

# Smart Helmet

R. Mohana Priya, L. K. Hema, Jaideep Bensley, Ajmal Abubacker, Surya Muthaiah



**Abstract:** The proposed system includes smart helmet where in the IR sensor is enabled only when the helmet is put on. This system also incorporates other features like GPS and Accelerometer. Such features serve as the rider aids. The IOT techniques has added in this systems to monitor a vehicle of the respective people and has used to send the message if any changes occurred in the above parameters

**Keywords:** Accident Detection, GPS Location, Temperature, MEMS Sensor Value, Smoke Sensor Value.

## I. INTRODUCTION

It is a new approach for person who have interest in riding the motor cycle .It will provide a safe riding to them. The idea is implemented by Arduino. The operation of this helmet is bounded with MEMS sensors which is connected to the Arduino board. Whenever the rider lose the balance there is a maximum chance of hitting the ground. The sensor attached to it senses the effect of accident and Arduino extract the GPS data using the GPS module interfaced with the Arudino. When the data exceeds minimum stress limit, the GPS data is uploaded to the cloud along with MEMS Sensor values .In the proposed system includes smart helmet where in the IR sensor is enabled only when the helmet is put on. This system also incorporates other features like GPS and Accelerometer. Such features serve as the rider aids. The IOT techniques has added in this systems to monitor a vehicle of the respective people and is used to send the message if any changes occurred in the above parameters.

## II. SYSTEM DESIGN

ATMEGA 48P/168P/328P is a CMOS based 8-bit .It is a low power consuming system. The design is based on RISC architecture. The instruction is executed by using a single clock cycle. The throughput is approached 1 MIPS per MHz allowing the system designer to optimize power consumption versus processing speed.

Revised Manuscript Received on February 28, 2020.

\* Correspondence Author

**R.Mohana Priya\***, Assistant Professor, Department of Electronics and Communication at AVIT, Paiyanoor.

**L.K.Hema**, Professor and Head, Department of Electronics and Communication at AVIT, Paiyanur, Tamil Nadu.

**Jaideep Bensley**, U.G student, Department of Electronics and Communication Engineering, Aarupadai Veedu Institute of Technology, VMRF.

**Ajmal Abubacker**, U.G student of Department of Electronics and Communication Engineering studying Aarupadai Veedu Institute of Technology, VMRF .

**Surya Muthaiah**, U.G student of Department of Electronics and Communication Engineering studying Aarupadai Veedu Institute of Technology, VMRF .

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

## III. WORKING PRINCIPLE

Smart Helmet is a Device which helps us to know when a Rider meets with an accident. This device will be safely fixed inside the helmet , whenever the rider meets with an accident suddenly the accelerometer starts working only when high amount of pressure is applied on it , If the pressure is high it will detect the accident and starts working. If the Intensity of the accident is less than the data will not be send to the cloud .In this project we have introduced new things to the existing project such as temperature sensor, smoke sensor and GPS all this three things work together whenever vehicle met with accident . Here Temperature sensor is used for sensing the rider temperature when he is met with an accident, if the temperature is high then the uploaded data is checked by the authorities and sufficient action is taken. GPS is given to know the exact Location to know where the accident took place.

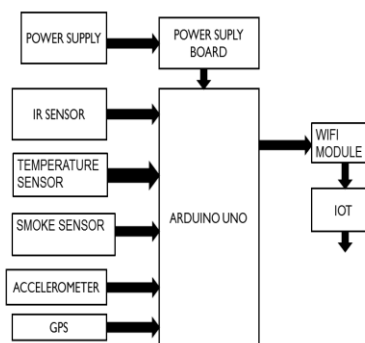


Fig.1: Block Diagram

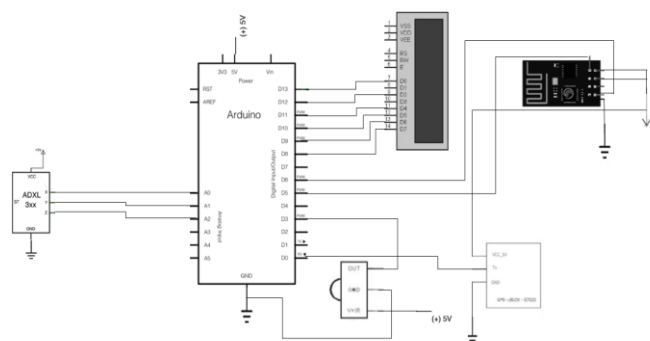


Fig 2: Schematic Diagram

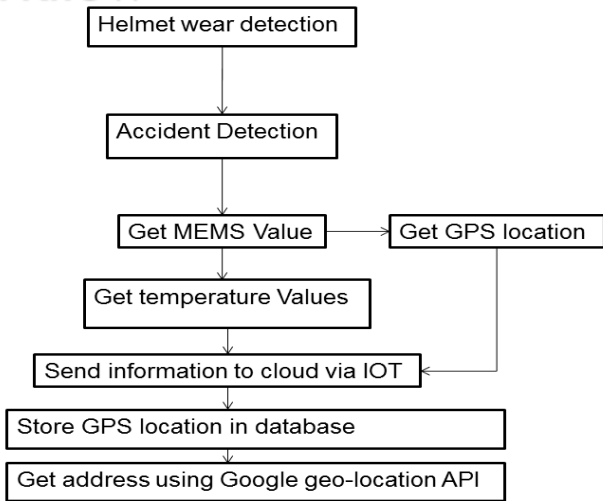


Fig 3: Work Flow

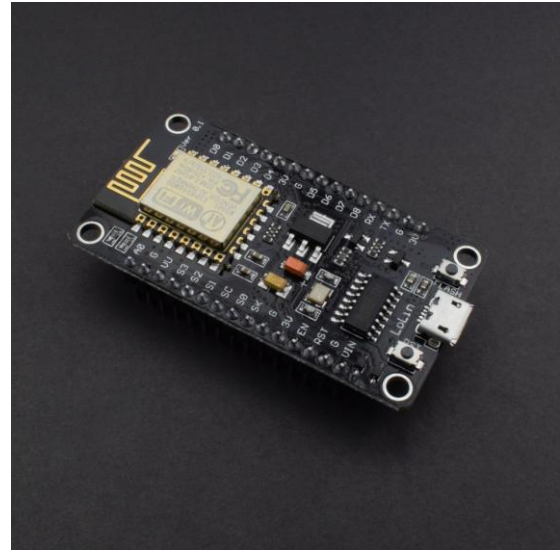


Fig 7: Wi-Fi Module



Fig 4 : DS18B20 (Temperature Sensor)



Fig 8 . MQ-5 Gas Sensor



Fig 5 : GPS Module



Fig 6 : Arduino Uno

IV. RESULTS & DISCUSSIONS

Vehicle Accident Detection & Alert Messaging can overcome the drawbacks of currently existing system. It is a very useful application which helps to know when a person met with accident. The system implementation mainly concentrates on accident detection and thereby alerting the authorities by uploading data to the cloud which is monitored. Details such as Location, MEMS Sensor Values, Temperature, Gas Sensor values will be included in the data, and the data is uploaded at the same time of accident. The system consists of Temperature sensor, GPS, Accelerometer & Gas Sensor.

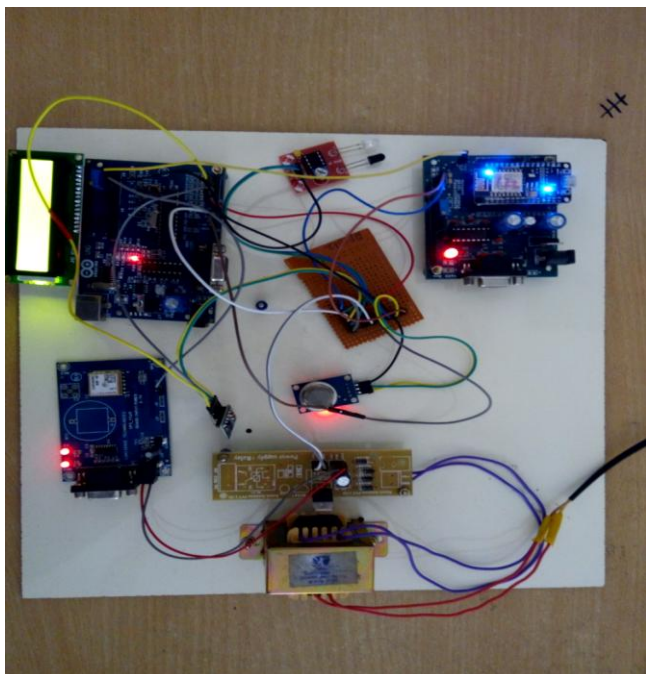


Fig 9 : Final System

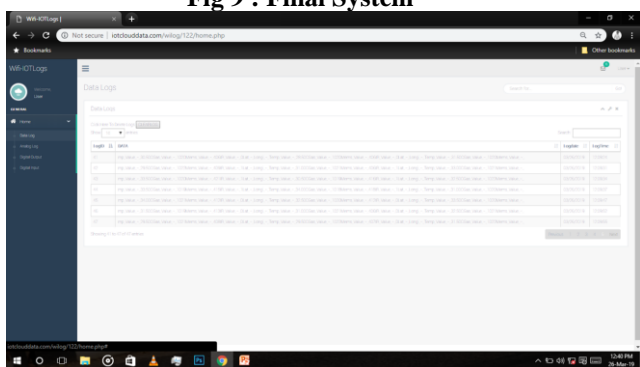


Fig 11: Screenshot of cloud data

V. CONCLUSION

Proposed Smart Helmet system can overcome the challenges in existing system and is a useful application which it assists the authorities to know whether an accident had occurred or not by tracking their locations. It also gives the information regarding the temperature, Smoke Sensor value, MEMS value at that particular moment.

REFERENCES

1. S.Chellappan., R. B. Lenin and V. Paruchuri ``Arrival time based traffic Signal optimization for intelligent transportation systems," in Proc. AINA, Barcelona, Spain, Mar. 2013, pp. 703 -709.
2. G. Hancke and K. Nellore , ``Traffic management for emergency vehicle priority based on visual sensing," Sensors, vol. 16, no. 11, p. 1892, Oct. 2016.
3. S. Wang, N. Smith, S. Djahel, and J. Murphy, ``Reducing emergency services response time in smart cities: An advanced adaptive and fuzzy approach," in Proc. ISC2, Guadalajara, Mexico, Oct. 2015, pp 1-8.
4. I. Arnold," Statistics on Emergency Vehicle Accidents " , in the United States. Accessed: Apr. 15, 2018. [Online].
5. G. P. Hancke and K. Nellore, ``A survey on urban traffic management system using wireless sensor networks," Sensors, vol. 16, no. 2, p. 157, Jan. 2016.
6. V. Golla, S. Hebbar, and R. Sundar, ``Implementing intelligent traffic control system for congestion control, ambulance clearance, and stolen vehicle detection," IEEE Sensors J., vol. 15, no. 2, pp. 1109 -1113, Feb. 2015.

7. D. Rakesh and E. Sireesha, ``Intelligent traffic light system to prioritized emergency purpose vehicles based on wireless sensor network," Int. J. Comput. Appl., vol. 40, no. 12, pp. 24 -27, 2012.
8. K. Vinodha and K. R. Shruthi, ``Priority based traf c lights controller using wireless sensor networks," Int. J. Electron. Signal Syst, vol. 1, no. 4, pp. 58-61, 2012.
9. V. Sharma, R. Hussian and S. Sharma, ``WSN applications: Automated intelligent traf c control system using sensors," Int. J. Soft Comput. Eng, vol. 3, bo. 3, pp. 77 - 81, 2013.
10. M. S. Babu and N. Kapileswar , ``Automatic traf c monitoring system using lane centre edges," IOSR-JEE, vol. 2, pp. 1-8, Aug. 2012.

AUTHOR DETAILS



**Mohana Priya R** has completed her B.E. Degree in the year 2004 in Electronics and Communication Engineering from University of Madras, Tamilnadu. She has obtained her master degree in M.E - Applied Electronics from VMRF in 2010 At present she is pursuing her Ph.D in the field of Image Processing. She is working as Assistant Professor in Department of Electronics and Communication at AVIT, Paiyanoor. Her research areas includes are Signal Processing, Embedded Systems and Image Processing, Embedded Systems. Also she has life member of IETE. Email ID: mohanapriya@avit.ac.in.



**Hema L K** has received her U.G degree B.E in Electrical and Electronics Engineering from Madurai Kamaraj University, Tamilnadu, in the year 1990. She has completed M.S Degree in Education Management from Alagappa University in the year 2007 .Also obtained her M. Tech Degree in VLSI Design from Sathyabama University in 2009. She has acquired her Doctorate Degree from Manonmaniam Sundaranar University. Since 1991 she has been working as Faculty in the Departments of Computer Science and Engineering, Electronics and Communication Engineering. Her research areas are VLSI Design, Wireless Sensor Networks, Embedded Systems and Hardware Security. Now she is working as Professor and Head of the Department at AVIT and engaged in various Government funded projects. She is the life member of ISTE since 2009 and member in IEEE. MAIL ID: hemalk@avit.ac.in, [hemalk@avit.ac.in](mailto:hemalk@avit.ac.in)



**Jaideep Bensley** is U.G student of Department of Electronics and Communication Engineering studying Aarupadai Veedu Institute of Technology, VMRF .He is interested in doing research in Embedded Systems and Wireless Communication.



**Ajmal Abubacker** is U.G student of Department of Electronics and Communication Engineering studying Aarupadai Veedu Institute of Technology, VMRF .He is interested in doing research in Embedded Systems and Wireless Communication.



**Surya Muthaiah** is U.G student of Department of Electronics and Communication Engineering studying Aarupadai Veedu Institute of Technology, VMRF .He is interested in doing research in Embedded Systems and Wireless Communication.