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IoT Based Delivery Boys Safety Control and Bike Analyzer

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Abstract -**Two wheelers are widely used than other form of vehicles due to its low cost and simplicity. Most of the time rider doesn't like to wear helmet which could be result in fatal accidents. Drunken driving and Drowsy driving are the major factors for such road accidents. Some statics shows that 35% of the accidents are caused by two wheelers and in that 60% of the two wheeler accidents are caused due to lack of consciousness, drunken driving and not wearing helmet. The primary concern of all riders is safety. From above, taking in to consideration the safety of delivery boys who works for online business travels across areas using two wheelers, where safety of bike rider counts. Hence to track the activities of such rider and to provide safe riding this paper has been proposed. This paper aims for avoidance of accidents and develop helmet detection system. The proposed system is an intelligent/safety helmet. A module affixed in the helmet, such that, the module will sync with the module affixed on bike and will also ensure that biker has worn Helmet. Additional feature of accident avoidance detection module will be installed on the bike.**

Keywords- **IoT, Sensors, Microcontroller, Android.**

I. INTRODUCTION

The paper aims to provide total safety for bike riders. Recently helmets have been made compulsory, but still people drive without helmets. In the last few years, there has been rapid increase in number of road accidents. Due to rise in road accidents, it has now become necessary to generate a system to limit accidental deaths. With respect to vehicle safety, India meets only two out of the seven vehicle safety standards by the World Health Organization (WHO).

Two wheelers account for 25% of total road crash deaths. Nearly 75%motorcycle riders involved in accidents continued to wear helmets, crash records show. The main cause of these fatalities is people riding two wheelers under the influence of alcohol results and violation of traffic rules which later on results in serious accidents. "The likelihood of survival of fatalities wearing helmets are high as compared to those not wearing helmets". In this paper there are two module namely helmet and vehicle module, helmet will have control over the vehicle start and stop. In Helmet the sensor module is built using sensors like alcohol sensor, accelerometer sensor, touch sensor and eye blink sensor all the above sensors are connected to RF transmitter via Comparator.

Sensor module will be placed in the helmet to detect weather a person worn helmet are not, once the person wear the helmet the signals gets transmitted. The module in the bike allows the rider to start the vehicle once the module receives signals from helmet unit. The status of helmet worn is uploaded to cloud/server via GPRS. In case of alcohol consumption the vehicle remains off though helmet is worn and status is uploaded to cloud/server .In case of drowsy while driving the vehicle units get alerted via sensor in helmet and stops vehicle automatically and status uploaded to cloud. The rash driving detection is done using accelerometer sensor and rash driving status is uploaded to cloud/server for further action. The server is maintained by company authorities looking at database the rider status is tracked and required measures are taken. In case of helmet lost android app is provided to ignite the vehicle through password for 3 times, again after receiving signals from helmet unit the count in android app goes zero so that again 3 chances will be provided to ignite vehicle during helmet lost. After 3 chance helmet lost is noticed to authority via GPRS for further action.

II. LITERATURE SURVEY

Data from the National Highway Traffic Safety Administration (2017) indicate 698 bicyclists were killed and 44,000 were injured in 2007 and 15% of those killed and 29% of those injured were under the age of 16. These data also show the 10 to 15 year age group had the highest fatality and injury rates, with fatality rates 46% and injury rates 62% more than the average rate for all bicyclists. Bicycle fatality rates are highest in today's life. Head injuries account for 75% of bicycle related deaths and more than two thirds of bicycle related hospital admissions. Bicycle helmets have been documented to

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reduce the risk of head injury by 85% and brain injury by 88%.

They also found that the majority of children that receive head injuries were injured in collisions with a motor vehicle, while less serious head injuries involve crashes or falls that did not involve a motor vehicle. Of particular interest is the finding of that children and youth who wore poorly fitted helmets were more likely to be injured than those who wore properly fitted helmets.The number of vehicles registered in Bengaluru has climbed to 70.28 lakh- 48.7 lakh two-wheelers. Bengaluru is the city with HIGHEST NUMBER OF 2 WHEELERS IN INDIA. When in the discussion of accidents in last 4 years 3250 road accidents in that 680 two-wheeler accidents has been caused. In that 28% is due to not wearing helmet and 45% is due to Alcohol consumed riders accidents (Drink and Drive). Hence this paper plays a major role due to increase in two-wheeler accidents.A number of studies indicate that helmet use is lower among young teens than younger children. A number of studies have attempted to determine why middle school aged children are less likely to wear helmets or respond to education programs and helmet give a ways then elementary aged students. One factor that appears in many studies is lack of peer support and unappealing helmet design.

- This paper presents the design of an active safety system for prevention of unintended roadway departures. He proposed automated driving technologies.
- This paper a module is affixed in the helmet such that the module will sync with the module affixed on bike and will also ensure that biker has worn Helmet. Additional feature of accident avoidance detection module will be installed on the bike (Alcohol Detectors).
- This paper suggests the helmet is being made user friendly with the help of GSM, in case of accidents it sends message to the registered person and while the rider is consumed alcohol it detects and send the message to the registered person.
- This paper will ensure that the rider wear helmet or not and if doesn't wear then it will not turn on. This system also detects accidents and location of accidents. And if the rider drink alcohol then this system will detect the condition.

III. EXISTING SYSTEM

The existing system basically has a wireless telecommunication, and is connected to a smart phone. The prototype uses sensors to detect a crash or accidents and the communication hardware is used to automatically dial a predefined emergency contact. The other existing system is to control the speed in which the biker is going in. The helmet is fixed with all the components and sensors that read the status of the bike riderand accordingly instruct the rider to reduce or increase the speed based on the sensor value . Along with the speed limit sensors the helmet also checks if the rider is drunk and driving. If the rider is drunk then the ignition of the bike is avoided and the hence not letting the rider to ride the bike.

IV. PROPOSED SYSTEM

The proposed system has two unit helmet and vehicle. Vehicle is controlled via signals from helmet unit. The helmet unit has sensor module to monitor helmet worn or not, alcohol detection, drowsy detection and vibration detection, all connected to RF transmitter. The vehicle unit has RF receiver. Based on RF signal received the vehicle starts and stops automatically. And every status is uploaded to cloud via GPRS/GSM. Incase of helmet lost the vehicle is ignited via password through android device.

1. Flow Diagram

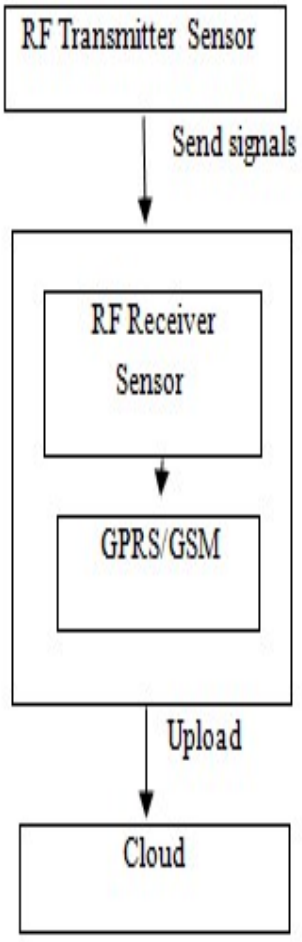

Fig.1 Block diagram of proposed model.

2. Flow Chart

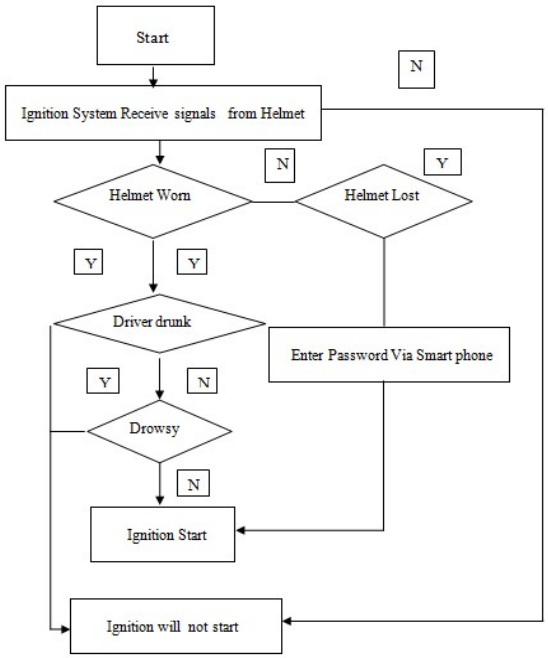

Fig.2 Flow chart of proposed model.

3. Demo points

- A prototype module will be developed for the paper. It includes individual PCB boards for all interfaces according to the block diagram. Every PCB will be inter-connected with jumper wires.
- LCD is utilized to demonstrate the whole paper.
- GSM/GPRS is used for wireless communication between vehicle and authority.
- RF transmitter and receiver is used for wireless communication between helmet, and vehicle.
- Android app is used to ignite vehicle during helmet lost.
- Alcohol sensor for alcohol detection, eye blink sensor for drowsy detection.
- Accelerometer sensor is used for detecting rash driving based on brake applied.

4. Features

- The ignition system of vehicle works only after receiving signals from helmet through RF module.
- The status of helmet worn, driver drunk, drowsy are monitored. based on above status vehicle is allowed to start and same uploaded to cloud and stored in database to track rider status while driving to avoid accidents.
- Vehicle start through password via Android smart phone while helmet is lost.

5. Advantages

- Easy to use.
- Efficient and reliable.
- If helmet was stolen then we can start the bike by the password.
- It will reduce the probability of accident.

6. Applications

- It can be used in real time safety system.
- We can implement the whole circuit into small module later.
- Less power consuming safety system.
- This safety system technology can further be enhanced in car.

.V. CONCLUSION

The paper is designed using structured modeling and is able to provide the desired results. It can be successfully implemented as a Real Time system with certain modifications. Science is discovering or creating major breakthrough in various fields, and hence technology keeps changing from time to time. Going further, most of the units can be fabricated on a single along with microcontroller thus making the system compact thereby making the existing system more effective. To make the system applicable for real time purposes components with greater range needs to be implemented.

A system for smart helmet has thus been developed which through communication between a unit in the helmet and one on the vehicle. Smart helmet ensures the safety of the delivery boy, by making it necessary to wear helmet and ensures that the rider hasn't consumed any alcohol. This system aims in providing a low cost safety system mainly focusing on the importance of human life.

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