Tamil Nadu, and Karnataka. Diseases such as red rot, smut, mosaic, and yellow leaf threaten yield and farmer income. Traditional disease detection is slow and inefficient for large-scale use. This paper introduces an AI-based system using EfficientNet and explainable AI (LIME) for accurate, timely sugarcane disease diagnosis. By leveraging deep learning and image processing, the system aims to provide farmers with accessible tools for early intervention, supporting sustainable farming and improved productivity.

OBJECTIVES:

1. To develop a deep learning model to accurately distinguish between healthy and diseased sugarcane plants using image data and preprocessing techniques.

2. To use explainable AI techniques (LIME) to interpret model predictions and integrate the solution into a web-based platform that provides disease diagnosis along with treatment and preventive measures.

METHODOLOGY:
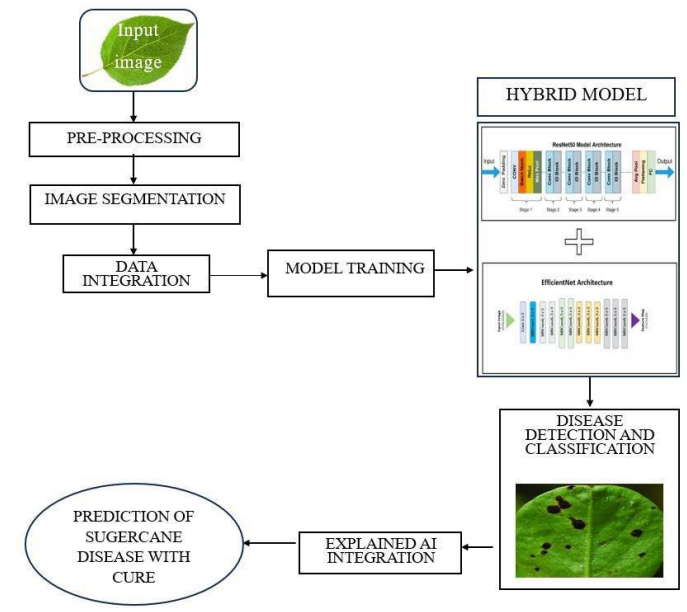
CONCLUSION:

Sugarcane is a vital crop globally but is severely affected by diseases like mosaic virus, smut, and red rot. This study explores using deep learning to combat these issues. While a hybrid ResNet50-EfficientNet model was tested, EfficientNet alone performed better due to easier training and higher accuracy. Improved preprocessing, segmentation, and feature extraction enhanced the model's adaptability to various environmental conditions and addressed dataset limitations. To ensure transparency, LIME was used to explain model predictions, helping users understand and trust the system. This approach demonstrates the potential of AI in advancing effective, reliable crop disease management.

COMPUTER SCIENCE AND ENGINEERING
ADAPTIVE REGION BASED NORMALIZATION IN CNN FOR IMAGE RESTORATION

Project Associates: Ms. Anjana Reddy, Ms. Champa B G, Ms. Deeksha G, Mr. Devendr Harijan
Project Guides: Dr. Gururaj T

ABSTRACT:

This project presents an advanced image inpainting framework that integrates Region Normalization (RN) into a CNN-based autoencoder for context-aware reconstruction of masked image regions. The model, designed to handle structured occlusions, uses spatially localized normalization to improve semantic consistency. Trained on the CIFAR-10 dataset with images degraded by random lines via OpenCV, the system employs a U-Net-inspired architecture with convolutional layers, skip connections, and RN layers for better localized corruption handling. Training uses Google Colab with GPU, Adam optimizer, and MAE loss.

INTRODUCTION:

This project aims to advance image inpainting by integrating Region Normalization (RN) into a convolutional neural network (CNN)-based autoencoder architecture for improved context-aware reconstruction. While traditional methods rely on global statistics for normalization, our approach uses RN to normalize activations based on localized image regions, allowing for better handling of structured occlusions and preserving semantic consistency in restored areas. We train the model on the CIFAR-10 dataset, where images are artificially degraded by random lines using OpenCV. The model follows a U-Net-inspired encoder-decoder structure, ensuring the preservation of spatial features during reconstruction. This work leverages the power of deep learning and advanced normalization techniques to push the boundaries of image inpainting for real-world applications.
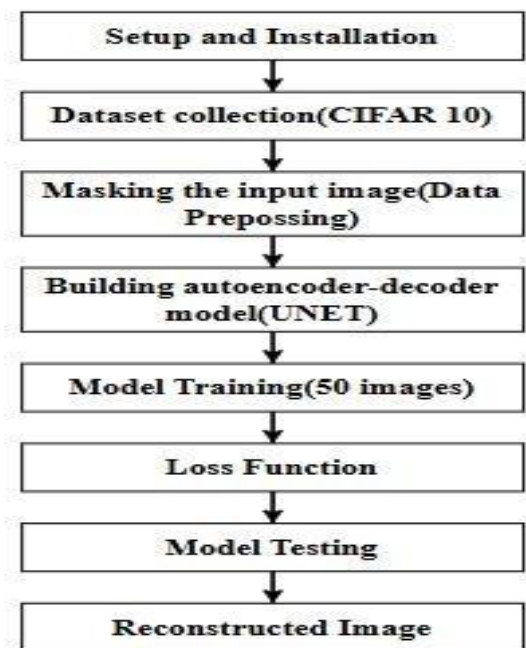
OBJECTIVES:

1. To develop an image inpainting framework that incorporates Region Normalization (RN) for context-aware reconstruction of masked image regions.
2. To evaluate the performance of the model using PSNR and SSIM scores while leveraging Firebase for user authentication and storage.

METHODOLOGY:

CONCLUSION:

In conclusion, this project successfully integrates Region Normalization into a CNN-based autoencoder for improved image inpainting, particularly in handling structured occlusions. By leveraging localized normalization, the model demonstrates enhanced semantic consistency in restored regions. The system is trained on the CIFAR-10 dataset, evaluated using PSNR and SSIM, and incorporates Firebase for efficient user management.

COMPUTER SCIENCE AND ENGINEERING

BLOCKCHAIN BASED END TO END ENCRYPTED CHAT AND FILE SHARING APPLICATION

Project Associates: Mr. Maddela Guna Naga Vishnu, Mr. Kruthik R, Mr. D H Prajwal
Project Guides: Dr. Jyothi G C

ABSTRACT:

This project introduces a secure, decentralized communication system by combining blockchain technology with end-to-end encryption (E2EE). Blockchain ensures user authentication and data integrity without central intermediaries, while E2EE protects data from unauthorized access during transmission. The system enhances trust by removing single points of failure and reducing reliance on centralized servers. It supports secure file sharing and messaging between users. This solution is ideal for applications requiring high levels of privacy, such as personal communication, healthcare, and finance.

INTRODUCTION:

This project provides a secure platform for chat and file sharing by integrating blockchain technology with end-to-end encryption (E2EE). All messages and files are encrypted on the sender's device and can only be decrypted by the intended recipient, ensuring complete privacy. Blockchain ensures user authentication and data integrity through a decentralized, tamper-proof ledger. The system eliminates reliance on centralized servers, reducing the risk of data breaches and single points of failure. It supports seamless and secure communication between verified users. User identities are validated through blockchain, enhancing transparency and trust. No third party can access or alter the transmitted data. The application is ideal for privacy-sensitive sectors such as healthcare, finance, and legal communication. Overall, it offers a reliable, scalable, and secure alternative to traditional messaging systems.

OBJECTIVES:

1. To develop a decentralized communication platform with end-to-end encryption for secure messaging and file sharing using blockchain technology.
2. To create a privacy-focused system that eliminates centralized servers, ensuring secure communication and data integrity.

METHODOLOGY:

Blockchain-Based End-to-End Encrypted Chat and File Sharing Application Methodology
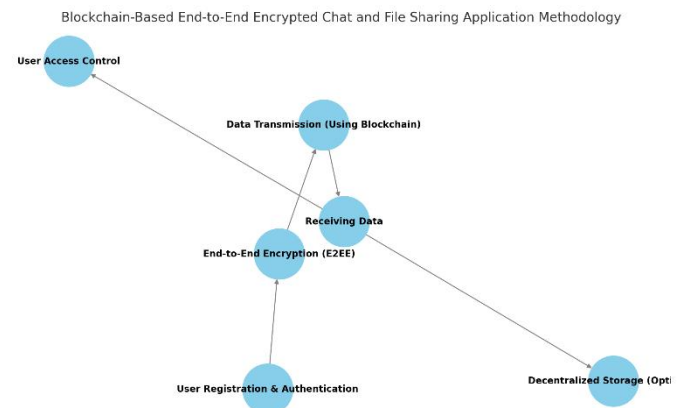
CONCLUSION:

In conclusion, this project demonstrates the potential of combining blockchain technology with end-to-end encryption to create a secure, decentralized communication platform. By eliminating centralized servers and ensuring data integrity, it provides a robust solution for secure messaging and file sharing. This approach addresses privacy concerns and reduces the risks of data breaches, making it a valuable tool for sensitive communication in various industries, including healthcare, finance, and legal sectors. The project sets the foundation for future advancements in secure, privacy-focused digital communication systems.

COMPUTER SCIENCE AND ENGINEERING

CODE GENERATOR USING AGENTIC AI

Project Associates: Ms. Inchara Y S, Ms. Karthik Kadam, Ms. Kavitha N Y , Ms . Ranjitha S
Project Guides: Prof. Mohamed Muthahir R

ABSTRACT:

The Code Generator using Agentive AI is a smart, full-stack web platform that helps users write code using simple natural language. It integrates advanced AI models like DeepSeek (via Ollama) and Google Gemini to generate accurate, multi-language code including Python, Java, C++, JavaScript, and HTML. Unlike regular code editors, this system offers real-time AI chat, live code compilation, terminal access, and a file explorer—all in one place. It also supports collaborative coding, allowing multiple users to work together in real time. The platform follows agentive AI principles, where the AI acts like a helpful assistant, suggesting and creating code while users stay in control. This tool is perfect for learning, debugging, and fast software development.

INTRODUCTION:

The Code Generator using Agentive AI is an advanced web-based platform that utilizes intelligent AI agents to streamline the software development process. It integrates models like DeepSeek and Google Gemini to assist users in generating, explaining, and debugging code through natural language. Unlike traditional IDEs, this system provides real-time code compilation, terminal access, and file management in a unified interface. It supports languages such as Python, Java, JavaScript, C++, and HTML. The platform features collaborative capabilities and secure execution environments, enabling seamless teamwork for projects, education, and learning. By embracing agentive AI, it enhances developer productivity while ensuring users retain control, creating a smarter, interactive coding experience that adapts to individual goals.

OBJECTIVES:

1. Empower Developers with AI-Driven Code Generation
2. Foster Collaborative and Efficient
3. Development

METHODOLOGY:
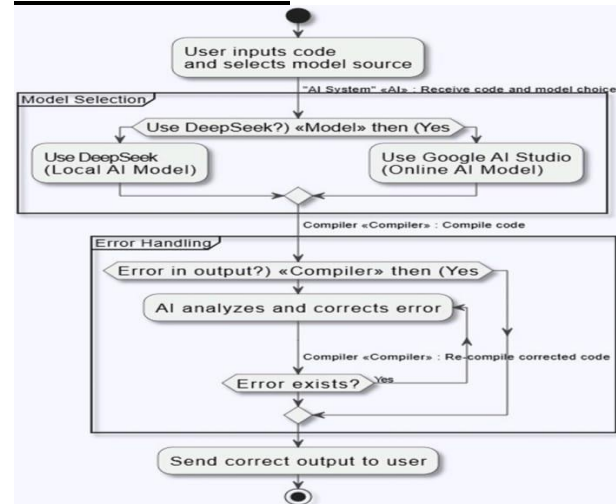
CONCLUSION:

The Code Generator using Agentive AI is a powerful tool that transforms the way developers write and manage code by integrating intelligent, goal-oriented AI agents. It allows users to generate, understand, and debug code using natural language, making programming more accessible and efficient. With support for multiple languages, real-time compilation, file management, and collaboration features, the platform is well-suited for both individual and team-based development. Its secure and responsive environment enhances learning and productivity. By following agentive AI principles, it ensures that the user stays in control while benefiting from smart assistance, making it a valuable asset for modern development.

COMPUTER SCIENCE AND ENGINEERING

AN EXPLAINABLE AI MODEL FOR AUTISM PREDICTION.

Project Associates: Spandana K N, Nandan R, Priyanka P S, P Vasudev
**Project Guide: Dr. Abdul Razak M S**

ABSTRACT: Autism Spectrum Disorder (ASD) often goes undiagnosed due to its diverse symptoms and limited awareness in underserved regions. This project presents a multi-modal, AI-driven autism prediction system that leverages behavioral data, facial images, and MRI scans to offer early and explainable ASD screening. The system integrates five independent modules, including questionnaire-based logistic regression models and CNN-based image analysis tools. A multilingual chatbot interface (English, Hindi, Kannada) enhances accessibility, while Explainable AI (XAI) techniques provide transparency behind each prediction. Built using Flask and TensorFlow/Keras, the tool aims to bridge diagnostic gaps through intelligent, inclusive, and interpretable technology.

INTRODUCTION: Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that impacts how individuals communicate, behave, and interact with the world. While early diagnosis is critical for effective intervention, ASD often remains undiagnosed or misdiagnosed due to its broad range of symptoms and lack of awareness, especially in rural and semi-urban areas. Traditional diagnostic methods rely heavily on clinical observations and questionnaires administered by trained professionals, making them time-consuming, costly, and inaccessible to many. Moreover, cultural and language barriers limit the reach of existing solutions. To address these challenges, this project introduces an AI-powered autism detection system that is both accessible and explainable. It combines multiple data types—including behavioral patterns, facial images, and MRI scans—to support early screening across diverse populations. With multilingual support and integrated Explainable AI (XAI), the system not only improves prediction accuracy but also builds user trust by clarifying the reasoning behind each result.

OBJECTIVES:

- To build a multi-modal AI system using behavioural data, facial images, and MRI scans for accurate autism detection.
- To offer multilingual chatbot support and Explainable AI via a Flask interface for accessible and transparent predictions.

METHODOLOGY:

Methodology
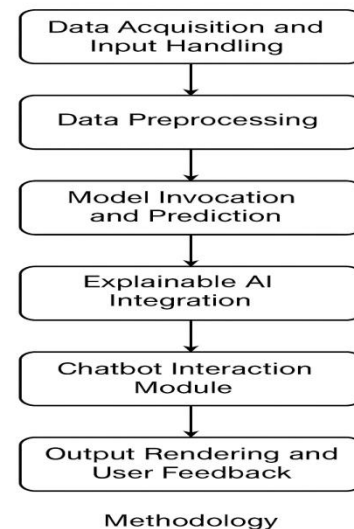
CONCLUSION:

The Autism Prediction and Health Assistant System combines machine learning, deep learning, and NLP to support early ASD screening in children. It uses behavioral data, facial images, and MRI scans to provide accurate, explainable predictions. With multilingual chatbot support (English, Hindi, Kannada), voice input, and a user-friendly interface, the system is accessible and inclusive. Overall, it bridges gaps in early autism detection through an intelligent, scalable, and user-centric solution.

COMPUTER SCIENCE AND ENGINEERING

SIXTHSENSEAI:AN ANDROID-BASED REAL-TIME ASSISTANCE AND MONITORING SYSTEM FOR VISUALLY IMPAIRED USERS

Project Associates: Mr. Vinaya V, Ms. Vismaya S M, Mr. Chethan E U,Mr. Vijaydeep P
**Project Guides:** Dr. Naveen H M

ABSTRACT: Sixth SenseAI is a virtual assistant app aimed at boosting the independence and self-esteem of people living with visual impairment. Its functionality includes hands-free interaction, text-to-speech reading, real-time object recognition, navigation help, gesture recognition, and voice commands. The app also contains a secure admin-client communication system with live SOS alert tracking and messaging, alongside an admin dashboard for managing emergency contacts, reminders, and accessibility. Combining artificial intelligence with computer vision and natural language processing, the app assists users in real-time, tailored to their individual needs. With intuitive navigation, customizable preferences, strong privacy protocols, and a flexible structured system adapts easily to the worsening global accessibility problem, while the rest supports the advancement of compassionate technology.

INTRODUCTION: In today's technologically advanced society, handheld devices pose a risk as they provide access to sensitive information. Mobile security is crucial in this scenario. Apps are vulnerable because traditional methodologies don't provide real-time threat detection and automatic response features. This paper proposes SixthSense AI, an all-encompassing mobile security solution tailored for contemporary Android systems, developed in Kotlin with Jetpack Compose. It provides a realtime admin dashboard that monitors threats and manages permissions. Supporting cross-platform security alongside a dynamic Material Design interface, this AI also locally encrypts classified information, guaranteeing data privacy. The system's modular, high-efficiency structure is ideal for academic and corporate environments, showcasing secure user-centric systems developed with modern frameworks.

OBJECTIVES:

1. To develop an AI-powered mobile app that assists visually impaired individuals with navigation, object recognition, and real-time obstacle detection.
2. To provide an accessible, voice-driven interface with multi-language support and OCR capabilities for seamless interaction and information access.

METHODOLOGY:
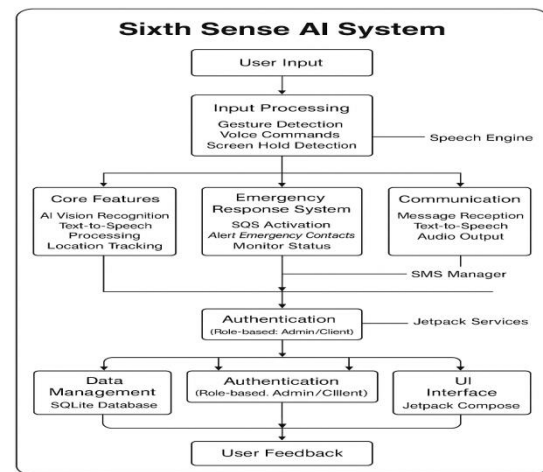
CONCLUSION:

SixthSense AI provides a real-time emergency response system for visually impaired customers with support for gesture controls, AI vision, voice navigation, and SOS monitoring. It has secure, lightweight, and modular architecture that makes it usable reliably. Some of its future upgrades are advanced AI for improved gesture/voice prediction, centralized monitoring, multi-channel alerts, and cloud-based storage for scalable deployments.

CIVIL ENGINEERING
AN EXPERIMENTAL STUDY ON EFFECT OF SLAG AND FINE AGGREGATES ON FRESH AND HARDENED PROPERTIES OF SELF COMPACTING CONCRETE

Project Associates: Mr. Shashank B Reddy, Mr. Suhas S, Ms. Suma P C, Ms. Priyanka N
Project Guides: Sri. Savan R G Basavaraj
Funding Agency: KSCST **Amount Sanctioned**: Rs . 5,500/-

ABSTRACT: Self-Compacting Concrete (SCC) is a flowable, non-segregating concrete that fills formwork and reinforcement without vibration (ACI 237R, 2007). Ideal for complex structures, it ensures uniform compaction (Okamura and Ouchi, 1999). Developed in Japan in 1988, SCC reduces labor, time, and noise. This study examines M40 SCC with GGBFS per IS 10262 (2019), IS 456 (2000), and ACI 318 (2011).

INTRODUCTION: Self-Compacting Concrete (SCC) is a highly flowable concrete which does not segregate and can spread into place, fill the formwork with heavily congested reinforcement, and encapsulate the reinforcement without any mechanical vibration The SCC technology has advantages such as, reduction in construction period by increasing the casting speed. Reduction in usage of labour, assuring compaction in the structure especially in confined zones (e.g. Beam column joint) when compaction by vibrator is difficult, eliminating noise due to vibration, saving in cost and energy due to compaction, resulting in highly durable concrete, minimizing health-related problems for construction workers, large utilization of industrial by-products, reduce production costs and enhance their industrial applicability.

OBJECTIVES:
The main objective of the proposed study is to investigate the influence of the varying percentage of cement, GGBFS, Aggregate type viz. river sand and crushed Stone Sand and Admixture content on,
1. Workability of fresh SCC,

2. Compressive, Flexural and Splitting Tensile strength of Hardened SCC.

METHODOLOGY:
To achieve the stated objectives, following methodology is intended to be adopted.

1. Conducting basic tests on constituents of SCC i.e., cement, GGBFS, fine aggregate (river sand and crushed stone sand) and coarse aggregate.

2. Mix design for M40 grade SCC as per IS 10262 (2019) codal provisions for varying proportions of cement, GGBFS, fine aggregate, coarse aggregate and admixtures (PCE and VMA) content.

3. Filling ability, passing ability and segregation resistance tests on fresh SCC to achieve its specifications as given by IS 10262 (2019).

4. Curing hardened concrete cube, cylinder and beam specimen for 7 and 28 days.

5. Conducting compression, splitting and flexural tensile strength tests on hardened concrete as per IS 516 (Part 1/Sec 1, 2021).

CONCLUSION:

Workability test results for both SCC mixes align well with EFNARC (2002, 2005) and IS 10262 (2019) guidelines, showing good uniformity without segregation or bleeding. Mix ID RSC75G25 demonstrated a significant increase in compressive strength 90% at 7 days and 92.5% at 28 days compared to conventional M40 grade concrete as per IS 456 (2000). Similarly, Mix ID CSC75G25 showed increases of 84.7% and 93.3% at 7 and 28 days, respectively. In terms of tensile performance, RSC75G25 achieved 78.79% and 85.58% higher 28-day splitting and flexural strengths, respectively, over conventional concrete as per ACI 318 (2011) and IS 456 (2000). CSC75G25 also exhibited improvements, with 56.6% and 62.5% increases in 28-day splitting and flexural strengths, respectively. However, it was observed that compressive, flexural, and splitting tensile strengths decreased with higher GGBFS content in the mixes

CIVIL ENGINEERING
"AN EXPERIMENT STUDY ON TRAFFIC SYNCHRONIZATION IN ONE DIRECTION FOR EXISTING MAJOR DISTRICT ROAD IN DAVANGERE"

Project Associates: Swathi K V, Vadiraj P, Varun M, Shekharagouda V K
Project Guides: Mr. Supreeth
Funding Agency: Institute Funding **Amount Sanctioned**: Rs;5,000/

ABSTRACT:
This project is a unique idea about avoiding traffic jams and saving time, fuel and impact on environment. On many of the main roads and highways there are traffic signals. By the time, a car crosses one traffic signal, it enters into another. The same thing repeats for the following signals, resulting in wastage of fuel, time and money. To overcome this miserable situation, we are proposing a new project based on synchronization between two adjacent signals. Generally, all signals are controlled individually by means of separate ON/OFF switches to start signaling sequence. This creates a chaos as one traffic signal has no communication with its adjacent signal. In our project, we plan to create a synchronization between their operation. In spite of synchronization, if traffic jam occurs, a signal shall be sent to the previous traffic signal, warning the driver of the of the jam. This will also help to clear the traffic jam a lot faster as the drivers would then resort to alternative routes.

INTRODUCTION:
Traffic synchronization refers to the coordinated control and management of traffic signals at intersections to optimize traffic flow, reduce congestion, and minimize travel times. The primary goal of traffic synchronization is to create a smooth and efficient flow of traffic, reducing the likelihood of accidents, congestion, and air pollution

Traffic synchronization is a critical component of intelligent transportation systems (ITS), aiming to optimize traffic signal timing to minimize congestion, reduce travel times, and enhance safety. The primary objective of traffic synchronization is to create a harmonized traffic flow, allowing vehicles to travel through multiple intersections without stopping.

OBJECTIVES:
1. To obtain traffic Synchronisation for one study stretch

2. To reduce the traffic conjunction problems at signalized intersection

3. To reduce the impact on environment

METHODOLOGY:
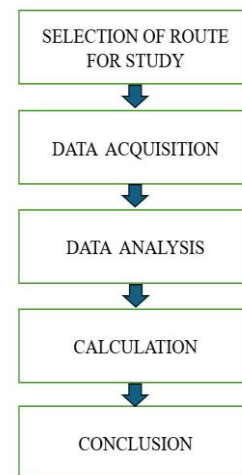
CONCLUSION:
Traffic synchronization is a critical aspect of traffic management that aims to optimize traffic signal timings to minimize congestion, reduce delays, and improve overall traffic flow. Aanalyzing traffic patterns, volume, speed, and composition, traffic engineers can determine the optimal cycle length, green time, yellow time, and red time for each intersection.

ELECTRONICS AND COMMUNICATION ENGINEERING

OPTIMIZATION OF DESIGNING OF SMART & SECURE SINGLE ATM CARD FOR MULTIPLE BANK ACCOUNT

Project Associates: Niveditha N S ,Raksha P, Uma M R, Shreya K S
**Project Guides:** Smt. Poornima G N

ABSTRACT: This project presents the design and implementation of a smart and secure single ATM card system capable of accessing multiple bank accounts through a multi-factor authentication process. The system utilizes an Arduino Mega microcontroller integrated with an RFID module, fingerprint sensor, keypad, LCD display, GSM module, and other supporting components. Upon swiping an RFID card, users can choose between fingerprint verification or password entry for identity confirmation. Once authenticated, users can select from multiple linked bank accounts and perform banking operations such as balance inquiry and cash withdrawal. The system updates and displays the remaining balance after transactions and sends alert messages via GSM in case of unauthorized access or successful withdrawals. Supporting multiple users with individual credentials, this project enhances banking security and convenience by merging multi-bank access into a single smart card solution.

INTRODUCTION: This paper details the design and implementation of a smart and secure single ATM card system aimed at providing access to multiple bank accounts. The project leverages a multi-factor authentication approach to enhance security and convenience for users. By integrating an Arduino Mega with components such as an RFID module, fingerprint sensor, and GSM module, the system offers a modern solution to managing multiple bank accounts through a single card. The core concept revolves around simplifying banking access while maintaining robust security protocols.

OBJECTIVES:
1. The main objective of this project is to integrate multiple bank accounts into one single smart card using RFID.
2. Authenticate users using RFID, fingerprint, or keypad for secure access.

METHODOLOGY:
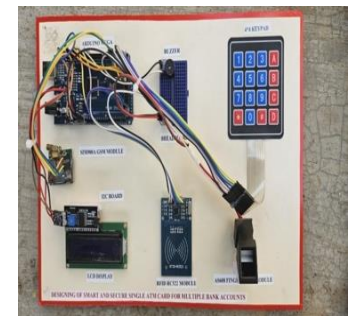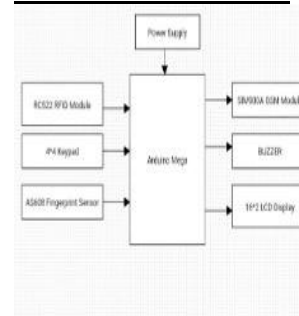
CONCLUSION:
In conclusion, this project successfully demonstrates the feasibility of creating a smart and secure single ATM card for managing multiple bank accounts. The implemented multi-factor authentication system, incorporating RFID, fingerprint scanning, and keypad input, significantly bolsters the security of banking transactions. By allowing users to access various accounts and perform operations like balance inquiry and withdrawals with real-time balance updates and GSM alerts, the system provides a streamlined and enhanced banking experience. This approach of consolidating multi-bank access into a single smart card offers a promising avenue for future banking security and convenience.

ELECTRONICS AND COMMUNICATION ENGINEERING

SMART SHOP CART

Project Associates: Ms. Khushi V, Ms. Pooja D Rao, Ms. Uzma Naaz ,Mr. Varun H.S
Project Guides: Vanishree H V

ABSTRACT:

This project presents the development of a Smart Shopping Cart system for retail environments, designed to enhance customer convenience through automation and intelligent features. The system integrates a mobile application and a smart cart embedded with RFID technology. Each product in the store is tagged with an RFID tag, and the cart is equipped with an RFID reader that automatically scans items as they are placed inside. This eliminates the need for manual barcode scanning, making the shopping process faster and more seamless.

INTRODUCTION:

In today's fast-paced world, consumers seek convenience, speed, and ease in all aspects of life—including shopping. To address these issues, this project introduces a Smart Shopping Cart system integrated with RFID (Radio Frequency Identification) technology and a dedicated mobile application. This system is designed to automate and enhance the in-store shopping experience. Each product in the store is equipped with an RFID tag, and the cart contains an RFID reader. As a customer places items into the cart, the system automatically detects and logs the items without the need for manual scanning. The mobile app displays the cart's contents in real-time, along with the current total and the location of products in the store (e.g., aisle or row number)

OBJECTIVES:

1. Automate item detection using RFID technology.
2. Display item details and placement row.
3. Enable the cart to follow the customer automatically.

METHODOLOGY:
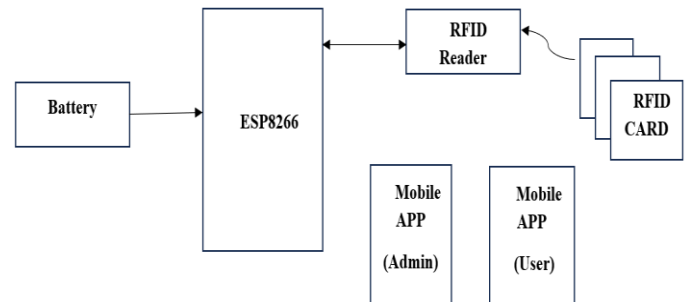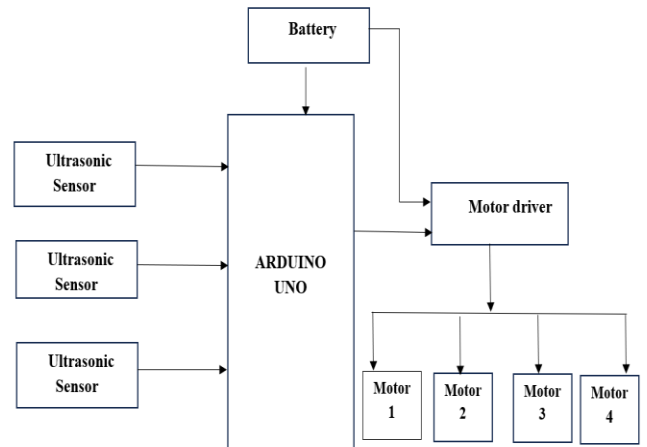
CONCLUSION:

The Smart Shopping Cart project successfully demonstrates how modern technologies like RFID, mobile applications, and automation can be integrated to improve the retail shopping experience. By automating item detection through RFID, customers can save time and avoid the hassle of manual scanning.

ELECTRONICS AND COMMUNICATION ENGINEERING

OPTIMIZATION OF HUMANOID ROBOT

Project Associates: Prajwal S, Raghavendra V Revankar, Renukaradhya M S
Project Guides: Dr. Shubha V Patel

ABSTRACT:

This project details the development of an interactive humanoid robot designed to enhance the event hosting experience. Integrating voice interaction with PocketSphinx STT/TTS, computer vision for human detection, and OLED eye displays for expressiveness, the robot offers engaging interactions. Seamless operation is facilitated by Bluetooth and Wi-Fi connectivity with mobile app control, while autonomous navigation with obstacle avoidance is achieved using ultrasonic sensors. Additionally, the robot features an integrated UV-C disinfection system for environmental safety and a number pad for attendee feedback. This multi-functional humanoid aims to provide an innovative and efficient solution for modern event management.

INTRODUCTION:

The burgeoning field of robotics has enabled the creation of humanoid robots for diverse applications. This project introduces an interactive humanoid robot designed to function as an event host. Utilizing Wi-Fi for extensive movement and Bluetooth for localized interaction, the robot aims to enhance event management. Notably, it incorporates UV-C emitters to autonomously sanitize the environment, addressing crucial hygiene concerns and offering a novel solution for modern events.

OBJECTIVES:

1. Develop an interactive humanoid robot for event hosting.
2. Implement voice recognition and TTS for user interaction.
3. Enable gesture-based control using sensors or cameras.
4. Integrate Bluetooth, Wi-Fi, and a mobile app for remote control.
5. Ensure autonomous navigation with obstacle avoidance.
6. To interface UV-C emitters which kills bacterias, germs in the surrounding environment

METHODOLOGY:
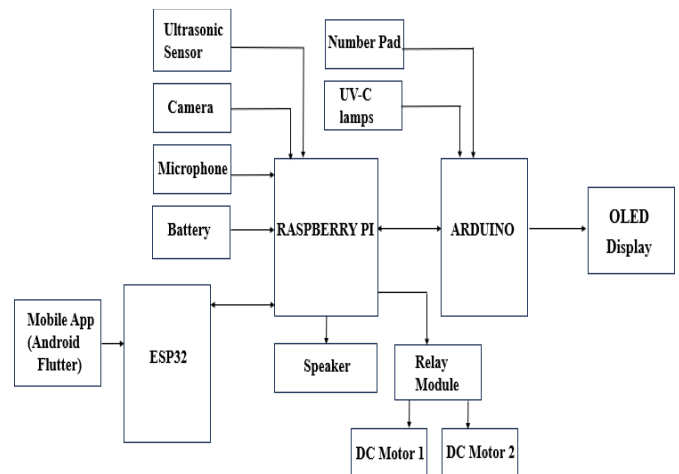
CONCLUSION:

In conclusion, this project successfully demonstrates the creation of a multi-functional interactive humanoid robot capable of serving as an effective event host. The integration of voice interaction, computer vision, and robust connectivity allows for engaging and personalized attendee experiences. Autonomous navigation and an innovative UV-C disinfection system address practical needs for event management and safety. The successful implementation of these features showcases the potential for such robots to streamline operations and enhance the overall quality of future events. This project provides a strong foundation for further development and application of interactive robots in various public settings.

ELECTRONICS AND COMMUNICATION ENGINEERING

AIR QUALITY MONITORING AND BILLING SYSTEM FOR INDUSTRIES

Project Associates: Abdul Khadar Jilani, Nikita S Suryawanshi, Ankitha R, Aaliya Khan

Project Guides: Dr . Pavankumar D

ABSTRACT:

Air quality is significantly influenced by industrial activities that emit various pollutants. These emissions, if left untreated, pose threats to the environment and human health. This paper presents a real-time Air Quality Monitoring and Billing System tailored for industrial settings. The system analyzes industrial gas emissions using various sensors and uploads real-time data to a cloud server for monitoring. By integrating ESP32 microcontrollers, sensors (gas, temperature, LDR), and Telegram bot notifications, the system ensures continuous emission assessment and alerts. Additionally, the project introduces a pollution-based billing mechanism that can enforce regulatory compliance and encourage eco-friendly practices.

INTRODUCTION:

Industrial emissions contribute significantly to global air pollution. Pollutants released in gaseous, liquid, or particulate form adversely affect ecosystems, weather patterns, and public health. Accurate monitoring and timely action are crucial to mitigate these impacts. With the proliferation of IoT, real-time environmental monitoring has become feasible and efficient. This project focuses on the deployment of sensors interfaced with ESP32 to track pollutant levels, notify stakeholders through Telegram, and generate pollution-based billing information.

OBJECTIVES:

1. Measure gas pollutants using CO and other gas sensors.
2. Record temperature using DHT11 sensor.
3. Monitor air clarity via LDR sensor.
4. Upload data to the cloud and notify industry stakeholders.
5. Implement a billing system based on pollution metrics.
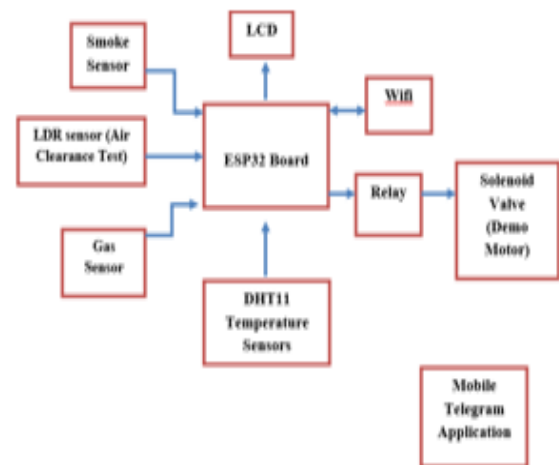
METHODOLOGY:

Figure 1: Block Diagram of Air Quality Monitoring

CONCLUSION:

The Air Quality Monitoring and Billing System provides an effective solution for continuous industrial emission tracking.

ELECTRONICS AND COMMUNICATION ENGINEERING

OPTIMIZATION OF AUOMATATIC MEDICAL DISPACTHER WITH DYNAMIC TELE MONITORING SYSTEM USIN IoT IN RURAL AREAS

Project Associates: Neha D, Rakshitha Pawar, Shalini C, Kruthika Rani D S
Project Guides: Mrs. Savithri G.R

ABSTRACT:

The Automatic Medical Dispatcher with Dynamic Tele Monitoring System Using IoT in Rural Areas is an innovative healthcare solution designed to provide users with easy and accessible medicine dispensing services through a self-contained, automated system. The vending machine is connected to a cloud-based platform (Firebase) to manage inventory, enable real-time communication, and generate automated reports, ensuring a smooth user experience. This machine utilizes AI-powered recommendations, a servo motor mechanism, and a user-friendly interface to enhance the overall dispensing process.

INTRODUCTION:

Access to healthcare, particularly in rural areas, can be a significant challenge. This project introduces an innovative solution: the Automatic Medical Dispatcher with Dynamic Tele Monitoring System. By integrating IoT technology, automation, and user-friendly interfaces, this system aims to provide a reliable and accessible way for individuals in rural communities to obtain necessary medications and receive remote medical assistance.

OBJECTIVES:
1. Implement facial recognition and encryption to ensure secure access and compliance with privacy regulations.
2. Automate the dispensing process for accuracy and efficiency.
3. Enable voice assistant functionality, multi-language AI chatbot, and live doctor consultations to improve user experience and remote healthcare access

METHODOLOGY:
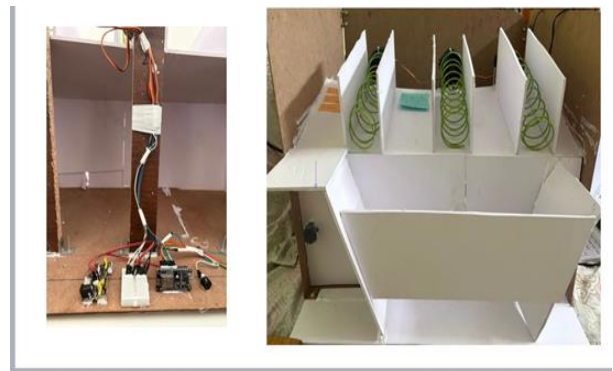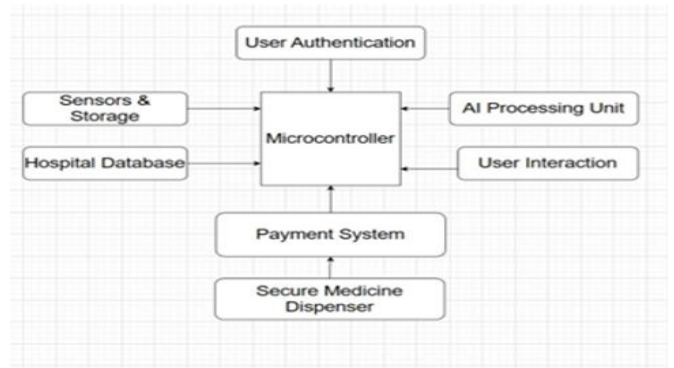
CONCLUSION:

The Automatic Medical Dispatcher system offers a promising approach to bridging healthcare gaps in rural settings. By focusing on secure access, automated dispensing, and enhanced user interaction through AI and tele-consultations, the project has the potential to significantly improve medication accessibility and remote healthcare provision, ultimately contributing to better health outcomes for underserved populations.

ELECTRONICS AND COMMUNICATION ENGINEERING

OPTIMIZATION OF IN-CAB SIGNALLING AND TRAFFIC MANAGEMENT SYSTEM USING AUTOMATED TRAIN OPERATOR

Project Associates: Sahana K, Sahana T, Sanjitha M S, Dhananjaya H

Project Guides: Yogesha K O

ABSTRACT:

The In-Cab signaling system is an advanced signaling and train control technology that enhances the efficiency, safety, and reliability of rail transportation networks. This operates through continuous real-time communication between trains and control centers, providing continuous data exchange. Key aspects include the integration of Automatic Train Protection (ATP), Automatic Train Operation (ATO), and Automatic Train Supervision (ATS) modules. The system's communication layer will be based on wireless technologies, ensuring fast and reliable data transfer.

INTRODUCTION:

This project focuses on the development of an In-Cab Signalling and Traffic Management System utilizing an Automated Train Operator. The system aims to significantly improve the safety, efficiency, and reliability of rail transportation by integrating advanced technologies. Through real-time communication and the seamless operation of Automatic Train Protection (ATP), Automatic Train Operation (ATO), and Automatic Train Supervision (ATS), this system seeks to minimize human intervention and optimize rail network performance.

OBJECTIVES:

1. Improve operational safety by integrating Automatic Train Protection (ATP) to prevent collisions, over speeding, and signal violations.

2. Real-time data exchange and traffic management strategies.

3. Implement Automatic Train Operator (ATO) with minimal human intervention.

METHODOLOGY:
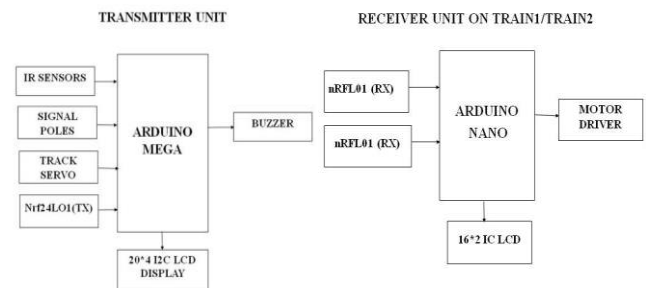
CONCLUSION:

In conclusion, the implemented In-Cab Signalling and Traffic Management System with an Automated Train Operator demonstrates a promising approach to modernizing rail transport. By successfully integrating ATP for enhanced safety and ATO for automated operation, the project achieves its key objectives. The system's reliance on continuous data exchange and wireless communication paves the way for more efficient traffic management and a substantial improvement in the overall operational reliability of the railway network.

ELECTRONICS AND COMMUNICATION ENGINEERING

SMART AQUAPHONIC FISH TANK USING IOT

Project Associates: Mr. Vishal S B, Mr. Vikas H H, Ms. Tejashwini T, Ms. Yasha M
Project Guides: Dr. Nirmala S O

ABSTRACT:

This project focuses on designing and developing a Smart Aquaponic Fish Tank system utilizing ESP32-WROOM and a variety of sensors for real-time monitoring and automation. The system integrates pH, temperature, turbidity, and water level sensors to ensure optimal water quality for fish and plant growth. A servo motor is employed for automatic fish feeding, and an oxygen machine is controlled via the ESP32 for dissolved oxygen management. Sensor data is displayed on an LCD screen cycling every 5 seconds and sent to ThingSpeak for remote monitoring. Additionally, water level alerts are sent to the owner to ensure timely maintenance. This automated aquaponic system combines sustainability with smart farming through embedded IoT technology.

INTRODUCTION:

In recent years, aquaponics has emerged as an innovative approach that combines aquaculture and hydroponics to create a sustainable ecosystem for food production. Monitoring and maintaining optimal water conditions is critical for fish and plant health. Manual observation is time-consuming and inefficient, especially on a larger scale. This project addresses this challenge by implementing a Smart Aquaponic Fish Tank using ESP32-WROOM with embedded sensors and IoT connectivity. The system aims to provide automation, real-time monitoring, and remote control features to enhance the productivity and health of the aquaponic environment.
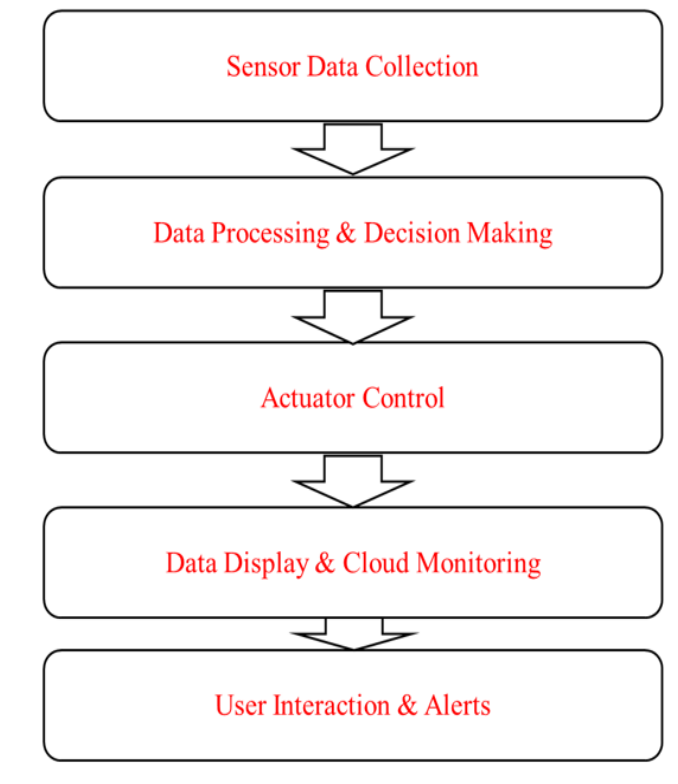
OBJECTIVES:

1)To develop an ESP32-WROOM-based monitoring system for aquaponics.

2) To automate fish feeding and oxygen control through servo motor and relay.

3) To enable real-time monitoring and alerting using ThingSpeak IoT platform.

METHODOLOGY:

CONCLUSION:

The Smart Aquaponic Fish Tank provides a reliable and efficient solution for automating aquaponic systems. It offers continuous monitoring of water parameters and timely interventions through automation and remote alerting. The integration of IoT enhances the system's capability for remote supervision and data-driven decision-making, promoting sustainable and smart aquaponics practices.

ELECTRONICS AND COMMUNICATION ENGINEERING

DEVELOPMENT OF DYNAMO – SOLAR POWERED E - BICYCLE

Project Associates: Ms. Deekshitha G A, Ms. Salma Faiza, Ms. Smitha K M, Ms. Soujanya Patil

Project Guide: Dr. Leela G H

ABSTRACT:

The **Dynamo–Solar Powered E-Bicycle** is an innovative solution aimed at promoting sustainable and energy-efficient transportation. This project integrates solar panels and a dynamo system to charge a battery that powers an electric motor, providing pedal assistance and reducing rider fatigue. Solar energy is harnessed during daylight, while the dynamo captures mechanical energy during motion, ensuring consistent power availability. The design maintains manual pedaling functionality while offering electric support, making it suitable for urban commuting and rural mobility. This eco-friendly hybrid bicycle reduces carbon emissions, minimizes reliance on fossil fuels, and serves as a practical, affordable alternative for everyday transportation needs.

INTRODUCTION:

The growing need for eco-friendly and energy-efficient transportation has led to the development of innovative solutions like electric bicycles. This project focuses on creating a dynamo solar powered e-bicycle that combines solar energy and mechanical energy to charge its battery. Solar panels mounted on the bicycle harness sunlight, while a dynamo generates electricity from wheel motion during riding. This hybrid system reduces reliance on conventional charging, offering a sustainable and self-sufficient mode of transport. The proposed design promotes renewable energy use, reduces carbon emissions, and provides an affordable, green mobility option for urban and rural commuting.

OBJECTIVES:

1. To promote sustainable and eco-friendly transportation.
2. To store regenerated power from dynamo into battery.
3. To develop a hybrid bicycle.

METHODOLOGY
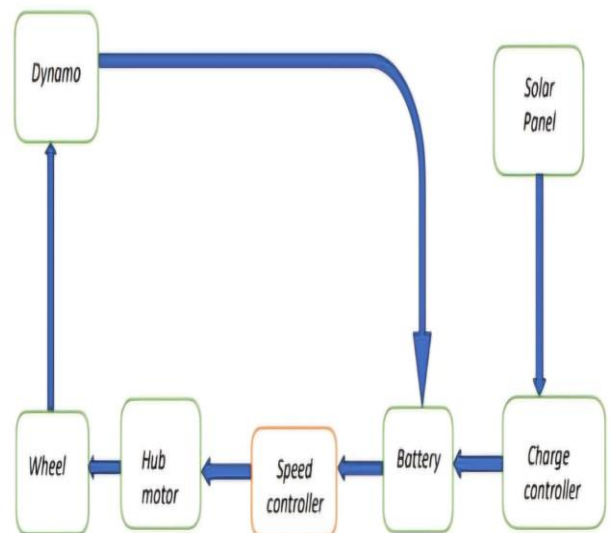
CONCLUSION:

The development of the Dynamo–Solar Powered E-Bicycle offers an efficient, eco-friendly solution for modern transportation. By utilizing both solar and mechanical energy, it ensures reliable performance with minimal environmental impact. This hybrid system promotes sustainable mobility, reduces dependence on fossil fuels, and encourages the adoption of green technologies for daily commuting and personal transport.

ELECTRICAL AND ELECTRONICS ENGINEERING

POWER FROM AIR WALKER

Project Associates: Mr. Faizal Ahamed, Mr. Akasha G. C., Mr. Divakara D., Ms. Yasmeen Taj
Project Guides: Mrs. Shilpa S. K.

ABSTRACT:

This project deals with system which will develop power using air walker. The aim is to use human as the power source to operating the air walker. In this the translation motion of the equipment is converted into rotation. For the sake of health people use to visit park, where they use various exercise tools, here the man powe5r is fully utilize and the mechanical energy is which is wasted can be avoided. So, the aim is to generate power using air walker equipment.

INTRODUCTION: There is the various source of energy or power generation method which humans have developed till now and use in our day-to-day life. There are renewable energy resources, non-renewable energy sources, manpower, animal-powered, etc. with various ideas and techniques are used for power generation. There are promising applications areas for human power in emerging regions where electric power is either not available or not affordable. There is also the untapped potential for harnessing human power for most fitness purposes. The non- conventional energy system is very essential at this time to our nation

Man has needed and used energy at an increasing rate for his sustenance and wellbeing ever since he came on earth for few million years ago. Because of which a lot of energy resources have been exhausted and wasted. Proposal for the utilization of waste energy of power generation by gym pulley is very much relevant and important for highly populated countries like India. As more people spend more and more of their days in front of computers or any other equipment's without any movements, additional concerns, such as health and the exercise they need for healthful living are often overlooked. From the other side for people who want to be aerobically fit it's not common to spend hours for example exercise in gym and park that produces nothing but heat, why not have your-my-our workout and generate usable electricity at the same time.

OBJECTIVES:

1. To convert mechanical energy to electrical energy during the movement of the air walker.

2. To make a device which does not uses any electrical power so that it is completely independent of its own.
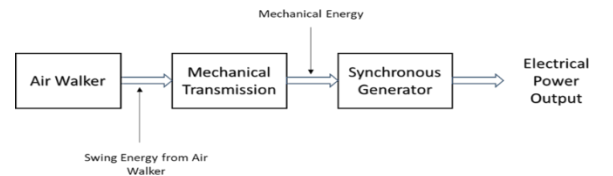
METHODOLOGY:

Fig.1 Block Diagram and Project Model

CONCLUSION: Power generation using an Air Walker is an innovative and sustainable approach that merges fitness with renewable energy production. While the energy output is modest, its applications in personal, educational, and community settings make it a valuable concept. This system promotes eco-friendliness, reduces reliance on fossil fuels, and raises awareness about energy consumption. Additionally, it offers dual benefits of health improvement and electricity generation, making it particularly suitable for green gyms, public spaces, and remote areas. In this project, through pedaling power generation can be done. But lots of challenges are faced during generation, that the voltage generation has some sort of interruption, it can be solved using proper electronics convertor devices.

ELECTRICAL AND ELECTRONICS ENGINEERING

DYNAMIC WIRELESS EV CHARGING SYSTEM

Project Associates: Mr. Manoj A. H., Mr. Akasha E. H., Mr. Hemanthachar S., Mr. Sagar K.
Project Guide: Dr. G. M. Shivakumaraswamy

ABSTRACT: Wireless charging technology is transforming how we deliver power, by eliminating the need for physical connections. This project introduces a wireless charging robot car that integrates voltage sensing, an Arduino-based control system. The system consists of four transmitting coils placed at specific intervals along the robot car's path. Each coil is powered by a 12V, 2A power supply, creating electromagnetic fields that transfer energy wirelessly to a receiver coil mounted on the car. A voltage sensor detects the power received by the receiver coil and sends the data to an Arduino Uno, which processes the information and displays it on an LCD screen.

INTRODUCTION: The car's mobility is powered by 2 AA batteries connected through a relay module, which acts as a switch to control the motors based on instructions from the Arduino. Additionally, a 12V Li-ion battery powers the entire system, ensuring continuous operation. To prevent collisions, an ultrasonic sensor is integrated into the car, enabling it to detect obstacles within a predefined range. Upon detecting an obstacle, the ultrasonic sensor signals the Arduino to deactivate the relay, stopping the car safely. This project highlights several innovative features, including wireless charging through resonant inductive coupling, real time voltage monitoring, and safety measures such as obstacle detection. The Arduino Uno serves as the system's brain, automating the car's movement, charging, and safety protocols. The integration of four transmitter coils ensures consistent energy transfer as the receiver coil moves along the path.

OBJECTIVES:

1. **Integrate Voltage Monitoring:** To implement a voltage sensor that monitors power received by the receiver coil and displays the readings in real time on an LCD screen for system diagnostics.

2. **Automate Safety Mechanisms:** To utilize an ultrasonic sensor for obstacle detection, ensuring the robot stops at a safe distance by deactivating the relay to prevent collisions.
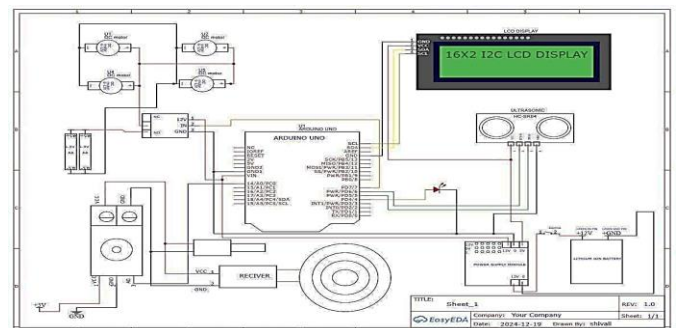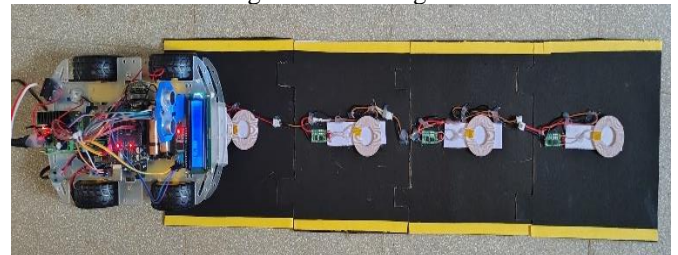
METHODOLOGY:

Fig. 1 Circuit Diagram

Fig. 2 Project Model

CONCLUSION:
The wireless charging robot project using a 5V 2A wireless charging module has been successful in its design and execution. The development and integration of wireless charging systems for mobile robots have emerged as a transformative innovation, particularly in the fields of automation, robotics, and energy management. This technology allows mobile robots to operate autonomously without the need for physical connectors or manual charging interventions. It addresses several challenges posed by traditional wired charging systems, including wear and tear of connectors, the restriction of mobility due to cables, and the need for constant human intervention for charging.

INFORMATION SCIENCE AND ENGINEERING

AUTOMATED MEDICINE DISPENSING CONVEYOR FOR HOSPITALS USING IOT

Project Associates: Ms. Aishwarya B S, Ms. Manasa K M, Ms. Pratiksha M K , Ms. Sanjana S
Project Guides: Dr . Patil N S

ABSTRACT: This project presents an Automated Medicine Dispensing System that combines Python Flask web application and Arduino-based hardware to automate the process of dispensing prescribed medications to patients. The system uses a conveyor belt mechanism that is controlled by a DC motor via an H-Bridge, with a servo motor that releases the medication at designated points. The web application enables hospital staff to register patients, input prescriptions, manage medicine inventory, and schedule dispensing tasks. The Arduino receives dispensing commands from the web application, processes the instructions, activates the conveyor, and dispenses the correct medication into the patient's collection tray. This automation eliminates human error, increases efficiency, and guarantees patient safety in modern healthcare facilities.

INTRODUCTION: In hospitals, traditional medicine distribution by medical staff or pharmacists can be time-consuming and prone to errors, especially in high-pressure environments. Mistakes such as incorrect dosages or wrong medications can lead to serious health risks and operational inefficiencies. To address these issues, this project presents an Automated Medicine Dispensing System that combines embedded systems with web technologies. The system uses an Arduino microcontroller to control a conveyor belt via a DC motor and H-Bridge module. A servo motor releases the correct medicine based on commands received through serial communication. A Python Flask web application serves as the interface for hospital staff to manage patients, assign prescriptions, monitor inventory, and schedule dispensing times. When a dispensing request is made, the Arduino executes the necessary mechanical operations. This integration enhances accuracy, efficiency, and traceability in medication distribution while reducing staff workload and ensuring effective inventory management through real-time stock tracking.

OBJECTIVES:
1. To make medicine dispensing automatic so that patients get the right medicine at the right time without mistakes and to reduce the work for hospital staff.
2. To keep track of medicine stock in real-time using a website, so hospitals don't run out of medicine or store too much.

METHODOLOGY:
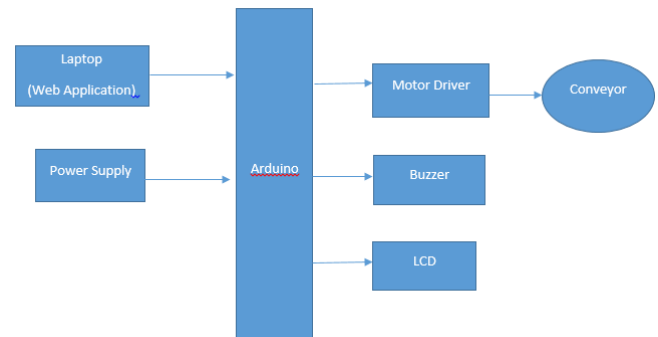
CONCLUSION:
The Automated Medicine Dispensing System offers a reliable and efficient solution for hospital medicine management. It reduces manual effort by automating the dispensing process, ensuring that patients receive the correct medication on time. By integrating precise hardware control with a web-based interface, it minimizes human error and enhances patient safety. Real-time stock monitoring supports effective inventory management, preventing shortages or overstocking. This system streamlines hospital workflows, improves operational efficiency, and allows medical staff to focus more on patient care.

INFORMATION SCIENCE AND ENGINEERING

VISIONAI: An intelligent voice assistant for the visually impaired

Project Associates: Ms. Aishwarya A M , Ms. Chandana M, Mr. Pavan Kumar J S , Mr. ShivaPrasad P Patil
Project Guides: Prof. Sushma C
Funding Agency: Institute Funding. **Amount Sanctioned**: Rs. 5,000/-

ABSTRACT: VisionAI is a wearable assistive system that uses a Raspberry Pi and a camera to process real-time visual input. It offers four key features—object detection, currency recognition, text-to-speech, and face recognition—controlled by side buttons. Processed results are delivered as audio through Bluetooth earphones, helping visually impaired users navigate their surroundings independently. Powered by a portable battery, VisionAI provides on-the-go support using AI-based technologies.

INTRODUCTION: Imagine a world where vision is no longer a limitation but a gateway to endless possibilities. Meet VisionAI – an intelligent voice assistant designed to empower the visually impaired, turning everyday challenges into effortless interactions. With the power of AI and machine learning, VisionAI listens, understands, and responds—bringing real-time object recognition, text reading, and navigation assistance to life. This is more than just a technology; it's a movement towards inclusivity, independence, and innovation. A bridge between ability and accessibility. A step closer to a world where everyone sees through intelligence.

OBJECTIVES:

1. To detect and identify objects in real-time from the surrounding environment and provide audio feedback to assist in safe navigation.
2. To recognize currency notes accurately and convert their denomination into speech, enabling independent financial transactions.
3. To convert text into speech allowing users to hear printed or handwritten content captured by the camera.
4. To recognize familiar persons using facial recognition and notify the user through audio, improving social interaction and awareness.

METHODOLOGY:
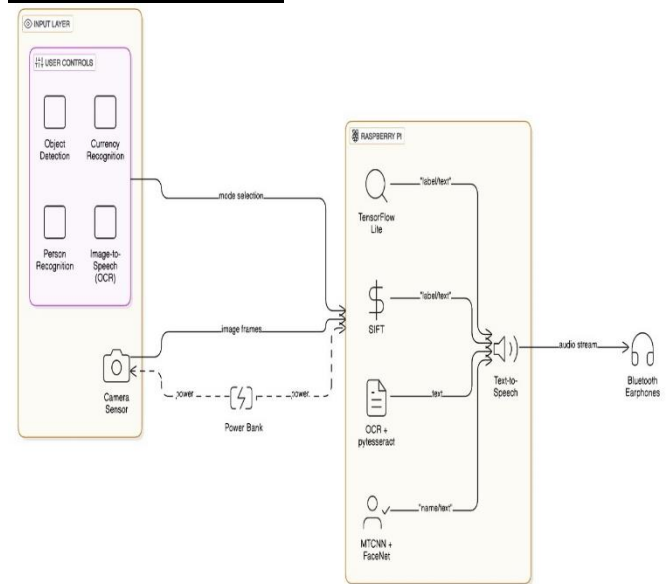
CONCLUSION:

VisionAI integrates multiple AI technologies within a wearable smart glasses setup to assist visually impaired users. The system includes user control buttons for selecting one of four functionalities: Object Detection, Currency Recognition, OCR, and Face Recognition. A camera sensor captures the visual input, which is processed by a Raspberry Pi running specialized models like TensorFlow Lite, SIFT, pytesseract, and MTCNN + FaceNet. The processed information is then converted to audio using a Text-to-Speech module and delivered through Bluetooth earphones, providing the user with real-time spoken feedback. Powered by a portable power bank, the device is lightweight and designed for everyday use, enhancing accessibility and independence for the visually impaired.

INFORMATION SCIENCE AND ENGINEERING

IoT BASED SMART SYSTEM FOR AUTONOMOUS VEHICLE SAFETY

Project Associates: Mr. Manish S Chikmath, Mr. Prajwal S Mallur, Mr. Shankar N Hulagur, Mr. Yaligar Ravi Teja
Project Guide: Dr. Bhuvaneshwari K V

ABSTRACT: Enhancing road safety with advanced driving assistance systems helps reduce accidents caused by driver inattention or delayed reactions. The proposed IoT-based solution uses sensors and cameras to detect obstacles like pedestrians or vehicles in real time. It alerts the driver and can autonomously slow down or stop the vehicle to prevent collisions. By combining real-time detection, alerts, and automated braking, the system aims to lower pedestrian fatalities and improve overall road safety.

INTRODUCTION: The integration of the Internet of Things (IoT) with autonomous vehicle (AV) technology has led to the development of smart systems that significantly enhance road safety and driving efficiency. By combining IoT-enabled sensors, real-time data processing, and advanced object detection algorithms like Convolutional Neural Networks (CNN) and You Only Look Once (YOLO), these systems enable vehicles to detect and respond to obstacles, traffic signs, and lane markings with high accuracy. The continuous exchange of information between vehicles and infrastructure ensures proactive hazard detection and safer navigation. This IoT-based smart system aims to create a reliable, intelligent driving assistance platform that improves situational awareness, reduces accidents, and supports the future of safe and autonomous transportation.

OBJECTIVES:
1. To acquire real-time image data using a camera and environmental data using an ultrasonic sensor for road and obstacle monitoring.
2. To collect and preprocess custom datasets from Kaggle and Roboflow for detecting potholes, traffic signs, and obstacles.
3. To train object detection models using YOLO and CNN architectures tailored for road safety applications.
4. To trigger visual and audio alerts for drivers & passengers in the event of detected hazards.

METHODOLOGY:
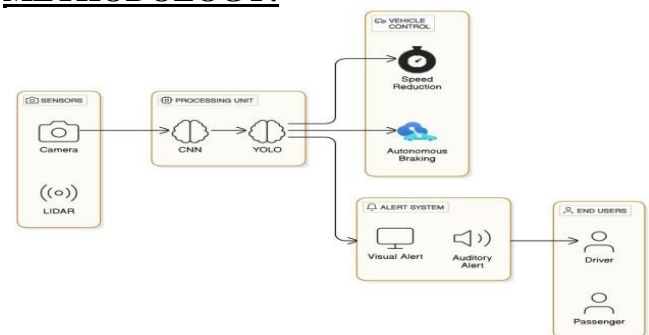
CONCLUSION:
The integration of IoT-based smart systems in autonomous vehicles marks a transformative step toward safer and more efficient transportation. Through real-time data collection, intelligent processing, and advanced object detection techniques like CNN and YOLO, these systems empower vehicles to perceive and react to their environment with high precision. Continuous communication between vehicles and infrastructure enhances hazard awareness, supports safer navigation, and minimizes the likelihood of accidents. This approach not only strengthens the foundation of autonomous driving but also contributes to the development of a more intelligent and secure mobility future.

INFORMATION SCIENCE AND ENGINEERING

Automated Traffic Law Enforcement : Helmet Detection and E-Challan System

Project Associates: Mr. Tarun H, Mr. Renuka Prasad P, Mr. Samarth U, Mr. Dhanush A G S
Project Guide: Prof. Roopa D E

ABSTRACT:

The rise in motorcycle accidents due to non-compliance with helmet regulations necessitates smarter enforcement systems. This project proposes an automated helmet violation detection system with real-time number plate extraction. The solution uses YOLO for detecting riders, passengers, and helmets, and EasyOCR for reading license plates. Detected violations are logged in a MongoDB database, and notifications are sent using Twilio. The system is deployed via a Streamlit interface, providing a user-friendly, scalable, and cost-effective approach to support traffic rule enforcement and enhance road safety.

INTRODUCTION:

Road traffic violations have become a significant concern, contributing to numerous accidents and fatalities. A major offense among two-wheeler riders is not wearing a helmet, which increases the severity of injuries during accidents. Government efforts, such as awareness campaigns and stricter traffic regulations, have aimed to reduce such incidents. However, manual monitoring remains inefficient and resource-intensive.To address this, the project focuses on developing an intelligent and automated system capable of detecting helmet violations and identifying the violator via number plate extraction. Traditional methods involve expensive hardware or manual enforcement. This system utilizes real-time video processing, object detection with YOLO, image segmentation, and OCR to identify violations. The detected violator's details are logged into a MongoDB database, and an e-challan notification is sent using Twilio. The project is implemented through a Streamlit-based UI for ease of use and deployment, targeting affordable scalability and effective enforcement.

OBJECTIVES:
1. To automate helmet violation detection in real-time using computer vision and deep learning.
2. To classify and detect riders and passengers with or without helmets using YOLO.
3. To extract vehicle number plates using EasyOCR and segment violator details.
4. To store violation data in MongoDB and send notifications via Twilio.
5. To develop a lightweight, scalable solution suitable for smart traffic monitoring.

METHODOLOGY:
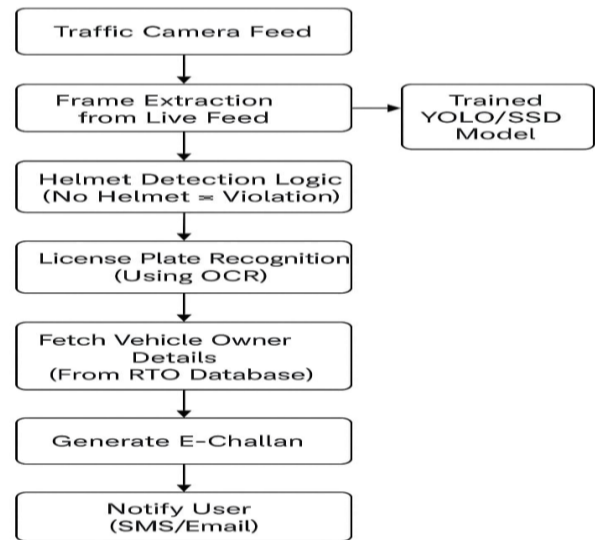
CONCLUSION:

The proposed system successfully automates helmet violation detection and number plate extraction using YOLO and EasyOCR. It offers a cost-effective alternative to manual monitoring by integrating MongoDB for data storage, Twilio for alerts, and Streamlit for user interaction. The system demonstrates high accuracy and efficiency, making it suitable for real-time deployment in smart traffic management.

INFORMATION SCIENCE AND ENGINEERING

GARBAGE MANAGEMENT SYSTEM FOR SMART CITY

Project Associates: Ms. Rakshtha .L.G, Ms. Sahana B.R, Ms. Sanjana .G.K, Ms . Sinchana .R.B.
Project Guides: Prof. Sheik Imran

ABSTRACT:

The Civic Issue Reporting System is a digital platform designed to streamline the process of reporting and resolving civic issues such as garbage dumps and it enables users to submit complaints via a user-friendly web and mobile interface, with automated GPS tagging for accurate location tracking. Built with Flask and MongoDB, the system ensures real- time communication between citizens and municipal authorities. It enhances transparency, improves response times, and fosters civic engagement. By leveraging automation and data analytics, the system aims to optimize urban management, improve service efficiency, and promote active citizen participation in community development.

INTRODUCTION

The Garbage Management System (GMS) is a smart city software solution that streamlines waste management by enabling citizens to report issues like overflowing bins via a user-friendly app with location tagging and images. Municipal authorities use a centralized dashboard for complaint tracking and performance monitoring. By improving communication and accountability, GMS promotes cleaner cities and supports sustainable, data-driven urban governance.

OBJECTIVES:

1. Isolation and identification of bacteria from sludge and agriculture soil. To develop a mobile-based platform that enables citizens to easily report waste-related issues using images and description.

2. Characterization of extracted pigments from soil bacteria. To integrate geolocation services for automated location tagging, ensuring accurate and efficient waste report management.

3. Establish real-time tracking and streamlined communication between users and authorities.

METHODOLOGY:
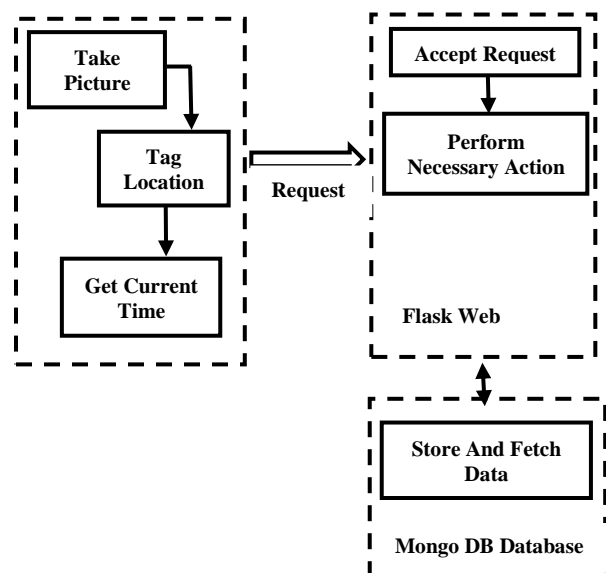
CONCLUSION:

The Garbage Management System is a smart solution for efficient waste handling, improving communication between citizens and authorities while ensuring transparency and accountability. It empowers public participation and supports data-driven decisions for cleaner, well-managed cities, aligning with smart city goals.

INFORMATION SCIENCE AND ENGINEERING

BLOCKCHAIN BASED VOTING SYSTEM

Project Associates: Mr. Manoj M N, Mr. Nandan S, Mr. G Manjunatha, Mr. H M Tejas Kumar
Project Guides: Dr. Poornima B

ABSTRACT:

A block chain-based voting system modernizes traditional voting by offering a decentralized, secure, and transparent alternative. It addresses issues like fraud, inefficiency, and lack of trust through immutable vote records. Smart contracts automate vote validation and counting, ensuring accuracy and eliminating tampering. Voter anonymity is protected using cryptographic techniques, allowing secure and verifiable elections. The system supports remote voting, increasing accessibility. Real-time processing and reduced manual intervention enhance speed and reliability. Overall, it ensures fairness, trust, and efficiency in democratic processes.

INTRODUCTION:

A block chain-based voting system ensures secure, transparent, and tamper-proof elections using decentralized technology. Voters use digital identities to cast immutable votes recorded on the block chain. Smart contracts verify eligibility while maintaining voter anonymity through cryptographic techniques. The system offers real-time vote counting, reduces fraud, and enhances public trust. Ethereal is a preferred platform for building secure and efficient e-voting systems using smart contracts. Despite benefits, challenges like scalability, privacy, and regulatory hurdles remain. Ongoing research continues to improve block chain e-voting for reliable, large-scale adoption.

OBJECTIVES:

1. To create a database for the public and candidates participating in the election.
2. To authenticate users by sending an OTP (One-Time Password).
3. To implement the SHA encryption algorithm to generate and send a private key.
4. To validate the private key before allowing the user to cast their vote.
5. To announce the election results accurately and securely.

METHODOLOGY:
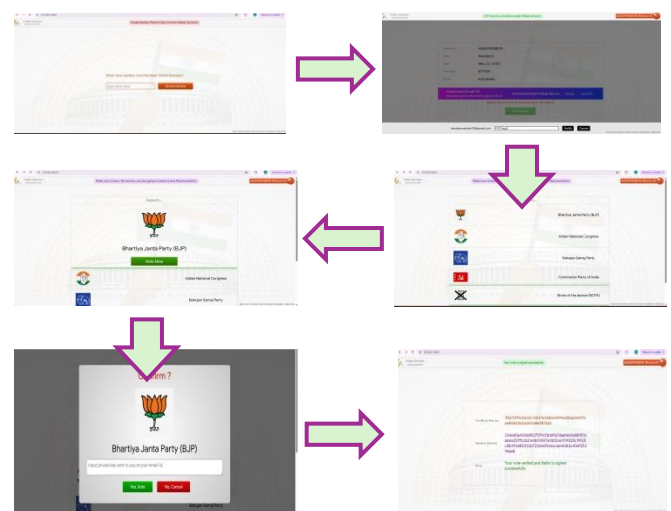
CONCLUSION:

This chapter will discuss the development of the entire system as a whole. It will give an insight into the general procedures that were taken to accomplish the project. It will also discuss the aims and objectives of the initial proposal that where and the objectives that could not be accomplished. It will cover the drawbacks the project possesses and the necessary work that can be used to enhance the system in the future. The main project objective was to build a secure online voting system, which would be used. The aim of the project was to convert the current use of paper based voting to an electronic form of voting, which would enable voters to vote remotely from any location through the use of the internet.

INFORMATION SCIENCE AND ENGINEERING

DEEP LEARNING AND IOT BASED FOREST FIRE DETECTION AND ALERT SYSTEM

Project Associates: Ms Nikhitha G N, Ms Sanjana R, Ms Vidya K M
Project Guides: Prof. Manjushree K R

ABSTRACT: The growing threat of forest fires due to climate change and human activities calls for intelligent, real-time monitoring solutions. This project proposes a Deep Learning and IoT-Based Forest Fire Detection and Alert System that leverages Deep learning and IoT to detect early signs of fire. Sensors such as infrared cameras and smoke detectors capture data, which is analyzed locally using machine learning models trained to identify fire. Operating on edge devices, the system ensures low latency and rapid alert generation without relying on cloud connectivity. It is scalable, adaptable to diverse environments, and capable of continuous learning to improve accuracy. This proactive approach enhances fire response efforts while minimizing environmental and economic damage.

INTRODUCTION: It is a cutting-edge solution designed to improve forest fire management through real-time monitoring and early detection. Forest fires pose severe risks to ecosystems and communities, and traditional methods often fall short in providing timely alerts. This system deploys IoT-enabled edge devices with sensors like infrared cameras and smoke detectors across forested areas to capture environmental data. Edge computing ensures low latency and efficient operation without relying heavily on cloud connectivity. The system offers quick alerts, enhanced adaptability, and greater protection for natural resources and human life.

OBJECTIVES:

1. To develop and optimize deep learning algorithms for real-time forest fire detection using visual data from cameras or drones.

2. To establish a sensor network for continuous monitoring and early fire detection.

3. To enhance detection accuracy by analyzing key visual features like color, texture, and motion of flames and smoke.

4. To integrate the system with existing forest management and firefighting infrastructure for timely response.

5. To provide recommendations for further improvements based on evaluation results

METHODOLOGY:
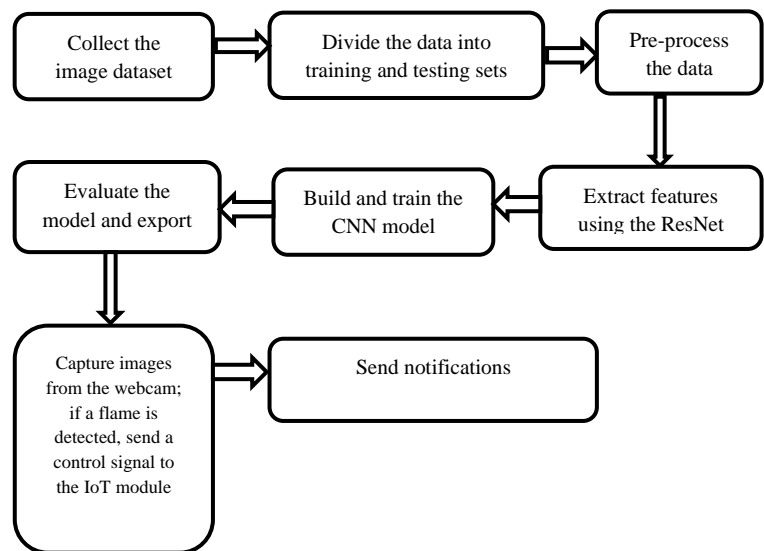
CONCLUSION: The integration of Deep Learning and IoT in forest fire detection and management offers a highly promising solution for minimizing the destructive impact of wildfires. By utilizing AI algorithms, computer vision, and data from satellites, sensors, and cameras, these systems enable accurate and real-time detection, early warnings, and predictive analysis to support efficient firefighting and preventive actions. While there are challenges related to data quality, system accuracy, and implementation, ongoing advancements collaboration in Deep Learning and IoT technologies are paving the way for smarter, faster, and more effective forest fire response systems.

INFORMATION SCIENCE AND ENGINEERING

CREDIT CARD FRAUD DETECTION USING MACHINE LEARNING

Project Associates: Mr. Darshan V M, Mr. Chinmay H R, Mr. Nithish Kumar N, Mr. Darshan K G
**Project Guides:** Prof. Rekha B H

ABSTRACT: This project presents a credit card fraud detection system using supervised machine learning to identify fraudulent transactions based on features such as transaction time, amount, and anonymized variables (V1–V28). By training on historical data, the model can effectively classify transactions as legitimate or suspicious. The goal is to enhance real-time fraud detection accuracy, reduce false positives, and improve financial security through intelligent, data-driven analysis.

INTRODUCTION: With the rapid growth of digital payments and online transactions, credit card fraud has become a major concern for both consumers and financial institutions. Traditional fraud detection methods, often rule-based, struggle to keep up with the evolving tactics of fraudsters, leading to either missed fraud or unnecessary disruptions for legitimate users. Machine learning offers a powerful solution by analyzing large volumes of transaction data to identify patterns and anomalies that indicate fraudulent behavior. This project explores the use of supervised machine learning algorithms to detect credit card fraud efficiently, aiming to improve detection accuracy, minimize false positives, and ensure a secure transaction environment.

OBJECTIVES:
1. **To develop** a credit card fraud detection system using supervised machine learning techniques.
2. **To analyse** transaction data (e.g., time, amount, V1–V28 features) for accurate classification of fraudulent and legitimate transactions.
3. **To enhance** real-time detection capabilities and reduce false positives.
4. **To improve** user security and trust in digital transactions through intelligent fraud detection.
5. **To create** a scalable and adaptive model capable of handling evolving fraud patterns.

METHODOLOGY:
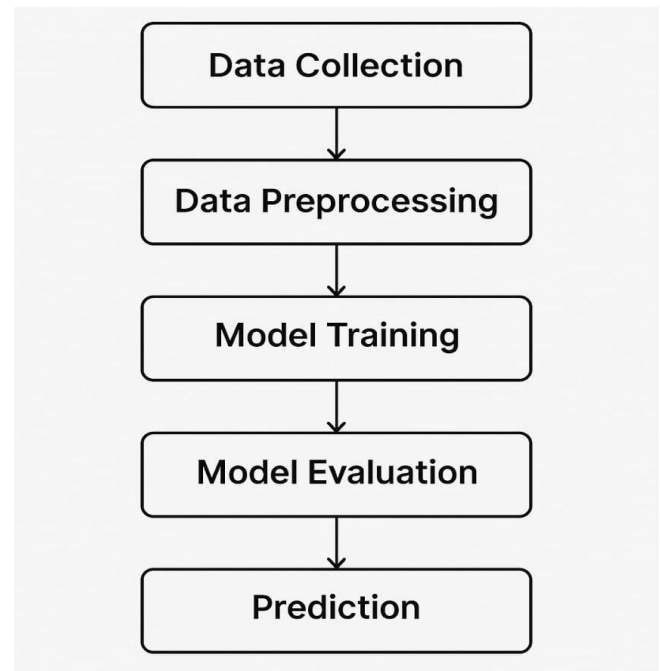
CONCLUSION:

The proposed credit card fraud detection system successfully integrates supervised machine learning with dual-factor authentication—OTP verification and facial recognition—to provide a robust, real-time security solution. By analyzing transactional patterns through intelligent algorithms and confirming user identity via LBPH facial recognition, the system effectively minimizes false positives and prevents unauthorized access.This approach not only enhances the overall security of online financial transactions but also maintains user convenience. The project demonstrates the feasibility and importance of combining predictive analytics with biometric verification to address modern cybersecurity challenges in the financial sector.

INFORMATION SCIENCE AND ENGINEERING

SMART EV STATION LOCATOR AND SLOT BOOKING APP

Project Associates: Mr Akash P, Mr Gagan J K, Ms Deeksha, Ms Sneha T R
Project Guides: Prof. Puneeth S P

ABSTRACT: The EV Station Locator and Slot Booking Application helps electric vehicle (EV) users find nearby charging stations and book slots in advance. Using GPS tracking, the app displays available stations with details like charger type, amenities, and pricing. To reduce wait times, users can pre-book charging slots and make secure online payments. Notifications ensure a smooth experience. Charging station owners can manage bookings and update availability through an admin panel. The app leverages Google Maps API, Hygraph database, and an intuitive user interface to enhance accessibility and convenience. By optimizing station usage and reducing delays, this application promotes EV adoption and supports sustainable transportation.
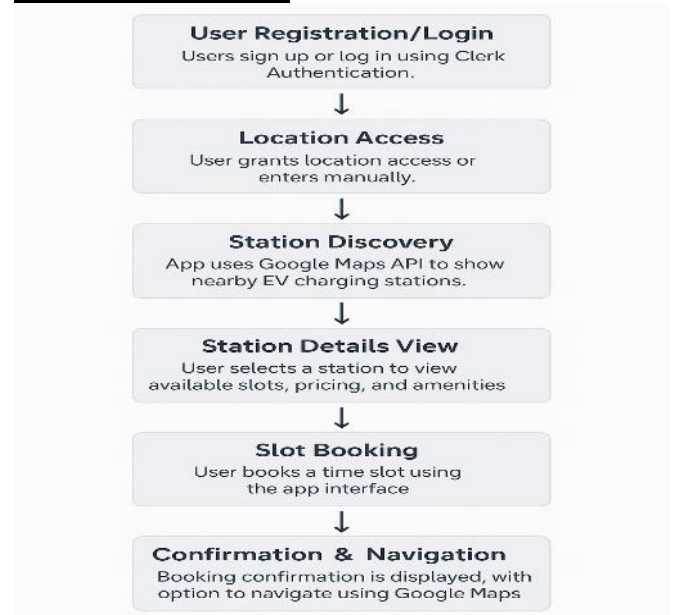
INTRODUCTION: The increasing adoption of electric vehicles (EVs) has led to a rising demand for accessible and efficient charging infrastructure. However, finding available charging stations and securing a charging slot remains a significant challenge for EV owners. This project aims to develop a Smart EV Station Locator and Slot Booking App to address these issues, ensuring a seamless and convenient charging experience. The app helps EV users locate charging stations, check real-time availability, and book slots. Built with React Native and Hygraph, it ensures a smooth user experience

OBJECTIVES:
1. To create EV station locator using geolocation.
2. To develop a slot booking system for reserving charging slots ahead of time.
3. To implement Hygraph for efficient management of station data and content.
4. To provide online payment options for quick and safe transactions.
5. To implement push notifications for booking confirmations.
6. To track the expenses for users to monitor their charging costs and manage budgets effectively.

METHODOLOGY:

User Registration/Login
Users sign up or log in using Clerk Authentication.
↓
Location Access
User grants location access or enters manually.
↓
Station Discovery
App uses Google Maps API to show nearby EV charging stations.
↓
Station Details View
User selects a station to view available slots, pricing, and amenities
↓
Slot Booking
User books a time slot using the app interface
↓
Confirmation & Navigation
Booking confirmation is displayed, with option to navigate using Google Maps

CONCLUSION:
The Smart EV Station Locator and Slot Booking App addresses critical challenges in EV charging infrastructure by providing a user-centric, technology-driven solution. By integrating geolocation, slot booking, and secure payments into a single platform, the app enhances convenience and promotes sustainable transportation. The app promotes greater adoption of electric vehicles and contributes to sustainable and eco-friendly mobility. Its scalable architecture and modular design make it suitable for urban infrastructure, fleet management, and integration into smart city frameworks. Future enhancements could include predictive analytics for station demand and integration with vehicle systems for automated charging schedules.

INFORMATION SCIENCE AND ENGINEERING

ENHANCING STROKE REHABILITATION USING WEARABLE SENSORS AND ML-POWERED ANALYTICS

Project Associates: Ms. Geethanjali B P, Ms. Kavya M Patil, Ms. M Rashmi , Ms. Chandana P
Project Guide: Prof. Santhosh T

ABSTRACT:

Stroke is the second leading cause of death and a major cause of long-term disability, affecting 17 million people annually. Traditional rehabilitation is often limited by high costs and poor accessibility. This project proposes an IoT and machine learning-based stroke rehabilitation system that enables real-time health monitoring, predictive analysis, and emergency alerts. Using ESP32 with ECG, heart rate sensor, ADXL345 (movement), and ThingSpeak cloud integration, the system collects and analyzes patient data. A Python-based web app uses ML algorithms to assess recovery, predict stroke risk, and classify movements. Healthcare providers can remotely track progress and deliver personalized therapy. In critical cases, the system sends instant Telegram alerts for timely intervention.

INTRODUCTION:

Stroke is a leading neurological disorder, ranking as the second cause of death and third cause of disability worldwide. It occurs when brain blood flow is disrupted by a blockage (ischemic) or bleeding (hemorrhagic), affecting over 15 million people globally each year. Of these, 5 million die and another 5 million are left permanently disabled. Traditional rehabilitation methods are costly, time-consuming, and often inaccessible, relying on manual evaluations and periodic checkups. This project proposes a Smart Stroke Rehabilitation System that uses IoT sensors, cloud computing, and machine learning to provide real-time monitoring, predictive analytics, and personalized therapy. The system enhances recovery by enabling continuous, data-driven rehabilitation and improving communication between patients and healthcare providers, ensuring accessible and effective therapy tailored to individual needs.

OBJECTIVES:
1. To develop a smart health monitoring system using IoT sensors.
2. To integrate machine learning for risk prediction, and personalized therapy recommendation.
3. To provide a real-time web application for data retrieval, analysis, and visualization.

METHODOLOGY:
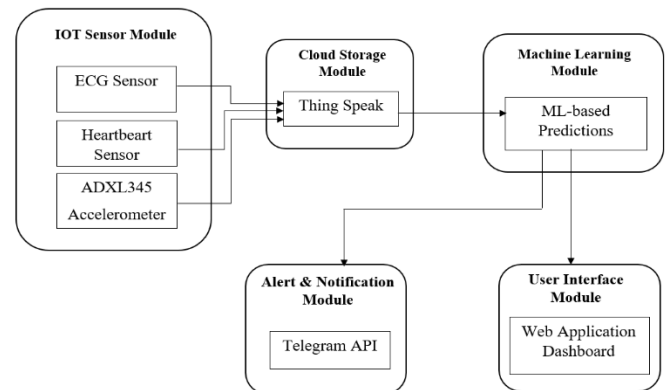
CONCLUSION:

The proposed Stroke Rehabilitation System combines IoT and machine learning to offer a smart, accessible solution for post-stroke recovery. Using wearable sensors and cloud-based data processing, it enables continuous health monitoring, real-time feedback, predictive analytics, and remote therapy supervision. This enhances outcomes through timely interventions and personalized care while addressing challenges like limited access, high costs, and delayed emergency responses. Automated alerts and ML-driven exercise recommendations boost safety and patient engagement. Its adaptive design supports customized rehabilitation based on individual progress.

INFORMATION SCIENCE AND ENGINEERING

AN EEG-BASED BRAILLE INTERVIEWING SYSTEM FOR BLIND INDIVIDUALS AND COGNITIVE ASSESSMENT USING MACHINE LEARNING

Project Associates: Vaishnavi Desai, Mehek N, Simran Banu, Pooja P S
Project Guides: Dr. Ashoka K, Prof. Sheik Imran

ABSTRACT: Cognitive assessment plays a vital role in evaluating skills such as memory, reasoning, and problem-solving. Traditional assessment tools often exclude blind individuals due to their visual nature. This project introduces an innovative EEG-based Braille Interviewing System tailored for visually impaired users. Using EEG headbands, participants complete audio-based quizzes designed to evaluate cognitive ability. Real-time brain activity, particularly beta waves, is recorded and analyzed to assess mental effort and attention. The study employs machine learning models like SVM to categorize performance based on EEG patterns and quiz responses. This system promotes inclusive employment practices by offering objective, non-visual cognitive evaluation methods that identify strengths and align them with suitable roles.

INTRODUCTION: Visually impaired individuals often face systemic and structural barriers in employment, not due to lack of capability but due to biased evaluation systems. Standard assessments primarily depend on visual and manual inputs, excluding many blind individuals from equal opportunity. This project bridges this gap by implementing an EEG-based system that records neural activity during auditory quiz sessions. The focus on beta wave analysis allows for cognitive profiling that does not rely on sight. By correlating quiz results with EEG signals, this system provides objective, reliable insights into cognitive abilities, supporting better job-role mapping and equal access to employment.

OBJECTIVES:
1. To design and develop an audio-based Braille interviewing system for the visually impaired.
2. To collect quiz-based response data and measure cognitive load using EEG signals.
3. To acquire, filter, and preprocess EEG data to ensure accuracy.
4. To implement and evaluate machine learning models, such as SVM, for cognitive assessment.

METHODOLOGY:
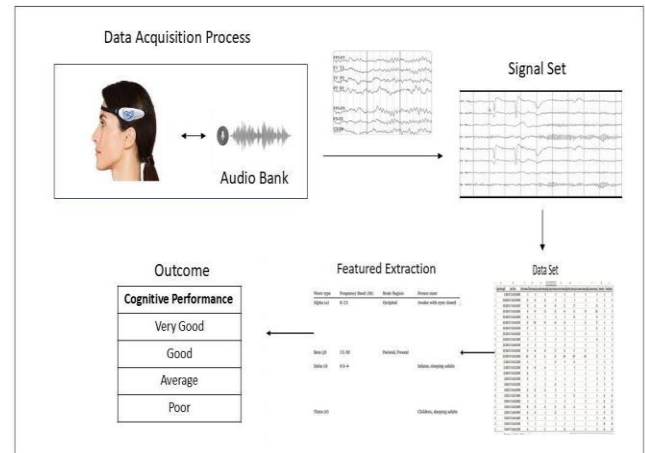
CONCLUSION:

This project successfully integrates cognitive quizzes with EEG-based assessment technology to offer a non-visual method of evaluating mental performance. The use of lightweight, portable EEG headbands and SVM-based classification ensures a scalable, low-cost, and inclusive solution. This framework opens new pathways for fair evaluation and better employment placement for blind individuals. Future improvements may include developing larger datasets, enhancing classifier accuracy, and integrating the system into clinical and educational platforms.

MECHANICAL ENGINEERING

S.M.A.R.T PORTABLE FRUIT PRESERVATION SYSTEM

Project Associates: MJ Rakshith, Madhu R Gouli, Nikith D M , Yashwanth N V
Project Guides: Dr. G Manavendra
Funding Agency: AICTE

ABSTRACT:

The SMART Tomato Preservation System is a technology-driven solution designed to extend tomato shelf life and reduce post-harvest losses. It integrates acoustic modulation to suppress ethylene production, along with UV-C and red-light treatments to delay ripening and inhibit microbial growth. The system is housed in a pyramid-shaped structure made of reinforced mud for natural insulation and durability. It incorporates evaporative cooling and Peltier elements to maintain optimal storage conditions. Real-time monitoring through integrated sensors ensures precise control of temperature and humidity. Scalable and eco-friendly, the system suits both small-scale farms and large industrial operations

INTRODUCTION:

Tomatoes are highly perishable, leading to major post-harvest losses, especially in rural areas lacking affordable preservation methods. Traditional techniques like cold storage and chemicals are costly and often inaccessible. This spoilage impacts the entire supply chain, contributing to food waste and economic loss. The SMART Tomato Preservation System offers a sustainable solution by using sound waves, UV-C, and red light to delay ripening and extend shelf life. Its energy-efficient, portable design makes it ideal for small-scale and off-grid farming communities.

OBJECTIVES:

1.   To significantly extend the shelf life of tomatoes by integrating acoustic modulation, light-based treatments (UV-C and red light), and advanced temperature-humidity control within a sustainable, low-cost storage environment.
2.   To reduce post-harvest losses and improve food security by providing an eco-friendly, scalable preservation solution suitable for both small-scale farmers and large agricultural operations.
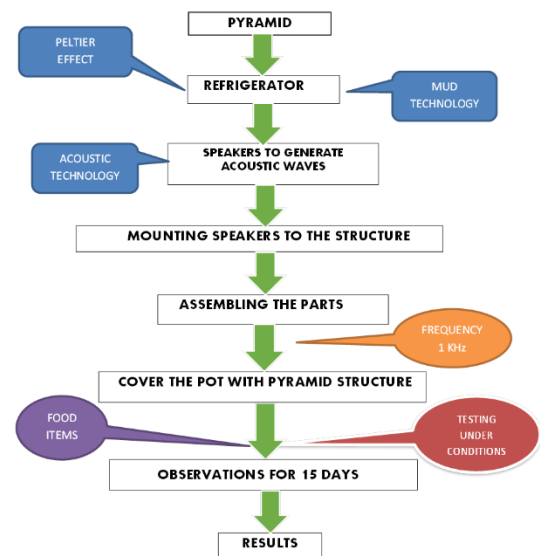
METHODOLOGY:

Fig.1 Block Diagram of design of Hot Plasma

Device.

This flowchart outlines the setup and testing of a pyramid-shaped tomato preservation system using mud insulation, Peltier cooling, and acoustic waves at 1 kHz. The system is assembled, tested with food items over 15 days, and evaluated based on observed results.

CONCLUSION:

The SMART Tomato Preservation System effectively integrates acoustic, thermal, and light-based technologies within an insulated pyramid structure, demonstrating improved tomato shelf life and reduced spoilage over a 15-day observation period.

MECHANICAL ENGINEERING

OUTDOOR AIR QUALITY MANAGEMENT AND GAS LEAK DETECTION MONITORING USING IOT

Project Associates: Rajiv M H, Ganesha T M, Kirankumar S P, Mahesh G S
Project Guides: Dr. A.B. Vinayaka Patil

ABSTRACT:

Air pollution poses serious health risks due to urbanization and industrialization. To combat this, an automated Air Purification and Quality Monitoring System was developed using a NodeMCU ESP8266 for real-time monitoring and cloud connectivity. The system includes MQ2 gas sensors to detect harmful gases, a DHT11 sensor for temperature and humidity, LCD display, PC fans, LEDs, and a buzzer for alerts. Air is drawn in, filtered, and released while sensors monitor air quality at both inlet and outlet. If gas levels exceed thresholds, alerts are triggered. Data is sent to the Arduino IoT Cloud for remote monitoring and control. This ensures effective purification and timely warnings, providing a smart solution to air pollution.

INTRODUCTION:

Rapid urbanization and industrialization have made air pollution a significant health concern. To combat this, an IoT-enabled system for air filtration and quality monitoring has been developed. Utilizing a NodeMCU ESP8266, MQ2 gas sensors, and a DHT11, it provides real-time data and cloud connectivity. This system filters air, monitors quality at inlet and outlet, and alerts users to high pollution levels, offering a smart solution for improved indoor air quality.

OBJECTIVES:

1. The system is designed to be cost-effective and user-friendly,

2. Real-time air quality monitoring is achieved using MQ2 gas sensors at both the inlet and outlet.

METHODOLOGY:
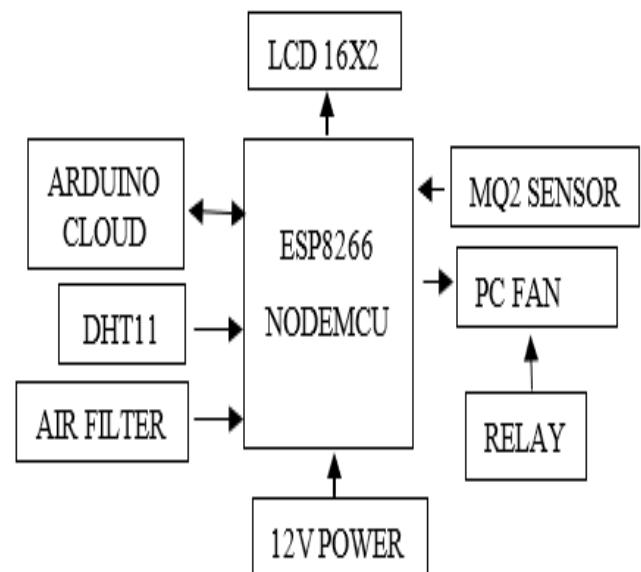
CONCLUSION:

This air quality monitoring and filtration system provides an efficient solution for maintaining optimal indoor air quality. By integrating various sensors and automating fan control, it effectively detects and reacts to environmental changes. Real-time monitoring through cloud integration and alert systems ensures timely filtration and improved health and safety. Ultimately, this system serves as a valuable tool for creating healthier indoor environments.

MECHANICAL ENGINEERING

DEVELOPMENT OF ADVANCED CAR DOOR OPENING TECHNOLOGY FOR AN ACCIDENT PREVENTION

Project Associates: Mr. Pruthviraj. P, Mr. Prajwal A B, Mr. Siddarath H C, Mr. Vinay G H.
Project Guides: Dr .S. Kumarapppa
Funding Agency: INSTITUE **Amount Sanctioned**: Rs . 5,000/-

ABSTRACT:

Vehicle accidents stem from various factors including human error and mechanical failures, often leading to damage, injuries, and fatalities. A particular risk is "dooring," where opening a car door into traffic causes collisions and injuries. This project introduces an advanced car door opening technology to prevent such accidents using ADAS principles. Sensors detect approaching vehicles from the rear, calculate their distance, and activate safety measures. The system provides visual and audible warnings and can lock the door actuator to prevent opening when a hazard is detected.

INTRODUCTION: Vehicle accidents are a major global concern, frequently caused by human error, mechanical issues, or environmental factors. Dooring incidents, where a car door opens into oncoming traffic, cyclists, or pedestrians, are a significant yet often underestimated hazard, especially in busy urban areas. This project focuses on developing advanced car door opening technology as a proactive safety solution to mitigate dooring accidents. Integrated within a vehicle's ADAS, the intelligent sensor system enhances situational awareness and enables real-time safety interventions. Strategically placed proximity sensors, including ultrasonic sensors, continuously monitor the vehicle's surroundings while parked.

OBJECTIVES:

1. To develop automatic door locking systems that engage when sensors detect an imminent collision risk.
2. To integrate auditory warning systems, such as buzzers, to alert occupants of potential hazards during door operation.
3. To implement sensor-based systems capable of detecting approaching vehicles, cyclists, or pedestrians from behind, thereby providing alerts to occupants before the door is opened.

METHODOLOGY:
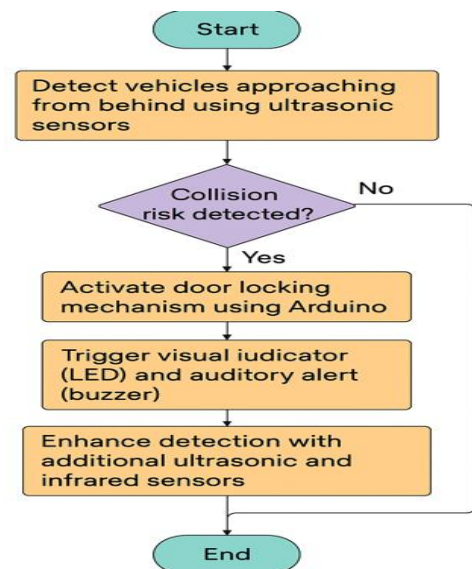
CONCLUSION:
The incorporation of ultrasonic-based technology into vehicle door systems represents a substantial advancement in automotive safety features. The developed system demonstrates effectiveness in detecting obstacles and actively preventing door-related accidents, particularly in dense urban environments with high traffic. Future enhancements, such as optimizing sensor range and refining detection algorithms, are expected to further improve the system's accuracy and response time. This project contributes significantly to ongoing efforts aimed at reducing accident rates specifically caused by sudden car door openings, offering particular benefits for the safety of cyclists and motorcyclists.

MECHANICAL ENGINEERING

DESIGN AND DEVELOPMENT OF HOT PLASMA DEVICE

Project Associates: Aditya D, Annappa N N, Rahul Raj K P, Yogesh P S.
Project Guides: Dr . G. MANAVENDRA, Dr. SHARAN A. S.
Funding Agency: NAIN-2.0 program

ABSTRACT:

A plasma-based system creates liquid fertilizer by producing reactive nitrogen and oxygen species from air or oxygen, forming essential plant nutrients in water. Utilizing a flyback transformer, buck converter, and Arduino controller with sensors, it ensures safe and efficient operation. This eco-friendly, low-cost solution reduces reliance on synthetic fertilizers and supports sustainable farming.

INTRODUCTION:

Plasma technology provides a sustainable method for generating liquid fertilizer by ionizing nitrogen and oxygen from air or water to form plant nutrients. Unlike energy-intensive methods like Haber-Bosch, this approach lowers pollution and cost, allowing for decentralized, on-demand production suitable for small farms. The system incorporates real-time monitoring and safety features for efficient operation.

OBJECTIVES:

1. To develop a sustainable plasma-based system for producing liquid fertilizer by generating reactive nitrogen and oxygen species that form essential plant nutrients.

2. To reduce dependency on synthetic fertilizers by enabling low-cost, on-demand, and eco-friendly nutrient production suitable for small-scale and organic farming.
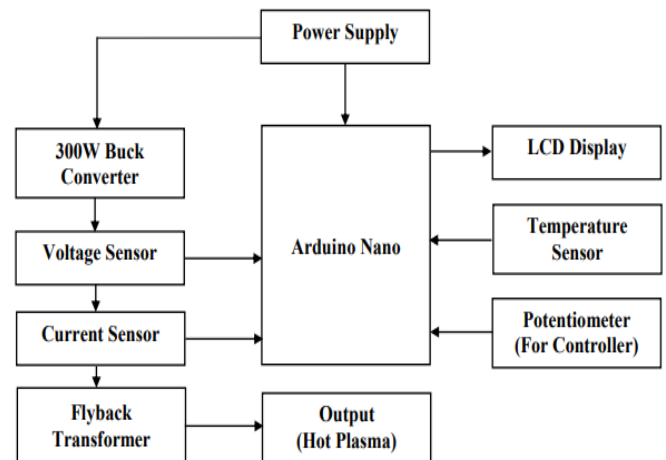
METHODOLOGY:

Fig.1 Block Diagram of design of Hot Plasma Device.

CONCLUSION:

The plasma-based liquid fertilizer system offers an eco-friendly alternative to chemical fertilizers by generating reactive nitrogen species from ionized air. It enables on-demand, nutrient-rich fertilizer production with a compact, sensor-integrated design. This promotes sustainable farming while reducing environmental impact and reliance on industrial fertilizers.

MECHANICAL ENGINEERING

DESIGN AND DEVELOPMENT OF SIX LEG SPIDER ROBOT

Project Associates: Akhilesh G R. Nithin K P. Sandeep J. Vasudevachari R.
Project Guides: Dr . Pradeep N R

ABSTRACT:

This paper presents a novel six-legged ant-inspired robot, "AntBot I," engineered for intrinsic stability and exceptional heavy load-carrying capabilities. The robot features a unique parallel kinematic mechanism actuated by only two DC motors, enabling a mechanically optimal and lightweight design. Wireless control is facilitated via LabVIEW and a microcontroller, with the electronics system developed using Proteus and Altium Designer and programmed through Code Vision. These features make AntBot I a semi-autonomous platform, well-suited for applications in social assistance and rescue operations.

INTRODUCTION:

Mobile robots are broadly classified into wheeled and legged systems, each offering distinct advantages depending on the environment and application. Among legged robots, six-legged designs inspired by insects provide superior stability and adaptability, particularly in uneven terrains. These robots typically exhibit high compliance and multiple degrees of freedom, enhancing maneuverability and load-bearing capacity.

This study introduces AntBot I, a six-legged robot modeled after the ant's remarkable ability to carry heavy loads relative to its size. Unlike many existing designs that employ numerous actuators, AntBot I utilizes a parallel kinematic structure powered by only two DC motors, which reduces mechanical complexity and cost. The design process included mechanical simulation using SolidWorks to optimize performance and ensure structural integrity.

The implementation emphasizes cost-effectiveness and industrial viability, with the integration of wireless control systems that allow semi-autonomous operation. This positions AntBot I as a promising candidate for real-world applications such as disaster rescue, social assistance, and industrial tasks requiring stable and efficient robotic platforms.

OBJECTIVES:

The objective of developing a six-legged spider robot is to create a versatile, efficient, and stable robotic system capable of navigating various terrains and performing tasks autonomously.

METHODOLOGY:
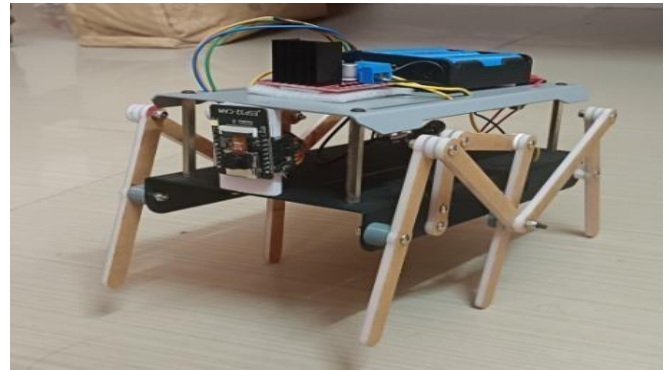
CONCLUSION:

The development of a six-legged spider robot involves a comprehensive approach that combines mechanical design, advanced control systems, and robust testing methodologies. The goal is to create a robot capable of autonomous operation in challenging environments, with potential applications ranging from rescue missions to military surveillance and environmental monitoring. Each stage, from design to testing, plays a critical role in ensuring that the robot performs its tasks effectively and efficiently.

MECHANICAL ENGINEERING

ECO PRINTING: TRANSFORMING PET BOTTLES INTO 3D PRINTER FILAMENT

Project Associates: Mr. Nagaraja E R, Mr. Nagaraja k, Mr. Nandeesh B B, Mr. Siddesh N
Project Guides: Dr . K.C.Devendrappa.

ABSTRACT:

This project presents a sustainable system to transform PET bottles into 3D printer filament, reducing plastic waste. Key components like a heating coil, thermistor, and Arduino Nano precisely control the melting and extrusion process. A stepper motor pushes the melted plastic through a nozzle, creating consistent filament, with real-time feedback displayed on an LCD. This system offers an environmentally friendly alternative for 3D printing material.

INTRODUCTION:

Plastic waste, particularly from PET bottles, poses a significant environmental challenge. Repurposing PET into 3D printer filament offers a sustainable solution, transforming waste into a valuable material for prototyping and manufacturing. This system utilizes heating to melt the plastic, which is then extruded through a nozzle to form usable filament, contributing to both waste reduction and resource creation for 3D printing.

OBJECTIVES:

1. Recycle PET Bottles: Convert PET bottles into 3D printer filament to reduce plastic waste.
2. Efficient Filament Production: Melt and extrude PET plastic into quality filament.
3. Precise Temperature Control: Use thermistor and Arduino for accurate heating control

METHODOLOGY:
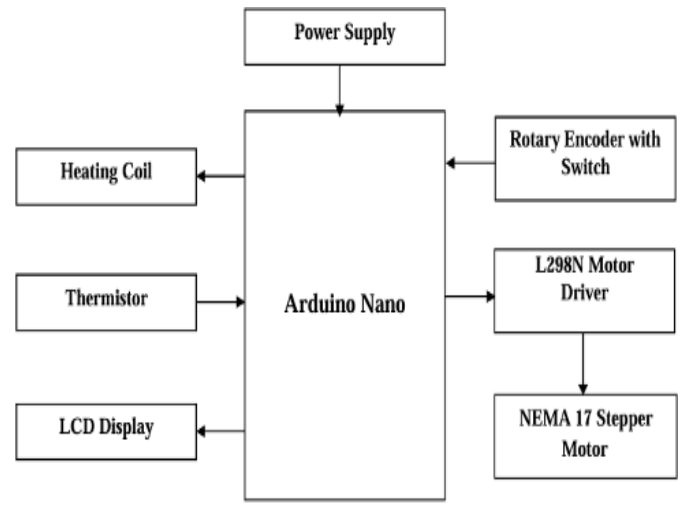
CONCLUSION:

In conclusion, the system for converting PET bottles into 3D printer filament successfully demonstrates the potential for recycling plastic waste into valuable materials for 3D printing. By utilizing components such as the heating coil, thermistor, Arduino Nano, and stepper motor, the system efficiently melts and extrudes PET plastic into consistent, high-quality filament. The inclusion of user controls through the rotary encoder and real- time feedback via the LCD display enhances the system's usability and allows for precise adjustments. Despite some challenges with material variation and extrusion speed, the system shows significant promise in providing an environmentally friendly alternative to traditional filament production.

MECHANICAL ENGINEERING

DESIGN AND FABRICATION OF ELECTRICAL FERTILIZER SPREDER

Project Associates: Vinodakrishna ,Ajaykumar, Manjunath H R and Manu

Project Guides: Dr.Prashanth .S.J

ABSTRACT:

This project focuses on the design and development of an electric fertilizer spreader aimed at improving the efficiency and accuracy of fertilizer application in agricultural fields. The spreader addresses the common challenges of manual methods, such as uneven distribution, time consumption, and labor intensity. Powered by an electric motor, the system enables precise and uniform spreading of fertilizer with adjustable rate control, making it suitable for different crop types and field conditions. The primary objective is to enhance productivity for small and medium-scale farmers while promoting better resource management and supporting sustainable farming practices.

INTRODUCTION:

In modern agriculture, the efficient and uniform application of fertilizer plays a crucial role in achieving healthy crop growth and maximizing yield. Manual methods of fertilizer spreading are still widely used in rural areas but often result in uneven distribution, higher labor demands, and ineffective nutrient utilization. To overcome these issues, this project introduces an electric fertilizer spreader designed to simplify the process and improve accuracy.

The device uses an electric motor to rotate a disc that evenly disperses fertilizer across the field. It includes features such as variable speed control, adjustable spread range, and user-friendly operation, making it ideal for various farm sizes and crop types. By reducing manual effort and ensuring precise nutrient

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application, the spreader supports cost-effective and sustainable farming. This project aims to provide a practical solution for farmers by combining mechanical design with basic automation to enhance field efficiency and crop management.

OBJECTIVES:

1. Design of technology for electric fertilizer.\
2. Fabrication and testing of electrical fertilizer.

METHODOLOGY:

An electric fertilizer spreader generally involves a mechanism that uses an electric motor to power a rotating disc or drum, which then throws fertilizer onto the ground. This method utilizes a hopper to store fertilizer, and a valve or similar mechanism controls the amount released. The rotating disc or drum is powered by an electric motor, often connected to a battery, which enables the spreader to operate without the need for a tractor or other engine.

CONCLUSION:

Electric fertilizer spreaders offer a significant advancement in agricultural practices, providing a more efficient and effective alternative to manual methods. They reduce labor costs, save time, and ensure more even fertilizer distribution, leading to improved crop yields and sustainable agricultural practices

TEXTILE TECHNOLOGY

COMPARING COTTON FABRIC DYED WITH MINERAL DYE (COFFEE) IN DIFFERENT RATIOS

Project Associates: Ms. Chaitra D R, Ms. Thanushree D, Mr. Girish G S, Mr. Srinivas D B
Project Guides: Mrs. Kavya L
Funding Agency: Innovative Research Project

ABSTRACT:

The project explores the development of sustainable cotton/polypropylene (PP) blend yarns using BT cotton and waste banner fabric. Coffee, a natural mineral dye, is evaluated for dyeing cotton at varying concentrations. The goal is to optimize blend ratios, test fabric properties, and propose coffee dyeing as an eco-friendly alternative.

INTRODUCTION:

The textile industry is increasingly adopting sustainable practices due to environmental concerns linked to synthetic dyes and textile waste. Natural dyes offer a biodegradable, low-toxicity alternative, and among them, coffee shows promise due to its rich content of tannins and polyphenols. Utilizing waste coffee grounds as dye not only reduces environmental impact but also supports waste valorisation.

This project explores the dyeing of cotton fabrics with coffee at varying concentrations and evaluates key properties such as color strength, chemical interaction, and wash fastness. Additionally, it focuses on developing sustainable yarns by blending BT cotton with recycled polypropylene from waste banner fabric. The overall aim is to propose a viable, eco-friendly alternative for textile dyeing and material sourcing that supports circular economy goals.

OBJECTIVES:

1. Analyze impact of coffee-to-water ratios on colour intensity
2. Study colour range achievable
3. Examine fabric texture post-dyeing
4. Assess dye fixation and colourfastness
5. Investigate durability of dyed fabric
6. Evaluate environmental implications
7. Compare aesthetic results

METHODOLOGY:
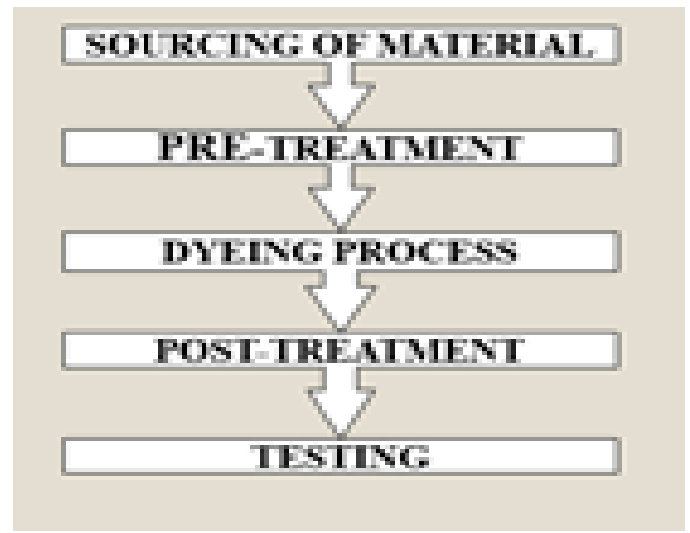
CONCLUSION:

Coffee proves to be a promising natural dye for cotton fabrics, offering a range of colors based on concentration levels. While the dyeing process is straightforward and environmentally friendly, further research is needed to enhance colorfastness and texture for large-scale applications. This study underscores the potential of coffee dyeing in advancing sustainable textile production.

TEXTILE TECHNOLOGY

DEVELOPMENT OF FLAME RETARDANT AND WRINKLE RESISTANT FINISH ON COTTON FABRIC USING ECO-FRIENDLY FINISHING AGENTS

Project Associates: Mr. Deepak Dewasi, Mr. NH Srujan, Ms. Smitha GM, Mr. Sritej R Kandakur
Project Guide: Dr. Dinesh YN
Funding Agency: Innovative Research Project

ABSTRACT:

This project aims to enhance the crease recovery and flame-retardant properties of cotton fabrics using eco-friendly agents: citric acid as a cross-linking agent, sodium hypophosphate as catalyst and pineapple peel as a natural flame retardant. Cotton fabrics were treated with citric acid, sodium hypophosphate and pineapple peel at three concentrations using the pad-dry-cure method. Treated and control samples were evaluated for tensile strength, flammability, LOI, crease recovery, and flexural rigidity. Results showed citric acid improved crease recovery, while pineapple peel increased flame resistance and LOI. Higher concentrations yielded better results. Post-wash tests indicated a slight reduction in flame retardancy, while crease recovery remained unaffected.

INTRODUCTION:

Cotton is strong and comfortable due to its moisture absorption, but it wrinkles easily after laundering. This is due to the rupture and reformation of hydrogen bonds under moist conditions. Durable press (DP) finishing, using cross-linking agents, improves wrinkle resistance by forming stronger covalent bonds between cellulose chains. Traditional DP agents like N-methylol compounds are effective but release harmful formaldehyde. Eco-friendly alternatives like citric acid and BTCA are safer, though BTCA is costly. Flame-retardant (FR) finishes reduce textile flammability, essential for safety in clothing and furnishings. Advancements in FR treatments aim to balance performance with environmental and health concerns.

OBJECTIVES:

6. To finish cotton fabric with citric acid as wrinkle recovery agent and pineapple peel as flame retarding agent at three different concentrations.

7. To study the fabric for Crease Recovery property. Flame related properties like char length and LOI.

8. Performance properties like Tensile Strength. Handle properties like Flexural Rigidity.

METHODOLOGY:
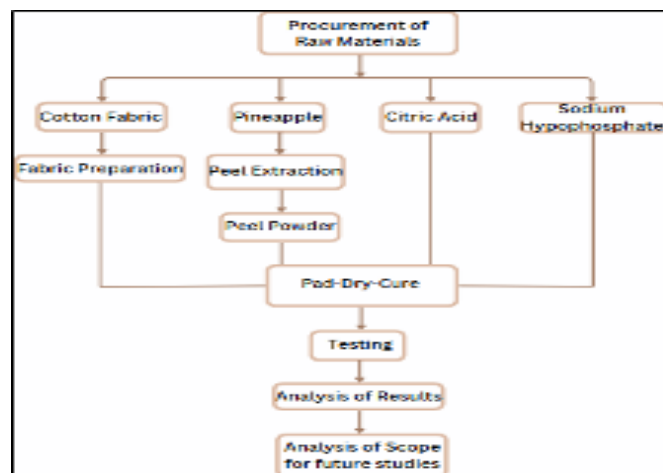
CONCLUSION:

- Citric acid can be used as substitute to BTCA and DMDHEU, which is economically not viable.
- 8% concentration of citric acid with 8% concentration of pineapple peel with 5% concentration of sodium hypophosphate has been found to be the most suitable recipe among the recipes used.
- Pineapple peel can be used as a substitute to conventional flame retarding agents which are expensive toxic in nature and non-sustainable.

TEXTILE TECHNOLOGY

DEVELOPMENT OF TABLE TOP FIBER OPENER

Project Associates: Ms. Lavanya Bisati, Ms. Tejaswini Baleger, Ms. Yashodha G, Mr. Jayanth B K
Project Guides: Mr. Nandeesh R S

ABSTRACT:

A tabletop fiber opener has been designed and developed to efficiently process natural fibers, such as cotton, hemp, and flax. The device utilizes a combination of mechanical and pneumatic systems to open, clean, and align fibers, resulting in improved fiber quality and reduced processing time. With its compact and user-friendly design, the tabletop fiber opener is an ideal solution for small-scale textile producers, research institutions, and educational facilities. The device has demonstrated its effectiveness in improving fiber quality and reducing processing costs, making it a valuable tool for the textile industry. This project aims to design and develop an efficient fibre opener machine that improves fibre quality, reduces fibre breakage, and increases machine productivity. This project contributes to the development of efficient fibre opener machines, which can benefit the textile industry by improving fibre quality, reducing production costs, and enhancing sustainability

INTRODUCTION:

Tabletop fiber openers break down bales of fiber—cotton, wool, synthetics—into loose fibers for processes like spinning and carding. Their small size suits limited-space environments. Adjustable settings enable consistent fiber output, reducing clumps and tangles. These machines also aid recycling, supporting sustainable manufacturing.

OBJECTIVES:

1. Efficient Fiber Opening.

2. Space and Energy Efficiency

3. Sustainability

4. Minimized Fiber Damage

5. Improved Fiber Quality

METHODOLOGY:
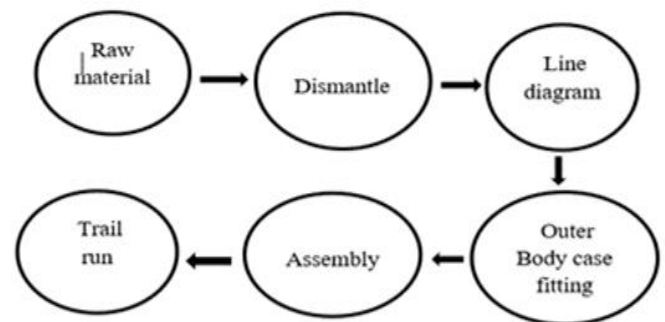
CONCLUSION:

Table top fiber opener machine is efficiently designed for small scale fiber processing operation, With its compact design, it is easy to use & durable construction makes it easy for opening & cleaning of various fibers, It is less space consuming & easy to handle.Its ability to handle small batches of fibers makes it an excellent choice for laboratories,research institutions & small scale fiber processing businesses.

The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when he contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery each day. Never lose a holy curiosity.

Albert Einstein

I am among those who think that science has great beauty. A scientist in his laboratory is not only a technician: he is also a child placed before natural phenomena which impress him like a fairy tale. We should not allow it to be believed that all scientific progress can be reduced to mechanisms, machines, gearings, even though such machinery also has its own beauty.

Marie Curie
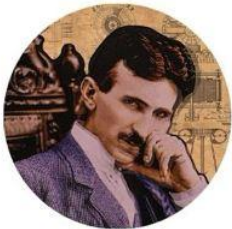
Let the future tell the truth, and evaluate each one according to his work and accomplishments. The present is theirs; the future, for which I have really worked, is mine. The scientific man does not aim at an immediate result. He does not expect that his advanced ideas will be readily taken up. His work is like that of the planter—for the future. His duty is to lay the foundation for those who are to come, and point the way.

Nikola Tesla

I think it's much more interesting to live not knowing than to have answers which might be wrong. I have approximate answers and possible beliefs and different degrees of certainty about different things, but I'm not absolutely sure of anything, and there are many things I don't know anything about, such as whether it means anything to ask why we're here. I don't have to know an answer. I don't feel frightened by not knowing things, by being lost in a mysterious universe without any purpose, which is the way it really is as far as I can tell. It doesn't frighten me.

Richard Feynman
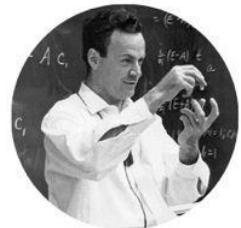
To myself I am only a child playing on the beach, while vast oceans of truth lie undiscovered before me.

Issac Newton

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