

To  
Head of the Department  
Electronics and Communication Engineering

Subject: Application for approval of project title and objectives of the project

Dear sir, we would like to inform you that our project team has proposed title of the project as

## **IOT Based Underground Cable Fault Locator**

With following work/Objectives:

- Detect underground cable faults promptly as they occur to minimize service disruption and reduce repair costs. Pinpoint the precise location of cable faults, both in terms of distance and depth, to expedite repair and minimize excavation.
- Continuously monitor cable parameters such as voltage, current, and temperature to identify potential issues before they escalate into full-scale faults. Provide remote access to real-time data and fault information to enable quick decision-making and response from maintenance teams.
- Generate alerts and notifications to relevant personnel when a fault is detected, ensuring rapid response and reducing downtime. Improve customer satisfaction by reducing service interruptions and providing a more reliable power or communication service.

For this project we have selected base paper as

Paper Title: IoT based underground cable fault locator

Journal Name :

Publisher: IOP Publishing Ltd.

Publication year: 2020

Submitted by student Name/s:

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forwarded by

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Signature of the supervisor

**Prof. Mahendra Kumar**

**Dr. Atul Kumar Dwivedi**

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The proposed project title is

1. Approved
2. To be improved ----- Signature of HOD

## ABSTRACT

Project Title : **IOT based underground cable fault locator**

Keywords : Internet of things, Arduino Uno R3, Wi-fi (ESP8266), bridge rectifier, filter capacitor, 7805 regulator, level converter, real-time monitoring and precise fault location.

**Short Summary :** In this project, we'll design an IoT-based underground cable fault detector using Arduino Uno R3 and a Wi-Fi module. This system will continuously monitor the underground cables for faults and alert the maintenance personnel in real-time when a fault is detected. By leveraging IoT technology, we can remotely monitor the system and take proactive measures to minimize downtime and ensure uninterrupted power supply.

An IoT-Based Underground Cable Fault Locator is a specialized system designed to detect and pinpoint faults in underground power or communication cables. This technology combines IoT, sensors, and data analytics to quickly identify and locate cable faults, minimizing downtime and repair costs.

The IoT-Based Underground Cable Fault Locator is a cutting-edge solution for early fault detection in underground cables. Using advanced sensors and data analytics, it identifies and categorizes faults accurately, minimizing service disruption. With real-time monitoring and precise fault location, it streamlines maintenance, reduces downtime, and lowers costs. Historical data aids in preventive maintenance, optimizing efficiency, and ensuring compliance, ultimately elevating reliability, safety, and customer satisfaction in cable management.

List of components to be used:

1. **Arduino Uno R3:** The Arduino Uno R3 serves as the brain of the system. It controls all the operations, collects data from sensors, processes it, and communicates with the Wi-Fi module to send alerts or updates to the central monitoring system.
2. **Wi-Fi Module (e.g., ESP8266 or ESP32):** The Wi-Fi module enables the Arduino to connect to a local network or the internet. It facilitates remote monitoring and control of the system, allowing users to access real-time data and receive notifications about faults detected in the underground cables.
3. **LCD Display:** The LCD display provides a user-friendly interface for monitoring system status and displaying relevant information such as current readings, voltage levels, temperature,

and fault alerts. It enhances the accessibility and usability of the system.

4. Power Supply Components:

- **Step-Down Transformer:** Converts high-voltage AC input (230V) to a lower voltage suitable for the system's operation.
- **Bridge Rectifier:** Converts AC voltage to DC voltage.
- **Filter Capacitor:** Smooths out the rectified DC output, reducing ripple and ensuring a more stable voltage supply.
- **Voltage Regulator (e.g., 7805):** Regulates the voltage to a constant 5V, which is required for powering the Arduino and other components.

5. **9V Output AC Supply:** Provides power to specific components in the system that require a 9V input. This may include sensors, indicators, or the LCD display, depending on their voltage requirements.

6. **Resistance-based Cables:** These cables are used to simulate underground power cables. By varying the resistance in the cables, you can create different fault conditions such as short circuits or open circuits, allowing you to test the system's fault detection capabilities under various scenarios.

