INTELLIGENT MINE SAFETY SYSTEM

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OBJECTIVES

- IOT based coal mine safety monitoring and alerting system project is proposed for the purpose of implementing security and detection of hazards inside a coal mine. This project is one of the important IOT projects. The project consists of two modules that are the receiver and the transmitter modules. The transmitter module has temperature, smoke, and methane sensors installed in it. The transmitter module also carries an LCD and an RF transmitter. The receiver module consists of an RF receiver, an LCD display, and a WiFi module. All the sensor data is transmitted to the remote IOT server every 2 minutes. The circuit also contains an alarm buzzer and alert system with LED Lights.

MOTIVATION

- Coal is one of the most important commodities and raw materials for a number of industries. It is used for power generation as well as the extraction of many by-product chemicals and materials. The extraction of coal from the coal mine is, however, a complex and dangerous process. Many accidents take place in the coal mines world over which causes fatalities and economic losses. The dangers and hazards can be reduced significantly by making use of the latest smart technologies. We aim to reduce these casualties by monitoring the conditions inside the mine and raising alert when the conditions become prone to accidents.

TOOLS USED

- Arduino UNO WiFi
- DHT Sensor - for Temperature and Humidity
- Gas Detection Sensors
- Temperature Sensor
- Pressure Sensor
- Soil Moisture Sensor
- Rain Detection Sensor
- Light Intensity Sensor
- Flame Sensor
- Resistors and Jumper Cables

INNOVATIONS

- The system takes into account the major causes leading to disasters in the mining industry like increase in temperature, air pressure, humidity, soil moisture, presence of toxic gases, rainfall etc. which leads to loss of invaluable lives and resources.
- The Intelligent Alerting System and Informative Dashboard helps the respective authorities to monitor the conditions in Real Time and send assistance in times of need.
- The system gathers data from an array of embedded wireless sensor networks and decided accordingly.
- The proposed system is designed to be both functionally and economically effective.
- Alarm System triggers when the sensor values cross a specific threshold.

THANK YOU