Dairy No. 28382/2021-CO/L

Title: Advanced Worker Safety Helmet

Introduction

In whatever form of construction, worker safety should always be a primary priority. Underground mining operations are a high-risk achieve in terms of worker safety and health. The diverse procedures utilized to harvest various minerals are to blame for these hazards. The deeper the mine, the higher the risk. These worries about safety are especially severe in the coal business. As a result, worker safety should be a major priority in any sort of mining, whether coal or other minerals. Underground coal mining is more dangerous than open pit mining due to ventilation concerns and the possibility of collapse. The use of heavy machinery and excavation procedures, pose safety dangers in all types of mining. Modern mines routinely adopt a wide range of safety protocols, worker education and training, and health and safety requirements, resulting in substantial modifications and improvements in both opencast and underground mining

Keywords—Internet of Things, Global System for Mobile communication, Sewage Gas monitoring system

Related work

The utilization of a sewage monitoring system sets in place a useful approach to remind individual or facilities employing these workers, to evacuate areas when ppm levels of certain gases go higher than recommended. This saves lives of the employees working in harmful environments and saves them from hazards. Organizations often employ septic tanks and chemical treatment of sewage sites in industries prior to sending in manual workers on site, however no system is in place to check on hazardous levels. A smart system is defined asa cyber-physical system or an embedded system, that can process sensor data and assurea wireless communication to the server. Different systems have been proposed earlier by scientists researching the environmental pollution and air hazards due to industrial sewage.

Aim: “The main aim of this project is to developed IOT Based Tracking and working smart safety helmets”

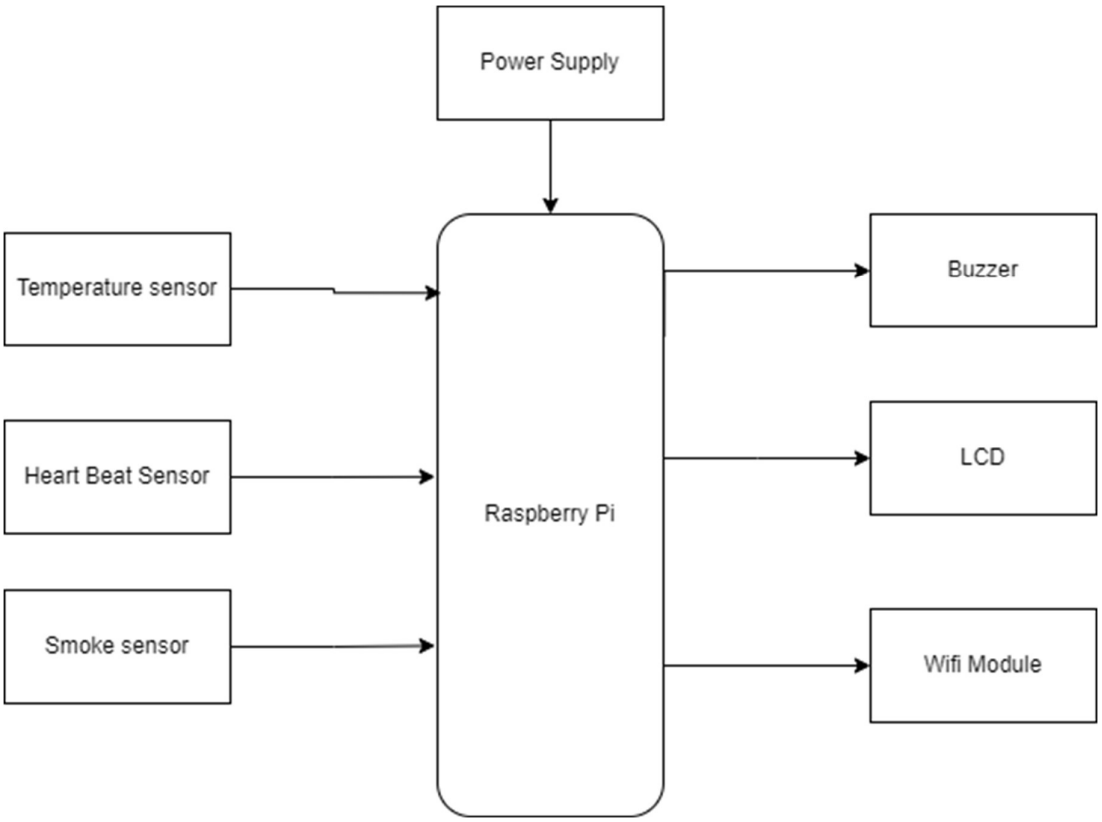
Objective

- In every business, the most important factor is safety. Safety is of the utmost importance

in the mining industry. Security is an important aspect of anything.

- Our major goal is to prevent any type of mining accident based on ZIGBEE with early-warning intelligence. IOT can be used to track the status of personnel.
- To avoid the conditions of environment changes.
- To maintain security is a fundamental aspect of all.
- To avoid accidents of workers working in mining industries.

Block diagram



Advantages of Proposed System

- Assuring miners safety in case of mining accidents that occurs due to increase in temperature, pressure, force.
- To help the coal miners inside the mines to communicate with the outside world.

- To monitor the conditions inside the mines and intimate the miners in case of emergency.
- GPS is used to track the position of miners.
- Alerting the miners whenever the helmet is removed

Disadvantages of Proposed System

- Smart helmets mainly use inexpensive and lightweight sensors. Therefore, there is a possibility that the sensor malfunctions frequently, and a false alarm occurs.

Application

- Mining industries
- Construction sites
- Disaster prevention
- Rescue request
- Police services

Conclusion

Thus, a smart helmet for hazardous event detection, monitoring the surrounding environmental conditions and updating information like GPS location and sensor data to the central console for easy tracking and providing oxygen supplements to avoid the inhalation of poisonous gases is designed.

Future Scope

- To avoid the range issues, we can attach a Signal/network Catcher.
- For better communication Walkie Talky can be added.
- To date, there has been in-sufficient research on the security and privacy of data collected by smart helmets through sensors. It can be improved to maintain the privacy of data collection.
- Small Fans

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