SAFETY HELMET FOR PRE INFORMATION TRANSMISSION SYSTEM FOR UNEXPECTED EVENTS

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ABSTRACT

The main aim of the project is protective cap has been created that can recognize of dangerous occasions in the mines business. In the advancement of cap, we have considered the three primary sorts of risk, for example, air quality, protective cap evacuation, and impact (excavators are struck by a question). The first is the focus level of the perilous gases, for example, CO, SO2, NO2, and particulate issue.

The second risky occasion was named an excavator evacuating the mining protective cap off their head. An IR sensor was created unsuccessfully however an off-the rack IR sensor was then used to effectively decide when the protective cap is on the excavator's head. The third dangerous occasion is characterized as an occasion where diggers are struck by a question against the head with a power surpassing an estimation of 1000 on the HIC (Head Injury Criteria). An accelerometer was utilized to quantify the quickening of the head and the HIC was figured in programming.

The format of the perception programming was finished, anyway the usage was unsuccessful. Tests were effectively done to adjust the accelerometer. PCB's that were planned and made incorporated a breakout board and a model board. An entire programming execution was done in light of Contact working framework keeping in mind the end goal to do the control of the estimating of sensors and of computations finished with the deliberate qualities. This paper exhibits the embraced configuration itemizing answers for issues brought up in past research.

I. INTRODUCTION

South Africa is known for its wide and different mineral resources and broad mining industry. Managers are considered as possible for all harmful effects upheld under their supervision, and should in like manner think about possibly perilous conditions. The issue tended to have in the documentation at variety of mining head defender with a particular ultimate surely having objective larger security care in diggers. When working with rowdy equipment, observing one's condition can a section having time challenge.

In the mining business diggers have a tendency to clear a segment of their prosperity adapt light in way that the contraption is excessively significant, warm or clumsy, making it impossible to work with. In any case, diggers all around don't remove their defensive tops. Eventually mining prosperity tops simply have

the inspiration driving guaranteeing the excavator's head against potential hazardous thumps. The prosperity defensive tops don't have any development added to it to tell diggers when a related excavator has encountered an unsafe event.

In this way the motivation behind the venture depicted having paper to change a current mining wellbeing cap to influence the protective cap will make easy to not harm by adding a remote power hub to arrange. The cap security assignment was stretched out to planning the framework sufficiently small to have fit into the cap and keep running sufficiently long while running on battery control. More energy has been put for a base.

Head protector having mining should be achieved with a cap inside the ground altered to cap. At the point when an excavator expels his protective cap. Accordingly chance that a protest falls on a mineworker being careful wearing his cap he can wind up oblivious or stationary. The work may get disturbed if any damages are dangerous. Thirdly, perilous gases should be recognized and reported. In the territory of mining innovation, continuous screen and control of mine peril are more mind boggling. Mine wellbeing modules are arranged to convey to ground control or a focal station.

A genuine basic issue in mines is risky gases. Frameworks utilized as a part of a mine can make extraordinary vibrations and increment the level of dangerous gases, for example, CO, SO2, NO2 and particulate issue. The process inside has been done not able to see each and every continually.

II. EXISTING SYSTEM

The problem addressed in this project was the improvement of a mining helmet in order to ensure more safety awareness between miners. When working with noisy equipment, being aware of one's surroundings can sometimes be challenging. In the mining industry miners tend to remove some of their safety gear because the gear is too heavy, warm or uncomfortable to work with. So this system is developed to intimate the authorities in critical conditions.

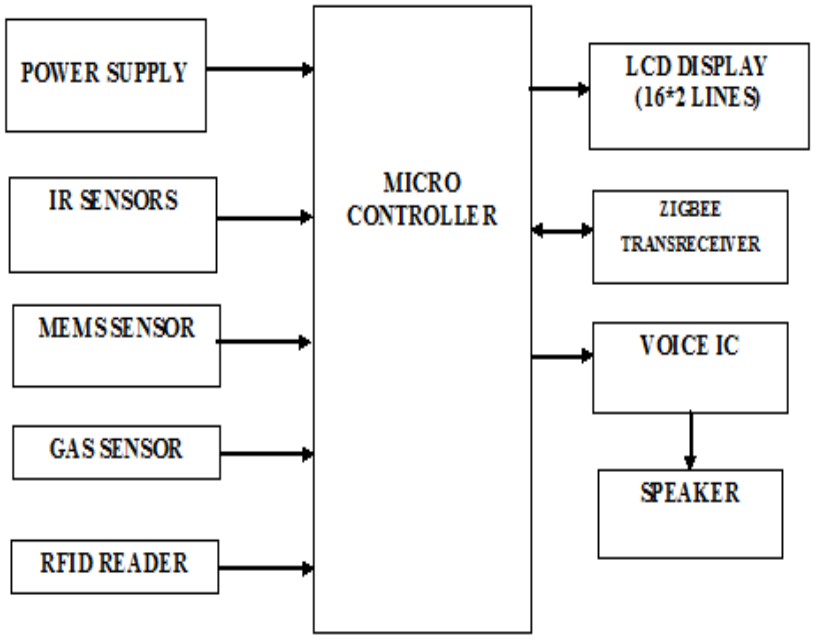
III. LITERATURE SURVEY

A cost effective ZigBee-based wireless mine supervising system is presented in this article. This scheme used intelligent helmets as voice terminal and ultra-low-power nodes of wireless sensor network. The programmer adopted ZigBee wireless technology to build wireless sensor networks, realized real-time surveillance with early-warning intelligence on methane, temperature, humidity in mining area, and used speech communication to reduce potential safety problems in coal production.

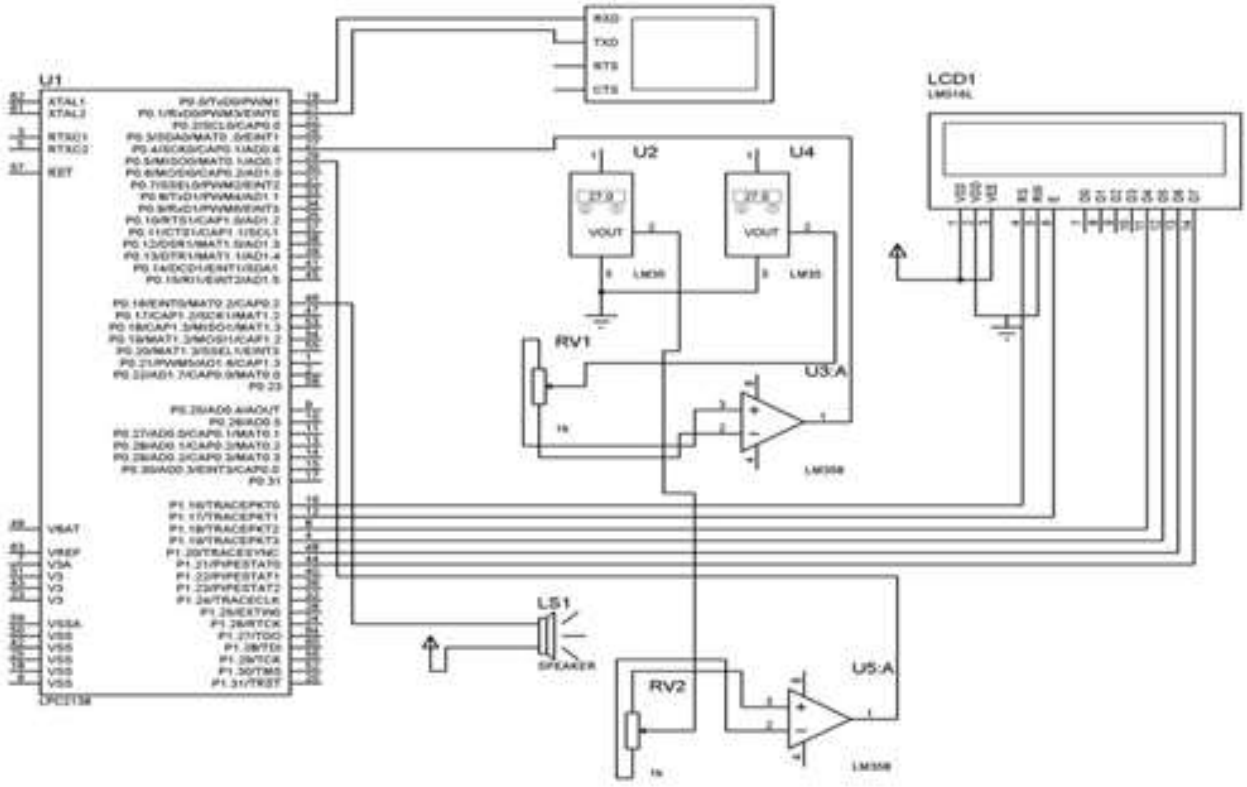
The proposed work is to screen the underground coal mining gas spillage framework utilizing zigbee module. This framework gathers the underground mine parameters, for example, carbon mono-oxide, methane gasses and temperature, stickiness estimation of coal mine through zigbee. In the current framework, at whatever point the limit values increments over the edge esteem, then a message will be sent through base station unit for the approved client. In the proposed framework the data send from the principle server to all specialists, if the conditions get to be unfavorable in the working place, diggers will be alarmed to leave the

spot, through which the coal mine mishaps can be stayed away from. So the profitability can be expanded and wellbeing to the coal mining procedure.

IV. PROPOSED SYSTEM BLOCK DIAGRAM:



V. SCHEMATIC DIAGRAM



WORKING MODEL

A smart mining helmet was developed that is able to detect four types of hazardous events such as air quality, helmet removal, and fire and vibration sensor. In order to explain the entire system, the system is divided into six units. Helmet remove sensor, which is used to detect the miner, is wearing the safety helmet or not this is achieved through the IR sensors. Air quality sensor, which is used to detect Air pollution from coal mines. It is mainly due to emissions of particulate matter and gases include methane (CH4) and carbon monoxide (CO). Data processing unit the micro controller which is used to get all the data from the above all sensor and concludes whether need any intimation to wireless unit or the user wearing it. Wireless transmission and alerting unit is used to transfer the data obtained from the processing unit. It is achieved through Zigbee .The Block Diagram for mine worker helmet and for supervisor.

In this Project ARM7 is used to communicate the Input and Output devices. LPC2148 processor is used to process the inputs according to the requirements. The resulted values passed to the LCD and also to the web server using WIFI. If the sensed values were exceeded threshold limit buzzer will be on.

RFID

RFID is short for Radio Frequency Identification. For the most part a RFID framework comprises of 2 expressions. A Reader, and at least one Transponders, otherwise called Tags. RFID frameworks developed from scanner tag marks as a way to naturally distinguish and track items and individuals. You will be for the most part comfortable with RFID

Frameworks as observed in:

•Access Control.

RFID Readers set at passages that require a man to pass their closeness card (RF tag) to be "read' before the entrance can be made.

•Contact less Payment Systems.

RFID labels used to convey installment data. RFIDs are specific suited to electronic Toll gathering frameworks. Labels connected to vehicles, or conveyed by individuals transmit installment data to a settled perused appended to a Toll station. Installments are then routinely deducted from a client’s record, or data is changed straightforwardly on the RFID tag.

•Product Tracking and Inventory Control. RFID frameworks are generally used to track and record the development of conventional things, for example, library books, garments, production line beds, electrical merchandise and various things.

ZIGBEE

Zigbee is the name of a detail for a suite of irregular state correspondence traditions using pretty much nothing, low-control mechanized radios in perspective of the IEEE 802.15.4-2006 standard for remote individual zone frameworks (WPANs, for instance, remote headphones partner with PDAs through short-go radio. The development is intended to be less troublesome and more affordable than various WPANs, for

instance, Bluetooth. ZigBee is engaged at radio-repeat (RF) applications that require a low data rate, long battery life, and secure frameworks organization.

APR9600

RE-RECORDING VOICE- IC

The APR9600 gadget offers genuine single-chip voice recording, non-unstable capacity, and playback capacity for 40 to 60 seconds. The gadget underpins both irregular and consecutive access of various messages. Test rates are client selectable, enabling creators to modify their outline for novel quality and capacity time needs. Incorporated yield amplifier, microphone speaker, and AGC circuits incredibly improve framework plan. The gadget is perfect for use in compact voice recorders, toys, and numerous other shopper and industry applications.

MQ-5 SMOKE SENSOR

* High affectability to LPG, petroleum gas, town gas
* Small affectability to liquor, smoke.
* Fast reaction, Stable and long life
* Simple drive circuit

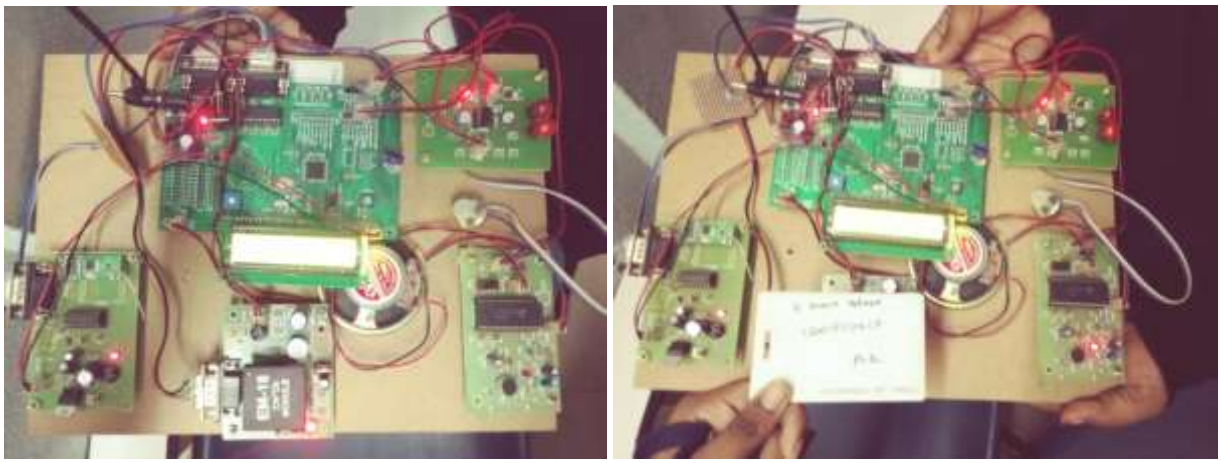
MEMS SENSOR

Smaller scale Electro-Mechanical Systems, or MEMS, is a development that in its most wide casing can be portrayed as downsized mechanical and electro-mechanical parts (i.e., devices and structures) that are made using the strategies for scaled down scale creation. The fundamental physical estimations of MEMS contraptions can change from well underneath one micron on the lower end of the dimensional range, the separation to a couple of millimeters.

IR SENSORS

The least expensive approach to remotely control a gadget inside a noticeable range is by means of Infra-Red light. All sound and video hardware can be controlled thusly these days. Because of this broad utilize the required segments are very shoddy, hence making it perfect for us to utilize IR control for our own tasks. Infra-Red really is typical light with specific shading.

VI. EXPERIMENTAL RESULTS



Working Models of the system with the various interfaces

VII. ADVANTAGES

- The transmission was fruitful at separations more than twofold than were determined.
- The basic levels of the dangerous gases, for example, CO, CH4 in the mines business has been demonstrated through alarming unit.
- The framework effectively distinguished when the cap is expelled 10 cm off the sham head with a normal deviation of 0.3% too far.

APPLICATIONS

- It can be utilized as a part of continuous security framework.
- We can actualize the entire circuit into little , module later
- Less power devouring security framework.
- This security framework innovation can additionally be improved into four wheeler likewise by supplanting the head protector with safety belt.

VIII. CONCLUSION & FUTURE SCOPE

The hazardous events were classified as a miner removing the mining helmet off their head. An off-the-shelf IR sensor was then used to successfully determine when the helmet is on the miner's head. The system was extensively tested in order to determine whether or not the system works to the requirements. It was observed that the accelerometer should be placed on the inside of the helmet and not on the plastic harness inside the helmet to compensate for the weight difference.

The framework can be moved forward. Including an outer radio wire would expand the range or enhance the flag quality so as to take into consideration more human interface. The separation may at present need to be restricted as it is unreasonable to caution mineworkers that are too far away to discover the excavator who is encountering a dangerous occasion. The framework can be enhanced by adding all the more estimating gadgets to check the excavator's circulatory strain and pulse. Gas fixation can be estimated too.

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