VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"SMART POLYHOUSE IRRIGATION MANAGEMENT SYSTEM"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

AKSHAY KUMAR H	**4AL21EC005**
CHIRANJEEVI U B	**4AL21EC021**
PRAJWAL S DAS	**4AL21EC062**
JEEVAN K G	**4AL21EC035**

Under the Guidance of
Mr. SUDHAKARA H M
Associate Professor
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Mini Project Guide
Mr.Sudhakara H M

Mini Project Coordinator
Dr. Ganesh V N

HOD
Dr.Duttathreya

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ABSTRACT

The project focuses on the development of an intelligent irrigation management system for a smart polyhouse using Arduino. The system integrates a soil moisture sensor, a relay module, and a 12V DC water pump to automate the watering process based on real-time soil moisture levels. The soil moisture sensor continuously monitors the soil's moisture content and sends the data to the Arduino. When the moisture level drops below a predefined threshold, the Arduino activates the relay to turn on the water pump, providing irrigation to the plants. This automated process ensures optimal soil moisture, promoting healthy plant growth while conserving water.

Furthermore, the project incorporates a comprehensive database of various plants, detailing their specific water and fertilizer requirements. This database is accessible via a web interface, allowing users to customize the irrigation settings for different plants in the polyhouse. By leveraging real-time sensor data and plant-specific requirements, the system enhances the efficiency of water usage and improves crop yield.

The project aims to reduce manual labor, minimize water wastage, and ensure the optimal growth of plants in a controlled polyhouse environment. The implementation of this smart irrigation system demonstrates a practical application of IoT (Internet of Things) in agriculture, showcasing how technology can contribute to sustainable farming practices.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"Coffee Vending Machine"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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Abstract

Coffee vending machines provide a practical solution for delivering high-quality beverages efficiently across various environments. These machines are designed to offer a range of drinks, including coffee, tea, and hot chocolate, ensuring that users have quick and convenient access to their preferred beverages at any time of day.

The primary advantage of coffee vending machines lies in their convenience and 24/7 availability, making them ideal for high-traffic locations such as offices, hospitals, and public transportation hubs. They reduce the need for staff and operational overhead, offering a cost-effective alternative to traditional coffee services.

Modern coffee vending machines are engineered to deliver consistent quality and taste, with options for customization to suit individual preferences. This reliability enhances user satisfaction and provides a dependable coffee experience.

The machines are also designed for minimal maintenance and ease of use, ensuring that they remain functional with little downtime. Their ability to generate revenue through beverage sales further underscores their economic benefits.

In summary, coffee vending machines offer a blend of efficiency, cost-effectiveness, and convenience, making them a valuable asset in settings where quality coffee anduser accessibility are essential.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"REMOTE CONTROLLED UGAV FOR WASTE DISPOSAL"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ELECTRONICS & COMMUNICATION ENGINEERING

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Basangouda Patil	**4AL21EC010**
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ABSTRACT

We have seen much advancement in unmanned aerial systems, and even in unmanned ground vehicles. Nowadays they are used for various purposes that may be military, or may be in space Research. We have seen concepts of all terrain drones, similarly this project is mainly about developing an unmanned ground and aerial vehicle with vacuum cleaner set-up, Currently, various robotic vacuum cleaners have been presented; however, they have focused on ground cleaning but when comes to the matter of stairs where current vacuum cleaner robots fail to fly over the stairs so we have come up with an idea to solve this problem by integrating vacuum cleaner set-up to Unmanned ground and aerial vehicle(UGAV) set- up.

We have developed a robot with Flying (Drone), Driving (Rover) and Sucking (Vacuum cleaner) applications and to control the activities through remote from distant places. The vehicle design can help users beyond a drone and rover since it is both integrated it can used to fly when required and can run over terrains as well, this lets the system save energy this lets system use energy effectively over long timeand the proper observation and proper task can be carried out using this vehicle. And as add on advantage we have implemented vacuum cleaner setup to our UGAV vehicle. This new setup helps individual in such a way that while moving on the floor it collects the dust and stores in a dust collecting box and it can fly to the place where dust should be disposed off.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"Bluetooth Controlled Car With Arduino"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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Professor
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Abstract

A remote-controlled vehicle is any mobile machine controlled by means that are physically not connected with the origin external to the machine.

In this project, we make use of Bluetooth technology to control our machine car. We do not call this a robot as this device does not have any sensors. Thereby, senseless robots are machines. The project aims are to design a Bluetooth control Arduino car and write a program into the Arduino microprocessor. Arduino car contains an Arduino microcontroller with basic mobility features. In this project, we make use of Bluetooth technology to control our machine car.

After doing this only we can say that we have been able to create as per our goal described. The device can be controlled by any smart device with android. The major reason for using a Bluetooth-based tech is that we can change the remote anytime – mobile phones, tablets, and laptops and physical barriers like walls or doors do not affect the car controls.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"Voice Controlled Robot"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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ABSTRACT

Voice signal plays a major role in the communication among human beings. Robots reduce the human efforts in their day-to-day tasks. In this project, a voice-controlled robot is developed. The human voice commands are taken by the robot through an android application with a micro controller. The voice signal commands are directly communicated to the robot using Bluetooth.

The robotic vehicle is controlled by voice commands received from the user. The development of the robotic vehicle is carried out using two DC gear motors associated with micro-controller at the collector side. The commands from the application are changed over in to computerized signals by the Bluetooth RF transmitter for a fitting reach (around 100 meters) to the robot.

At the receiver end the information gets decoded by the receiver and is taken care of to the micro-controller which drives the DC motors for the fundamental work. The voice-controlled robot is designed and implemented to reach out the necessary undertaking by paying attention to the commands of the user.

An earlier preliminary meeting is required for the smooth activity of the robot by the user. A code is utilized for offering guidance to the user. Performance valuation is carried out with appreciable results of the initial experiments.

Keywords: Robot, Plan, Voice control, Micro controller, Bluetooth,
Computerization and Performance.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"ADVANCE HEALTHCARE MANAGEMENT SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

With the exponential growth in various technologies today, IOT is one of major domains which has found a broad spectrum of applications. The aim is to increase the quality of health care facilities with the help of IOT. The requirement of proper health care facilities in rural areas are yet to be covered. This abstract introduces a novel approach for providing the proper health care facilities to the people in the rural areas where there is unavailability of doctors. The system also helps in improving the quality of life of the people in rural areas. Various sensors like ECG senor, temperature sensors, heartbeat sensors and others collects the vital data from the patient and stores in the IOT cloud, and these data is used is made available to the doctors.

The web page using front end and back end technologies is developed for patient easy interface. The patient will connect to a remote doctor through video call. The video call link, patient's collected real time vital data and prescription form will be sent to all registered doctors so that any doctor who is free can join the video conference and assist the patient. After discussion with patient the doctor will fill the prescription form will be filled and the prescription will be made available to patient. This reduces expenses of long distance travel to seek medications. This implementation not only promotes the growth of the health care facility in the country but also utilizes the best of the IOT applications for the welfare of the society.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

AUTOMATED BASKET SYSTEM

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

In today's fast-paced retail environment, efficiency and convenience are paramount for both consumers and retailers. This paper presents an innovative automated basket system designed to streamline the shopping experience by automatically scanning products as they are placed in the basket. The system utilizes advanced RFID (Radio Frequency Identification) technology and smart sensors integrated into the basket to detect and identify each item instantly. Upon placing a product into the basket, the system automatically records the item details, including product name, price, and quantity, in real-time, eliminating the need for manual scanning at checkout. This solution not only reduces time spent in lines but also minimizes human errors and enhances overall customer satisfaction. The proposed system can be easily integrated into existing retail environments and is scalable, catering to stores of varying sizes. This automated approach to product scanning aims to revolutionize the retail industry by providing a seamless, user-friendly, and efficient shopping experience.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"GENERATION OF ELECTRICITY USING WASTE"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ELECTRONICS & COMMUNICATION ENGINEERING

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ABSTRACT

This project focuses on generating electricity from solid waste, addressing the critical issues of energy demand and waste management. It investigates various methods, including incineration, anaerobic digestion, and landfill gas recovery, to convert solid waste into electrical energy. Through comprehensive efficiency analysis, environmental impact assessments, and economic viability studies, the project demonstrates the effectiveness of these waste-to-energy technologies in producing renewable energy. The integration of these systems into urban infrastructure promotes a circular economy. The findings suggest that with appropriate policies and investments, solid waste-to-energy solutions are sustainable, economically viable, and contribute significantly to energy security and environmental conservation.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"Farm to Table: Automating Fruit Yield and Sales Using ESP32-CAM and Telegram Bot"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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ABSTRACT

This project, "Farm to Table: Automating Fruit Yield and Sales," aims to improve direct-to-consumer sales and streamline agricultural procedures. Utilizing Telegram Bot and ESP32-CAM," makes use of contemporary IoT and communication technology to build an effective, automated system for tracking fruit harvests and enabling their sale. This project combines a Telegram Bot with the inexpensive ESP32-CAM microcontroller, which has built-in camera capabilities, to provide farmers with a complete solution for managing and selling their produce directly to consumers. The system's goal is to take pictures of the fruit production in real time, which are then processed to determine how much and what kind of produce is produced. At predetermined intervals, the ESP32-CAM takes these pictures, which it then transmits to a cloud server where image processing software examines the information. Additionally, it enables farmers to handle orders, keep track of inventories, and get in touch with purchasers directly. The system seeks to decrease waste, cut labor expenses, and guarantee that fresh fruit is delivered to customers on time by automating these procedures. This project has the potential to significantly change traditional agricultural practices by providing small- to medium-sized farmers with direct access to larger markets, negating the need for middlemen. By lowering the time and costs associated with manual monitoring and sales activities, the integration of IoT and communication technologies not only improves operational efficiency but also advances sustainable farming practices.

Key Words: Agriculture, Direct Sales, Image Processing, ESP-32 CAM, Telegram bot, IoT and sustainable.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"ASSISTIVE DEVICES FOR HEARING IMPAIRED"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

There are so many disabilities faced by the people and one of them is deafness.For the silent community, sign language is the only means of communication.Sign language is unfamiliar to a large number of people. This project aims to help the deaf community during emergency situations to ask for the help.We address the issue by putting into practice a methodology that will aid in closing the communication gap that exists between the deaf and the general public.As a result, we propose a speech aid that will enable silent persons to communicate with non-mute individuals by using hand gestures.Flex sensors, whose resistance value varies in response to the user's chosen gestures, are integrated into speaking systems. The Arduino UNO microprocessor processes the gesture data, and the appropriate text is shown in the output. Here, a Bluetooth module is also used and this sends the message to the mobile phones.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

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Mini Project Report

On

"Smartphone Control RGB Scrolling Text Display LED Matrix"

A report submitted in partial fulfillment of the requirements for

MINI PROJECT (21ECMP67)

In

Electronics And Communication Engineering

Submitted by

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY MIJAR,

(Unit of Alva's Education Foundation ®, Moodbidri)

Affiliated to Visvesvaraya Technological University, Belagavi,

Approved by AICTE, New Delhi, Recognized by Government of Karnataka.

Accredited by NACC with A+ Grade

Shobavana Campus, Mijar, Moodbidri, D.K., Karnataka

2023 – 2024

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY
MIJAR, MOODBIDRI, D.K. -574225

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINERRING

CERTIFICATE

This is to certify that the Project entitled **"Smartphone Control RGB Scrolling Text Display LED Matrix"** has been successfully completed by

BHASKAR T	4AL21EC014
KISHOR U	4AL21EC041
LAKSHMI KEERTHANA B	4AL21EC043
MAHANTESH S T	4AL21EC046

The Bonafide students of the Department of Electronics and Communication Engineering, Alva's Institute of Engineering and Technology of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2023–2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The Project report has been approved as it satisfies the academic requirements in respect of the Project work prescribed for the Bachelor of Engineering Degree.

Siddesh
Dr. Siddesh G K
Mini Project Guide

Dr. Ganesh V N
Mini Project Coordinator

Dr. Dattathreya
HOD, Dept. of ECE

H. O. D.
Dept. Of Electronics & Communicatn
Alva's Institute of Engg. & Technolo
Mijar, MOODBIDRI - 574 225

ABSTRACT

This project presents a novel approach to displaying messages using a LED scrolling display controlled by an Android phone via Bluetooth technology. The system consists of two main components: a message transmission section using an Android phone and a reception and displaying section using an AVR microcontroller, Bluetooth receiver, and a LED display. The Android phone is used to transmit text messages to the LED display using an APK application, which sends the message to the Bluetooth receiver connected to the AVR microcontroller. The microcontroller then displays the message on the LED display using a scrolling technique.

The LED display is a 3-color matrix display consisting of 16 rows and 32 columns, capable of displaying alphanumeric characters and symbols. The system uses a P10 LED module, Bluetooth module, and an AVR microcontroller as the main components. The project aims to provide a cost-effective and efficient way of displaying messages, particularly in advertising and public information systems. The use of Bluetooth technology allows for wireless communication between the Android phone and the LED display, making it easy to update messages remotely.The system has several advantages, including low power consumption, long lifespan, and high brightness. The LED display is also environmentally friendly and energy-efficient. The project has a wide range of applications, including advertising, public information systems, and transportation systems.

Overall, this project demonstrates a innovative approach to displaying messages using LED technology and Bluetooth communication. The system is cost-effective, efficient, and environmentally friendly, making it a viable solution for various applications.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"AI-DRIVEN IC VALIDATOR"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

GOWTHAM MA	**4AL21EC029**
KIRAN KASHYAP M	**4AL21EC040**
LAKSHAN	**4AL21EC042**
LEKHAN T	**4AL21EC044**

Under the Guidance of
Dr. GANESH VN
Associate Professor
Department Of Electronics & Communication Engineering

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2023-2024

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CERTIFICATE

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has submitted Project synopsis on **"AI-DRIVEN IC VALIDATOR"** for VI Semester B.E. in Electronics & Communication Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mini Project Guide
Dr. Ganesh V N

Mini Project Coordinator
Dr. Ganesh V N

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Dr. Dattathreya

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Dept. Of Electronics & Commun
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Mijar, MOODBIDRI - 574 22

ABSTRACT

This project presents the development of an AI-driven system for the automated identification and validation of integrated circuits (ICs), designed to enhance educational experiences in electronics laboratories. The system integrates a Raspberry camera within a controlled dark chamber, coupled with a focused light source to capture high-quality images of ICs. These images are processed using the Gemini Pro AI model, which accurately identifies the ICs and retrieves detailed information, including their names, characteristics, and applications. A speech output module further enhances accessibility by providing audible results.

The primary objectives of the project were to create a user-friendly setup for automated IC validation, reduce manual errors, and improve the learning experience for students. Through rigorous system testing and optimization, the project demonstrated significant improvements in accuracy and efficiency. The system's implementation has been shown to streamline laboratory exercises, enabling students to engage more deeply with practical aspects of electronics.

Challenges encountered during development, including technical limitations and integration issues, were addressed through iterative refinement. The project's success highlights its potential impact on educational settings, providing a reliable and interactive tool that enhances both teaching and learning processes. Future work will focus on expanding the IC database and exploring advanced AI models to further improve the system's capabilities and applicability.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"Fire Detection And Suppression"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

Sandeep M	**4AL21EC045**
Rakesh	**4AL21EC065**
Vishal	**4AL21EC0111**

Under the Guidance of
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Professor
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE

This is to certify that the following students,

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Siddesh 12.8.24

Mini Project Guide — **Dr SIDDESH G K**

Mini Project Coordinator — **Dr Ganesh V N**

HOD — **Dr Dattathreya**

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Dept. Of Electronics & Communication
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ABSTRACT

Fire detection and suppression systems are crucial for safeguarding lives, property, and environments from the devastating impacts of fire. This paper provides a comprehensive review of current technologies and methodologies employed in fire detection and suppression, highlighting advancements, challenges, and future directions. Fire detection systems, including smoke, heat, and flame detectors, are examined for their effectiveness in early fire identification and alarm generation.

The study also covers suppression techniques, such as water-based systems, chemical agents, and emerging technologies like aerosol and foam suppression. Emphasis is placed on integrating these systems into smart building infrastructure and the role of data analytics and artificial intelligence in enhancing their efficiency and responsiveness.

The work identifies key issues such as false alarm reduction, system maintenance, and the adaptation of suppression methods for various environments. By synthesizing recent advancements and proposing future research avenues, this study aims to contribute to the development of more reliable and adaptive fire safety solutions.

This work provides an overview of fire detection and suppression systems, crucial components for safeguarding lives and property. It explores various types of detectors (smoke, heat, flame, and combination) and suppression systems (water-based, foam, dry chemical, gas-based, and wet chemical).

The significance of early fire detection and rapid suppression in preventing loss of life, property damage, and business disruption is emphasized. The paper also highlights the importance of system selection based on building type, occupancy, fire hazards, and regulatory compliance.

Advanced technologies, such as intelligent detection systems and clean agent suppression, are briefly discussed. Regular inspection and maintenance are underscored as essential for system effectiveness.

This work provides a comprehensive analysis of fire detection and suppression systems, essential components for safeguarding lives and property. It explores the evolution of these systems, encompassing traditional technologies to cutting-edge advancements in artificial intelligence and IoT. The study delves into the application of fire safety measures across various environments, including high-rise buildings, healthcare facilities, and industrial complexes.

Human factors, environmental considerations, and economic implications are also examined. By incorporating case studies and regulatory analysis, this research offers a holistic perspective on fire safety strategies.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"PREPAID ENERGY METER AND BILL GENERATOR"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

MUHAMMAD RAZI	**4AL21EC052**
MOHAMMA IQBAL	**4AL21EC051**
HEMANTH R	**4AL21EC031**

Under the Guidance of
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Mini Project Guide	Mini Project Coordinator	HOD
Dr. [illegible] Napolean	**Dr. Ganesh V N**	**Dr.Duttathreya**

H. O. D.
Dept. of Electronics & Comm
Alva's Institute of Engg. & Te
Mijar, MOODBIDRI - 574

ABSTRACT

The prepaid energy meter and bill generator project aims to develop a system using GSM and Arduino technology to provide consumers with real-time monitoring and control of electricity usage. The system measures energy consumption, allows for prepaid recharges via SMS, and sends low-balance warnings to ensure uninterrupted service. This project addresses the challenges of traditional postpaid billing, such as delayed payments and billing disputes, by offering a transparent, efficient, and user-friendly solution. The system's successful implementation demonstrates its potential to enhance energy management and reduce operational burdens on utility companies.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"SMART PARK ASSIST"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

JEEVAN V	**4AL21EC036**
NAGABHUSHAN H K	**4AL21EC053**
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Mini Project Guide	Mini Project Coordinator	HOD
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Dept. Of Electronics & Communica
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ABSTRACT

The rapid urbanization and increase in vehicle ownership have led to significant challenges in efficient car parking management. The "Smart Park Assist" project aims to address these challenges by developing a cost-effective, automated car parking solution. Utilizing Arduino microcontrollers, sensors, and actuators, the system is designed to manage parking space utilization effectively, reduce human intervention, and enhance user convenience. The project demonstrates the integration of hardware and software components to create a reliable and scalable parking management system. Additionally, it incorporates real-time data processing and communication to provide instant feedback to users, ensuring a seamless parking experience. The system's modular design allows for easy adaptation and expansion to accommodate various parking lot sizes and configurations. Ultimately, "Smart Park Assist" aims to contribute to smarter cities by optimizing parking operations and reducing traffic congestion.

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"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"MULTFUNCTIONAL ROBOT FOR SPECIALLY ABLED"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

VAISHNAVI VITHAL NAIK	**4AL21EC105**
SHRAVYA SHETTY	**4AL21EC080**
NIVEDITA T PATIL	**4AL21EC056**

Under the Guidance of
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Mini Project Guide	Mini Project Coordinator	HOD
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ABSTRACT

The development of a multifunctional robotic device designed to aid disabled individuals, which can be seamlessly transformed into a chair or a bed and can lift the individual, represents a significant advancement in assistive technology. By employing a versatile mechanical structure and user-friendly controls, the device can transition smoothly between its various configurations, providing support for sitting, reclining, lying down, and moving around. The innovative design aims to reduce the physical strain on caregivers and improve the quality of life for users by offering a practical, all-in-one solution for everyday activities and rest. Additionally, the device incorporates safety features such as secure locking mechanisms and adjustable speed settings to ensure the user's comfort and security. It also includes customizable options, allowing users to adjust the device's height and position according to their specific needs. Overall, this multifunctional robotic device is designed to empower individuals with disabilities by enhancing their independence and mobility.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"IOT-BASED ARECA NUT DRYER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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Senior Assistant Professor
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Mini Project Guide	Mini Project Coordinator	HOD
Dr. Guruprasad B	**Dr. Ganesh V N**	**Dr. Duttathreya**

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ABSTRACT

This project presents the development of an advanced and sustainable areca nut drying system using Internet of Things (IoT) technology. The system aims to enhance the drying process of areca nuts by integrating several components to ensure optimal drying conditions, improve quality, and reduce energy consumption.

The core of the system is a custom-designed steel drying chamber that accommodates the areca nuts during the drying process. Heaters are strategically installed on both sides of the chamber to provide consistent heat. The drying temperature is precisely controlled using an Arduino Uno-based thermostat. This setup ensures that the drying conditions are maintained within the optimal range for areca nut processing. A unique feature of the system is the inclusion of a scissor lifter at the base of the chamber. The lifter can raise the base, allowing the chamber's roof to open and expose the nuts to natural sunlight. This solar exposure is utilized to complement the electric heating, thereby reducing the overall energy consumption. By harnessing solar energy, the system not only cuts down on electricity use but also contributes to environmental sustainability. The system's integrationof solar power addresses multiple benefits: it enhances drying efficiency by utilizing both electric and solar heat sources, and it protects the nuts from adverse weather conditions, such as rain and dust, as well as from insect contamination. Additionally, the use of a scissor lifter ensures that the nuts are evenly exposed to sunlight, further improving drying uniformity.

Overall, this project demonstrates a significant advancement in areca nut drying technology by combining traditional heating methods with modern IoT solutions and renewable energy sources. The result is a more efficient, cost-effective, and environmentally friendly drying process that aligns with contemporary demands for sustainability and resource conservation.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"Audio Equalizer / Tone Control Circuit with Bass, Treble and MID Frequency Control using Op-Amp"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

Prajwal Malabagi	**4AL21EC061**
Saikumar	**4AL21EC071**
Santhosha S	**4AL21EC074**
Shashank C Soppannavar	**4AL21EC076**

Under the Guidance of
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Sr. Assistant Professor
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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Saikumar	**4AL21EC071**
Santhosha S	**4AL21EC074**
Shashank C Soppannavar	**4AL21EC076**

has submitted Project synopsis on **"Audio Equalizer / Tone Control Circuit with Bass, Treble and MID Frequency Control using Op-Amp"** for VI Semester B.E. in Electronics & Communication Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mini Project Guide	Mini Project Coordinator	HOD
Dr. Ganesh K	**Dr. Ganesh V N**	**Dr. Dattathreya**

H. O. D.
Dept. Of Electronics & Comm...
Alva's Institute of Engg. &
Mijar, MOODBIDRI

ABSTRACT

This project presents the development and implementation of an audio equalizer, a digital signal processing tool designed to adjust the balance between frequency components of an audio signal. The primary objective of this project is to enhance the audio experience by providing users with the ability to modify specific frequency bands, thus improving sound quality and catering to individual listening preferences.

The project encompasses the design and implementation of a multi-band equalizer using both software and hardware components. The software implementation involves the development of a user-friendly interface that allows real-time manipulation of audio signals across different frequency bands. The hardware component includes the integration of an audio processing unit capable of executing the equalization algorithms efficiently.

Key features of the developed equalizer include adjustable gain controls for multiple frequency bands, real-time audio processing, and a visual representation of the audio spectrum. The project leverages digital signal processing techniques such as Fast Fourier Transform (FFT) for frequency analysis and Finite Impulse Response (FIR) filters for precise control over frequency bands.

Comprehensive testing was conducted to evaluate the performance and accuracy of the equalizer. The results demonstrate significant improvements in audio quality, with the equalizer effectively enhancing desired frequencies and attenuating unwanted noise.

This project not only showcases the practical application of digital signal processing in audio engineering but also provides a valuable tool for audio enthusiasts and professionals seeking to customize their listening experience. Future work may include the enhancement of the equalizer's functionality with additional features such as automatic equalization based on audio content and integration with various audio playback devices.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"SMART FLOOR CLEANER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

Prasanna Kumar B I	**4AL21EC064**
Shashank Swami	**4AL21EC077**
Shashank Shetti	**4AL21EC078**
Shivukumar K.V	**4AL21EC079**

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Shashank Swami	**4AL21EC077**
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Mini Project Guide	Mini Project Coordinator	HOD
MR.Sudhakara.H.M	**Dr. Ganesh V N**	**Dr.Duttathreya**

H. O. D.
Dept. Of Electronics & C

ABSTRACT

Smart Floor Cleaner is the future of cleaning your floors with an innovative solution that will change the way floor cleaning happens by providing an efficient, effective, and user-friendly experience for the cleaning of various floor types. At the core, there is the microcontroller of the Arduino UNO, interfaced with a motor driver, servo motors, and a water pump. These give the easiest movement around and cleaning of floors with high precision. The mobile app will allow users to remote control and monitor cleaning processes for scheduling cleanups, tracking real-time progress, or sending/receiving notifications. Therefore, this system can make up for the deficiencies of traditional methods of cleaning, which revolve mainly around time-consuming, labor - intensive, and ineffective practices. This project will create an upheaval in the cleaning industry by providing a reliable, effective, and user-oriented solution. Further, its modular design means that each part of the system can be serviced and updated easily in the future if required. It has many safety features, like obstacle detection and collision avoidance, to make cleaning safe without incidents. This project itself shows that new technologies can change old industries and make our lives much better. It's time for the Smart Floor Cleaner to take over, providing innovative technology and ease of user interface, hence able to adjust to any kind of household, business, or institution looking for new options in floor cleaning.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590018

Mini Project Report on

"NON-INVASIVE BLOOD GROUP DETECTION"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

HURIYA SANADI	4AL21EC033
RAKSHA	4AL21EC066
SUMA K G	4AL21EC094
THEJASHWI P ACHARYA	4AL21EC100

Under the Guidance of
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CERTIFICATE

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has submitted Project synopsis on **"NON-INVASIVE BLOOD GROUP DETECTION"** for VI Semester B.E. in Electronics & Communication Engineering during the academic year 2023-24. The mini project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Mini Project Guide	Mini Project Coordinator	HOD
Dr. Napolean	**Dr. Ganesh V N**	**Dr. Dattathreya**

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ABSTRACT

Non-invasive blood group detection is an emerging technology that offers significant advantages over traditional methods, such as avoiding discomfort and reducing infection risks. This project presents a novel system for non-invasive blood group detection using Near-Infrared (NIR) sensors, an Arduino microcontroller, an LED display, an I2C module, and an ESP32. The NIR sensor detects variations in light absorption through the skin, which correlates with different blood group characteristics. The Arduino processes the sensor data and communicates with the LED display via the I2C module to present the detected blood group in real-time. The ESP32 provides wireless connectivity for data transmission and remote monitoring. This system aims to provide a quick, reliable, and user-friendly solution for blood group determination, with potential applications in emergency medical services, personal health monitoring, and point-of-care diagnostics. The integration of these components creates a compact and cost-effective device, paving the way for advancements in non-invasive medical diagnostics.

VISVESVARAYA TECHNOLOGICALUNIVERSITY

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Mini Project Report on

"DETECTIONOFHEARTATTACKUSINGACETONE SIGNATURE"

Submittedinpartialfulfillmentoftherequirementsfortheawardofdegree

BACHELOROFENGINEERING
IN
ELECTRONICS&COMMUNICATIONENGINEERING

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Under the Guidance of
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2023-2024

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ABSTRACT

Heart attacks, sometimes referred to as myocardial infarctions, are one of the major causes of death globally. This initiative investigates the use of breath sample acetone levels as a non-invasive diagnostic technique for heart attack early detection. Increased acetone levels offer a viable method for prompt detection since they may be indicative of metabolic alterations linked to myocardial infarction. This project's main goal is to create a trustworthy, non-invasive technique for identifying heart attacks by examining breath sample acetone signals. This approach aims to provide quick and affordable screening and monitoring by finding a relationship between breath acetone levels and the risk of a heart attack. The technology includes non-invasive breath sample collection and accurate acetone quantification through the use of sophisticated detection techniques including gas chromatography-mass spectrometry (GC-MS) and laser-based sensors.

Sophisticated algorithms will be used in data analysis to evaluate acetone levels and associate them with the risk of a heart attack. Creating a real-time breath collection device that is integrated with AI models to process and evaluate the data is part of the implementation phase. To verify the device's accuracy and efficacy, a variety of breath samples will be analyzed before clinical trials are conducted. The standardization of breath collecting techniques, sensor sensitivity, and specificity will all be guaranteed by ongoing improvement. Early diagnosis and intervention could be revolutionized if breath acetone signatures could be used to successfully detect heart attacks. It will be imperative to tackle issues like as sensor accuracy, individual baseline variances, and clinical validation. This strategy has the potential to greatly enhance patient outcomes by enabling early and non-invasive heart attack identification through cooperative research and technological improvements.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Mini Project Report on

"BRAIN TUMOR DETECTION USING MATLAB"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Tumor detection and removal is one medical issue that still remains challenging in the field of biomedicine. Early imaging techniques such as pneumoencephalography and cerebral angiography had the drawback of being invasive and hence the CT and MRI imaging techniques help the surgeons in providing a better vision. In this paper, tumor image processing involves three stages namely pre-processing, segmentation and morphological operation. After the acquisition of the source image, it is pre-processed by converting the original image to gray scale in addition high pass filter for noise removal and median filter for quality enhancement is provided which is followed by enhancement stage resulting with histogram equivalent image. Finally segmentation is done by means of watershed algorithm. The above proposed methodology is helpful in generating the reports automatically in less span of time and advancement has resulted in extracting many inferior parameters of the tumor

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Mini Project Report on

"QUALITY MONITORING OF FRUITS AND VEGETABLES BY USING IOT"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
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ABSTRACT

The rising concern over food safety and waste has prompted the development of innovative technologies to monitor and ensure food quality. This project presents an Internet of Things (IoT)-based system designed to detect food spoilage, aiming to reduce food waste and enhance consumer safety. The system utilizes a network of sensors to monitor environmental parameters such as temperature, humidity, and gas emissions associated with spoilage. These sensors are connected to a central processing unit that analyzes the data in real-time using machine learning algorithms to detect early signs of spoilage.

The data collected is transmitted to a cloud-based platform, where it can be accessed via a user-friendly mobile application. This app provides users with timely alerts and detailed reports on the status of their food items, allowing for proactive measures to prevent consumption of spoiled food. The system is designed to be easily integrate with various storage environments, including refrigerators and pantries, making it versatile and accessible for both household and commercial use.

The results from initial testing indicate that the IoT based food spoilage detection system is effective in identifying spoilage earlier than traditional methods, potentially leading to a significant reduction in food waste and improved food safety. This project demonstrates the feasibility and benefits of integrating IoT technology with food safety monitoring, paving the way for further advancements in smart food storage solutions.

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Mini Project Report on

Optimization of ZnO Nanostructures for Enhanced Photocatalytic Hydrogen generation

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The project focuses on enhancing hydrogen production through photocatalysis by optimizing ZnO nanostructures. ZnO is a robust and widely researched photocatalyst known for its high stability and broad bandgap, which allows it to absorb a wide range of light. By refining ZnO's properties, such as its size, shape, and surface characteristics, we can improve its efficiency in generating hydrogen.In this study, we investigate various techniques to boost ZnO's performance, including modifying its nanostructure, introducing dopants, and creating composite materials. These modifications are aimed at increasing light absorption, enlarging the active surface area, and enhancing charge carrier movement.The improvements lead to a significant increase in hydrogen generation rates when ZnO is exposed to visible light. This advancement is crucial for developing more efficient solar energy conversion systems. By making hydrogen production more effective, the project contributes to the broader goal of creating sustainable and environmentally friendly energy sources, reducing dependence on non-renewable resources, and supporting the transition to a cleaner energy future.

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Mini Project Report on

"SMART PHONE CONTROLLED ROBOTIC ARM "

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

In the contemporary landscape of automation and robotics, the integration of smartphone technology with control systems has become increasingly prevalent. This project explores the development of a Smartphone Controlled Arm utilizing the Node MCU microcontroller, designed to enhance the accessibility and versatility of robotic manipulation tasks. The core objective is to create an intuitive and user-friendly interface for controlling a robotic arm through a smartphone application, thereby demonstrating the potential of Internet of Things (IoT) technologies in everyday applications.

The system is built around the Node MCU, an open-source IOT platform based on the ESP8266 Wi-Fi module, which provides seamless connectivity and control capabilities. The robotic arm, equipped with servo motors, is interfaced with the Node MCU to facilitate precise and responsive movements. A custom smartphone application, developed for both Android and iOS platforms, serves as the control interface. This application communicates with the Node MCU via Wi-Fi, sending control signals to manoeuvr the arm in various directions and perform specific tasks.

The implementation of this project involves the design and programming of both the hardware and software components. Key aspects include the development of the Node MCU firmware to interpret commands from the smartphone and translate them into motor movements, as well as the creation of a user-friendly mobile application with real-time feedback and control features.

This project demonstrates the practical application of IOT in robotic control and aims to showcase the potential for further advancements in remote automation. By enabling control of the robotic arm through a smartphone, it provides.