IOT BASED CABLE FAULT DETECTION WITH GSM

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MOTIVATION

- Write the reason which motivates you to do this project work.

Ex:

The power supply in many areas is interrupted due to undetected cable faults, which take a long time to locate and fix.

OBJECTIVE

- **Write the objective which meets your motivation.**
- **Kindly use bullet format**

Ex:

- Develop an embedded system that detects faults in underground power cables
- Use voltage drop analysis to determine fault distance from the base station

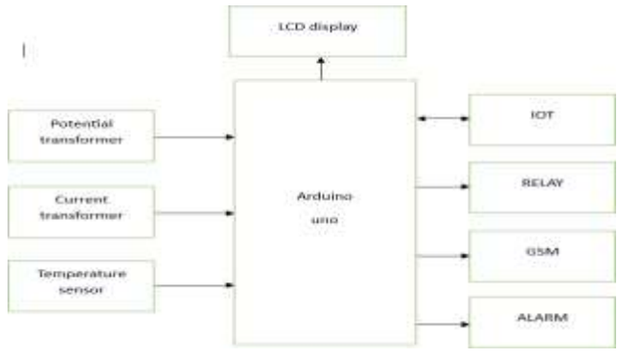
APPLICATIONS

- **Write the various applications of your project or where your project fits.**
- **Ex:**
  - Smart power distribution systems
  - Urban underground electrical grids
  - Rural electrification monitoring
  - Automated fault detection systems

EXPERIMENTAL SETUP

The setup includes an Arduino Uno as the main controller, connected to resistors and cables that simulate underground wiring. To detect faults, the system monitors voltage levels along the cable lines. A GSM module (SIM800L) is used to send fault location alerts via SMS. LEDs are used to indicate the type and location of the fault visually. The entire circuit is powered by a regulated power supply, and faults are manually triggered at different points for testing.

BLOCK DIAGRAM/ALGORITHM



WORKING PRINCIPLE

- **Write the working principle with in 4 to 5 points.**
- The system continuously monitors underground cables for voltage drops using a voltage divider network.
- When a fault occurs, the voltage level changes, which is detected by the Arduino microcontroller.
- The Arduino calculates the distance of the fault based on the resistance per unit length of the cable.
- A GSM module sends an SMS alert with the exact fault location to a predefined phone number.
- LEDs are used to visually indicate whether the fault is an open circuit or short circuit.

EXPERIMENTAL / SIMULATION RESULTS

- **The system accurately detected and located faults in underground cables.**
- **When a fault occurred, the GSM module sent an SMS with the exact location.**
- **The microcontroller processed voltage drops to identify fault type and distance.**
- **Simulation on Proteus/Multisim verified correct circuit response for LG, LL, LLG faults.**
- **The setup proved reliable for low-cost and real-time fault monitoring.**

CONCLUSION

The proposed system provides an efficient and cost-effective solution for detecting faults in underground cables. By integrating IoT and GSM technologies, the system enables real-time monitoring and instant fault location reporting via SMS.

SUPERVISOR :