

DIGI TALKS



MESSAGE BY HEAD OF THE DEPARTMENT

It gives me immense pleasure to pen a few words for the annual edition of our Department's Technical Magazine. This magazine stands as a testament to the innovation, creativity, and technical acumen of our students and faculty. It reflects our department's commitment to nurturing a culture of continuous learning, exploration, and excellence.



In today's fast-evolving technological landscape, it is crucial that students not only keep up with current trends but also learn to question, analyze, and innovate. This magazine is a platform that celebrates such inquisitiveness and showcases the promising minds that will drive the future of science and technology.

I commend the efforts of all contributors—students, faculty, and the editorial team—who have made this publication possible. I also encourage our readers to actively engage with the content, reflect on the insights shared, and take pride in the knowledge that this collective endeavor represents.

Let us continue to push boundaries, challenge the conventional, and work together in shaping a brighter, more innovative tomorrow.

With best wishes and regards,

A. PADMAVATHI, M. Tech.,

Head of the Department

Department of Electronics and communication Engineering

Dr. Y. C. James Yen Government Polytechnic, Kuppam.

MEMBERS OF THE DEPARTMENT

Smt. S. Sujatha, M. Tech., (Ph.D.), senior Lecturer

Smt. S. Radha, M. Tech., Lecturer

Smt. J. Anuradha, B. Tech., Lecturer

Sri. V. Praveen Kumar, B. Tech., Lecturer

Smt. D. Sirisha, B. Tech., Lecturer

Smt. U. Shirisha, B. Tech., Lecturer

Industrial Visit

NARL: A Hub for Atmospheric Research

NARL has now become one of the prime centers for atmospheric research in the country and operates a state-of-the-art MST radar, Rayleigh/ Mie Lidar, Boundary Layer Lidar, Sodium Lidar, Lower Atmospheric Wind Profiler, Sodar, Disdrometer, Optical Rain Gauge, Dual frequency GPS receiver, Automatic Weather Station apart from regular launching of the GPS balloon sonde. NARL is involved in technology development, observations, data archival, dissemination, assimilation and modeling.

The Industrial Visit was very well welcomed by the Students.



Highlights of the NARL Visit

Campus and Radar Systems

Students got witnessed the bird eye view of NARL campus, MST Radar, HF Radar, Rain Radar, X-Band Radar, Radar Electronics laboratory.

Exposure to Diverse Instruments

Students got exposure towards Microwave radiometer, Micro rain Radar, Flux Tower, Total Sky Imager, Aethalometer, Nephelometer, Electric field mill, GPS antenna, ROSA, Rayleigh Doppler Lidar, Mie Lidar, Brewer spectrophotometer, IRNSS, GPS radio occultation.

Advanced Laboratories

Students visited High performance computer lab, LIDAR (laser Radar) lab, L-band Radar lab, Sodar lab.

Understanding Atmospheric Measurements

Students came to know about how Mars magnetic field, regional air quality, precipitation rate, lighting detectors, Solar eclipses, Cyclones are measured.



Webinar on VLSI Technology

Date: 05-07-2023

Topic: VLSI Technology

Keynote Speaker: GIRIDHAR SALANA, Sr. CAD Engineer, Marvell Technology MNC

To bring awareness on latest developments in Industry practices among faculty and students.

Highlights of the webinar

- 1 Introduction
- 2 Significance of VLSI
- 3 Domains in VLSI
- 4 RTL Design
- 5 Design for Testability
- 6 Physical Design
- 7 Analog Circuit Design
- 8 Insights and Future Prospects

Workshops and Collaborations

MOU with Aaviza Electronics

Date: 14-07-2023

MOU Made with Aaviza Electronics Bangalore



Virtual Workshop: Gender Sensitization

Date: 02-08-2023

Topic: Gender Sensitization

Keynote Speaker: Dr. S SRI VIDHYA, Clinical Psychologist, myndwell

Session Outcomes

Importance of gender sensitization with equal representation of male and female staff and students

Session Highlights

- What is unconscious bias
- Understanding gender and gender stereotypes
- Gender and socialization
- Building gender awareness
- Gender and law



Safety and Technology Webinars

One Day Workshop on Fire Safety

Date: 16-08-2023

Topic: FIRE SAFETY

Keynote Speaker: M/s King Institute
Engineering, Paritala, Vijayawada SBTET



Webinar on Industrial Automation and IOT

Date: 16-08-2023

Topic: INDUSTRIAL AUTOMATION USING
EMBEDDED SYSTEMS AND IOT

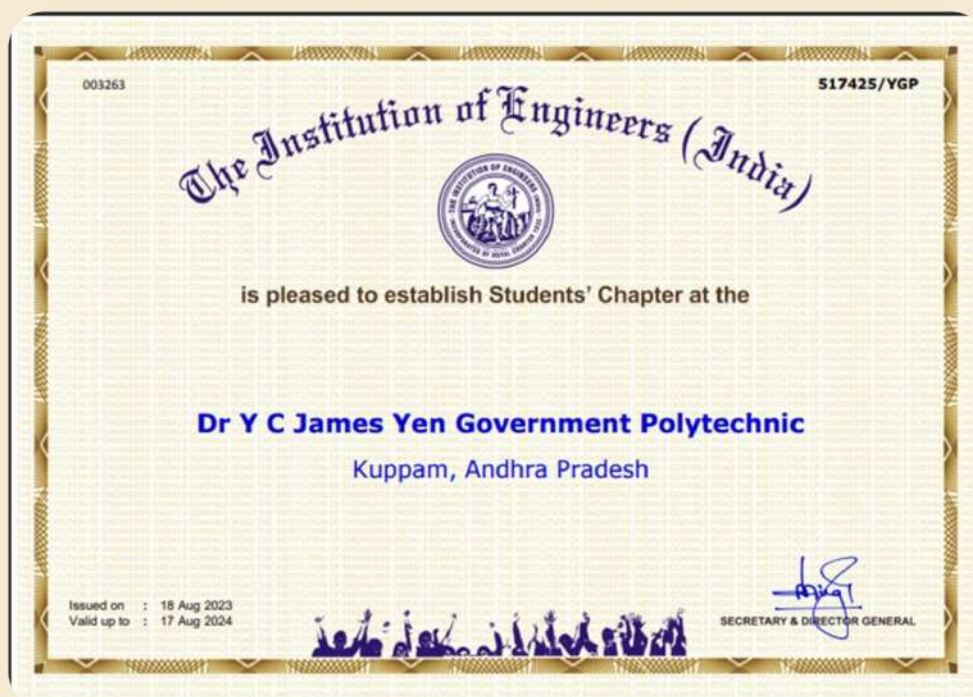
KeyNote Speaker: SAYYED ABDUL REHMAN
AUTOMATION ENGINEER AIM
TECHNOLOGIES



IEI Student Chapter Inauguration

Date: 19/08/2023

IEI student chapter inauguration inaugurated by principal, staff and students.



Webinar on Emerging Technologies

Date: 30-08-2023

Topic: EMERGING TECHNOLOGIES- IMPACT ON SOCIETY AND SUSTAINABLE DEVELOPMENT

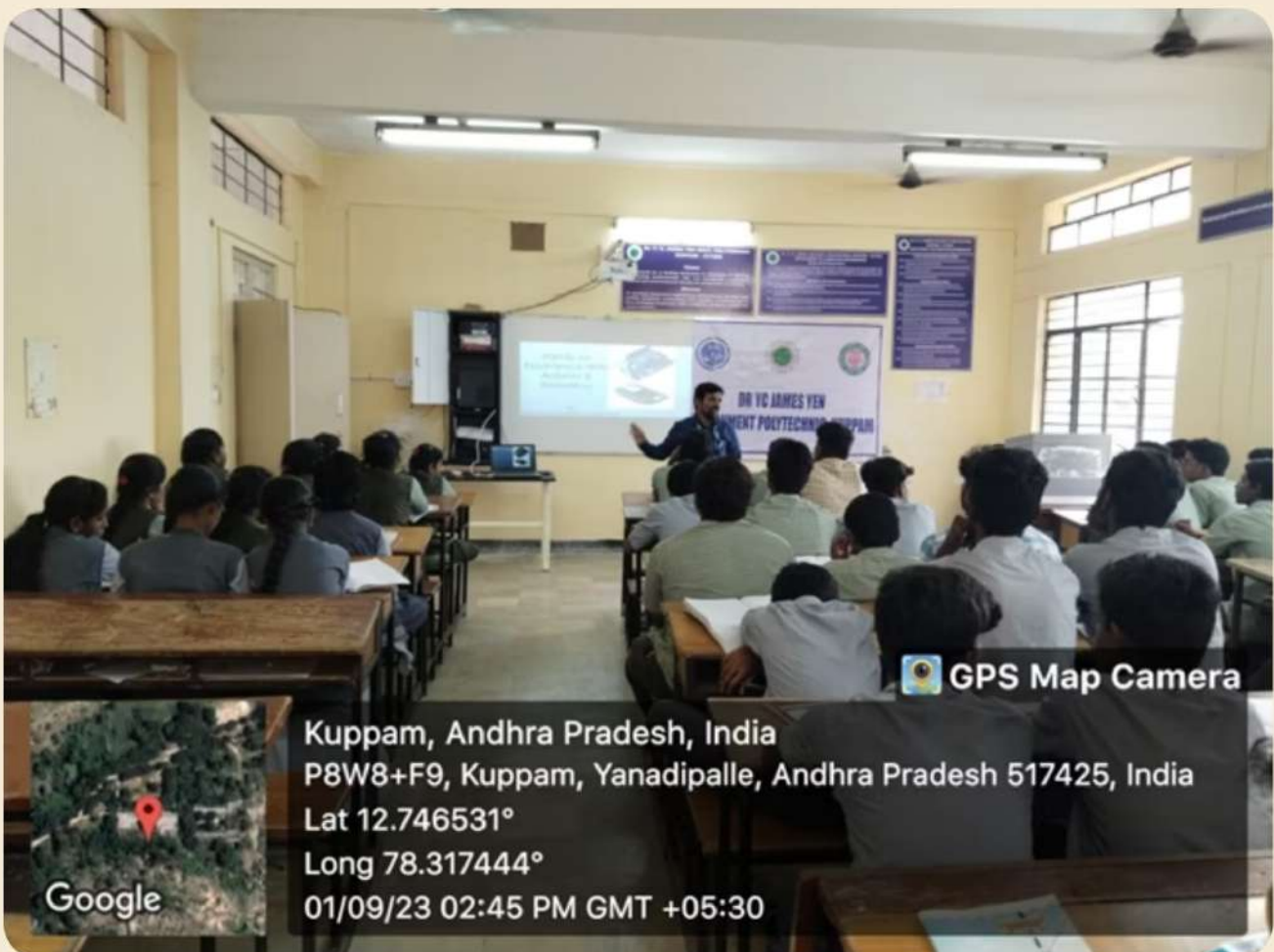
Keynote Speaker: Prof. Dr.R.PRADEEP KUMAR CSIR- CENTRAL BUILDING RESEARCH INSTITUTE
ROORKEE

Two Days Hands-On Experience Workshop

Date: 01/09/2023 AND 02/09/2023

Topic: INTERNET OF THINGS

Keynote Speakers: Dr. Santosh B.Panjagal and M.Lakshmipathi Associate professors, Kuppam
Engineering college, Kuppam



Engineer's Day 2023: ELITES-2023

Technical Symposium

Date: 15-09-2023

Dr.Y.C.JAMES YEN GOVERNMENT POLYTECHNIC, KUPPAM

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ENGINEER'S DAY CELEBRATIONS ON 15/09/2023.

1	Technical Quiz	22101-EC-058	V THEJASHREE	I Place	J Anuradha
		22101-EC-057	V R HARIKA		
		22101-EC-039	P G CHANDRIKA		
		22101-EC-049	S VANISREE		
2	Just a Minute (JAM)	22101-EC-008	C .PAVAN KUMAR REDDY	I Place	U.SHIRISHA
3	Rapid Fire	22101-EC-008	CHINTHAKUNTA PAVAN KUMAR REDDY	I Place	S Radha
4	Cross Word	22101-EC-058	V THEJASHREE	I Place	D Sirisha
5	Soldering	22101-EC-036	MUDI NARESH	I Place	V Praveen Kumar

Guest Lecturer on Rockets and Satellites

Date: 16/03/2024



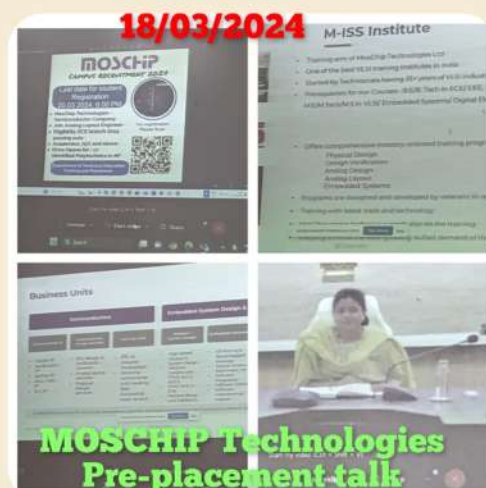
MOSCHIP Technologies Semiconductor Pre-Placement Talk

MosChip Technologies, a leading semiconductor and system design services company, conducting campus recruitment drive 2024 for final year Electronics and Communication Engineering branch students studying in Polytechnics of AP.

On 18.03.2024, at the pre-placement talk, the Commissioner of Technical Education Smt C Nagarani IAS emphasized the importance of career with semiconductor VLSI and Embedded systems fields and advised students to take wise decision to grab opportunity coming to door steps.

Kasinath, Head HR from MosChip appraised about company, selection & on-boarding process, growth ladder in company etc.

Chandra, Sr Manager - Technical and Alumni of Gudlavalleru polytechnic explained the role of Analog design Engineer.



Build Any Small Prototype Using Three Sensors and Blynk IoT

This project focuses on developing an IoT-based Greenhouse Monitoring System using Arduino, three environmental sensors, and Blynk IoT. The sensors typically include temperature, humidity, and soil moisture sensors. The system monitors environmental parameters and allows real-time access and control via the Blynk mobile application.



Temperature Sensor

Monitors ambient temperature within the greenhouse.



Humidity Sensor

Measures the moisture content in the air.



Soil Moisture Sensor

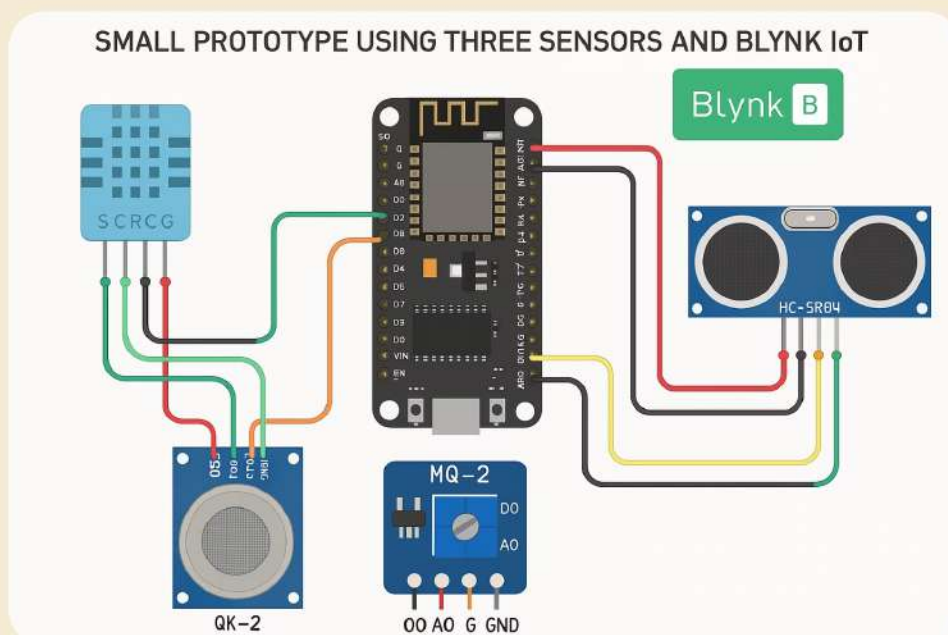
Detects the water content in the soil.

Key Features:

- Real-time data visualization through Blynk App.
- Monitoring and maintaining environmental conditions for greenhouse farming.
- Use of ESP8266 module for Wi-Fi connectivity.
- Integration of power supply units, sensors, and microcontroller.
- Arduino Uno handles sensor data acquisition and communication.

Applications:

Smart agriculture, remote farm management, and environmental automation.



Build a Webserver on ESP8266 to Control LED

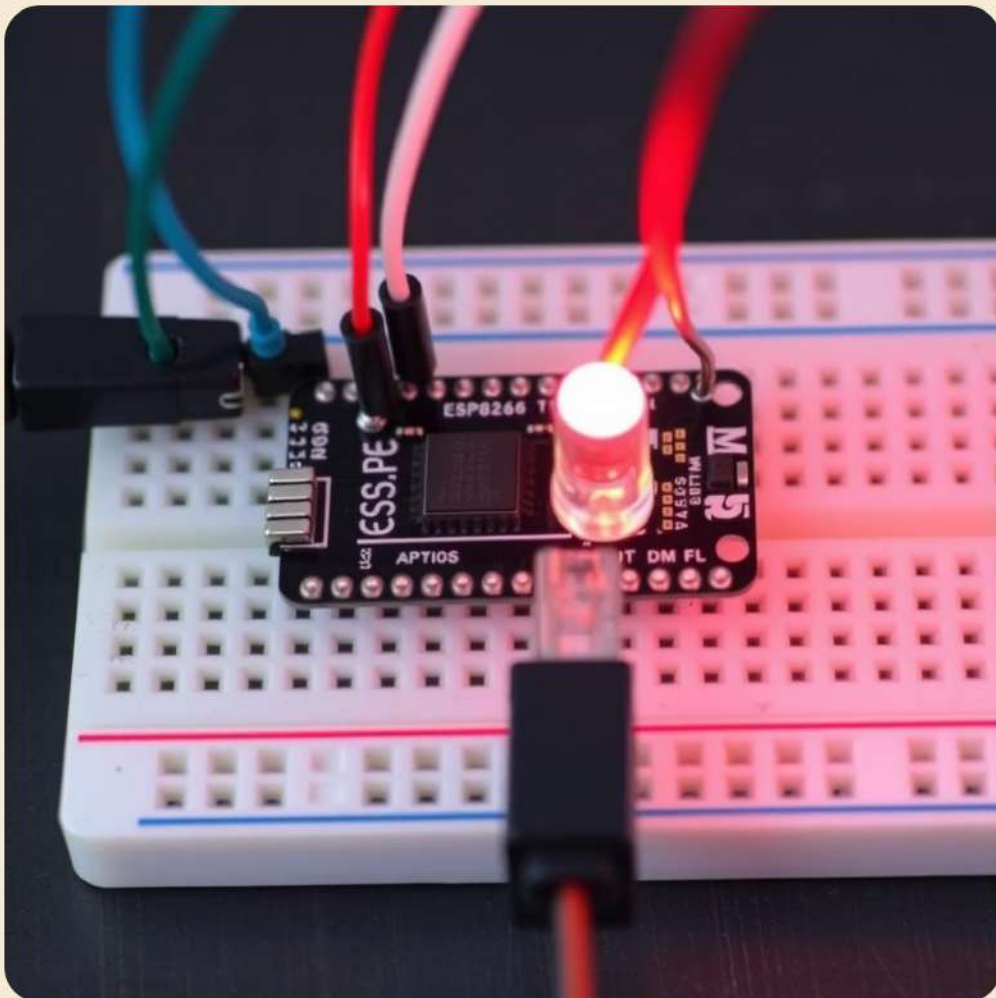
This project explores the development of a smart home automation system by controlling household lighting using a webserver hosted on the ESP8266 Wi-Fi module. The ESP8266 interfaces with an Arduino Uno and uses relays to switch ON/OFF the lights. The user accesses a mobile-friendly web interface via Wi-Fi to interact with the lighting system.

Key Features:

- Web-based control without physical interaction.
- Energy-efficient solution promoting smart living.
- Relay interface to handle AC-powered lights.
- Use of regulated power supply to ensure circuit stability.
- User interface accessible through mobile browser.

Applications:

Home automation, remote-controlled lighting, and IoT-based energy management.



Interface Servo Motor with ESP8266 and Rotate It from 0 to 180 Degrees

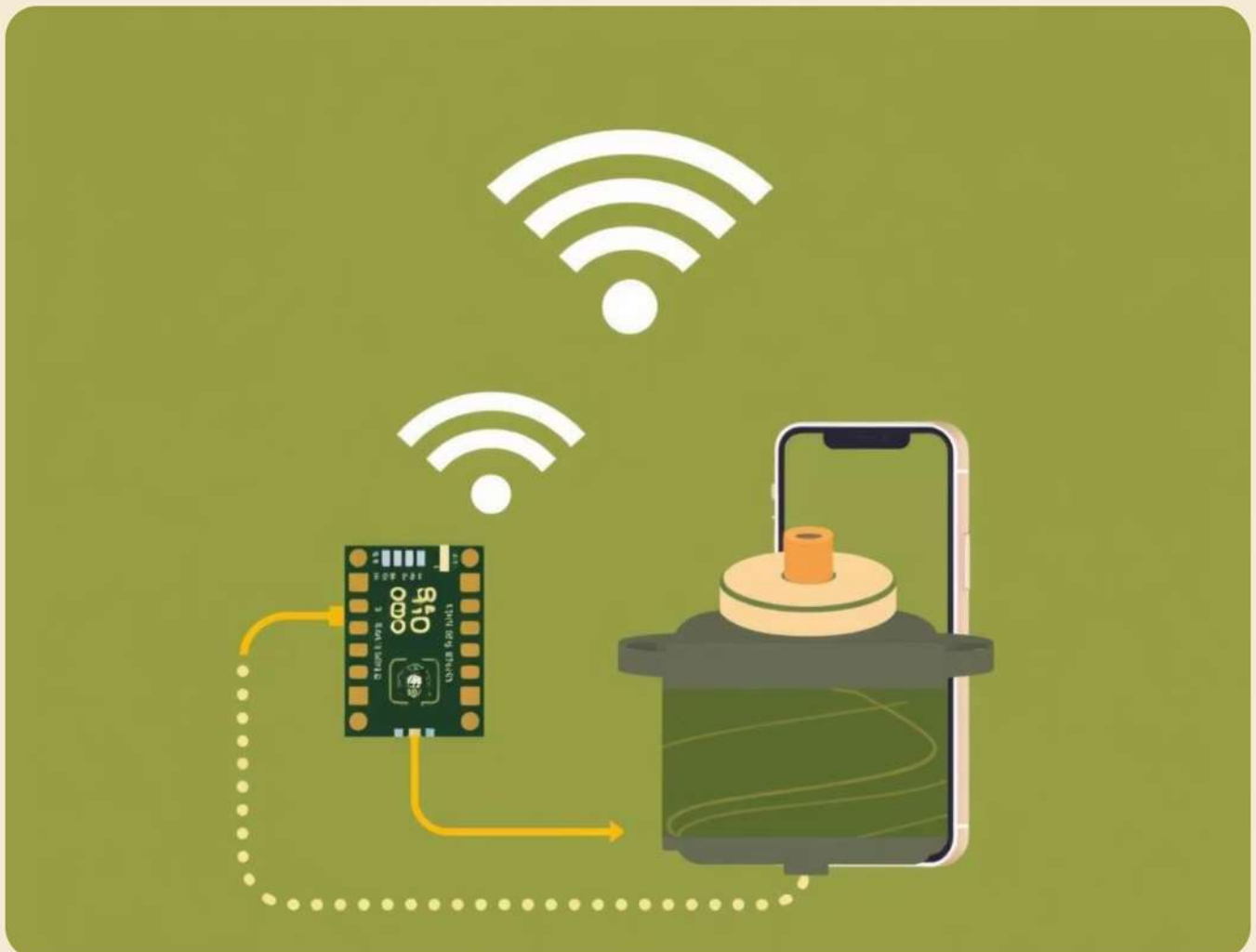
This project demonstrates how to control a servo motor using the ESP8266 Wi-Fi module, rotating it smoothly between 0° to 180°. The system can be remotely triggered to set motor angles using smartphone-based interfaces, enabling precise actuation for various smart mechanisms.

Key Features:

- Servo motor control with precise angular movement.
- Wireless interface using ESP8266 and potentially Blynk or similar.
- Application in robotics, smart actuators, and position-based systems.
- Reliable regulated power supply design to support motor and microcontroller operation.
- Emphasis on user-friendly and mobile-based interaction.

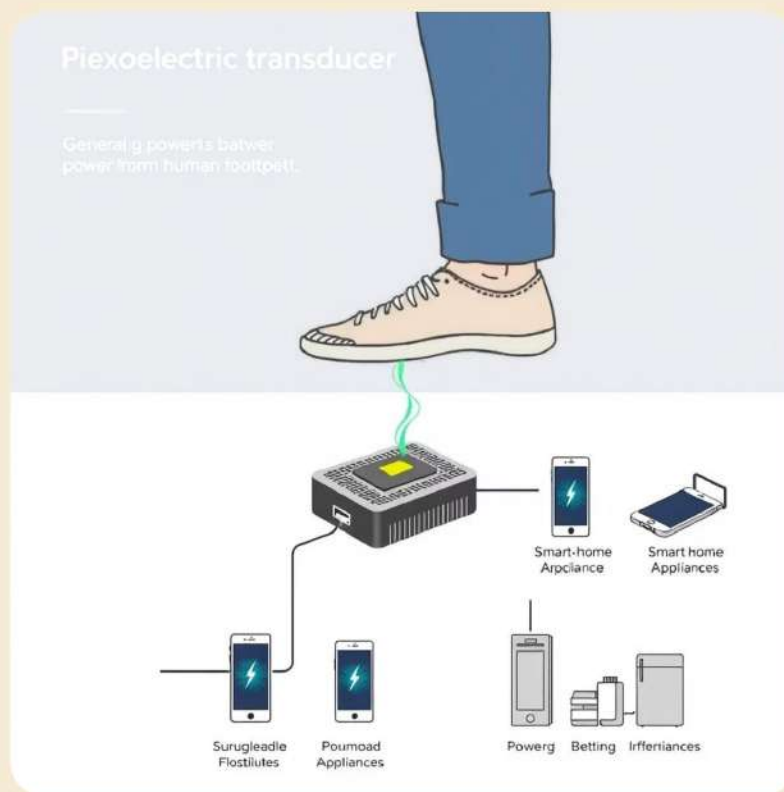
Applications:

Automated mechanical systems, robotics arms, remote-controlled levers, and smart locking mechanisms.



Foot Step Power Generation

This project aims to generate power using human footsteps to address increasing power demands and energy wastage. The generated power charges a battery, which can then be used to charge mobile phones via an RFID card and control automatic lights using an IR sensor. The system utilizes a piezoelectric transducer, which acts as a proportional voltage source and filter network, where the output voltage is directly proportional to the applied force, pressure, or strain. The output signal is then related to this mechanical force as if it had passed through an equivalent circuit.



Interface AC Load with ESP8266 and Control It Through Blynk IoT App

This project proposes an IoT-based home automation system using Wi-Fi to control home appliances remotely. The system consists of an Arduino, a Wi-Fi module for signal transfer, and a smartphone for controlling a web page server. Appliances are connected to a standalone Arduino Wi-Fi board using relays, and the smartphone interacts with the Arduino via Wi-Fi. The primary goal is to control home appliances when the user is away, offering a cost-effective and secure solution for automating modern homes through the internet. The system demonstrates control over three loads, acting as home lighting and fans. Previous work in home automation using Android and Wi-Fi, RF remote control, and Bluetooth with voice commands is also discussed, highlighting the advancements in remote control systems and the benefits of Wi-Fi-based solutions like wider range and reduced wiring.

Interface DHT11 Sensor with ESP8266 and Display Humidity in Blynk IoT App

This project focuses on monitoring humidity data using a DHT11 sensor and uploading it to a ThingSpeak cloud via an Arduino Uno and ESP8266-01 module. The Arduino Uno, acting as an MCU, fetches and processes humidity data from the DHT11 sensor before sending it to the ESP8266 Wi-Fi module for transfer to the IoT cloud. The introduction emphasizes the importance of monitoring humidity fluctuations due to their impact on healthy living, particularly in applications like hospitals, homes, industries, agriculture, and weather monitoring. The project highlights the benefits of IoT in real-time monitoring and remote sensing, offering a low-cost, powerful, and user-friendly system accessible via the internet. The document also details the components of power supplies, including transformers (stepping down AC voltage) and rectifiers (converting AC to DC), which are essential for electronic circuits.

Interface DHT11 Sensor with ESP8266 and Display Temperature in Blynk IoT App

Similar to the humidity monitoring project, this project describes an IoT system for reading temperature data from a DHT11 sensor and uploading it to a ThingSpeak cloud using an Arduino Uno and ESP8266-01 module. The Arduino fetches and processes the temperature data, which the ESP8266 Wi-Fi module then transfers to the IoT cloud. The importance of monitoring temperature fluctuations for healthy living and various applications (hospitals, homes, industries, agriculture, weather) is highlighted. The project aims to provide a low-cost, powerful, and user-friendly real-time monitoring and remote sensing system through IoT. The document also provides a detailed explanation of power supplies, including transformers for stepping down high voltage AC to low voltage AC and rectifiers for converting AC to varying DC, crucial for powering electronic devices.



70%

Humidity Monitoring

Ensuring optimal humidity levels for health and comfort.



85%

Temperature Control

Maintaining ideal temperatures in various environments.

Interface Soil Moisture Sensor with ESP8266 to Measure the Percentage of Soil Moisture and Display It

This project proposes an IoT-based irrigation monitoring and control system designed to help farmers manage water supply remotely, preventing issues like water-logging or dry soil that can damage crops. The system uses an Arduino Uno board and a Wi-Fi module to connect to the internet, allowing users to monitor soil moisture percentage from a desired website. The introduction highlights the significance of agriculture in India and the challenges faced by farmers using traditional methods. IoT technology is presented as a solution for smart agribusiness, enabling farmers to monitor field conditions without being physically present. The project also touches upon precision agriculture, which leverages technology and data to optimize farming practices, improve productivity, and ensure the long-term viability of farm production.

Interface Temperature Sensor with ESP8266 and Turn On the Fan When Temperature Exceeds the Threshold Level and Observe the Status of Temperature and Fan Through IoT App

This study investigates an IoT-based temperature monitoring and automatic fan control system. The system uses an ESP32 WiFi module, a DHT11 temperature sensor, and a transistor for fan control, integrating IoT technologies to provide real-time fan speed adjustments based on ambient temperature. This improves user convenience, environmental comfort, and energy efficiency. The project aims to allow users to remotely control and monitor the system via any iOS or Android device, setting preferred temperature thresholds and viewing current temperature and fan status. The introduction explains IoT as an internet-based network of physical objects that interact and communicate, finding applications in smart homes, cities, agriculture, health, and industry. Fans, as typical IoT-managed items, can have their speed and mode adjusted automatically, solving the inconvenience of manual control and optimizing energy consumption. The document also describes the principles of power supplies, including transformers for voltage step-down and rectifiers for AC to DC conversion, and various rectifier types like the bridge rectifier.

Interface Ultrasonic Sensor with ESP8266 to Measure the Distance from the Target and Display It in Blynk IoT App

This project explores using an HC-SR04 Ultrasonic Sensor with Arduino and ESP8266 to measure the distance of an obstacle and display it in a Blynk IoT App. Ultrasonic sensors are valuable tools for non-contact distance measurement and object detection, used in applications such as liquid level measurement, proximity checking, and automotive anti-collision systems. The core principle relies on ECHO: sound waves are transmitted, reflect off an obstacle, and return as an echo. The distance is calculated based on the time taken for the sound waves to travel and the known speed of sound. The project aims to provide an efficient and precise method for measuring small distances. The introduction highlights the versatility of ultrasonic sensors in various fields like robotics, positioning, and dimensioning. Components include Arduino Uno, ultrasonic sensor, ESP8266, ESP-01 adapter, and connecting wires. The document also details the fundamental aspects of power supplies, including transformers for stepping down AC voltage and rectifiers for converting AC to DC.

Non-contact Distance Measurement

Utilizes sound waves for precise distance calculation without physical contact.

Versatile Applications

Used in robotics, liquid level measurement, and automotive systems.

Real-time Data Display

Integrates with Blynk IoT App for instant distance readings.