**Coal Mine Safety Surveillance**

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**Abstract:**

This project helps to tackle the problem of coal mine accidents which results in the death of several people per year. It is found out that the rate of fatality in the coal mine industry is nearly six times the rate for all private industry. Most of the accidents are due to fire or gas and lack of a proper surveillance or rescue system. By implementing a Coal Mine Surveillance bot, which can move around unmanned in the mine and detect the temperature level, fires we can prevent major accidents. We can even use the bot to detect any human presence at the restricted area.

Components used Arduino UNO, Breadboard, 16\*2 LCD display, Temperature sensor, Gas sensor, Ultrasonic sensor, PIR sensor, Piezo buzzer, Motor.

**Arduino UNO:** We will use Arduino UNO as a microcontroller to connect and coordinate with all the components effectively.

**Temperature sensor:** The temperature sensor is used to monitor the surrounding temperature.

**Gas sensor:** To detect the dangerous gas.

**Ultrasonic sensor:** For autonomous surveillance we will be using two ultrasonic sensors for obstacle avoidance.

**PIR sensor:** To detect any human presence at the restricted area.

We will be using motors for the moment of the bot, to display the sensor values we will use an 16\*2 LCD display and a piezo buzzer to alert when there is any abnormal situation.

For the fire detection we will use the combination of temperature and gas sensors output.

We can use IoT to remotely monitor the surroundings for more safety purpose but in this project we will be permitting ourselves up to displaying the environmental parameters in an LCD display.