International Conference on Emerging Trends in Engineering, Management and Technology - (ICTEMT 2022)

"SMART HELMET FOR ACCIDENT PREVENTION AND COAL MINES SAFETY MONITORING AND ALERTING SYSTEM"

Presented By

BHAVYA SHREE R(1RR15IS006)

DISHA KV (1RR15IS015)

SWETHA B (1RR15IS045)

Supervisor

Dr. NEHA SINGHAL M.Tech, Ph.D

Associate Professor

Department of ISE, RRCE

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

RAJARAJESWARI COLLEGE OF ENGINEERING

Mysore Road Bengaluru - 560074

Presentation Outline

- Introduction

- Literature Survey / Background of the Work

- Existing System & Limitations

- Proposed System

  – Objectives

  – Block diagram

  – Implementation and Contribution

  – Additional Features & Applications & Advantages

- Result and Discussions

- Conclusion & Future Scope

- References

INTRODUCTION

- A Smart Helmet has been developed that is able to detect of hazardous events in the mines industry.

- In the development of helmet, we have considered the three main types of hazards such as air quality, helmet removal, and collision .

- This can also be used for the road safety purposes to avoid accidents as well as in any mines.

INTRODUCTION

- The problem addressed here is the improvement of the helmet in order to ensure more safety awareness between miners and riders.

- Presently, these safety helmets only have the purpose of protecting the human's head against potential hazardous gases. The safety helmets do not have any technology added to it to let miners know when a fellow miner has encountered a hazardous event.

- Therefore, the purpose of the project described in this paper was to modify an existing safety helmet to make even safer by adding a wireless sensor node network.

PROBLEM STATEMENT

- The problem addressed is the improvement of the helmet in order to ensure more safety awareness among miners and riders.

- The persons who are working in the mines has to face various environmental parameters problems.

- Therefore, the purpose of the work presented here is to modify an existing safety helmet to make even safer by adding few features using wireless sensor node network to enhance safety.

EXISTING SYSTEM

- The present concept there is <u>no such smart helmets</u> present in existence.

- Meanwhile there are some technologies which create such smart helmet to provide the safety for the bike riders and to prevent accidents.

- The workers are not educated for wearing the helmet while working in the fields.

- Therefore, many human loss have been occurring in the mining industries as well as in the road safety systems.

PROPOSED SYSTEM

- The aim of the project is to design a wireless helmet for coal miners using Zigbee era. The machine is a value powerful ZigBee-based wireless mine supervising machine.

- Software adopted ZigBee technology to build wireless sensor networks, determined out real-time surveillance with early-warning intelligence on temperature, leakage of gasoline in mining place, and alerting the manage station the use of wireless zigbee technology.

- The machine also monitors the mines and if it exceeds the threshold degree, it alerts via alarm the usage of buzzer and also displays on LCD to the person.

OBJECTIVES

- The main objective of the project is to design a low-cost intelligent helmet that is capable of identifying alcohol consumption and preventing road accidents.

- The system is capable of providing security and safety of the bikers against road accidents. The circuit is so designed that the bike won't start without wearing helmet and if the rider is drunk.

- In case of accident, GSM system will globally locate the biker and immediate message will be sent to the family members about the location of accident.
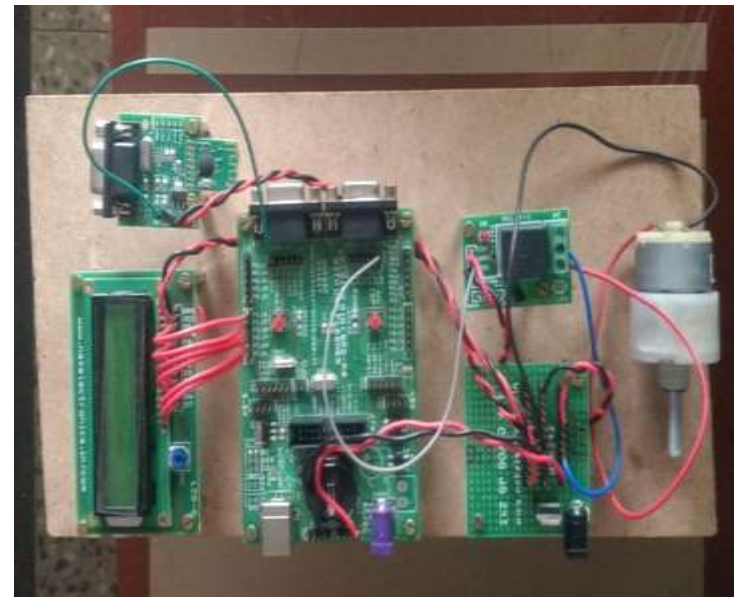
BLOCK DIAGRAM
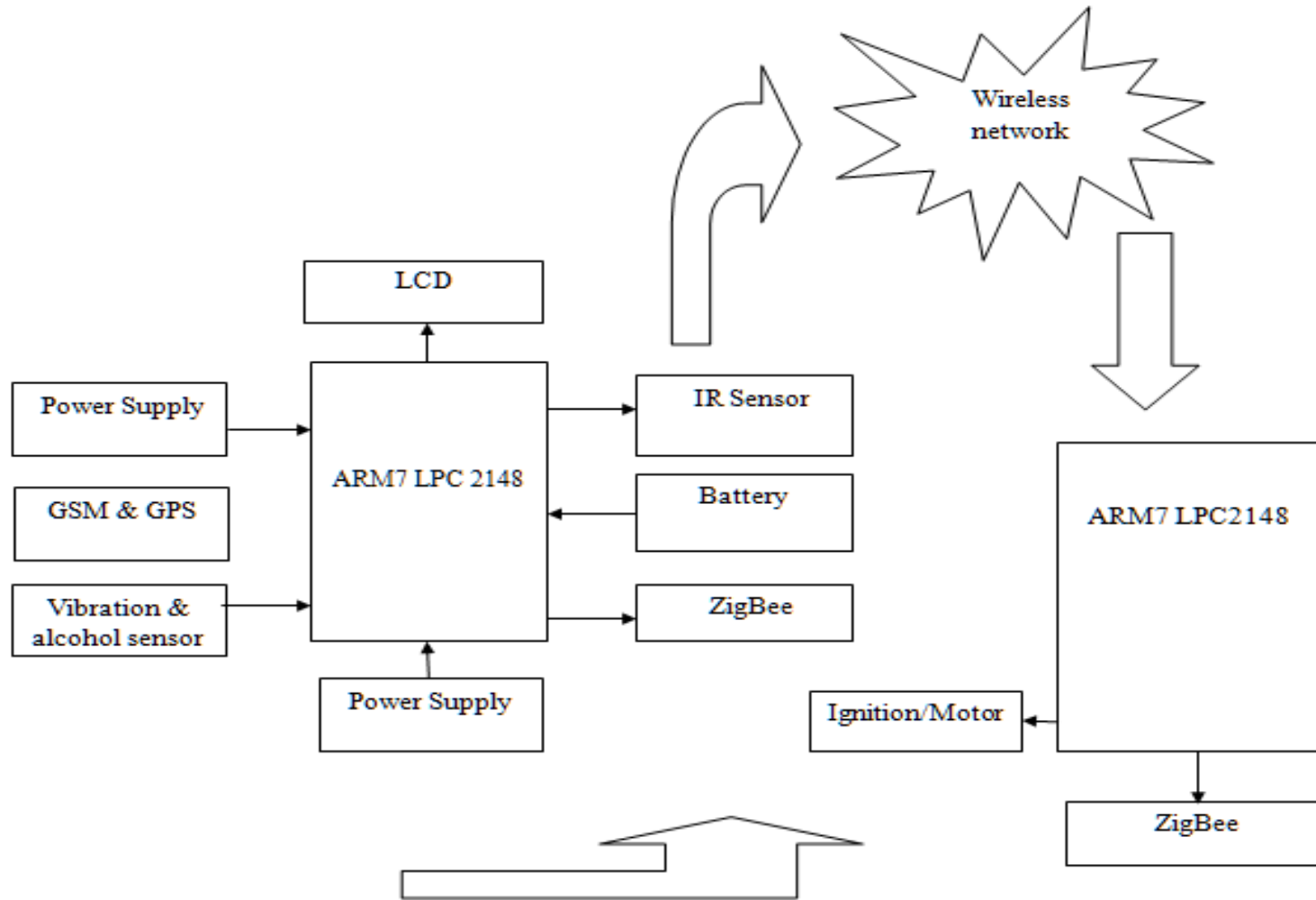
# IMPLEMENTATION / PROPOSED PROTOTYPE MODEL

(a) Helmet prototype   (b) Vehicle Prototype

In the present work, the programming of ARM7 LPC2148 microcontroller has been done in Embedded C language. Firstly, a motorcyclist or miner should wear the proposed intelligent helmet when on the road or the mine field. Then, the proposed intelligent helmet will automatically start the motor

RESULTS

(a) LCD warnings
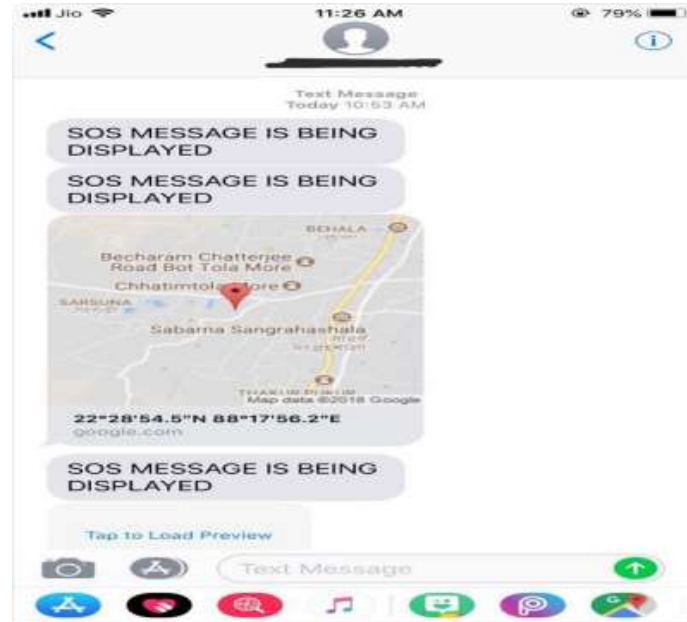
(b) SOS message

Any warnings to be displayed is done through the LCD and if the person collapses from the vehicle the buzzer is alarmed and the alert message is sent to all the contact list.

FEATURES & ADVANTAGES

- The system provides safety for the workers in mines.

- The system allows the workers to wear the helmet always in case of failure to wear the intimation will be sent to the management.

- The system detects the hazardous gases and intimates the status to workers for safety.

- In case the workers hit any hard object then information will be sent the management for immediate action.

APPLICATIONS

- The concept can be used in everyday transportation for the two wheelers.

- It can be applied for the workers in building construction.

- It can be used for the workers in fire brigades

- The project can be used to provide safety for military man.

CONCLUSION &FUTURE SCOPE

- The main purpose to design this project is safety of person in coal mines as well as in roadways.

- The proposed system has been successfully tested and has shown quick response to the hazardous parameters variation. It can conclude that this system will greatly help in reducing future casualties caused by sudden changes in these parameters and help make the man work safer.

- The prototype developed yielded satisfactory results.

REFERENCES

[1] Saha, HimadriNath, Abhilasha Mandal, and Abhirup Sinha."Recent trends in the Internet of Things." Computing and Communication Workshop and Conference (CCWC), 2017 IEEE 7th Annual. IEEE, 2017.

[2] C. J. Behr; A. Kumar; G. P. Hancke , A smart helmet for air quality and hazardous event detection for the mining industry, 2016 IEEE International Conference on Industrial Technology (ICIT).

[3] A. Ajay ; G. Vishnu ; V. Kishoreswaminathan ; V. Vishwanth ; K. Srinivasan ; S. Jeevanantham, Accidental identification and navigation system in helmet, 2017 International Conference on Nextgen Electronic Technologies: Silicon to Software (ICNETS2).

[4] SudharsanaVijayan, Vineed T Govind, Merin Mathews, SimnaSurendran, Muhammed Sabah, "ALCOHOL DETECTION USING SMART HELMET SYSTEM", International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE) ISSN: 0976-1353 volume 8 issue 1 –APRIL 2014.