IoT based Mining Workers Safety Monitoring and Alerting System by using Raspberry Pi

G. Ahmed Zeeshan [1], Dr. R. Sundara Guru[2], Mohammed Abdul Aziz[3]
Assistant Professor[1], Professor and Head[2], M.Tech[3]
Department of Electronics and Communication Engineering[1,2,3]
Global Institute of Engineering and Technology, Moinabad, Hyderabad, Telangana, India[1,3]
SMVIT, Bangalore, Karnataka, India[2]

Abstract - Today, security of mineworkers is a noteworthy test. Excavator's wellbeing and life is defenseless against a few basic issues, which incorporates the workplace, as well as its delayed consequence. To build the profitability and lessen the expense of mining alongside thought of the wellbeing of laborers, an inventive methodology is required. Mining wellbeing checking framework in light of sensor system can auspicious and precisely reflect dynamic circumstance of staff in the underground areas to ground PC framework and portable unit. Mining assumes essential job in a large portion of the creating nations to meet the vitality requests. However, a similar time mining industry is confronting numerous issues which predominantly incorporate the excavator's security. Particularly the underground mine condition is exceptionally intricate. So we are actualizing a framework which can screen laborers wellbeing in underground and because of any reason if excavator's tumbles down and lose awareness additionally appropriate treatment isn't given them around then, so number of diggers are passed on. To defeat this issue, the proposed framework give crisis alarm to the manager, if laborer tumble around any reason and furthermore if any wellbeing parameter of specialist like temperature, mugginess, pulse is unusual.

Keywords: Raspberry Pi, Temperature-Humidity, Heart beat sensor, Accelerometer, Bluetooth etc.

I.   INTRODUCTION

Wellbeing of the human life is most critical worry in an industry. In mining ventures because of the natural condition, there are odds of catastrophes of always lives are lost and numerous innumerable diggers are harmed. To keep away from an undesirable wonder all the mining business ought to take after the fundamental prudent steps. To keep away from any loses to the creation and harming of human wellbeing, solid and consistent correspondence framework is required. The present checking arrangement of the mining for the most part utilize link organizes in numerous spots which are as yet unequipped for sparing existences of those specialists which

are working in this expert. Another impediment of wired correspondence is whether it is harmed because of land slide or blast, it is exceptionally troublesome and costly to reinstall it once more. Our proposed framework depends on wired and additionally remote correspondence which is produced for quick and solid correspondence with no intrusion. So in the proposed framework we are utilizing remote Bluetooth correspondence for observing laborer wellbeing, we can likewise screen by utilizing web server with help of IOT.

II.   BLOCK DIAGRAM
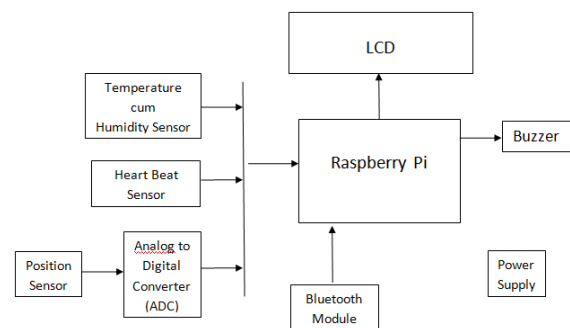
Fig(3.1) System block diagram

Fig(3.2) Block diagram of monitoring Section

III.   SYSTEM OVERVIEW

Raspberry Pi: The Raspberry Pi is a little yet full-included PC on a solitary board. It connects to a screen and you join a

console, mouse and speakers. The Raspberry Pi can be utilized for perusing the web, making reports and spreadsheets, playing recreations, watching recordings and parcels more. It likewise gives an awesome domain to picking up programming and advanced making. You can likewise interface up equipment to the Pi's GPIO (universally useful info/yield) sticks and figure out how to program utilizing hardware segments.

Power Supply: This segment is intended for providing Power to every one of the segments said above. It fundamentally comprises of a Transformer to venture down the 230V air conditioning to 9V air conditioning taken after by diodes. Here diodes are utilized to correct the air conditioner to dc. After amendment the got undulated dc is sifted utilizing a capacitor Filter. A positive voltage controller is utilized to manage the gotten dc voltage.

LCD Display: This area is fundamentally intended to show up the status of the venture. This task influences utilization of Liquid Crystal To show to show/provoke for vital data.

Accelerometer: Accelerometers are increasing speed sensors. An inertial mass suspended by springs is followed up on by increasing speed powers that reason the mass to be avoided from its underlying position. This diversion is changed over to an electrical flag, which shows up at the sensor yield. The utilization of MEMS innovation to accelerometers is a generally new improvement.

Buzzer Section: This segment comprises of a Buzzer. The signal is utilized to caution/show the fruition of process. It is now and again used to demonstrate the beginning of the implanted framework by cautioning amid start-up.

ADC: ADC is a gadget changing over signs from simple to advanced arrangement. This is utilized to change over the sensor esteems which are in simple arrangement to advanced shape and give it to microcontroller.

Bluetooth: AUBTM-22 is a Bluetooth v1.2 module with SPP profiles. The module is planned to be coordinated into another host framework which requires Bluetooth capacities. The HOST framework could send charges to AUBTM-22 through a UART. AUBTM-22 will parse the charges and execute appropriate capacities, e.g. set the most extreme transmit control, change the name of the module. Furthermore, next the module can transmit the information get from the UART with SPP profiles.

Humidity sensor: Humidity sensor is a gadget that measures the relative moistness of in a given zone. A stickiness sensor can be utilized as a part of both inside and outside. Stickiness sensors are accessible in both simple and advanced structures.

Pulse Sensor: Heart rate information can be extremely valuable whether you're planning an activity schedule, examining your action or nervousness levels or simply need your shirt to squint with your heart beat. The Pulse Sensor Amped is an attachment and-play heart-rate sensor. Just clasp the Pulse Sensor to your ear cartilage or fingertip.

Temperature Sensor: LM35 is a temperature detecting devise. It is utilized to detect the temperature. In this venture by relies upon the estimation of temperature ready will produce.
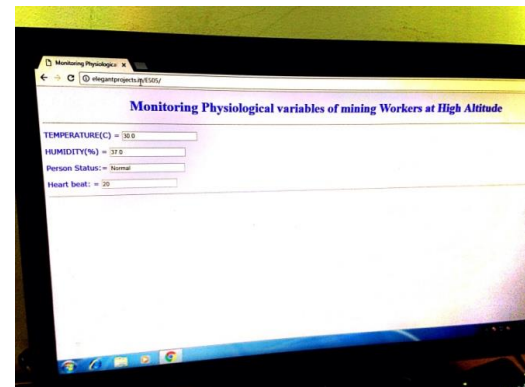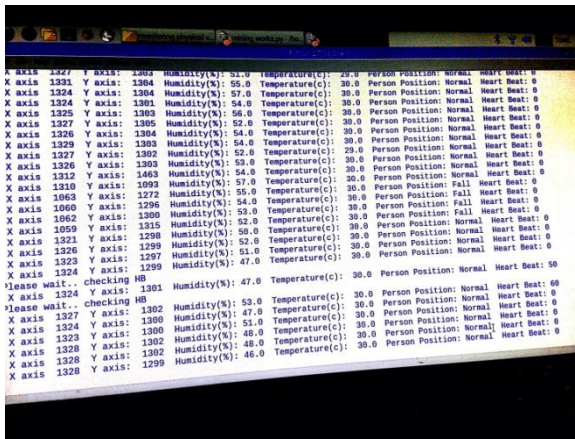
IV.   RESULTS
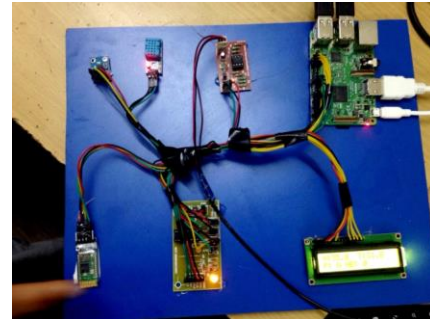
Fig(5.1) Hardware components of system

Fig(5.2) Parameters of worker will display on LCD

Fig(5.3) Health Parameters display on web server

Fig(5.4) If worker falls down then alert on web server

V.   CONCLUSION

A constant checking framework is created to give clearer and more point to point viewpoint of the underground mine. This framework is showing the parameters of specialist wellbeing on the checking unit; it will be useful to all excavators display inside the mine to spare their life before any setback happens. Caution triggers when sensor esteems crosses the limit level.

VI.   REFERENCES

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