3.2.1: Institution has created an Ecosystem for Innovation and has Initiatives for creation and transfer of knowledge

S.N.O	NAME OF THE ECO SYSTEM	URL
1	COIN BASED MOBILE CHARGING STATION	VIEW DOCUMENT
2	HOME AUTOMATION BASED ON IOT	
3	IOT BASED AIR QUALITY MONITORING SYSTEM	
4	DESIGN AND DEVELOPMENT OF WOMEN SAFETY SYSTEM USING IOT TECHNOLOGY	
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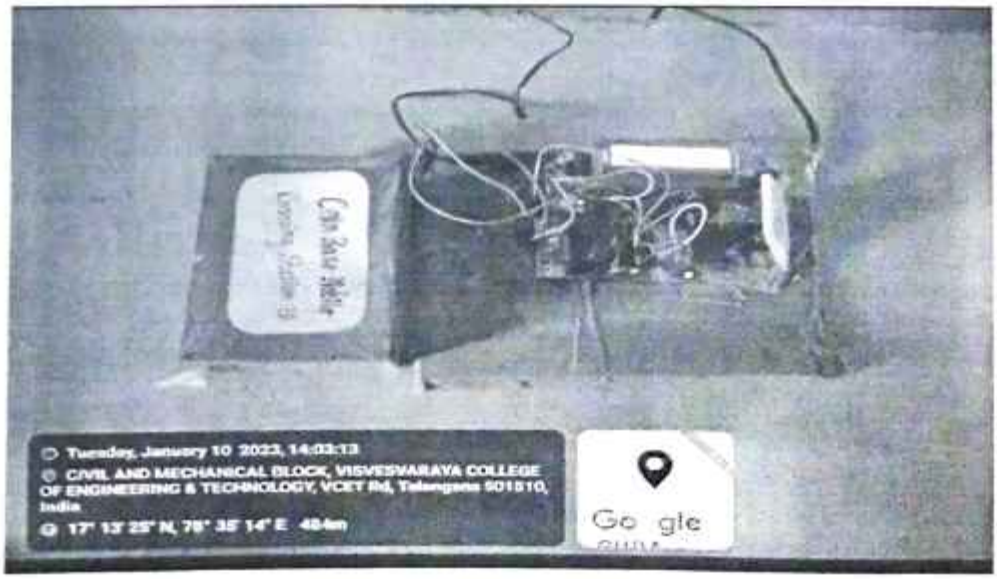
COIN BASED MOBILE CHARGING STATION

The Coin-Based Mobile Charging Station provides a simple, cost-effective solution for charging mobile devices in public spaces. The system allows users to charge their phones by inserting coins into a vending machine-like station. Upon payment, the station provides access to a charging port equipped with various connectors to suit different mobile models. The station is designed to be user-friendly, ensuring ease of use for customers who require emergency charging on the go. The system operates with low maintenance costs and provides a convenient alternative to traditional charging methods, especially in high-traffic areas like malls, airports, and bus stations. It also incorporates features like real-time monitoring of charging status and user feedback collection. The coin-based payment model ensures secure and efficient transactions. Additionally, the station can be designed to offer extended services such as USB charging, Wi-Fi access, and promotional advertisements. The solution benefits both users and operators by providing an affordable, practical, and scalable mobile charging infrastructure.



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HOME AUTOMATION BASED ON IOT

In recent years, the advancements in Information and Communication Technology (ICT) are mainly focused on the Internet of Things (IoT). In a real-world scenario, IoT based services improve the domestic environment and are used in various applications. Home automation based IoT is versatile and popular applications. In home automation, all home appliances are networked together and able to operate without human involvement. Home automation gives a significant change in humans life which gives smart operating of home appliances. This motivated us to develop a new solution which controls some home appliances like light, fan, door cartons, energy consumption, and level of the Gas cylinder using various sensors like LM35, IR sensors, LDR module, Node MCU ESP8266, and Arduino UNO. The proposed solution uses the sensor and detects the presence or absence of a human object in the housework accordingly. Our solution also provides information about the energy consumed by the house owner regularly in the form of message. Also, it checks, the level of gas in the gas cylinder if it reaches lesser than the threshold, it automatically books the gas and sends a reference number as a message to the house owner. The proposed solution is deployed and tested for various conditions. Finally, in this paper, the working model of our proposed solution is developed as a prototype and explained as a working model.

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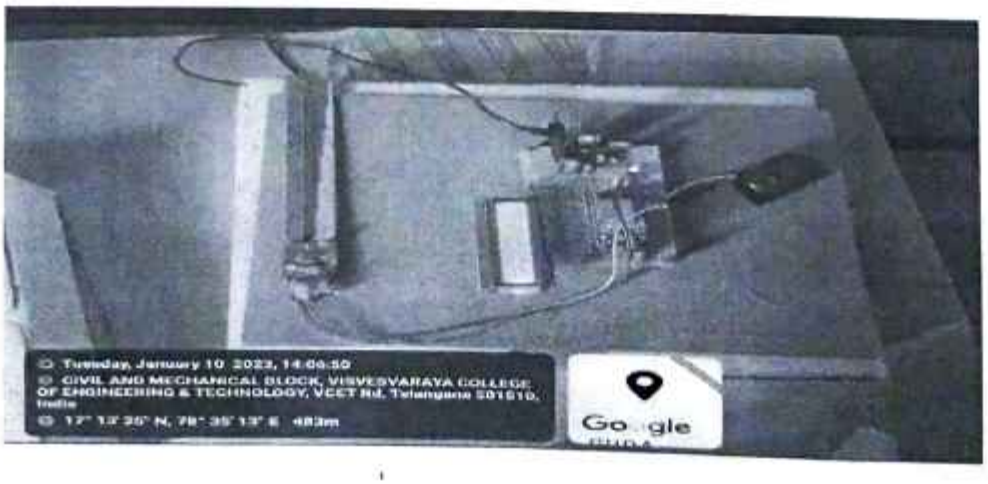
IOT BASED AIR QUALITY MONITORING SYSTEM

High population and urbanization growth rate raises the issue of air pollution in recent years. Air quality monitoring is one of the major concerns due to its influence on human health. With the advancement in sensing and embedded technology, Internet of Things(IoT) becomes one of the economic alternative to implement air quality monitoring system(AQMS)compared to costly and fixed air quality monitoring stations. In this paper we present the ample review of candidate enabling technology for IoT based AQMS architecture. Specifically, we start with overview of major low cost air pollutant sensors classification, typical error sources and calibration methodologies. Then we present analysis and comparative study of infrastructure protocols and application layer protocols to support IoT based architecture for AQMS. We also review existing system and categorised them based on deployment strategy employed. Finally, challenges involved in building such systems are discussed in detail.



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DESIGN AND DEVELOPMENT OF WOMEN SAFETY SYSTEM USING IOT TECHNOLOGY

Women safety has always been an issue even in these modern times with so much advancement in technology. Women are not safe anywhere and are most vulnerable when traveling alone into lonely roads and deserted places. Existing hand held safety devices for women require human intervention for activating the device such as pressing the button or shake the device etc after sensing the danger. We propose a solution which will try to overcome the disadvantages of the existing systems and also aim at providing false proof safety to women. The proposed work aims at designing an IoT based safety device that relies on providing security to women by fingerprint-based method of connectivity to the device and alerting nearby people and police when a women is not safe. An unsafe situation is sensedby fingerprint verification for a minute then it will automatically alert nearby people and police if the device senses no signal. Moreover, for first-hand safety, shockwave generator is also designed that women can use to attack the perpetrator. Additional features such as sending group messages, audio recording are also part of the proposed design. A mobile app is designed for women safety where safe locations from victim's current location will be shown on the map so that women can reach the safe place from her current location.

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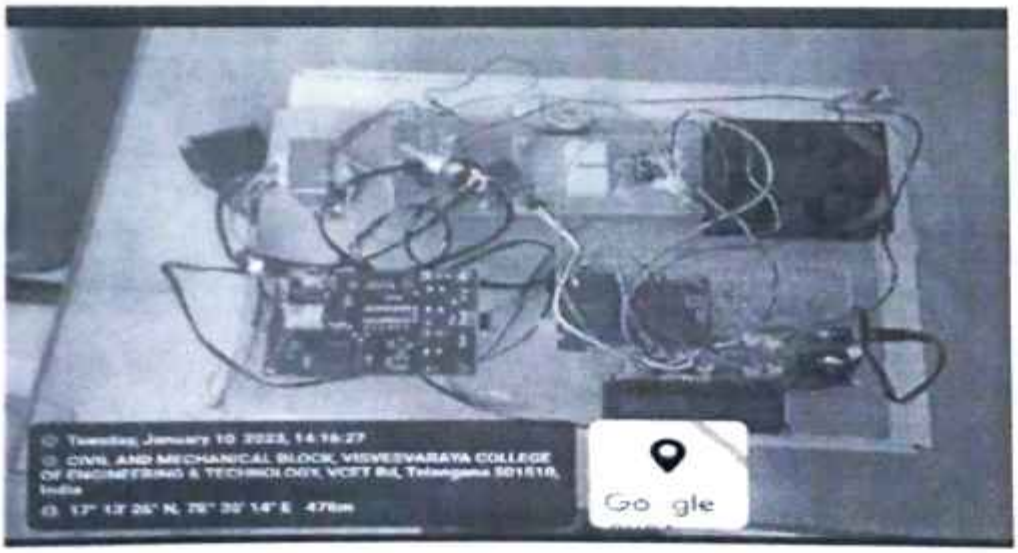
INTERCONNECTION SWTCHES ON-OFF STATE IDENTIFICATION OF DISTRIBUTION NETWORK BASED LOAD MEASUREMNT

The efficient monitoring and management of electrical distribution networks are crucial to ensuring reliable power delivery and reducing operational costs. A key aspect of this management is the identification of the on-off state of interconnection switches, which control the flow of electricity between different segments of the network. The traditional method of determining switch states often relies on manual inspection or limited remote sensing capabilities, which can be time-consuming, error-prone, and inefficient.

The proposed method is evaluated on a simulated distribution network, demonstrating its effectiveness in accurately detecting the on-off status of interconnection switches. Additionally, the approach reduces the need for extensive physical inspections, decreases downtime, and provides utilities with real-time operational intelligence. The integration of this load measurement-based switch identification technique can significantly enhance the reliability and responsiveness of electrical distribution systems.

Key benefits of the approach include improved fault detection, optimized maintenance planning, and better overall network performance. Future developments may focus on integrating this method with existing smart grid technologies to further enhance the dynamic management of the distribution network.



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REAL TIME MONITORING OF TRANSMISSION LINE PARAMETERS

The efficient monitoring and management of electrical distribution networks are crucial to ensuring reliable power delivery and reducing operational costs. A key aspect of this management is the identification of the on-off state of interconnection switches, which control the flow of electricity between different segments of the network. The traditional method of determining switch states often relies on manual inspection or limited remote sensing capabilities, which can be time-consuming, error-prone, and inefficient.

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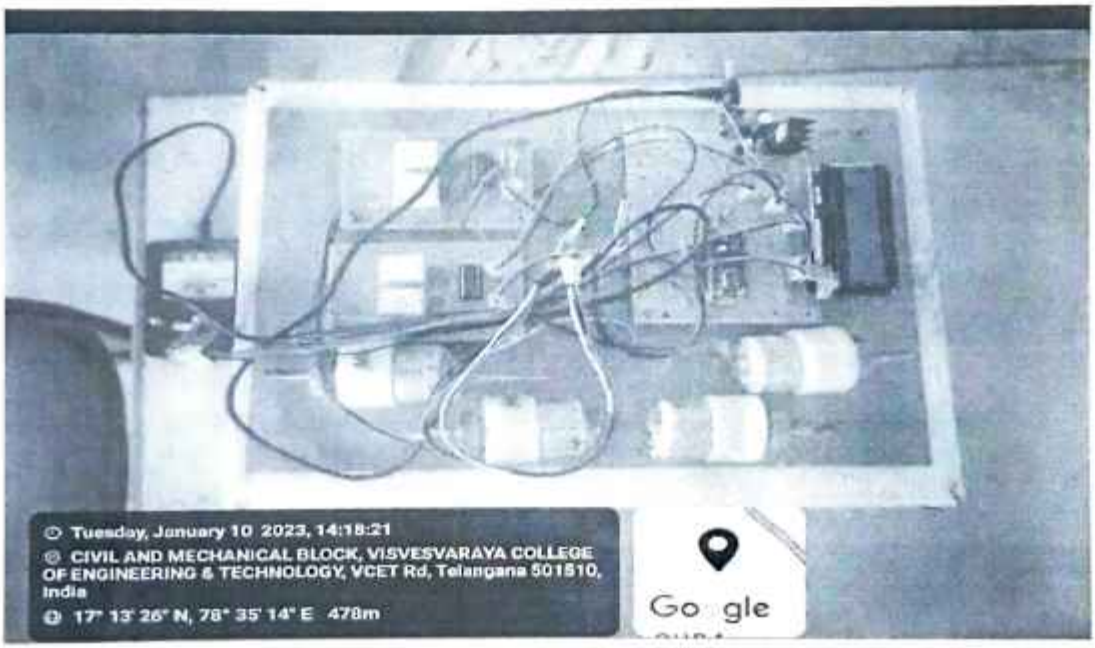

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ADVANCED DISTRIBUTION TRANFOEMER LOAD MONITORING AND CONTROLLING BY USING GSM MODEM

This project is about intend and completion of a mobile embedded system to observe and evidence key framework of a distribution transformer like load currents, voltage and ambient temperature. The proposal of on-line monitoring system accomodate a global service mobile (GSM) Modem, with a detached single chip microcontroller and different sensors. It is connected at the distribution transformer site and the above factors are inscribedby means of the analog to digital converter (ADC) of the embedded system. The obtained criterion are refined and registered in the system memory. If any deviation or an disaster situation occurs the method sends SMS (short message service) messages to the mobile phones containing in sequence about the irregularity according to some predefined information programmed in the microcontroller. This cell phone system will help the transformers to manage smoothly and identify evilsfacing any terrible failure

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POWER CONTROL OF GRID CONNECTED CONVERTERS UNDER UNBALANCED VOLTAGE CONDITIONS

This paper addresses the power control of grid-connected converters under unbalanced voltage conditions. Unbalanced voltages can lead to poor power quality and instability in the grid. The converter's control strategy involves real-time voltage sensing and phase detection to monitor grid conditions. Using advanced control techniques, such as PQ and droop control, the converter manages both active and reactive power flow to ensure stable grid integration. A current control loop is employed to track the reference current despite voltage imbalance. Additionally, the converter adjusts its internal voltage to regulate power exchange efficiently. The proposed system ensures robust performance and enhances grid stability under unbalanced voltage scenarios.

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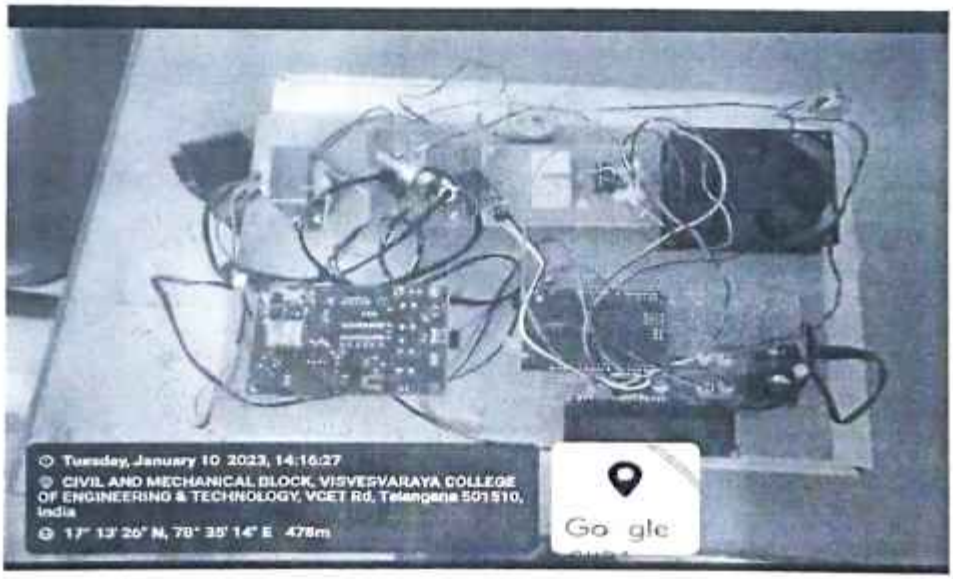
FAULT LOCATION IN RADIAL DISTRIBUTION SYSTEM BASED ON OPTIMIZED ALLOCATION OF POWER QUALITY METERS

method for fault location detection in radial distribution systems using optimized allocation of power quality meters. Faults in distribution systems can cause significant service interruptions, and identifying the fault location quickly is crucial for minimizing downtime. The proposed approach optimizes the placement of power quality meters to accurately detect faults by analyzing voltage and current disturbances. The optimization algorithm considers factors such as system topology and meter placement costs to enhance fault detection efficiency. By leveraging real-time data from these meters, the system can pinpoint fault locations with high accuracy. The method improves fault location identification time and reduces the overall operational cost. This approach offers a practical solution for fault management in distribution networks.



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INTELLIGENT ELECTRICAL LOAD SHEDDING IN HEAVELY LOADED INDUSTRIAL ESTABLISHMENT

An intelligent electrical load shedding strategy for heavily loaded industrial establishments to ensure grid stability and prevent system overloads. The approach uses real-time data from smart meters to monitor load conditions and predict potential overloading scenarios. An optimization algorithm determines the most critical loads to shed based on priority and system requirements. By analyzing power consumption patterns, the system dynamically adjusts load shedding to minimize operational impact while maintaining essential processes. Machine learning techniques are employed to continuously improve load shedding decisions based on historical data. The proposed solution helps prevent blackouts, reduces energy costs, and improves overall system reliability. This intelligent strategy enhances power management in industrial facilities

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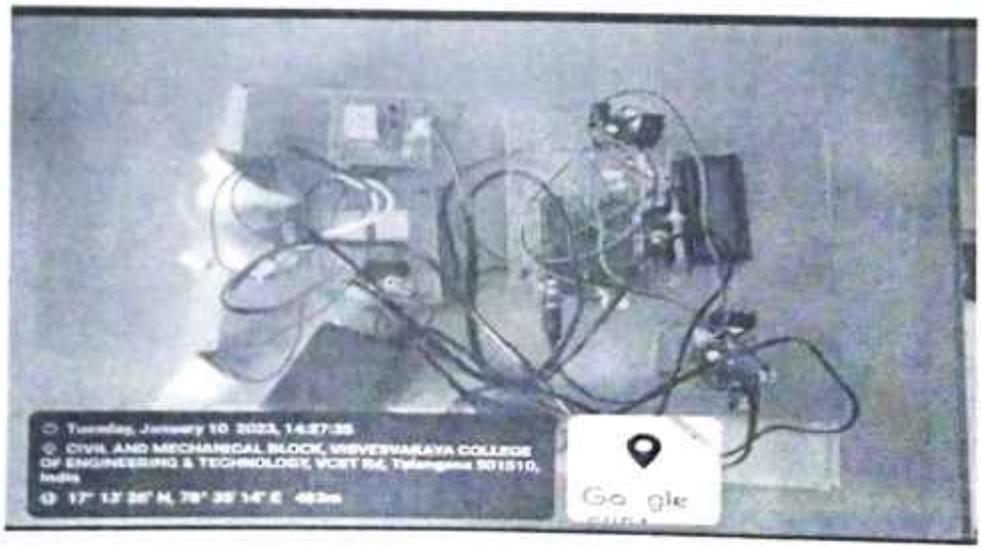
EQUIPMENT STUDY ON THE TOLERANCE ABILITY OF ADJUSTABLE SPEED DRIVES TO VOLTAGE SAG FOR UNIVERSAL MOTOR USING IGBT

This study investigates the tolerance ability of Adjustable Speed Drives (ASDs) equipped with Insulated Gate Bipolar Transistors (IGBTs) to voltage sag, specifically for universal motors. Voltage sags can significantly impact the performance of motors, leading to downtime and equipment damage. The research analyzes the behavior of ASDs during voltage dips, focusing on the motor's response and the drive's ability to maintain stable operation. It examines the effectiveness of IGBT-based drives in protecting against voltage fluctuations by adjusting output voltage and current. The study includes experimental testing under various sag conditions to assess motor performance and drive robustness. Results show that while IGBT-based ASDs offer some protection, their response depends on the severity and duration of the sag. This research provides valuable insights into improving ASD design for enhanced voltage sag tolerance.



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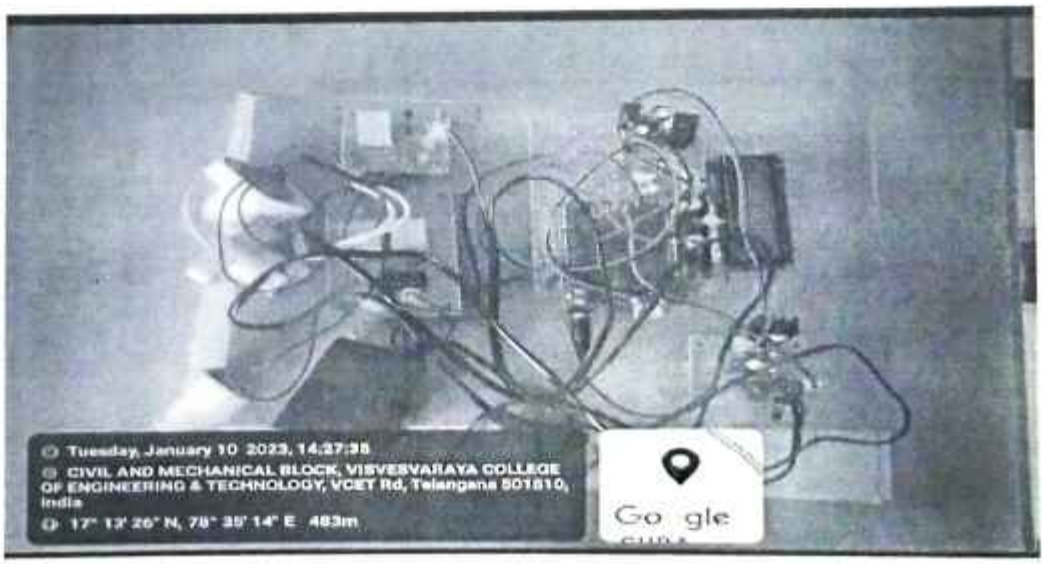
DYNAMIC STABILITY IMPROVEMENT ISSUES WITH A GRID-CONNECTED MICRO GRID SYSTEM

Dynamic stability improvement issues in grid-connected microgrid systems. Microgrids, when connected to the main grid, can experience stability challenges due to the intermittent nature of renewable energy sources and fluctuating loads. The study explores advanced control techniques, such as droop control and hierarchical control strategies, to enhance the dynamic response and stability of the microgrid. It also highlights the role of energy storage systems in mitigating power fluctuations and supporting grid stability. The impact of communication delays and fault conditions on stability is analyzed, along with methods for real-time monitoring and control. Simulation results demonstrate the effectiveness of the proposed strategies in improving the microgrid's stability. This research contributes to the safe and reliable operation of grid-connected microgrids in the face of dynamic disturbances.



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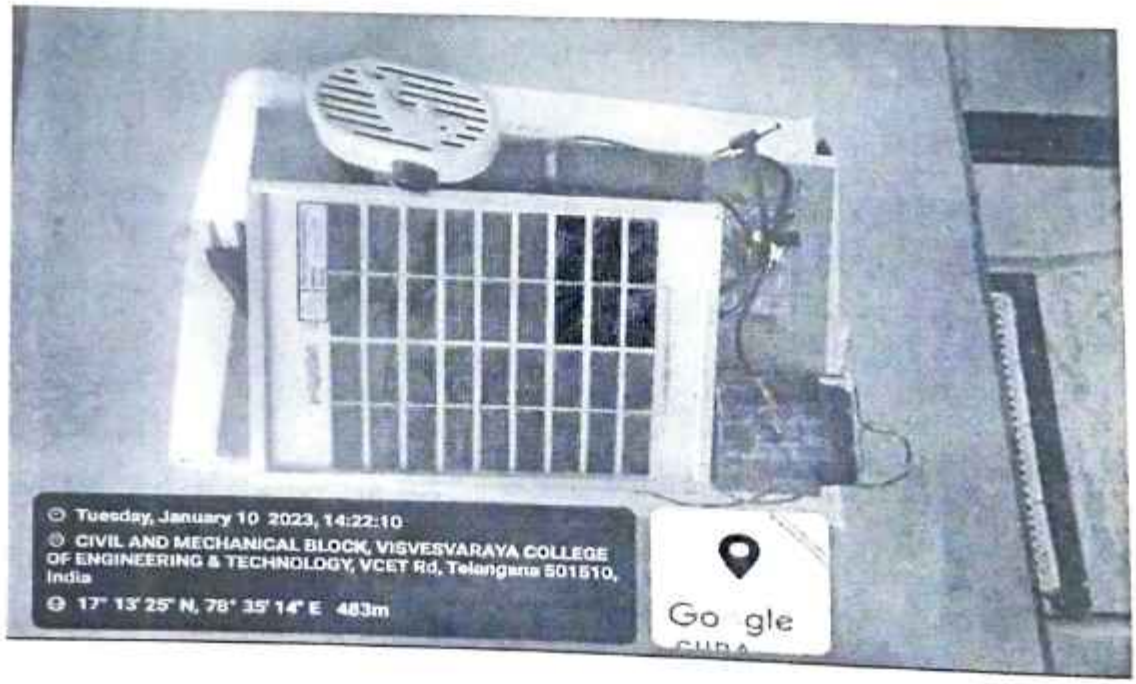
POWER ENHANCEMENT WITH GRID STABILIZATION OF RENEWABLE ENERGY BASED GENERARTION SYSTEM USING UPQC-FLC-EVA TECHNIQUE

This paper presents a method for power enhancement and grid stabilization in renewable energy-based generation systems using an UPQC-FLC-EVA technique. The Unified Power Quality Conditioner (UPQC) is employed to mitigate power quality issues such as voltage sags, harmonics, and flicker that can affect the grid. A Fuzzy Logic Controller (FLC) is integrated to adaptively control the UPQC's compensation capabilities in real-time, based on changing grid conditions. The Evolutionary Algorithm (EVA) is used to optimize the control parameters of the FLC, improving system performance and response time. The proposed technique ensures seamless integration of renewable energy sources, enhancing power stability and reliability. Simulation results show significant improvement in power quality, voltage regulation, and grid synchronization. This method offers an effective solution for maintaining grid stability while maximizing the performance of renewable energy systems.



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IMPROVING ENERGY EFFICIENCY IN PREDICTED ENERGY AND ACTUAL ENERGY CONSUMPTION USING WSN

improving energy efficiency by comparing predicted energy consumption with actual energy usage in a system utilizing Wireless Sensor Networks (WSNs). WSNs are employed to collect real-time data on energy consumption across various devices and systems. By predicting energy usage based on historical data, the system can identify discrepancies between predicted and actual consumption. Advanced algorithms analyze these discrepancies to optimize energy usage, reducing wastage and improving overall efficiency. The paper highlights how WSNs enable precise monitoring, fault detection, and adjustment in energy management. The proposed method allows for dynamic adjustments to energy consumption, aligning actual usage with predictions. The results demonstrate significant improvements in energy efficiency, particularly in industrial and residential applications.

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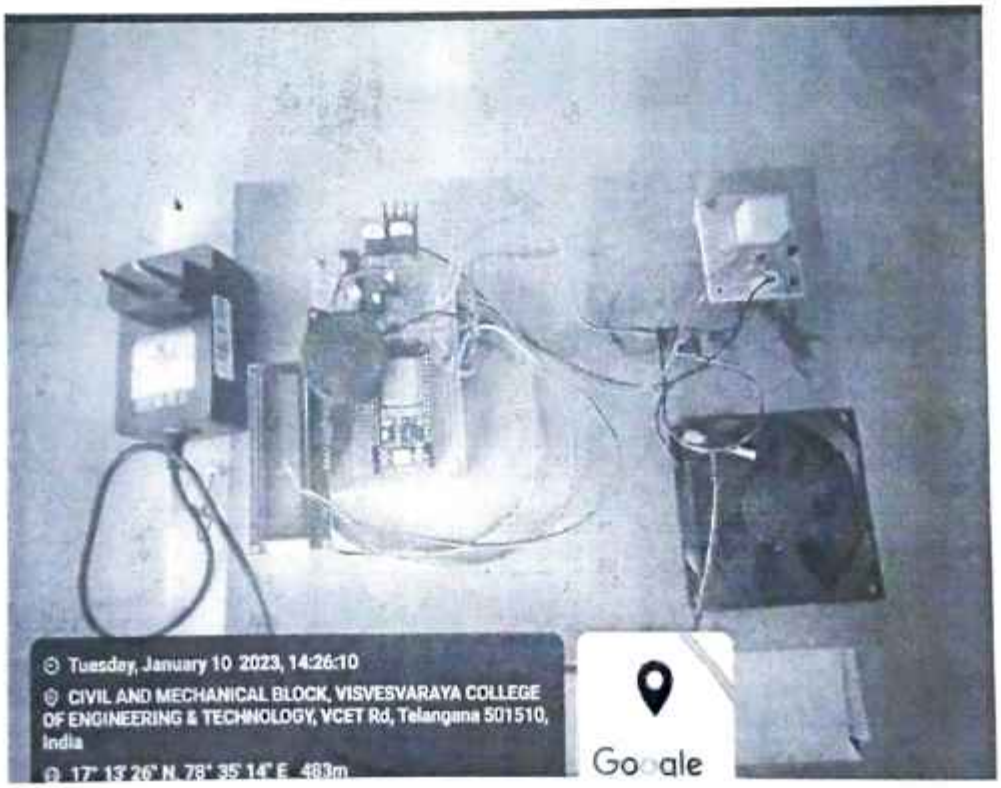
IMROVED FAULT DETECTION AND LOCATION SCHEME FOR PHOTO VOLTOIC SYSTEM

This paper presents an improved fault detection and location scheme for photovoltaic (PV) systems to enhance reliability and minimize downtime. The proposed method uses real-time monitoring and advanced signal processing techniques to identify faults such as short circuits, open circuits, and ground faults in PV panels and their associated components. The scheme employs a combination of voltage, current, and temperature sensors integrated with the PV system to detect abnormal behavior. Faults are accurately located by analyzing the variations in these parameters, allowing for faster maintenance and repair. Additionally, the system's diagnostic capabilities reduce false alarms and increase detection accuracy. Simulation results validate the effectiveness of the scheme in different fault scenarios. This approach ensures enhanced performance, safety, and longevity of PV systems.



FABRICATION OF 4 WHEEL STEARING VEHICLE

The fabrication of a 4-wheel steering vehicle involves integrating a steering mechanism that controls all four wheels, allowing for enhanced maneuverability. The process begins with designing the chassis, ensuring structural strength and stability. Next, the front and rear axles are equipped with steering linkages, which are connected to the steering wheel. The rear wheels are steered either independently or in coordination with the front wheels using a hydraulic or electronic control system. The vehicle's control system is programmed to enable different steering modes, such as parallel or crab steering, for optimized turning and parking. The powertrain is then installed, including the engine, transmission, and braking systems. Finally, the vehicle undergoes testing to ensure smooth steering transitions and overall performance. This design improves handling, turning radius, and maneuverability in tight spaces, offering better control compared to traditional 2-wheel steering systems.

KNEE POWER GENERATION

Knee power generation works by converting mechanical energy from the bending and straightening of the knee joint into electrical energy. A piezoelectric or electromechanical device is embedded in a wearable unit, typically in a knee brace or sleeve. When the user walks or bends their knee, the motion induces pressure or strain on the device, causing it to generate electricity. This energy is then stored in a small battery or capacitor for later use. The harvested power can be used to charge small electronics, such as sensors or wearables. The system is designed to be lightweight and flexible, ensuring comfort during movement. This technology allows for self-sustaining energy generation without the need for external power sources or batteries.

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LINE FOLLOWING ROBOT

A line-following robot uses sensors to detect and follow a path, usually represented by a line marked on the ground. The robot is equipped with infrared sensors or cameras that track the line's position. As the robot moves, the sensors constantly monitor the line's direction and send data to the microcontroller. The microcontroller processes this data and adjusts the motors accordingly to steer the robot. If the robot deviates from the line, the sensors detect the change, and the microcontroller commands the motors to correct the direction. The robot typically uses differential steering, where the left and right motors move at different speeds to turn. This process continues, allowing the robot to stay on the predefined path.

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OBSTACLES AVOIDANCE ROBOT WITH REGENARATIVE BREAKING SYSTEM

The obstacle avoidance robot with a regenerative braking system is designed to autonomously navigate while avoiding obstacles and recovering energy during braking. It uses ultrasonic or infrared sensors to detect obstacles in its path, continuously scanning the environment as it moves. When an obstacle is detected, the robot processes the data and alters its course using its motors for steering and movement. The regenerative braking system comes into play when the robot needs to slow down or stop. Instead of wasting energy as heat, the system converts kinetic energy into electrical energy and stores it in a battery or capacitor. This energy recovery improves the robot's efficiency and extends its operational time. The robot uses a combination of its sensors and control algorithms to smoothly decelerate, adjust speed, or change direction while ensuring that obstacles are avoided. The regenerative braking mechanism works in parallel with the navigation system, offering both energy conservation and enhanced mobility. This type of system is ideal for robots that operate over long distances or in environments where efficient energy use is crucial.

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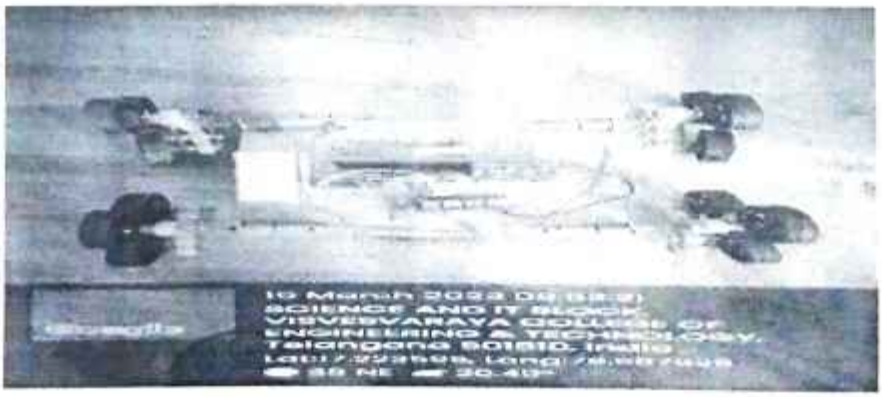
STAIR CLIMBING ROBOT

. A stair-climbing robot is a specialized type of mobile robot designed to navigate stairs and uneven surfaces, providing mobility in environments that are inaccessible to conventional wheeled robots. This abstract describes the working principles of a stair-climbing robot in a seven-line overview:

1. The robot uses sensors (such as infrared or ultrasonic) to detect stairs and obstacles in its path.
2. Upon reaching the base of the stairs, the robot positions itself correctly, aligning with the first step.
3. Specialized wheels or legs are employed to lift and grip the steps, enabling the robot to ascend.
4. The robot sequentially moves each part (either wheel or leg) over the step while adjusting its posture.
5. To maintain balance during the climb, the robot continuously monitors its stability through internal sensors like gyroscopes.
6. The robot follows a cyclical movement pattern, repeating the lift and engage actions for each step.
7. Upon reaching the top, the robot checks its position and can safely descend if required, reversing the process.

This system allows the robot to navigate stairs autonomously, making it suitable for applications in environments such as homes, offices, or rescue missions.



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HAND GESTURES CONTROLLED WHEEL BASED ROBOT EITH-VOICE CONTROLL & BLUETOOTH SENSORS

The hand gesture-controlled wheel-based robot uses sensors like accelerometers or cameras to detect specific hand movements, translating them into commands for the robot's movement. A microcontroller processes the hand gesture data and sends signals to the robot's wheels for forward, backward, left, or right movements. The robot also features voice control, where a voice recognition system captures spoken commands, enabling additional control options like start, stop, or specific directional instructions. Bluetooth sensors establish a wireless connection between the robot and a mobile device or controller for remote control. The combination of hand gestures, voice commands, and Bluetooth communication allows for flexible, intuitive navigation of the robot. The system processes input from these different sources simultaneously, providing seamless control in various environments. This multi-modal control enhances user interaction, making it suitable for various applications, including assistive technologies or robotics research.

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