

Sri Sai Vidya Vikas Shikshana Samithi ® SAI VIDYA INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi, affiliated to VTU, Recognized by Govt. of Karnataka Accredited by NBA, New Delhi (CSE, ECE, ISE, MECH & CIVIL), NAAC – "A" Grade Rajanukunte, Bengaluru – 560 064, Karnataka



MOTTO

"Learn to lead"

VISION

Contribute dedicated, skilled, intelligent engineers and business administrators to architect strong India and the world.

MISSION

To impart quality technical education and higher moral ethics associated with skilled training to suit the modern day technology with innovative concepts, so as to learn to lead the future with full confidence.



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SAI VIDYA INSTITUTE OF TECHNOLOGY



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PRESENTS

TECHSPARDHA 2023

EXHIBITING INNOVATIVE PROJECTS on May 22nd, 2023

2023 GRADUATING BATCH OF SVIT



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Dr. RAGHAVENDRA S Professor & HOD Mechanical

Dr. ANANTHAYYA M B Professor & HOD Civil



DR. A M PADAMREDDY

Founder Trustee & Additional Director Sai Vidya Institute of Technology Greetings from Sai Vidya Institute of Technology.,

It gives me great pleasure to announce the upcoming Project Exhibition and the release of the "SOUVENIR-BOOK of PROJECT ABSTRACT" for the graduating batch of 2023 at Sai Vidya Institute of Technology. As the Additional Director of the institute, I am immensely proud of the hard work and dedication you have put into your projects, and this exhibition serves as a platform to showcase your remarkable achievements. As engineers, you have the power to shape the world through innovation and technological advancements. Your projects reflect the diverse domains you have explored, including areas such as artificial intelligence, robotics, sustainable energy, Internet of Things, and more. Through your collective efforts, you have tackled complex challenges, pushed boundaries, and demonstrated the immense potential that lies within each one of you.

Software and programming play a pivotal role in shaping our modern world, providing the backbone for countless industries and enabling the functionality of devices and systems we rely on daily. From operating systems and applications to websites and mobile apps, software forms the foundation of digital innovation. Programming, the art of creating software through coding languages, empowers us to design and develop solutions to complex problems, automate tasks, and unleash the full potential of technology. With software and programming, we have the revolutionize industries. ability to enhance communication, improve efficiency, and create transformative experiences for users. Their importance lies in their capacity to drive progress, fuel innovation, and empower individuals and organizations to bring their ideas to life in the digital realm.

Finally, I would like to congratulate each one of you once again. Your hard work, perseverance, and achievements have made Sai Vidya Institute of Technology proud. I have no doubt that you will continue to make significant contributions to the field of engineering and beyond.



DR. Y JAYASIMHA

Founder Trustee & Dean Academics Sai Vidya Institute of Technology Dear All.,

It gives me immense pleasure and pride to announce the upcoming Project Exhibition and the release of the "SOUVENIR-BOOK of PROJECT ABSTRACT" for the 2023 Graduating Batch of Sai Vidya Institute of Technology. As the Dean Academics, I extend my warmest congratulations to each and every one of you on this momentous occasion.

As you embark on this exciting journey, I urge you to reflect on the invaluable skills and knowledge you have acquired during your time at our institute. Remember that the projects you present are not merely technical endeavours but also reflections of your growth as individuals and future engineers. Embrace the challenges that lie ahead with confidence and resilience, knowing that you are equipped with the tools to overcome any obstacles you may encounter.

On behalf of the entire faculty and staff, I extend my heartfelt congratulations once again. Your accomplishments bring immense pride to our institution, and we are confident that you will continue to shine in all your future endeavours. May this Project Exhibition and the "SOUVENIR-BOOK of PROJECT ABSTRACT" mark the beginning of a promising and successful journey for each and every one of you.

Wishing you all the very best for a bright and fulfilling future.



DR. M S GANESHA PRASAD

Principal Sai Vidya Institute of Technology Bangalore

The true sign of intelligence is not knowledge but imagination.

---Albert Einstein

I am extremely delighted that the Sai Vidya Institute of Technology is exhibiting final year students' projects along with open day for the benefit of students' community on 22nd May, 2023. The SVIT has a special and significant place in the spectrum of the technical education in the Karnataka. With the advent of intellectual people from Trust who supports National Education Policy (NEP) 2020.

Engineering is the art of guiding the great source of power in nature for the use and convenience of mankind. We use technology every day and everywhere in order to fulfil particular duties of our specific interests. Technology is forever changing the world we live in, enhancing the way of life and introducing new lifestyles.

We must strive to innovate, to excel in our field, and to uplift our society to be the best version of itself. Project Exhibition will provide a wonderful ambience for all the students community to refresh - knowledge base and explore the innovations in a befitting manner considering their importance in the emerging frontiers of technology. It will strive to offer plenty of networking opportunities to meet and interact with other participants.

Hoping you all to join us in this major event – a symphony of outstanding Engineering and technological event, I wish the Project Exhibition a great success. I am confident that you will use the knowledge and experience, derived from this fest, to liberate your minds, break down your mental barriers, and achieve success in all your future endeavours.



DR. LAKSHMINARAYANACHARI K

Vice Principal Sai Vidya Institute of Technology Bangalore Dear Final Year Engineering Students,

It gives me immense pleasure and pride to announce the upcoming Project Exhibition and the release of the "SOUVENIR-BOOK of PROJECT ABSTRACT" for the 2023 graduating batch of Sai Vidya Institute of Technology. As the Vice Principal of this esteemed institution, I extend my heartfelt congratulations to each and every one of you on reaching this significant milestone in your academic journey.

Technology plays a vital role in shaping our modern world, revolutionizing industries, enhancing communication, and transforming the way we live, work, and interact. From advancements in healthcare and transportation to the digital revolution and artificial intelligence, technology has become an integral part of our daily lives. It empowers us to solve complex problems, improve efficiency, and create innovative solutions that drive progress and improve the quality of life for individuals and communities. In an increasingly interconnected and fast-paced world, the importance of technology lies in its ability to foster economic growth, bridge gaps, facilitate global collaboration, and pave the way for a more sustainable and inclusive future.

Finally, I would like to congratulate each one of you once again. Your hard work, perseverance, and achievements have made Sai Vidya Institute of Technology proud. I have no doubt that you will continue to make significant contributions to the field of engineering and beyond.

May the Project Exhibition and the release of the "SOUVENIR-BOOK of PROJECT ABSTRACT" mark the beginning of a successful and fulfilling professional journey for each one of you.



DR. VENKATESHA M

Professor and HOD Department of Electronics and Communication Engineering Sai Vidya Institute of Technology Bangalore Greetings from Department of ECE, Sai Vidya Institute of Technology.,

I extend my heartfelt congratulations to all the stakeholders and final year students of Sai Vidya Institute of Technology, for your valuable contributions in submitting abstracts of final year project work. Your contributions are a testament to your knowledge, skills, and passion for engineering, and I wish you all the best in showcasing your projects during this exhibition.

The Final Year Project work serves as a transformative platform where innovative ideas are nurtured and transformed into tangible products through meticulous research and strategic planning in emerging technologies. Research, innovation, intellectual property rights (IPR), and entrepreneurship are indispensable catalysts for the growth of a country, especially in the field of engineering. Through research, engineers explore new frontiers, uncover novel solutions to complex problems, and push the boundaries of knowledge. Innovation transforms these research findings practical applications, fostering technological into advancements and creating new opportunities for economic development. Thus, embracing research, fostering innovation, respecting IPR, and nurturing entrepreneurial spirit are key to unlocking the full potential of engineering students and fostering the growth of their country. Wishing you all the very best in your future endeavours. I am happy to announce more than eight project groups from 2023 graduating batch converted their project work to research papers and presented their work IEEE Flagship conferences.

On behalf of the entire faculty and staff of department of ECE, Sai Vidya Institute of Technology, I extend my heartfelt congratulations to all the stake holders of SVIT on the release of the "SOUVENIR-BOOK of PROJECT ABSTRACT".

Wishing you all the very best in your future endeavours.



DR. T G MANJUNATH

Professor and HOD Department of Electrical and Electronics Engineering Sai Vidya Institute of Technology Bangalore It gives me immense pleasure to be a part of the team of "SOUVENIR -BOOK OF PROJECT ABSTRACTS 2023" in the 15th year of Academic Excellence of Sai Vidya Institute of Technology. The souvenir intends to bring together different disciplines to discuss concerns related to various computation techniques in science and technology as it is a book of Abstracts of Innovative Projects from all the branches 0f Engineering.

I strongly believe that this Book of Project Abstracts will provide tools and knowledge to overcome significant problems appearing in our industry and society by identifying innovative ideas and technologies introduced by the researchers and students. The success of this Souvenir will encourage us in introducing many more initiatives for innovative trends in the coming years. I wish the "SOUVENIR -BOOK OF PROJECT ABSTRACTS 2023" a great success.

I sincerely thank our Management, Principal, HODs and Organizing Committee members for bringing all Innovative ideas under one roof. Special thanks to all Final students for their active participation and I wish bright future to all the students.



DR. SHANTAKUMAR B PATIL Professor and HOD Department of Computer Science and

Engineering Sai Vidya Institute of Technology Bangalore

Greetings to all..!

The new millennium is witnessing unprecedented challenges and opportunities in higher education. Engineering Education plays a pivotal role in Human Resource Development of any country. In the recent times, the educational sector has gone through a major transformation influenced by the global technological changes viz. shifting to Outcome Based Education, enhancement of Industry-Institute-Interactions, digital transformation, providing affordable quality education etc. This is paving a way for students to pursue their higher studies and enhanced employment opportunities

We are honoured to release "SOUVENIR-BOOK of PROJECT ABSTRACT" at Sai Vidya Institute of Technology.

This book provides a platform for final year students from multiple disciplines to come together and explore innovative advancements in the field of engineering. The book will feature discussions and presentations aimed at finding optimized solutions to the challenges faced in the various domains of engineering. The insights gained from the book will be instrumental in enhancing the ability of participants to work effectively in teams.

I would like to express my appreciation to all final year students for their commitment to this book and wish them every success.



DR. VRINDA SHETTY

Professor and HOD Department of Information Science and Engineering Sai Vidya Institute of Technology Bangalore I am happy that Sai Vidya Institute of Technology, Bengaluru is realising First Souvenir-BOOK OF PROJECT ABSTRACTS on this occasion of project exhibiton-2023.

The project exhibition emphasizes on the importance of learning advanced tools & technologies. It provides the platform for showcasing their innovative projects developed by the Final Year student's, problems defined by Industry/ User, also provides an opportunity for the students to exhibit their learning experience. The students will learn the importance of project making & team building.

Glad to share that the department of Information Science and Engineering students have developed 16 working projects among them 4 projects are sponsored by KSCST and the innovative ideas of the projects have been published/presented in reputed International/ National Conference/Journals.

I congratulate all the final year students once again. Wish you all good luck in future endeavours.



DR. RAGHAVENDRA.S

Professor and HOD Department of Mechanical Engineering Sai Vidya Institute of Technology Recent centuries witnessed an emphasis on how products function and what structures they contain, while at the same time, advances in machinery and technology opened up a wide range of new possibilities for ways to manufacture. With the implementation of these innovative materials and production techniques in the industries, the twenty-first century came into being. The modern society is focused on finding new and sustainable ways to produce high-quality goods at the lowest possible cost.

In an effort to cut carbon emissions, the mechanical industry is moving towards environmentally friendly and sustainable materials and production methods. In this situation, it is crucial to concentrate on enhancing manufacturing technology, systems, and processes as well as implementing green manufacturing.

We are glad to extend an invitation to the annual Project Exhibition sponsored by the Department of Mechanical Engineers to our young, aspiring engineers from the Mechanical groups.

Bridging Academic Research and Industrial Practices is the focus of our annual Project Exhibition, which acknowledges the rapid advancements in basic research and the necessity of their translation from research to industrial practice. Welcome to our esteemed industry specialist, who has made significant contributions to engineering, technology, and research. Indian scholars likewise didn't fall behind in the fight for innovation and advancement. They have also made a substantial contribution to the fields of advanced materials, fluid thermodynamics, industry, dynamics and concurrent manufacturing, and modern manufacturing processes and systems. with the intended participants, the annual Project Exhibition will offer a wide variety of the most recent developments in materials and production methods.



DR. M B ANANTHAYYA

Professor and HOD Department of Civil Engineering Sai Vidya Institute of Technology Bangalore As the Head of the Civil Engineering department, I take immense pride in witnessing the accomplishments of our students and their contribution to the field of technology. The Project Exhibition and the Book of Project Abstracts not only showcase their remarkable work but also reflect the dedication, perseverance, and passion they have exhibited throughout their academic journey. I congratulate all the students for their outstanding achievements and extend my gratitude to the faculty members, staff, and industry partners for their unwavering support in nurturing and guiding these bright minds. Together, we continue to foster a culture of innovation, research excellence, and academic brilliance in the field of Civil Engineering, ensuring a promising future for our students and the department as a whole.

On this occasion I would like to express my gratitude and warmest thanks to the esteemed Management, Heads of the departments, Faculty guides, Students of all programs and Coordinators for their hard work and outstanding contributions to make this Project exhibition a grand success.

Wishing you all the best for your future endeavours.





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BOOK OF PROJECT ABSTRACTS 2023 GRADUATING BATCH

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A MICROCONTROLLER BASED AUTOMATIC POWER SOURCE SELECTION AND DATA VISUALIZATION ANALYSIS FOR DISTRIBUTEDLOAD USING IOT

Sathya Sai Santhosh H, Meghana B N, Ranjitha A, N Ajay Kumar Department of ECE, Sai Vidya Institute of Technology

The primary objective of this Work is to continuously deliver electricity to a load by choosing the power source from a variety of sources. On a daily basis, there is an increase in the demand for electricity, and frequent power outages are causing several problems in establishments like offices, hospitals, and residences. A power supply backup strategy is required. Numerous companies have created various methods for energy monitoring, control, and conservation. as a result of rising energy costs and demand. Using a microcontroller-based autonomous power source selector and real-time data monitoring system for dispersed loads, it is possible to reduce expenses while still satisfying energy demand. Internet of Things (IoT) is the technology that can be used to control energy consumption in commercial, residential, and industrial settings. The design of system to identify synchronisation failures of any external power sources including solar, wind, and the primary power source, is also presented in this project. The data gathering module collects energy usage data from each device and sends it to a centralised server for further processing and analysis. The utility's server then retains all of the information from all of the devices and locations. As a result, we can switch between the available sources.





Meghana BN 1VA19EC049



Ranjitha A 1VA19EC063

Keywords: Microcontroller, IoT , Power Sources , Solar Panels and Electric Meter

ISOLATION AND WASTE DISPOSAL MONITORING SYSTEM UTILIZING CNN

Rahul Reddy S, Akhil Varma, Akhilesh G, Kishore PC, Vani B P Department of ECE, Sai Vidya Institute of Technology

Cities have various challenges as their population rises, notably in the waste management system. Waste disposal methods differ between urban and rural areas. In general, reusing and recycling waste is the best approach to handle it. On the other hand, the cost of proper waste management is substantial, requiring collaboration from both authorities and users. Despite great efforts by the government or authorities to improve waste management systems, this remains a big issue in every country, particularly in metropolitan areas. If the waste is collected on schedule, one of two things can happen: the bins may not be completely filled, or they may overflow. Waste that is collected before the bins are full is a waste of staff resources.. The use of CNN in a smart waste management system may considerably improve trash classification performance and accurately categorise trash, saving resources and lowering global waste. This idea proposes a smart waste management system that identifies and categorizes various types of garbage before depositing them in a designated compartment. It also sends an SMS to the designated recipient, notifying them of the quantity of garbage collected in the bins and reminding them to empty the bins for future usage.





1VA19EC003



1VA19EC002



Kishore PC 1VA19EC040

Keywords: Dry and wet Waste Segregation, Waste Management, Convolutional Neural Network, Raspberry Pi controller

ENCRYPTED INSTANT MESSAGING SERVICE USING XMPP

Sameera Nataraja, Hemanth P, Pruthvi V, **Divya T.M** Department of ECE, Sai Vidya Institute of Technology

Instant Messaging provides real time communication between users, which has become a predominant part of human's life due to faster and efficient communication. Instant Messaging systems and its supporting protocols generally do not ensure security aspects to guarantee the message's authenticity, confidentiality, and integrity. In this project, a solution is provided for the same by means of Integrating cryptography and hashing techniques for devices with the Extensible Messaging Presence Protocol (XMPP). The XMPP server notifies the presence of a message to a single or multiple users at the same time. The server enables personal and multi-user chatting after creating a platform. A group of users can simultaneously message at the same time. The proposed system implements encryption of end to end messages and provides authentication using hashing technique.





Hemanth P 1VA19EC031

Keywords: XMPP, chat application, SHA-256, AES Algorithm, Instant Messaging.



DESIGNING OF CO - PROCESSOR FOR ARITHMETIC OPERATION OF FLOATING POINT NUMBERS USING VLSI

Anurag Suresh Warthi, Swastik Prashant Hegde, Sagar D, Akshith Monnappa K Department of ECE, Sai Vidya Institute of Technology

This project aims to design a co-processor for floating-point arithmetic operations using VLSI technology to improve the performance of microprocessor chips. The co-processor will handle the mathematical portion of the job, freeing up the CPU to handle other tasks. The project targets CAD software users and those performing scientific and engineering computations, who require fast and accurate calculations. The co-processor is a 32-bit device that controls the sign, exponent, and fractional parts of a floating-point number. It includes an ALU, a multiplexer, a control unit, a shifter, and rounding hardware. Functional verification is carried out using tools from Cadence and EDA Playground to test the performance of the arithmetic circuit. The process involves adding and subtracting individual sign, exponential, and fractional bits, testing the results, and making any necessary exponent modifications to achieve a final output of 32 bits. The arithmetic results are theoretically tested in addition to the functional

The design has been successfully synthesized, achieving a frequency of 500 MHz. This project aims to demonstrate the effectiveness of co-processors in improving system performance and reducing the workload on the CPU. The compact design of the co-processor, coupled with low power consumption and high performance, makes it suitable for scientific and engineering computation. The project contributes to the field of VLSI technology and provides a valuable resource for those seeking to improve system performance using co-processors.

Ø

Anurag Suresh Warthi 1VA19EC011



Swastik Prashant Hegde 1VA19EC087



Sagar D 1VA19EC067

Keywords: VLSI, Floating-point, Co-processor, ALU Operations, Microprocessor

IMPLEMENTATION OF WALL PAINTING ROBOT USING ARDUINO UNO

Akshay Kannan R C, Tatikonda Chinna Kullayappa, U Tharun Kumar Reddy, Emmadi Yuvaraju,

Suryanarayana N K

Department of ECE, Sai Vidya Institute of Technology

Painting flat walls is always considered a tedious job. It requires human skills and a lot of effort to paint the surface with proper mixing of paint. Exposing humans to mixing of paint, and applying it on walls may lead to health hazards. Hence the introduction of Automation in Wall painting will reduce human effort and it is very precise. In this project, initially, if any object is identified by the IR sensor, the DC motor is triggered to adjust the available path with a minimum distance from the wall to be painted without deviating from the current location. The program is embedded into the memory of the microcontroller to move the arm in up-down and left-right positions. The main advantage of the proposed robotic paint arm prototype is to reduce time in painting and avoid health hazards for the person who is involved in painting. Further, we can introduce technologies to mixing paint by the containers placed and different color mixing can be achieved.

Keywords: IR Sensor, Tracking, Object detection, robotic arm, paint health hazard







Tatikonda Chinna Kullayappa 1VA19EC088



U Tharun Kumar Reddy 1VA19EC092



Emmadi Yuvaraju 1VA19EC024

SMART MIRROR USING RASPBERRY PI

Rushali K, Yashashwi R Gowda, Manoj Kamalakar Patgar, Tejaswini S, Suryanarayana N K Department of ECE, Sai Vidya Institute of Technology

Getting notifications and alert messages is one of the important needs of today's world. A mirror can be used as an information source if it is equipped with automation connected to the internet. If voice controlled and image recognition technologies are used to provide the necessary information when a person stands in front of the mirror while grooming, which saves a lot of time by bypassing mobile for information gathering. This project aims to design and develop of Smart Mirror using a Raspberry Pi board with supporting components interfaced with the board. A Wi-Fi module is interfaced with Raspberry Pi and helps to get information from the internet as a source. The same prototype is used as a student information center displaying all academic-related information like USN, IA marks, Lab score, Attendance status, exam fee payment status and previous semester results, and so on depending on the way in which we program the processor used here. The introduction of this type of project in Academic institutions, Hospitals, and Hostels reduces the usage of mobile phones and reduces searching time.

Keywords: IR Sensor, Tracking, Object detection, robotic arm, paint health hazard



Rushali K 1VA19EC066



Yashashwi R Gowda 1VA19EC099





AUTOMATION OF LIBRARY MANAGEMENT SYSTEM USING AUTONOMOUS ROBOT

Sharat Hiremath, B Yamini , Tejashwini M N, **PRABHA.K** Department of ECE, Sai Vidya Institute of Technology

In this paper automation of library management system is achieved by designing an autonomous robot to automate the process of picking the required book and dropping them to the borrower table and also to replace the book back to the shelf and also a webpage is created to access the books in library. Manually searching a book in a library is a labour - intensive procedure and if the book is misplaced either purposefully or accidentally it requires extra time and effort to retrieve it. The user will have to enter the book details either to borrow or return the book on the webpage and accordingly the robot will receive command and performs the task. A rack is designed and different coloured tags are placed in each row so the robot can find the desired row in the rack. The system also notifies the user when the book is available if it is not readily accessible giving the user choice of requesting the book or requesting the soft copy of the book. The experimental results showed that the robot is capable to carry book weighing up to 500 grams. There are numerous uses for autonomous robots in numerous sectors such as: Manufacturing, Agriculture, Healthcare, Transport and logistics, mining and exploration, Military forces, and security.







Tejashwini M N 1VA19EC046

Keywords: Pick and Place Robot, Library Management system, Zigbee, RFID, Color Sensor

IMPLEMENTATION OF ROBUST NOISE ELIMINATION ALGORITHM FOR SPEECH ENHANCEMENT USING DEEP NEURAL NETWORKS

Janavi M, Jyothi M, Girisha G, Kiran M S, **Pavithra G S** Department of ECE, Sai Vidya Institute of Technology

In this work, a deep neural network (DNN) based speech enhancement method is presented that focuses on utilizing a speech enhancement using DNN. This approach directly estimates the clean speech spectrum by using the output of the DNN. The objective function remains consistent, defined as the minimum mean square error estimator (MMSE) between the interference speech spectrum and the estimated spectrum. To evaluate the performance of our proposed method, we conducted a comparative analysis with a baseline DNN-based speech enhancement scheme. The evaluation metrics employed included SNR, perceptual evaluation of speech quality (PESQ), and short-term objective intelligibility (STOI).

Keywords: Speech enhancement, Magnitude Squared Spectrum Estimator (MSSE), Deep Neural Network (DNN), Minimum Mean Square Error (MMSE), Inverse Filtering





Girisha G 1VA19EC026



CNN BASED STRESS DETECTION SYSTEM

Subash S, Tejas B M, Vasanth R, Vani B P Department of ECE, Sai Vidya Institute of Technology

Excessive dread and worry brought on due to some reasons can result in strong emotions. In actuality, stress is typically triggered by situations that make a person feel apprehensive or angry. Anxiety is a feeling of fear, worry, or unease. With the world's population growing, the ratio of health care is steadily decreasing. A device that monitors physiological stress signs is called a stress detector. Majority of these devices focus on your heart. Heart rate monitors track your heart rate. Designers of wearable technology recently created additional techniques to monitor heart rate activity. Stress can be recognised using a thermal image, a device that collects the required data, as well as an algorithm that can identify a person's behaviour from images taken using a regular camera. Because a person's eye, mouth, and head movements change while they are under stress, this fact can be advantageous for the deep neural network that employs facial landmarks as input. The proposed Arduino based system combines this deep neural network and biological sensors together to detect stress in a person and informs through message. Detection of stress at early stages can avoid its serious consequences and help people live stress free life.





Keywords: Face recognition, Emotions Detection, Stress recognition

RESCUE BOT FOR EXCAVATION IN TRENCH TO SAVE CHILD USING RS485 IN OPEN BOREWELL

Goni Sai Snehasri, Megha, Nayana P N, Padmasree K B, **Manjuvani K M** Department of ECE, Sai Vidya Institute of Technology

India being an agriculture country, water plays an important role in society. The most pressing problem faced by society as a result of the enormous population growth is water scarcity, which is leading to the construction of a significant number of bore wells. When a borewell fails to produce water despite numerous attempts, some irresponsible individuals may leave some bore wells exposed. Children unintentional fall into the bore well, Saving thechild who is trapped in the borewell is a difficult process. Deserted borewell seems to be death pits for children. These borewells in turn have started to take many innocent lives. Therescue process to save the child from bore well is a very long and complicated process. It consumes more time and is risky in a variety of ways. The project aims to design a system that can rescue a child easily, safely and in a short time. Various sensors such as temperature sensor (DHT11), gas sensor (MQ2), Passive infrared sensor (PIR), and Ultrasonic Distance Measure (UDM), which connect to the ESP32 microcontroller to measure and track the temperature, dangerous gases, and distance of the victim inside the bore well as well as to determine aliveness of victim.

Keywords: Rescue Bot, Open Borewell, RS485, ESP32, Robotic arm





1VA19EC048





DEPARTMENT OF ECE 5 | P a g e

ENHANCED PROPAGATION LENGTH IN HYBRID PLASMONIC WAVEGUIDES

Shashank C, Anvith Sharma, Samyak Darshan S Jain, Kalyan S Nayaka, **Dr. Venkatesha M** Department of ECE, Sai Vidya Institute of Technology

Traditional electronic integrated circuits have been proved to be inefficient pertaining to sub-wavelength confinement and diffraction of light. Plasmonics which stands to offer a solution has been extensively researched by various academicians throughout the world. The SPP (surface plasmon polariton) which forms the backbone of plasmonics has been of significant importance owing to its extraordinary properties such as sub-wavelength confinement and extended diffraction. With the advancements in technology, the hybrid plasmonic waveguides are congruous with PICs (plasmonic integrated circuits). Although numerous researchers have designed, modelled and proposed a variety of Hybrid Plasmonic Waveguides, the propagation length and mode confinement are very low, which are in the order of micrometer range. In this project, we have proposed, modelled and simulated a novel Hybrid Plasmonic Waveguide (with two different material configuration) with enhanced modal characteristics, particularlythe propagation length.



Shashank C 1VA19EC074



Anvith Sharma 1VA19EC012



Samyak Darshan S Jain 1VA19EC069



Kalyan S Nayaka 1VA19EC036

Keywords: Plasmonics, Hybrid Plasmonic Waveguides, Propagation Length, SPR Sensors

DESIGN OF MICROSTRIP PATCH PHASE ARRAY ANTENNA FOR 5G/6G APPLICATIONS Vinay kumar K S, Spoorthi G, Shravani V, Udith K S, Dr. Venkatesha M Department of ECE, Sai Vidya Institute of Technology

In this work the mathematical modelling and optimization of Micro strip patch antenna is developed based on linear phased array antennas where the phased array antenna systems (PAAS). A noteworthy advancement in wideband micro strip antenna design is the slotted micro strip patch antenna, which makes use of the patch surface to increase the antenna impedance bandwidth. The micro strip patch antenna is developed using Ansys HFSS (High Frequency Structure Simulator). This project presents the design, mathematical modeling, and analysis of a 2×2 microstrip patch antenna array (MSPA) for 5G applications operating at 5.3 GHz. The single MSPA achieves a maximum gain of 6.14 dB at 5.3 GHz, while the 2×2 array structure produces a gain of 7.713 dB at the same frequency. The results demonstrate the potential for such antennas in 5G technology and devices.

Keywords: Microstrip Antennas, 5G Antennas, Slot Array, Gain, Return loss, Microstrip antenna





1VA19EC080





Udith K S 1VA19EC093

SYSTHESIS OF PURE OXIDE AND DOPED MATEL OXIDE BASED NANO MATERIALS FOR DISPLAY AND GAS SENSOR APPLICATIONS

Rahul Kumar K, Anjan S, Nikhil M N, Nithin P, **Dr. Venkatesha M, Dr. Shruthi D** L Department of ECE, Sai Vidya Institute of Technology

The word nanomaterial or nano compound has a significant name in the field of science and technology. In this work, X2MoO4 (X=Li, Na,K) and X2WO4 (X=Li,Na,K) phosphor has been synthesized by the conventional solid state method at 900°C for molybdates and 700 °C for tungstate for 6h each. The morphological and optical properties of the materials have been investigated by various characterization methods like XRD, UV-vis spectroscopy, FTIR, Photoluminescence (PL), cathodoluminescence (CL) and Scanning electron microscopy (SEM). From the XRD studies, the average crystallites size was found to be 56.28 nm and 58.05 nm for molybdates and tungstate respectively. From the UV-vis spectroscopy the bandgap was calculated and found to be 3.507 eV for Na2WO4, 3.778 eV for Li2WO4, 3.168 eV for K2WO4, 2.710 eV for Na2MoO4, 2.676 eV for Li2MoO4 and 2.633 eV for K2MoO4. The synthesized phosphors show the Photoluminescence under an excitation wavelength of 532 nm a strong green peak at 555 nm. The FTIR studies shows the peaks at 954.99 cm-1, 886.96 cm-1 and 770.8 cm-1 wavenumber which exhibits the bonds between tungsten and oxygen molecules. The bonds are asymmetric in nature. From the characterization results it was observed that the materials are promising for the application of WLEDs.

Keywords: Nano-Materials, Synthesis, Photoluminiscence, White LEDs, FTIR, XRD.





1VA19EC009



Nikhil M N 1VA19EC043



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DESIGN AND DEVELOPMENT OF MIL-STD-1553 BASED TEST CONSOLE FOR EARTH SENSOR

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The main aim of our project is to design and develop the MIL-STD-1553 based test console for the Earth Sensor. We use 2 buses (BUS A and BUS B) which are parallely connected to four 1553 couplers. These couplers are intern connected to an Earth Sensor and a DDC based MIL-STD-1553 kit which is again connected to the PC via USB. The MIL-STD-1553 is the military specification defining a Digital Time Division Command/Response Multiplexed Data Bus. We collect the Roll, Pitch error and status word of the earth disc. The sensor has electrical interface with Attitude and Orbit control Electronics through MIL-STD-1553 bus. There are three 16 bit words namely Roll, Pitch word and Status word is getting transferred from the sensor to AOCE through MIL-STD-1553 protocol, with AOCE as Bus Controller (BC) and Earth Sensor as Remote Terminal (RT). Sensor update rate is at every 250ms AOCE read is at 64ms.

Keywords: MIL-STD-1553, Earth Sensor, Remote Terminal, RS-232



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DESIGN OF ABSORPTIVE BANDSTOP FILTER USING 180NM BI-CMOS TECHNOLOGY

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Wideband communications, radar, and sensing applications are becoming increasingly popular due to the develop- ment of software-defined wideband amplifiers, ADCs, DACs, and radios. For these applications it is often necessary to minimize the amount and magnitude of harmonics with the spurious content of the transmitter signal while maintaining the best possible dynamic range and sensitivity in the receiver signal. It has been found that radio waves cause reflections of RF power as they pass through a notch filter, which can damage previous stages of operation. An integrated absorption/reflection notch filter is implemented in this project. Since it has both CMOS transistor and bipolar junction transistor characteristics, we use Bi-CMOS technology to achieve this.Bi-CMOS works faster and consumes less power. Using 180nm technology and LTSpice software, we will combine these technologies into a single chip.It has been determined that the bandstop filter has a center frequency of 10.06 GHz, the bandwidth of 630.74 MHz and a quality factor of 15.95.Close agreement between the theoretical and simulated results for this integrated absorptive bandstop filter is achieved.



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Keywords: Bi-CMOS, Absorptive filter, Bandstop filter, Insertion loss, Return loss

GENETIC ROUTING FOR UNDERWATER ACOUSTIC SENSOR NETWORKS

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Secure transfer of data through energy is a tough task for Underwater Acoustic Sensor Networks (UWASN). This is carried on by an excessive amount of noise, extremely lengthy propagation delays, high BER, restricted bandwidth capabilities, and acoustic transmission interference brought on by interference. How to increase the lifespan of data transmission is the main area of study for UWASN. In the sphere of research, data transfer from source node to destination node in UWASN is a challenging problem. Recent years have seen the development of several routing methods, including depth-based routing and vector-based forwarding. For increasing the energy efficiency of data transmission in the routing Path from a source node to a destination node, we are proposing forth a genetic algorithm-based optimization method. We are seeking to reduce the duration in long-distance interactions between the nodes by clustering the genetic offspring.

Keywords: UWASN, BER[BitError Rate], Delay, Energy Efficient , Clustering , Genetic Algorithm.





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DESIGN, MODELLING AND ANALYSIS OF MICRO LIGHT EMITTING DIODE FOR DISPLAY APPLICATIONS

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Recently, there has been a lot of interest in micro-LED technology, because of its exceptional qualities, including auto emission, high visibility, low consumption of power, rapid response and longevity. The development of fully integrated, multifunctional devices and the incorporation of extra capabilities into micro-LED displays, such as sensing, light detection, and solar cells, are the pillars of advanced technology. To Improve Micro-LED array optical performance, thickness of sapphire micro reflector can be increased. The use of gratings is one of the most promising methods among those used to increase the efficiency of light extraction. Gratings, which are periodic structures, can be used to extract light from a micro-LED device that has trapped light, greatly enhancing overall efficiency. By extracting light from the micro-LED and directing it in the desired direction, the grating can function as a light coupler. It has been demonstrated that using this method can increase micro-LED displays' efficiency. Gratings could hasten the spread of micro-LED technology across a range of applications.

Keywords: Finite difference time domain, light out coupling efficiency, far field intensity, Power density, Quantum efficiency, Flat panel displays



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Audio classification or sound classification can be referred to as the process of analysing audio recordings. This amazing technique has multiple applications in the fields of AI and data science. In this project, we will explore audio classification using deep learning concepts involving algorithms like Convolutional Neural Network (CNN1D), and CNN2D. The dataset contains 2567 labelled sound datasets of pump normal, pump abnormal, fan normal, fan abnormal are used for audio prediction. Our goal is to give an audio file as the input, then our model should determine whether the audio features contain one of the target labels. As a result, each model is compared in terms of accuracy, training time, and prediction time.

Keywords: Audio prediction, spectrogram, neural network, urban sounds, accuracy



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Akula Pavan Parvatalu 1VA19EC006



Hemasundar M H 1VA19EC032



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DESIGN AND IMPLEMENTATION OF CUSTOMIZED AUTOMATION SYSTEM USING DEEP LEARNING ALGORITHM

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In our current day-to-day lives, many of the tasks which were previously carried out manually with the involvement of humans and their cognitive skills are being automated due to advancement in hardware, software and most importantly, the integration of these two components. In this project, we are proposing a customized automation system which is based on face detection and recognition using deep learning algorithms. Face Recognition is an important step in digital image processing and computer vision to identify the person based on facial features and biometric analysis. Compared to other triggering-based automation systems, the model based on our project has several advantages. It is more reliable and accurate than voice-controlled systems, which can be affected by background noise or speech recognition errors. It is more convenient than remote-controlled systems, which require a physical remote and line-of-sight communication. It is also more flexible than sensor-based systems, which can only trigger tasks based on specific conditions such as motion or temperature.

Keywords: Customized Automation, Deep Learning, Convolutional Neural Network, Face Recognition, Automated Systems, Machine Learning



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TRANSISTOR LEVEL IMPLEMENTATION OF AREA AND POWER EFFICIENT FOUR BIT ALU

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Adder is frequently utilized in computational systems to carry out arithmetic operations. The adder used for computational purposes should occupy less area, dissipate less power and should operate at higher speed. Adders, logic gates, and multiplexer units are used in the proposed 4-bit ALU implementation. In order to implement the proposed 4-bit ALU, various adder and multiplexer topologies are taken into account, power analysis is carried out on different adder and multiplexer topologies and the adder, multiplexer which dissipates less power is selected for implementing ALU. Four bit Arithmetic Logic Unit (ALU) is constructed, that performs binary addition, subtraction, increment, and decrement. The logical operations performed are XNOR, XOR, AND, and OR. The entire implementation is done using cadence virtuoso tool at transistor level with 90nm technology.

Keywords: ALU, Area, Power Dissipation, Adders, Multiplexers



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DESIGN AND SIMULATION OFSILVER BASED SUPERLENS FOR PLASMONIC LITHOGRAPHY

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Plasmonic lithography is one of the promising technology for nano-patterning due to its ability to bypass the diffraction limit. Metal with negative permittivity and/or permeability are used to design the superlens with dielectric-metal-dielectric pattern with appropriate thickness. The metal is opted due to its strong thermal conductivity, rapid electron mobility, and good lightmatter interactions. Superlens is capable of resolving features much smaller than the working wavelength by restoration of lost evanescent waves. Simulation results exhibit superlens made of PMMA-Silver-PMMA pattern will provide resolution of $\lambda/5.4$ of illuminated wavelength(365nm). The increase in layer of super lens helps to achieve high resolution of image.

Keywords: Plasmonic lithography, Superlens, Sub-wavelength, Evanescent wave, Resolution







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SMART ENERGY, GAS AND WATER METERING SYSTEM Shreya U S, Chaitra C, Sarvepalli Srikrishna S, Rajendra D, Dr. Venkatesha M Department of ECE, Sai Vidya Institute of Technology

In the modern day, intelligent buildings are difficult to envision without smart meters. Electricitygas and water use data are provided by smart meters. Customers are also given access to this information in order to assist them in lowering their energy use and CO2 emission. The prototype system depends on the combination of a specially developed smart phone app and a straightforward Internet of Things (IoT) technique for water metering. A smart city uses technology to maximise the use of resources like electricity, gas, and water as well as to increase overall productivity. Other ty pical utilities like gas and water can also use the AMI concept. Future versions of the smart grid and smart metres will be a part of a much larger internet of things that will integrate various human needs and services to meet those needs, and processes and workflows for real- time diagnostics will need to incorporate the analytics requirements discussed, such as big data, real-time analytics, and stream analytics.

Keywords: Smart meter, billing system, home automation, wifi module, sensors.







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ANALYSIS OF AUTOMOTIVE SECURITY RISK USING CYBER SECURITY

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As the automotive industry continues to evolve and embrace new technologies, the need for robust security measures has become more important than ever before. With the advent of commercially available 5G networks, cars are now at the center of V2X (vehicle-to-everything) communication, which connects everything around them. This means that security breaches in the automotive industry can have far-reaching consequences, affecting not only the car itself but also the infrastructure and other vehicles around it. This will lead to a shift away from mechanical control towards electronic control, as electronic systems can provide greater flexibility and allow for more advanced features. However, this shift also means that the industry will become increasingly reliant on software, which is vulnerable to cyberattacks. Additionally, industry stakeholders must work together to establish best practices and standards for automotive security, and regulatory bodies must enforce these standards to ensure compliance. In summary, as the automotive industry continues to evolve and embrace new technologies, ensuring the security of vehicles and their communication networks will become increasingly critical. By implementing robust security measures and working together to establish industry standards, the automotive industry can continue to provide safe and innovative products for consumers.



Muskan Singh

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Keywords: V2X (vehicle-to-everything), ICT, security, encryption, attacks.

IMPLEMENTING A ROBUST IRIS RECOGNITION SYSTEM USING FEED-FORWARD NEURAL NETWORK TECHNIQUES

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Iris recognition is a technique that analyses an individual's iris image to use an artificial neural network (ANN) based feedforward neural network (FNN). The FNN contains several layers of neurons that help it analyze input data and extract important information. Techniques including image preparation, feature extraction, and classification are used to increase accuracy, With accuracy rates of over 99.98%, FNN-based iris recognition has produced impressive results. Receiver Operating Characteristic curve, a true-positive rate, False Positive Rate, as well as other performance indicators are used to measure the system's accuracy. However, challenges such as motion blur and noisy images might have a significant impact on the way the FNNbased iris identification system performs Such challenges are now being addressed in existing research in an effort to increase the efficiency and dependability of FNN-based iris recognition systems for a wide range of applications, such as immigration control, remote access, and banking transactions.





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Keywords: V2X (vehicle-to-everything), ICT, security, encryption, attacks. Feedforward Neural Network, Receiver Operating Characteristic (ROC), True-positive rate, False-positive rate.

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

AUTOMATIC RAILWAY GATE CONTROL B.H.Deekshith, Kamble Prathmesh.B, Raktim Tamuli, Praveen B.R Department of EEE, Sai Vidya Institute of Technology

In this Project we initialize the modules and the controller will collect the data. It will check the IR sensors. If the IR sensor indicates good, then it will stop the engine and display the message. If the IR sensor indicates bad, then it will run the engine and will collect the data back .The final model will be well equipped with the features where gate can examine his accidents from anywhere and anytime. Emergency scenario to send an emergency message to the receiver with current status and full medical information can also be worked on.

Keywords: IR Sensors, Gate Control





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LANDMINE DETECTION ROBOTIC VEHICLE WITH GPS POSITION USING ESP32

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Landmines are dangerous military equipments that are a a threat to people's lives and cause economic problems. They are harmful because of their unknown locations and difficulty to detect. Detecting and clearing mines demand special expertise. In this paper, we present a low-cost system for landmines detection. We describe the strategy that can detect mines using a multi sensor robot and path planning algorithm for searching mines. We present how the robot can get information from different sensors to guide soldiers to detect landmines. The purpose is to give an efficient solution to landmines problem by using tele mobile robots that are capable of exploring and destroying buried landmines. The main purpose of landmines detecting robotic vehicle is to identify the landmines for the defense field for the maximum possible area. If the landmines explode, it causes severe damage to the soldiers and emits toxic pollutants to the environment. Here, the land mine detecting robots plays a vital role in saving the lives of soldiers. Landmines are so very destructive, they can be a threat to human and animal lives if not identified. The robotic vehicle in the implementation is controlled by an application in our mobile phones using bluetooth technology. The implementation uses a metal detector for detecting the landmine and it uses a robotic arm for picking up the landmine and it is transported to a safe location where it is disposed safely.



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Keywords: Landmine, robots

REAL TIME ELECTRIC VECHICLE CHARGING AND MONITORING SYSTEM USING IOT

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The adoption of electric vehicles (EVs) has increased significantly in recent years due to their environmental benefits and advancements in battery technology. However, the efficient charging and monitoring of EVs pose challenges for infrastructure providers and vehicle owners. This project proposes a real-time electric vehicle charging and monitoring system using the Internet of Things (IoT) to address these challenges. The system utilizes a network of IoT devices, including charging stations, smart meters, and vehicle onboard units (OBU), to enable seamless communication and data exchange. The charging stations are equipped with advanced sensors and communication modules, allowing them to interact with OBUs and the central monitoring system.. The proposed real-time electric vehicle charging and monitoring system using IoT provides an efficient and intelligent solution for EV charging infrastructure. It promotes effective resource utilization, enhances user convenience, and contributes to the overall sustainability of transportation. The successful implementation of this system has the potential to accelerate the widespread adoption of electric vehicles and support the development of a smart and eco-friendly transportation ecosystem.







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Keywords: Electric vehicles, Internet of Things, EV charging, Intelligent Charging Algorithms, Battery Management System

IOT AND AI BASED FIRE DETECTION SYSTEM Kushal S D, M S Sourav, Madhusudan R, **Amulya H G**

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Fire detection is crucial task for the safety of people. To prevent damages caused by fire, several fire detection systems were developed. One can find different technical solutions. Most of them are based on sensors, which is also generally limited to indoors. However, those methods have a fatal flaw where they will only work on reaching a certain condition. In the worst-case scenario, the sensors are damaged or not being configured properly can cause heavy casualty in case of real fire. Those sensors detect the particles produced by smoke and fire by ionization, which requires a close proximity to the fire. Consequently, they cannot be used for covering large area. To get over such limitations video fire detection systems are used. Due to rapid developments in digital cameras and video processing techniques, there is a significant tendency to switch to traditional fire detection methods with computer vision based systems. Video-based fire detection techniques are well suited for detecting fire in large and open spaces.









IOT BASED BATTERY MONITORING SYSTEM FOR ELECTRIC VEHICLE

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The project deals with real-time monitoring of batteries based on Internet of things is proposed and evaluated. In this system stores parameters that provide an indication of the battery, voltage, current and the Temperature in a real-time scenario. The wireless monitoring system is used as the backbone network. The information collects from all the associated battery interfaced sensor in the system is analyzed parameter. Because the battery temperature, voltage, current are the most common parameters for monitor. Currently, the requirement of battery in the modern automobile sector and industry sector keep increasing. For uninterrupted working of battery bank all required parameter need to monitor. In this implementation we are implementing a device for monitor the all required parameter of battery.





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DESIGN AND IMPLEMENTATION OF A WEARABLE SENSOR NETWORK SYSTEM FOR IOT-CONNECTED SAFETY AND HEALTH MONITORING SYSTEM

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A wearable sensor network system for Internet of Things (IoT) connected safety and health applications. Safety and health of workers are important for industrial workplace; therefore, an IoT network system which can monitor both environmental and physiological can greatly improve the safety in the workplace. The proposed network system incorporates multiple wearable sensors to monitor environmental and physiological parameters. The wearable sensors on different subjects can communicate with each other and transmit the data to a gateway via a LoRa network which forms a heterogeneous IoT platform with Bluetoothbased medical signal sensing network. Once harmful environments are detected and, the sensor node will provide an effective notification and warning mechanism for the users. With the emergence of IoT, users can easily view the real-time environmental and physiological data from web-browser or mobile applications at anywhere and anytime.

Keywords: IOT, NODE MCU, Health Monitoring System, Wearable Sensor, Smart System



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SURVEILLANCE SYSTEM FOR ELDERLY PEOPLE

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One of the most serious issues endangering the lives of old people is human fall. Elderly people who fall by accident could suffer various permanent problems or even deaths. In this study, we propose a fall detection system using surveillance camera is used to detect falls based on a real-time method of identifying senior fall behaviour. This system is based on Deep Learningclassification using a Convolutional Neural Network used for image classification and with an improved YOLOv5 utilised for object detection, using the standard datasets called COCO, which stands for Common Objects in Context, along with IoT used for alerting the related persons through SMS and phone system and a buzzer system that the elderly can use manually if there is medical requirement or to suggest no emergency. This method allows for the real-time identification of elderly falls, allowing for quick and efficient treatment. The testing findings indicate that the algorithm's average accuracy across all categories is 97.2%. As a result, the suggested algorithms can detect senior people's fall behaviour with accuracy.





1VA19CS009



1VA19CS032



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Keywords: Fall, surveillance camera, deep learning, object detection, convolutional neural networks

IMAGE FORGERY DETECTION USING ENSEMBLE OF VGG-16 AND CNN ARCHITECTURE

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Digital image modification or image forgery is easy to do today. The authenticity verification of an image becomes important to protect the image integrity so that the image is not being misused. Error Level Analysis (ELA) can be used to detect the modification in image by lowering the quality of image and comparing the error level. The use of deep learning approach is a state-of-the-art in solving cases of image data classification. This study wants to know the effect of adding ELA extraction process in the image forgery detection using deep learning approach. The Convolutional Neural Network (CNN), which is a deep learning method, is used as a method to do the image forgery detection.

Keywords: Deep Learning, Convolutional Neural Networks, Error Level Analysis, Image Processing, Image Forgery.



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VIRTUAL ASSISTANT FOR VISUALLY IMPAIRED AND SENIOR CITIZENS

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The virtual assistant app designed for visually impaired and senior citizens aims to provide assistance with daily tasks and improve accessibility for these groups. The app uses natural language processing and text-to-speech technology to provide a user-friendly interface for individuals who may have difficulty with traditional touch-based interfaces. The app is designed to provide a range of features, including voice-activated commands, reminders, and navigation assistance. It can help users set alarms, make phone calls, send text messages, and access information online. Additionally, the app can assist users in navigating unfamiliar environments by providing directions and identifying nearby points of interest. To ensure accessibility, the app has been designed with features such as high-contrast display, large font size, and adjustable volume levels. The app also offers a screen reader mode for users who prefer to use their own assistive technology. Overall, the virtual assistant app for visually impaired and senior citizens is a valuable tool that can enhance the daily lives of these individuals by providing personalized assistance and improving accessibility.



IMPLEMENTATION OF THE VOICE BASED CONTROL AND DETECTION OF THE CURRENCY IN ATM TRANSACTION

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Automated Teller Machines (ATMs) play a crucial role in modern banking systems. However, the user interface of traditional ATMs primarily involves a touch screen and physical buttons for interaction. To improve the ATM user experience and enhance security, we propose a novel approach that utilizes voice recognition technology for user control and currency denomination detection during transactions. Our project involves developing a software interface that employs speech recognition algorithms and machine learning models to detect user commands and currency denominations. This system is designed to be compatible with existing ATM hardware, ensuring seamless integration into current banking systems. Overall, the implementation of a voice-based control and detection system for ATMs has the potential to revolutionize the ATM experience for users and increase security in the ATM environment.

Keywords: Automated Teller Machines (ATMs), Voice recognition technology, Currency denominations, Security, Transactions, Speech recognition.



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1VA19CS015

DEPARTMENT OF CSE 17 | P a g e

SPEECH EMOTION RECOGNITION WITH LIBROSA

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Speech emotion recognition is an active research area that aims to automatically detect emotions from speech signals. In recent years, machine learning techniques have been extensively used for this task, due to their ability to learn complex patterns and features from data. In this paper, we propose a novel approach for speech emotion recognition using machine learning, which combines different feature extraction techniques and classifiers. Our approach extracts features from the speech signal using Mel Frequency Cepstral Coefficients (MFCCs), chroma which is fed into two different classifiers: Support Vector Machine (SVM) and Multi-Layer Perceptron (MLP). The proposed approach was evaluated on the RAVDESS Emotional Speech Database, achieving an accuracy of 78.4% for the classification of four emotions: happiness, sadness, anger, and neutral. These results demonstrate the effectiveness of our approach and its potential to be applied to real-world scenarios, such as emotion recognition in human-robot interactions or in speech-based mental health monitoring systems.





Semantic segmentation is a computer vision technique that involves labeling each pixel in an image with a corresponding semantic class. Deep learning has emerged as a powerful tool for performing semantic segmentation, with Convolutional Neural Networks (CNNs) being the most commonly used architecture. In this abstract, we discuss two popular CNN architectures for semantic segmentation: Fully Convolutional Networks (FCNs) and Pyramid Scene Parsing Network (PSPNet). FCNs are a type of CNN that have been specifically designed for semantic segmentation. The FCN architecture has been used in a variety of applications, including object recognition, scene understanding, and image segmentation. PSPNet is a more recent CNN architecture for semantic segmentation, which uses a pyramid pooling module to capture contextual information at multiple scales. FCNs and PSPNet are two popular CNN architectures for semantic segmentation, with different strengths and weaknesses. FCNs are computationally efficient and easy to train, making them a good choice for applications with limited computational resources. PSPNet, on the other hand, achieves state-of-the-art performance on benchmark datasets, but can be more computationally expensive to train

and deploy.

Keywords: Computer Vision, Semantic Segmentation, Deep Learning, FCN, PSP net









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CRYPTOCURRENCY OIE PREDICTION USING CNN

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predicting the Bitcoin price accurately taking into consideration various parameters that affect the Bitcoin value. For the first phase of our investigation, we aim to understand and identify daily trends in the Bitcoin market while gaining insight into optimal features surrounding Bitcoin price. Our data set consists of various features relating to the Bitcoin price and payment network over the course of five years, recorded daily. For the second phase of our investigation, using the available information, we will predict the sign of the daily price change with highest possible accuracy.Twitter is increasingly used as a news source increasing purchase decisions by informing users of the currency and its increasing popularity. As a result, quickly understanding the impact of tweets on price direction can provide a purchasing and selling advantage to a cryptocurrency user or a trader. By analyzing tweets, we found that tweet volume, rather than tweet sentiment(which is invariably overall positive regardless of price direction), is a predictor of price direction.The system will use a conjuncture of build scopes defined using constructs based on ML approaches such as RNN with LSTM model.





Keywords: Cryptocurrency, Machine Learning, LSTM, Bitcoin, Twitter sentiment

SMART LANDMARK RECOGNITION USING MACHINE LEARNING

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Travel and tourism have always been a means of relaxation and fascination for individuals seeking respite from their busy lives. With the advent of digital technology and electronic gadgets, people have begun to capture their cherished memories while visiting destinations for future recollection. Tourist attractions, particularly landmarks and monuments, remain the most frequented sites for entertainment purposes. However, people often forget the names of the places they have visited, and even when browsing through their digital libraries, they may struggle to recall them. Therefore, a machine learning-enabled tool that can recognize and classify these monuments would be a valuable solution to this issue. This tool would be accessible through a cross-platform website, providing users with a one-stop solution to this unique problem. The "machine learning algorithm" has been trained on a vast image dataset, enabling it to recognize landmarks and provide additional benefits by serving as a virtual tour guide that imparts fascinating historical details about the monument.







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TEXT TO IMAGE USING DEEP LEARNING

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"Text-to-Image Generation," is to produce a picture that matches a given textual description. In order to do this, the text input must be transformed into a meaningful representation, like a feature vector, and then used to create an image that corresponds to the description. It costs money and takes time to gather human-generated photographs with related captions. In this research, we propose a GAN that trains and tests the model using both real and artificial data. To create artificial images, we employ a text-to-image generator based on a Generative Adversarial Network (GAN). The captions are generated using actual and artificial photos that were trained on. We apply qualitative and quantitative analysis on widely used evaluation criteria to show the outcomes of our models. We demonstrate that the benefits of our suggested work are doubled by the findings of our experiments. Since we use additional photos for training, it both shows how GAN is used for synthetic images and enhances the quality of the captions that are created for real photographs.





1VA19CS018



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Thejaswini S1VA19CS057

SMART AGRICULTURE USING IOT AND ML

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The integration of machine learning and IOT data analytics in the agricultural sector has the potential to revolutionize farming practices and increase crop yields to meet the growing demand for food. However, there are also limitations to these advancements. Over the past decade, climate change and erratic rainfall have made it necessary for Indian farmers to adopt climate-smart methods, such as smart agriculture. Iot technology can help reduce water and fertilizer waste while increasing crop yields through automation and targeted information technology. The rapid development and widespread application of Iot in wireless environments have led to the adoption of sensor technology and wireless networks to improve the agricultural system. This project proposes a combined approach using internet and wireless communications, and a Remote Monitoring System (RMS) that utilizes temperature, moisture, and pH sensors to monitor soil conditions.

Keywords: Machine Learning, Sensors, IOT, Smart Farms, Agriculture, Data Analysis



¹VA19CS025



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PHONE-BOT

Abhishek Anand, Gautam Kumar Choudhary, Suman Kumar Sahu, Akshita R Potdar, Ashwini S S Department of CSE, Sai Vidya Institute of Technology

Current robots are either very difficult for a normal people to afford or make significant compromises on the functionality of the robots such as sensors, environment interaction capabilities, communication and computational abilities, etc. We propose to build a robot equipped with smartphone which acts as the brain for the robot multiple abilities to interact with human and environment to create a powerful ecosystem for itself. In this work, we push further along the path to highly capable mobile robots that could be deployed at scale. Our key idea is to leverage smartphones. Modern smartphones are even equipped with dedicated AI chips for neural network inference, some of which already outperform common desktop processors. Hardware components on custom robots are quickly outdated. In contrast, consumer-grade smartphones undergo generational renewal on an annual cadence, acquiring higher-resolution and higher-framerate cameras, faster processors, new sensors, and new communication interfaces.



SHOE PRODUCT AUTHENTICATION USING BLOCKCHAIN

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The proposed project aims to develop a shoe product authentication system using blockchain technology. This system uses decentralized database to store unique shoe product codes and corresponding authentication records. Whenever a customer buys a pair of shoes, the product code is recorded on the blockchain, and an authentication record will be created. The information will be stored in the record are like date and time of purchase, the retailer's name, and the shoe's details. When the customer wants to verify the authenticity of their shoes, they can scan the product code using their mobile device, and the system will retrieve the authentication record from the blockchain. The project proposes an effective and tamper-proof solution to combat counterfeit shoe products in the market, increasing customer trust and confidence in the authenticity of their purchases. In the future, this project will have wider inference on other industries looking to implementing secure and decentralized product authentication systems.

Keywords: Authentication, Blockchain Technology, Decentralized Database, Counterfeit, Mobile Device Scanning



1VA19CS002



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DRIVERLESS AUTONOMOUS CARS USING SENSORS AND DEEP LEARNING TECHNIQUES

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Autonomous vehicles, also known as self-driving cars or AVs, are automobiles operate without human help by utilizing a range of advanced technologies, such as sensors, cameras, radar, and AI. These technologies enable the vehicles to navigate roads, avoid obstacles, and make decisions without the need for a human driver. Over time, various automakers and technology have put into significant resources into researching and developing self-driving cars to make them more widely available. To illustrate this technology, we have implemented an autonomous vehicle that employs sensors and a Raspberry Pi to detect objects, humans, and traffic signs. The sensor is responsible for detecting objects in the vehicle's surroundings, while the Raspberry Pi uses captured images to differentiate between objects, humans, and traffic signs using deep learning techniques. Based on the detection, specific operations can be performed to control the autonomous vehicle.





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Ranjith N 1VA19CS041



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1VA19CS022

ASSET PRICE PREDICTION USING ELLIOTT WAVE THEORY AND DEEP LEARNING ALGORITHMS

S Lakhan Kumar, Sreesha J, **Dr. Shantakumar B Patil** Department of CSE, Sai Vidya Institute of Technology

This paper delves into the dynamic nature of asset price trends, highlighting the volatility and the need for buyers to utilize various techniques to escalate or finance profits. Two main approaches i.e Elliott Wave Theory followed by Deep Learning Models are implemented in this study for forecasting data. These concepts postulate the prediction capabilities by proving the correlation in the end results. The first approach is based on Pattern Recognition using the Elliott Wave Theory, which utilizes the time series data to accurately depict the market behavior and aids in security modelling. The second approach involves leveraging deep learning models which is an important tool for forecasting data using ANN, CNN, LSTM, CNN-LSTM and CNN Bi-LSTM models which are widely used for time series data analysis. These models aim to enhance forecast accuracy, providing insights into the trend behavior for the users to make informed decisions in prior. Study shows that the combination of CNN and Bi-LSTM model is proven to be an accurate model amongst the other deep learning models by scrutinizing the accuracy and performance factors.

Keywords: Stock Price Prediction, Pattern Recognition, Elliot Wave Theory, Fibonacci Ratios, Artificial Neural Network, Convolutional Neural Network, LSTM, CNN Bi-LSTM, Deep Learning Algorithms.



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ATC AUTOMATION USING GAN Yash Kumar, Dr. Shantakumar B Patil Department of CSE, Sai Vidya Institute of Technology

Airport automation systems play a crucial role in improving operational efficiency, enhancing passenger experience, and ensuring effective resource management. This paper presents a novel approach to airport automation utilizing Generative Adversarial Networks (GANs) to create realistic simulations and optimize various processes within an airport environment. The proposed GAN-based system leverages real-time data from multiple sources such as flight's arrival, departure, emergency inbounds, and many more. By training the GAN model on historical data and incorporating current inputs, it generates dynamic simulations that accurately represent approach path flow, security measures, and trajectory prediction. Through the use of GANs, the system can identify potential bottlenecks, predict passenger demand, and optimize resource allocation. It provides airport authorities with valuable insights for decision-making, enabling them to efficiently allocate personnel, optimize security checkpoint configurations, and streamline baggage handling operations.



Keywords: S GAN, ATC, CPDLC, Adversarial Networks, Terminal

DERIVATIVE OPTION GREEKS' ANALYSIS AND PREDICTION USING VOLATILITY AND TIME SERIES DATA

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Option analysis has mathematically derived values that are affected by underlying asset value and four parameters theta (time value), gamma which is second order derivative, delta which is the primary derivative or the probability of the event happening, Vega refers to the volatility, these are the four parameters that are affecting the options prices, used for option price prediction. The main aim of this research is to understand the effect of these various Greek parameters on predicting option prices. In this research we have trained 4 machine learning models which are, linear regression, random forest, SVR, K-Nearest Neighbors. Training data set used is NIFTY for the year 2022 CE options (European options), a total dataset of 3661 rows, was split into 2931 and 731 for training and testing respectively. One more test was conducted other than original training data that is considering KNIFTY data of 17-April 2023 with expiry 27-April 2023 to analyze the results of above-mentioned models. A stochastic volatility model called Heston model was also experimented to compare it with the ML models. After analysis, Random Forest was found to have the minimum Mean Absolute Error. This research is helpful for the algorithm traders and machine learning enthusiasts, who try understanding such a complex financial system.





Karthikeya S 1VA19CS021



Nidhishwar J 1VA19CS034



Kishankumar M 1VA19CS064

Keywords: Greek Parameters, ML model, Heston model, Option price prediction, Analysis

ATTACK DETECTION AND SECURED NETWORK COMMUNICATION IN WBAN Amogh Gaikwad, Rohith H G, Sammed Patil, Suraj B Gudi, Smitha B N, Vijayakumari G Department of CSE, Sai Vidya Institute of Technology

Wireless Body Area Network (WBAN) is the most rapidly growing branch of networking and data communication. With the rapid advancements of wireless communication and semiconductor technology, sensor network designed to operate autonomously to connect various other sensors (medical, position and geography) and appliances has become more robust and efficient. We realize a network consisting of intra body and inter-body communication network. Each body is considered to be an Autonomous System (AS) capable of mobility and connectivity to every other Autonomous System (AS) with different Autonomous System Number (ASN). The intra-body network consists of sensors and other elements embedded on or inside the body. These form the nodes of the network and are interconnected by links. A Body Area Network is constructed to interconnect the nodes, thereby exchanging information and bringing about the real-time concepts of sensors interdependability. This network when connected and tested would enable exchange of confidential and essential data of military personnel. The information in the network to be transmitted is password protected. This would avoid the intruders from stealing TOP-SECRET data/information. GNS 3 tool is used for implementing routing and cryptography on the network.









Keywords: Autonomous System, EIGRP, RIP, TELNET, AP, Implant Node, QOS, IP, OSPF, Subnet Mask, vty Lines.

IMAGE ENCRYPTION AND DECRYPTION USING CHAOS ALGORITHMS Rakshitha Mansi HT, Sparshithraj, Chandana N, Kishankumar M, Dr. Nagashree N Department of CSE, Sai Vidya Institute of Technology

Data security is one of the most important challenges in the information era, the extended use of big data leads to the necessity of hiding the content of a message from unauthorized users so that, prior to transmission, an encryption has to be performed. The basic principle of encryption with chaos is based on the ability of some dynamic systems to produce sequence of numbers that are random in nature. This sequence is used to encrypt messages. For decryption, the sequence of random numbers is highly dependent on the initial condition used for generating this sequence. A very minute deviation in the initial condition will result in a totally different sequence. This sensitivity to initial condition makes chaotic systems ideal for encryption. In this work we are implementing the combination of Arnold Cat Map and Henon Chaotic Map for encryption on the images. Arnold's Cat Map are chaotic two dimensions that can be used to change the position of the pixel of the image without removing any information from the image. The Henon map's generated chaotic sequence is employed to produce both the secret image and the parameters for the Arnold cat map. Its initial value is one of the secret keys in this scheme.

Keywords: Arnold, Mapping, Henon, Harris, Image Encryption, Decryption, Modified Chaotic Algorithm



Rakshitha Mansi HT 1VA19CS040



Sparshithraj 1VA19CS050



Chandana N 1VA19CS062



Chethana N 1VA19CS066

DESIGN AND MODELING OF DECENTRALIZED RIDE-BOOKING PLATFORM USING ETHEREUM BLOCKCHAIN

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The taxi service market in India alone is valued at a staggering \$30 billion. In recent years, major taxi-hailing companies have dominated this market by implementing surge-pricing tactics to balance supply and demand. Unfortunately, this has resulted in a significant decline in reliability and responsiveness across most cities, leaving users with no choice but to accept these unfavorable conditions. The current ride-booking services face numerous issues including security threats, lack of reliability, and centralization. With the involvement of a central authority or intermediary, taxi drivers experience increased costs and diminished profits. These complications have greatly diminished the viability of the taxi service industry as a sustainable mode of transportation.

However, the advent of blockchain technology offers the potential to revolutionize various industries, including transportation. Our proposal involves the development of a blockchainbased taxi booking platform utilizing the Ethereum blockchain. The primary objective is to address the existing challenges faced by traditional taxi booking platforms, such as high fees, limited transparency, and security concerns.By leveraging the decentralized and secure nature of the Ethereum blockchain, our platform enables users to directly book rides and make payments without intermediaries. This streamlined approach significantly reduces costs and enhances operational efficiency for both the platform and its users. Additionally, the implementation of smart contracts ensures transparency and security while empowering users to have greater control over their data.Overall, our blockchain-based taxi booking platform offers a more open, secure, and efficient alternative to conventional platforms, while addressing the current shortcomings in the industry.









A BLOCKCHAIN BASED FAKE PRODUCT IDENTIFICATION USING QUICK RESPONSE CODE

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One of the major issues faced by the retail industry today is product counterfeiting. Products that are counterfeited are just inferior reproductions of well-known brands. To prevent product counterfeiting, a variety of strategies have been used from time to time, including RFID tags, AI, machine learning, and many more. However, these approaches have several drawbacks, such as centralized databases and high processing power requirements for operations. The Quick Response (QR) Code and decentralized Blockchain technology suggested in this project is a way to enhance the detection of counterfeit products. By hashing the data twice and encoding it into different formats, the proposed system provides higher security.

Keywords: Block chain, QR code, Hash functions, encoding, security



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CYBER-ATTACK PREVENTION USING VAP TOOLS

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Networks and systems like computers and mobile devices are not secure enough and are vulnerable to numerous types of cyber threats. The frequency of cyber threats is on the rise each year. Such cyber threats lead to agendas called cyber security and cyber-attack prevention of public private networks and systems. The process of identifying the vulnerabilities in the systems and networks is called Vulnerability Assessment. Vulnerability Assessment helps in providing necessary solutions to mitigate cyber threats. It involves identification of vulnerabilities like network, physical and application vulnerabilities and the assessment of the risks associated with these vulnerabilities. This project proposes Cyber Attack Analysis using Vulnerability Assessment and Penetration Testing applying different Kali Linux tools along with menu-based interface and python modules. The results are compared with in-built tools of Kali Linux. The results are found to be improved in areas like system modifications, network and website testing, sniffing and spoofing and information gathering.



Unnathi Gaonkar 1VA19IS056



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Keywords: Cyber threats, VPT tools, Vulnerability Assessment, Kali Linux tools

IMPLEMENTATION OF AUGMENTED REALITY TO BOOST RESTAURANT SALES

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The web application will aid in the creation of both supplies and suppliers, allowing the user to visualize the meal before ordering it. Users are currently presented only an image, but the key concerns of food are quality and ingredients used. This online application employs Augmented Reality (AR) to provide an interactive user interface meal menu to order from. It makes the ordering procedure much more engaging and distinctive by allowing the user to inspect the 3D model before ordering the food. Users can interact with both digital data and the physical world. It is possible to digitalize the food business with this online application. Because this programme provides a 360-degree picture of food, it has the potential to steadily improve restaurant revenues. It also assists the user in better understanding the quality and ingredients of the food products used in them, as everyone wants to consume healthy and appetizing meals.







DEEPFAKE IMAGE DETECTION USING CONVOLUTION NEURAL NETWORKS Bondalakunta Praditha, Rohan Sanjay Mahajan, Vaishnavi VR, Vibha T Karunakara, Deepa Pattan Department of ISE, Sai Vidya Institute of Technology

Artificial Intelligence synthesized media, commonly known as Deep Fakes, has become increasingly prevalent due to advancements in deep learning techniques. With the ability to generate realistic and convincing media content, deep fakes have been used for political manipulation, spreading fake terrorism and blackmailing individuals. This has raised concerns about the need to detect and prevent the spread of deep fakes on social media platforms. The internet sees a massive upload of approximately two billion pictures every day, leading to an increase in editing software to alter image and video content. Deep Fakes utilize deep learning technology to manipulate images and videos of individuals to an extent where it becomes difficult to distinguish them from the real ones. To counter the spread of deep fakes, models can use Convolutional Neural Network (CNN) feature extraction properties to detect deep fakes accurately. Therefore, it is crucial to develop effective methods to detect and prevent the spread of deep fakes in social media to safeguard society from the negative impacts of manipulated media content.

Keywords: Convolution Neural Networks, Deepfake Images, Deep Learning, Tensorflow, Image Classification





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Vaishnavi VR 1VA19IS057



ibha T Karunakara 1VA19IS059

MULTI-FUNCTION NEURAL NETWORK BASED PHISHING WEBSITE DETECTIONS

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Online shopping, e-commerce, and social networking have all significantly enhanced the convenience of people's job, life, and pleasure in recent years due to the Internet's rapid expansion. As a result, a growing number of individuals start using and contacting the Internet. Through phishing websites, network hackers steal confidential information from users in order to profit economically. Blacklist detection and webpage content feature detection, which are currently the most popular detection methods for phishing webpages, have the drawbacks of either being unable to identify newly developing phishing webpages or requiring manual extraction of webpage features. So, by automatically collecting URL information, researchers have developed Convolution Neural Network (CNN) to recognize phishing websites. In this paper we have proposed multi-function neural network technique for the detection of phishing webpages based on URL feature detection.







Vamshi V 1VA19IS058



Keywords: Neural Network, Convolution Neural Network, Feature extraction, Blacklist Detection



Bhavya R 1VA19IS014

MY ALUMNI

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Everything has gone digital and cybernated in this period of modernity, and all industries are utilising this strategy to boost their growth. The education industry has also adjusted to this new standard, or digitalization. An educational institution can grow and expand its network thanks to digitalization. Creating an engaged, supportive alumni network is crucial to an institution's success. In order to to develop duplex communication between graduates and institution we have designed and developed an alumni portal for our college named 'MY ALUMNI'. The current Alumini portals lacks the features like social connections between the members as it provides only mail facilities. Also the sites are not robust as the updates are reflected lately and the there is no proper database management. On technical part we are going to make this application scalable and robust. We will be following Dev-Sec-Ops principles in SDLC to make application secure. The application will be dynamic and it will follow microservices architecture pattern which will be highly scalable.

Keywords: Microservices, load balancing, web application, Containerization, Scalability



ABHAY ONKAR 1VA19IS004

DECENTRALIZED VOTING SYSTEM USING BLOCKCHAIN

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Blockchain is a ledger technology which is distributed and stores data in a digital form. It uses a P2P network with each node storing information as transactions. These transactions are grouped together to form blocks. Smart contracts are self-executing and self-verifying contracts that execute automatically and eliminate the need for a third-party verifier. The prospect of using blockchain in a decentralised voting system is vast. The inherent nature of blockchain to be immutable and self-verifing contracts provide a very secure platform to develop the application upon. By leveraging the features of blockchain technology it is possible to create a secure and transparent voting system that can ensure accurate and tamper-proof results. In this project, we propose a possible implementation of a decentralised voting system based on blockchain technology and smart contracts. We attempt to overcome the drawbacks of the systems currently in use of being insecure, inconvenient and cost-ineffective through a web application-based voting system. Additionally, voters can verify their votes by logging back into the system whenever needed. Such an approach would increase the trust of the voter in the election process and the government. It will also be economically efficient when compared to the existing systems.

Keywords: Blockchain, Decentralization, Transaction, Ethereum, Smart Contracts







PRASHANTH R 1VA19IS040



UNUSUAL ACTIVITY DETECTION IN AN ATM USING DEEP LEARNING Ananya R Siri, Kruthika B V, A Sravan, Madhan A, Radha R Department of ISE, Sai Vidya Institute of Technology

A subset of machine learning called deep learning makes use of artificial neural networks to learn from data. It has been successfully used in a variety of industries, including speech recognition, computer vision, and natural language processing. Deep learning has recently been used to identify suspicious activities in ATMs. We've started utilising automation in nearly every part of our lives as the world develops. Additionally, as the 21st century progresses, the real world becomes a little more evolved, and advances in technology and other areas have downsides and adverse effects on society. One of the most popular places for thieves to rob or assault victims seeking cash is an ATM (Automated Teller Machine). Nowadays, practically all banks have started stationing security guards at ATMs, but it is not always cost-effective to do so, and occasionally human error does occur, leading to cases when even security officers are hurt by thieves attempting to rob the ATM. As the model would have been trained in the same environment where it has been trained, this becomes a superior detection system. This system would also include an alert mechanism that would sound a siren to alert nearby security of the ATM while also informing the necessary officials via mail service.

Keywords: Deep Learning, Convolutional Neural Network, CCTV- Closed Circuit TV, Safety, Automation.



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MORSE CODE SECURITY BREACH Surya Venkatesh, Rohith M, Tanusha V, Sheetal Ps, Radha R Department of ISE, Sai Vidya Institute of Technology

In order to address analytically challenging issues, Technology, algorithm design, and data inference are all combined in data science. Such as handle massive volumes of data, practically all industries, including those in education, finance, healthcare, and business, use data science The operational uses range from detecting cancer to estimating stock movement; when used for person identification, speech recognition, and text prediction in audio processing. Since the majority of individuals worldwide are having issues with security and authentication. For those who choose to use Morse code for their own authentication, we can offer real-time eye tracing for password authentication. As is well documented, technological developments in authentication and authorisation have gotten a lot of support in the twenty-first century. Personal identifying numbers (PINs) have been widely used for user authentication and security since the late 1990s. These days, we prefer to employ a different tactic because PIN codes are so easy to crack. For password verification, Morse code will be utilised, and digits will be depicted by slashes and dotted lines. This model presents a real-time application for gaze-based PIN entering together with an eye detection and tracking system for PIN identification utilising a smart camera.





Rohith M 1VA19IS067



Tanusha V 1VA19IS047



Sheetal Ps 1VA19IS047

Keywords: Morse-code, gaze-based authentication, PIN code, eye tracking.

TRAFFIC SIGN RECOGNITION WITH VOICE ALERTING SYSTEM USING CNN

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Traffic signs and signals are one of the most important parts of driving in day-to-day life. Having a proper knowledge of traffic sign and it is understanding is very important. Recognizing traffic signs when operating a vehicle is a crucial skill that can increase road safety by assisting drivers in recognizing traffic signs and preventing accidents. In this study, we propose a traffic sign detection and classification system that makes use of a convolutional neural network (CNN). The system has a voice alerting system as well, which notifies the driver audibly when a traffic sign is spotted. The proposed system also has a component where drivers of moving vehicles are informed of nearby traffic signs so they are aware of the laws they should observe. The proposed system's goal is to guarantee the driver, passengers, and pedestrians of the vehicle are all safe.

Keywords: Convolution Neural Network, GTSRB data set.





Diwakar Kumar Das 1VA19IS019



Raju 1VA19IS043

SMART ATTENDANCE SYSTEM USING FACIAL RECOGNITION

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The technology works by letting instructors choose the class session and sign in via a mobile application. The camera is then opened by the program, and when faces are spotted, they are automatically sent to the backend for analysis. The database's information is then compared to the faces that were discovered. The recognized faces are marked present, while others are marked absent, based on the matching results. The method enables for manual attendance rectification in the event of any mistakes.

Keywords: Facial Recognition Technology, Smart Attendance, Face Detection Algorithm, RetinaFace, Facenet.









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This project aims to provide a smart shopping basket is a system that utilizes object detection and load cell technology to provide an innovative and efficient shopping experience. The system is designed to automatically detect and track the products added to the basket using computer vision algorithms. Load cells are integrated into the basket to measure the weight of the products, allowing for accurate tracking of the quantity and cost of items purchased. The system can also display the bill and the total cost of items in GUI and enhances the shopping experience. By reducing the need for manual scanning and weighing of products, the smart shopping basket system can streamline the shopping process, increase efficiency, and improve customer satisfaction.

Keywords: Smart Shopping Basket, Product identification, Training, GUI, Integration





Divya H E 1VA19IS018



Vikas Muthyal M 1VA19IS060



1VA19IS061

FETAL BIRTH WEIGHT ESTIMATION AND PREDICTION OF FETAL ABNORMALITIES IN HIGH-RISK PREGNANCIES

Sumanth N, Sangeetha D V, Ayisha R, Sneha M R, Swathi C S Department of ISE, Sai Vidya Institute of Technology

Preterm low birth weight and birth pose a significant concern in prenatal care, as they can lead to adverse effects on the health of newborns, and in severe cases, even result in mortality, contributing to high infant mortality rates globally. Researchers have explored the potential of machine learning and the artificial intelligence techniques, to predict potential health issues that could arise during pregnancy, such as the risk of delivering an undersized fetus. The accurate identification of undersized fetuses is critical in prenatal care, as it can negatively impact the health of newborns and even lead to mortality. A study conducted on different machine learning techniques found that bagged tree model, a hybrid model, exhibited excellent accuracy and area under operating characteristic curve (0.849 and 0.636, respectively) in identifying undersized fetuses. Therefore, it's essential to predict potential fetal health problems early on. The use of machine learning and artificial intelligence algorithms, in particular, can forecast probable health problems during pregnancy and delivery. To maximize the likelihood of prompt intervention and lengthen the gestational period, which would improve infant health and lower rates of neonatal morbidity and mortality, early detection of fetal development issues is essential.



Sumanth N

1VA19IS051

Sangeetha D V 1VA19IS045

Sneha M R 1VA19IS049

Keywords: low birth weight undersized fetus neonatal morbidity gestational period infant health predictive model

DETAILED STUDY AND IMPLEMENTATION OF RSA ALGORITHM TO SECURE DATA IN CLOUD Sreelakshmi M, Shifa Tanzeem, Poorvika S, Mohammed Waseem Ulla, Santosh Y N Department of ISE, Sai Vidya Institute of Technology

Cloud computing is a rapidly growing technology that provides various benefits to users, including cost savings, scalability, and flexibility. However, the security of data stored in the cloud is a major concern for many users. In this paper, we propose a secure cloud data storage model that uses the RSA and Triple DES algorithms to encrypt and authenticate user data. The RSA algorithm is used for data encryption, while the Triple DES algorithm is used for user authentication to add an extra layer of security to the system. It ensures that the data is only delivered to the authorized user and not to any other user. The combination of RSA and Triple DES algorithms makes the proposed model secure against attacks and unauthorized access.

Keywords: Computing, Cloud security, Data Security, Encryption, Decryption, RSA Algorithm, Triple DES algorithm,One-time pad cipher.







Shifa Tanzeem 1VA19IS048





DETECTION OF ERRORS IN CRYPTOGRAPHIC DATA USING ARTIFICIAL INTELLIGENCE

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There has been a rise in the numbervof in recent years proposed attacks against various cryptographic systems, some of which involve injecting deliberate errors during the computation process. This emphasizes how crucial data security is to guarantee that only the intended recipient can access the data and that unauthorized modification or change is avoided. Different algorithms and methods have been developed to achieve this level of security, with the RSA algorithm being the most widely adopted public-key cryptosystem. However, hardware faults can be exploited to break cryptographic algorithms and retrieve the key, posing a significant security threat. This research intends to create a residue-based error detection technique that guards against such attacks in order to increase the protection of the RSA architecture. The scheme will analyze and detect errors and utilize AI techniques to evaluate and correct them, ensuring that information is in the expected format or area. This will enhance the safety of and reliability of cryptographic data, providing a robust defense against attacks.

Keywords: Cryptography, RSA algorithm, Cipher text, Encryption, Decryption, Data Security, Machine learning algorithm.



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Kamanakatta Ruthvik 1VA19IS025



N Darshan Raju 1VA19IS035

DETECTION OF SHIPS IN SATELLITE USING DEEP LEARNING TECHNIQUE

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Ship Detection is the basic need in maritime security; It may be used to look for lostships, commercial and also military ships. Though Automated Identification Systems exists in Ships, they can be manually disabled to avoid identification. Therefore, there is a need todevelop and automated ship detection system which can perform its task in real time and is alsocontrolled only by the authorized personal. The advancements in deep learning and publicly available remote sensing data when combined, give an effective solution to this problem. Different types of images, such as optical images, SARimages, and aerial photography images, are commonly employed to solve this problem. Though SAR images are the mostly commonly used, optical images can also be efficient.



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Keywords: Maritime security, Automated Identification, Deep learning, optical images, SAR images.

DEPARTMENT OF MECHANICAL ENGINEERING



DESIGN AND FABRICATION OF SOLAR DRYER FOR PRESERVING FRUITS & VEGETABLES

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The aim of this project is to design and develop a solar dryer that can effectively dry agricultural products using renewable energy sources. The solar dryer will be designed to take advantage of the abundant sunlight in order to reduce the dependence on traditional fuel sources like wood, coal, and diesel. The use of renewable energy sources like solar power will not only reduce the carbon footprint but also ensure that the drying process is more sustainable and cost-effective. The solar dryer will be designed to accommodate a wide range of agricultural products including fruits, vegetables, grains, and herbs. The dryer will consist of a chamber where the products will be placed for drying. The dryer will be made using locally available materials to ensure that it is affordable and accessible to farmers in developing countries. The solar dryer will offer several benefits to farmers. Firstly, it will reduce post-harvest losses by ensuring that products are dried quickly and efficiently. This will help to preserve the quality and nutritional value of the products. Secondly, it will provide an additional source of income for farmers by allowing them to sell their dried products at a higher price.



Sai Charan L Makam 1VA19ME012



Goutham Raju 1VA19ME005



Vignesh V 1VA19ME019



Keywords: Solar Dryer , Agriculture , Renewable energy, Drying, solar collector

DEVELOPMENT OF BASALT FIBRE REINFORCED POLYMER COMPOSITES WITH FILLERS FOR AUTO-SAFETY APPLICATIONS

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The characteristics of composite material are greatly influenced by the method of manufacturing composites. The conventional method that has been used such as Hand layup and Spray up are simple and easy to execute. Generally the safety equipments used are manufactured from glass fibres which are brittle in nature and less strength. When they are used in Auto-Safety applications the damage resistance is very less, as safety is the main Concern for human life, to overcome these disadvantages, Basalt fibre Reinforced PMC are used, Basalt fibre reinforced PMC finds widespread applications in civil construction field, Electrical field as well as in automotive field due to its several advantages like High wear Resistance, high strength-to-weight ratio and low cost. Because of the above said properties Auto-Safety equipments such as Helmets, Knee guards, Elbow guards and other safety equipments can be manufactured from Basalt fibre Reinforced PMC.

Keywords: Basalt fibre, Hand lay-up, Polymer Matrix Composite, Automotive field, high yield strength, Ductile Extension



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Rajesh S 1VA19ME010



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DEVELOPMENT AND ANALYSIS OF HYDRODYNAMIC JOURNAL BEARING

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The main objective of this study is to Design and develop copper alloy hydrodynamic journal Bearing and analyze the pressure distribution on hydrodynamic journal bearing under different lubricants for various loading conditions and various operating parameters. The space between the shaft and the bearing is filled with different lubricants. Journal bearing test rig is used to test the 115 mm diameter and 55 mm long bearing. Test bearing is located between two antifriction bearings and loaded mechanically. At first the bearing is tested in Journal bearing test rig under SAE40 of various load conditions such as 450N and 750N and speed ranges such as 1000 rpm and 2000 rpm and the pressure distribution results were observed and recorded. The pressure distribution over the contact surfaces is a crucial component of bearing design. A pressurised lubrication layer is created between the rotating and stationary surfaces by a bearing type known as a hydrodynamic bearing. The lubricant is often a liquid that is pushed into the contact area by the relative motion of the surfaces, such as oil or water. The shape of the bearing, speed, and lubricant viscosity all affect the pressure distribution in hydrodynamic bearings.



Mahanthesh S 1VA19ME007



Polmin Jose 1VA19ME009



Sharib Ahmad Khan 1VA19ME014

Keywords: Journal Bearing, SAE40

DEVELOPMENT OF MINIATURE SUBMARINE FOR INSPECTION AND MAINTENANCE OF AQUATIC LIFE IN SMALL SCALE FISHERIES & POOLS

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Nowadays, underwater monitoring can be carried out with RC (radio control) submarines. The project's cost will be minimized while making use of readily available components. The controller system and watertightness are the primary components of the RC submarine. The significant parts in the controller circuit are ESC and radio control module and propeller motor. The surface unit is controlled by a servo motor for direction control. The ballast tank is made using Syringe pipes, cylinder type and round shape. The hard part of this project is creating a control system for the ballast system. The circuit is delicate and prone to failure. The submarine can be controlled by a remote controller, and the onboard action camera can broadcast underwater footage. The waterways in our nation are plagued by a major issue. The drowning of a boat or other watercraft results in a significant number of fatalities. Hence, a submarine is intended to take care of this issue and see underwater fisheries rather than a man researching it.





K P Lalith Ranjan 1VA19ME006



Chandan G 1VA19ME002





SOLAR POWERED VACUUM AND FLOOR CLEANER ROBOT1

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Cleaning is a basic need for all human beings and it is unavoidable daily routine process. In recent years a greater number of devices are introduced for the purpose of collecting the leaves and debris from the ground or floor. In these, people are facing difficulties such as size of the disposable bag, noise produced by the device, safety precaution when it is operated by current etc. The conventional road cleaning machine is most widely used in colleges, hospitals, houses, auditorium, shops, bus stands and public place etc. also, this machine needs electrical energy for its operation. It is not user friendly as well as ecofriendly. In summer time there is power crisis and most of the roads cleaning machines are not used effectively due to this problem particularly. The purpose of this project is to design and create a floor and road cleaning machine for colleges, hospitals, auditoriums, and workshops. In our project we are using both solar energy and power supply to Charge the machine, so that it is functional as well as eco-friendly by keeping cost of the project as low as possible. It is one of the better alternatives for most of the machines which are available in market for the purpose of cleaning leaves and debris. It is very easy and safe to use. Anyone can operate this Floor Cleaner without any prior training of any sorts.

Keywords: Ultrasonic Sensor, Node MCU ESP8266 Module, L298N Motor Driver IC, OLED Display, Lead Acid



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Tejas K V 1VA19ME018



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Raieswar B

1VA19ME001

Harish R

1VA19ME012

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DEVELOPMENT OF LOW- COST COMPOSITE BRICKS USING RECYCLED PLASTICS Rajeswar B, Harish R, Bhaskar S, Dr. Raghavendra S

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The main objective of this study is to reduce the use of plastic ,Plastic is a non-biodegradable substance which takes thousands of years to decompose that creates land as well as water pollution to the environment. The quantity of plastic waste in Municipal Solid Waste (MSW) is expanding rapidly. It is estimated that the rate of usage is double for every 10 years. The Plastic usage is large in consumption and one of the largest plastic wastes is polyethylene (PE). The utilization of earth-based clay material resulted in resource depletion and environmental degradation One such effort is the efficient use of waste plastic and laterite quarry waste with a small quantity of bitumen, to develop an alternative building material such as bricks with negligible water absorption and satisfactory strength in comparison with Laterite stone to satisfy the increasing demand of conventional building materials. Further research based on recent research and a better understanding in utilization of plastic waste in brick is needed to produce a high durability and quality of bricks as well as to achieve the optimum balance in all aspects especially in terms of cost and functionality.



DEVELOPMENT AND FABRICATION OF MULTIPURPOSE HYBRID CHAFF CUTTER USING SOLAR PANELS FOR AGRICULTURAL APPLICATIONS

Pavan Joshi, Mahendra Varma D S, Hrishikesh Sanjeev Mirji, Hari Roopesh S R, **Vijaya B** Department of Mechanical Engineering, Sai Vidya Institute of Technology

The main objective of this study is to reduce the use of plastic ,Plastic is a non-biodegradable substance which takes thousands of years to decompose that creates land as well as water pollution to the environment. The quantity of plastic waste in Municipal Solid Waste (MSW) is expanding rapidly. It is estimated that the rate of usage is double for every 10 years. The Plastic usage is large in consumption and one of the largest plastic wastes is polyethylene (PE). The utilization of earth-based clay material resulted in resource depletion and environmental degradation One such effort is the efficient use of waste plastic and laterite quarry waste with a small quantity of bitumen, to develop an alternative building material such as bricks with negligible water absorption and satisfactory strength in comparison with Laterite stone to satisfy the increasing demand of conventional building materials. Utilizing MPW as construction materials especially in production of bricks is one of a promising step towards a sustainable resources and waste management. Plastic waste can substitute either partially or completely one or more of the materials in brick production. Further research based on recent research and a better understanding in utilization of plastic waste in brick is needed to produce a high durability and quality of bricks as well as to achieve the optimum balance in all aspects especially in terms of cost and functionality.

Keywords: Non-Bio-Degradable, Plastic Usage, Construction, Industries, Utilization, Plastic Waste.



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DEPARTMENT OF CIVIL ENGINEERING



SMART ELECTRIC FENCING SYSTEM FOR PROTECTION OF CROPS Suhasgowda A P, Ajay U, Shashidhar K N, Pawan Kumar S D, Dr. M B Ananthayya

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Crops in farms are many times ravaged by local animals like buffaloes, cows, goats, birds etc. This leads to huge losses for the farmers. It is not possible for farmers to barricade entire fields or stay on field 24 hours and guard it. So here we pro- pose automatic crop protection system from animals. This is a microcontroller based system using PIC family microcontroller. This system uses a motion sensor to detect wild animals approaching near the field. In such a case the sensor signals the microcontroller to take action. The microcontroller now sounds an alarm to keep the animals away from the field. As the sensor detects the unknown entry it will make sound so that the owner will able to know about the entry so that he can take action regarding it. When an animal or person comes into contact with the fence, the electrical charge delivers a shock that deters them from crossing the boundary. Electric fencing systems are commonly used in agricultural and livestock settings to contain animals and protect crops, but they can also be used for perimeter security in residential and commercial applications.

Keywords: Crops, Sensors, microcontroller, insulators, agriculture



Suhasgowda A P 1VA19CV019



1VA19CV001



Shashidhar K N 1VA19CV017



Pavan Kumar S D 1VA19CV013

ADVANCED MINOR FLOOD MONITORING DISCHARGE CHANNEL

S Akash, Ajay U, Deekshitha R, Madhu B Gowda, Prajwal Gowda, **Gowtham B** Department of Civil Engineering, Sai Vidya Institute of Technology

The project aims to protect the city from floods during heavy rainfall. It makes use of the data in order to identify the location and potential impacts of floods can have on people, property and natural environment. Thus, reducing the damages caused to the people, property and the environment. This study is focused on the prospect that climate change may contribute to increase flooding resulting from rising sea levels and heavy rains in certain regions of the planet. This study gives the scope because floods are among the most frequent natural disasters that cause greater economic losses and difficulties to human activities. In the current investigation an advanced minor flood monitoring discharge channel Model is developed in such a way that, the flood gates were operated automatically by the use of soil moisture sensor module & ultrasonic sensor module by detecting the total amount of water in the underground tank, when the tank crosses threshold limit, automatically the pumps starts to pump out the water from the underground tank to the nearby lakes. Also this idea can be effectively implemented to store water also.

Keywords: Flood, Channel, Pump, Infrastructure, Disaster



S Akash 1VA19CV015



Deekshitha R 1VA19CV004



Madhu B Gowda



AN ADVANCE ALARMING SYSTEM FOR FOG COVERED ROAD NETWORK IN HILLY AREAS TO IDENTIFY BREAKDOWN VEHICLES

Aklesh Kumar Sah, Suresh Raj Sharma, Prajwal R, Chethan H S, **Gowtham B** Department of Civil Engineering, Sai Vidya Institute of Technology

In this study an attempt is made for the safety risk for low visibility on roadways. Rough weather or smog causes fog/smoke, rain & high winds also affect every visible road by disturbing visibility conditions, driver's behavior, visibility distance etc. Visibility is weak for the driver and reduction in visibility due to weather conditions such as rainfall is an advanced factor that affects road accidents. An experimental prospect of visibility and understanding vehicle's responses, when the visibility falls below the range of driver's visibility conditions. According to this, to improve road safety under low visibility conditions it is necessary to improve driver's mental & physical behavior under such unfavorable conditions. Hence, in this project we thoroughly analyzed factors affecting accidents in low visibility conditions and developed a model in such a way that warning messages displayed by buzzer and LED light will glow during bad visibility conditions by identifying breakdown vehicles and any obstruction on the road.



Aklesh Kumar Sah 1VA19CV002



Suresh Raj Sharma 1VA19CV020



Prajwal R 1VA19CV014



Chethan H S 1VA19CV003

Keywords: Roadways, Visibility, Rainfall, Fog, Buzzer

ADVANCED ALARAMING SYSTEM ON ROAD NETWORK TO INDICATE HYDROPLANING CONDITION

Kungappagari G Gowtham, Adhithya K, Sahana S Gooru, Prajwal Halappa R, **Gowtham B** Department of Civil Engineering, Sai Vidya Institute of Technology

India is the country which observes drought, famine and flood in the same year because of the drastic changes in the climatic and weather conditions. The floods are common in the rural and urban areas in the Indian sub-continent. Urban flood is mainly happening in the Cities other than town and other urban places. Flooding leads to Hydroplaning, which occurs when tyre encounters more water on than it scatters. Water pressure in the front of the wheels pushes water under the tire and the tier is then separated from the road surfaces by a thin film of water and loses traction this result in loss of steering, breaking and power control. Hence in this project an attempt is made to develop a model in such a way that, travelling of vehicles will be avoided by displaying a message to the road users during hydroplaning conditions on the road. The model is fabricated by using moisture sensors, ESP 32 etc., The model is well fabricated & whenever water limit crosses the threshold height, automatically a warning LED has been displayed regarding Hydroplaning condition on the road.

Keywords: Weather, Flood, Drainage, Rainfall, Drought, Sensors.



Kungappagari G Gowtham 1VA20CV400



1VA18CV003



Sahana S Gooru 1VA18CV033



Prajwal Halappa R 1VA18CV027

ECO-FRIENDLY POST OPERATIONAL TREATMENT OF SANITARY NAPKIN'S

Shashank B N, Jnanesh Shetty, Pannaga M M, Harsha G, Gowtham B Department of Civil Engineering, Sai Vidya Institute of Technology

Disposing sanitary pads is a big issue all over the world. Hence, in this project an attempt is made to develop Eco Friendly model which can dispose the non-biodegradable sanitary pads and its by-products like plastic remains and organic ash which can be used for further processes. The working of model comprises, an Incinerator to dispose sanitary pads. For assembling this model, two spherical shaped earthen wares of a specific volume were taken & both the earthen wares were placed one above the other. The upper container is the burning disposal chamber while the lower one is the collection chamber. An ash tray was placed for collecting the organic ash. Results shown that we can treat sanitary pads in an effective way by adopting above stated method with less cost & without harming environment.

Keywords: Incinerator, Ash, Disposal, Sanitary pads, Earthenware.



Jnanesh Shetty 1VA19CV007





Harsha G 1VA18CV042

DESIGN AND FABRICATION OF ADVANCED AUTOMATED PARKING SYSTEM FOR TRAFFIC CONGESTED AREA WITH REALTIME DATA ANALYSIS THROUGH APP

K R Vaishnavi, Mohammad Uzair Kakroo, Sheikh Shariq Shahzaib, Seerat Altaf Beigh, **Gowtham B** Department of Civil Engineering, Sai Vidya Institute of Technology

One of the most common problems today is a saturation of parking spaces. Vehicles continue to outnumber existing parking spaces, thus clogging roads. Incidences of violence over occupancy, deformed cars due to a space crunch, and overcharging for parking are some problems that result. We have come up with an idea of creating an Advance parking system, which is a Sensor based parking. In this study, we use real time data analysis of an area & same will be simulated in the Blynk IOT app. When the sensor comes in contact with Magnetic field, the sensor sense the magnetic field and gives output in the App stating occupancy of the parking space. Therefore, when a car or a vehicle try to park in an empty parking area, as the vehicles have magnet, the sensor detects the magnet and gives output in App as "Parking not Available". If there is no vehicle parked in parking area, the sensor detects no magnetic field and gives as "Parking Available" information in the app. Even though the main agenda of this project is to get real time parking data analysis, indirectly we are promoting public to use public transport service.



Seerat Altaf Beigh 1VA20CV401

Keywords: Space Crunch, parking system, Magnetic field, Security, public vehicle.

PLASTIC WASTE BRICKS

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Plastic waste which is increasing day by day becomes eyesore and in turn pollutes the environment, especially in villages where no garbage collection system exists. It takes hundreds of years for petro-chemical based compounds to decompose. The process of dumping plastic waste is a huge problem and also harmful to the environment. Plastic products are one of the major sources of pollution for land and water. Dumping of plastic waste is a critical problem. To overcome these effects, the plastic waste is used in bricks produce construction materials. In the present work the crushed plastic waste is used in bricks production. To evaluate different physical and mechanical properties, tests like water absorption test, transverse resistance test, impact resistance test and abrasion resistance test as per IS specifications on the plastic bricks and to compare these results with the normal cement bricks. As per this study it can be considered to use plastic waste as a building material in the manufacture of bricks. This can be one of the solutions to reduce plastic waste which is dumped in the landfills and to protect the environment from pollution. As per the tests conducted the average compressive strength of bricks is found to be 41N/mm².

Keywords: Brick, Plastic, environment, construction, strength.



Kuncham prasad 1VA18CV015





Divya R S 1VA19CV005



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