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IOT Integrated Smart Helmet

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ABSTRACT

An IOT integrated smart makes motorcycle driving a safer smarter and safer one. A smart helmet is a type of defensive hat used by the rider which makes bike driving safer. The purpose of this helmet is to provide safety for the riders. This will be implemented by using advanced features like accident identification, alcohol detection, speed control, location tracking, use as a hands-free device, fall detection. This makes it not only a smart helmet but also a point of a smart bike. It is compulsory to wear the helmet, without which the ignition switch cannot be turned ON. Alcohol detection also aids the starting ignition. An RF Module will be used as wireless link for communication between transmitter and receiver. If the rider is drunk the ignition gets automatically locked, and can't start until both the conditions are satisfied. Just in case of an accident it'll send location with the assistance of GPS module.

I. INTRODUCTION

This project has been developed for the social safety of Two Wheeler riders. As we are able to see many accidents occurring around us, the death is increasing. According to a survey of India there are around 500 accidents occurring because of bike crashes per day. The reason for the accidents is also many, such as no proper driving knowledge, no fitness of the bike, rash driving, drink and drive etc. In some cases, the person injured might not be directly responsible for the accident; it's going to be fault of another rider. If accidents are one issue, lack of treatment in proper time is another excuse for deaths. Nearly half the injured people die due to lack of treatment in proper time. This project is extremely useful in day to day life and adds extra safety while driving. This can be not only useful in bike accidents only but also in car accidents. Use of this project is to make the life of the rider secure at crucial times, especially when the accident occurs at a no man place, where there's not a soul to note the accident. It automatically sends the information using the assistance of GPS Module.

II. SYSTEM DESCRIPTION

An IOT Integrated smart helmet could be a special idea which makes motorcycle driving safer than before. This is being implemented using Arduino. The aim of this project is to create a protection system using a helmet for the security of motorbike rider. The smart helmet that's made is fitted with different sensors for detection. There are two main units in this setup. This smart helmet has two modules one on the helmet and other on the bike. Signal transmission between the helmet unit and bike unit is achieved by employing a RF module.

III. PROPOSED SYSTEM

The proposed system is an IOT Integrated Smart helmet. The system ensures the protection of the biker, by making it necessary to wear the Helmet, as per the government guidelines. A module is affixed within the helmet, such that, the module will sync with the module affixed on the bike. The system will bear following functionalities:

- It will make sure that the rider has worn the helmet. If he fails and try do so, the bike won't start.
- It will also make sure that biker has not consumed alcohol. If the rider is drunk, the bike won't start.
- An accident detection module installed on the bike using Vibration sensor is used for fall detection, which can be able to detect the accident location and notify using GPS Module
- It also aids the speed control, if the rider exceeds the threshold speed the speed is automatically controlled.

It will carries with it two parts:

- Module on helmet and
- Module on the bike.

IV. BLOCK DIAGRAM

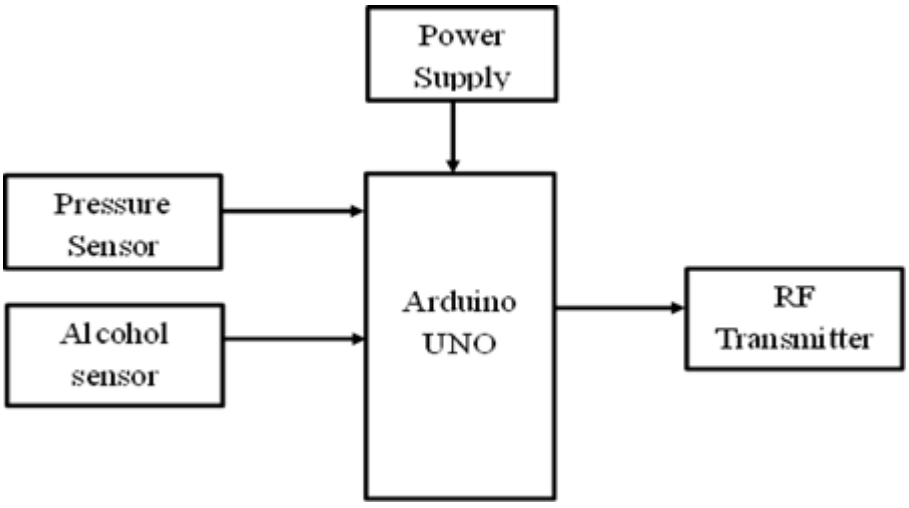

Fig 1 Block diagram of RF Transmitter

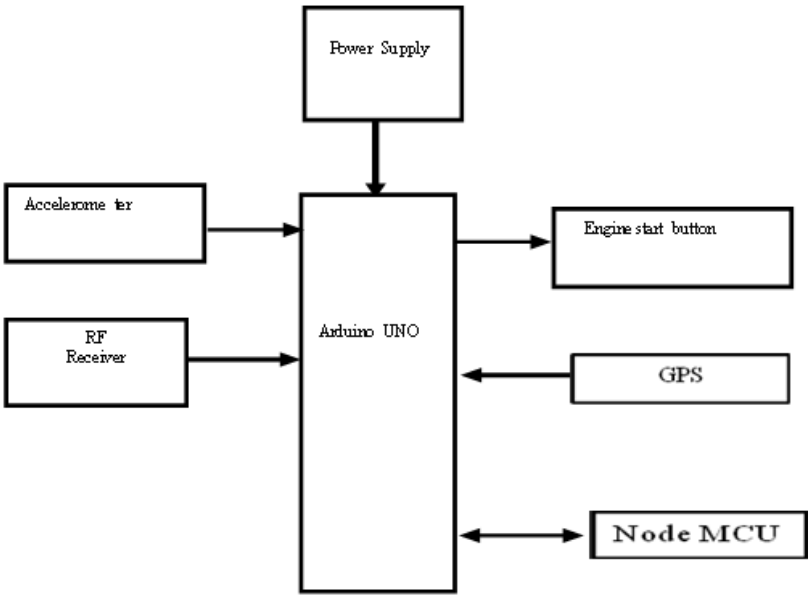

Fig 2 Block diagram of RF Receiver

V. FLOWCHART

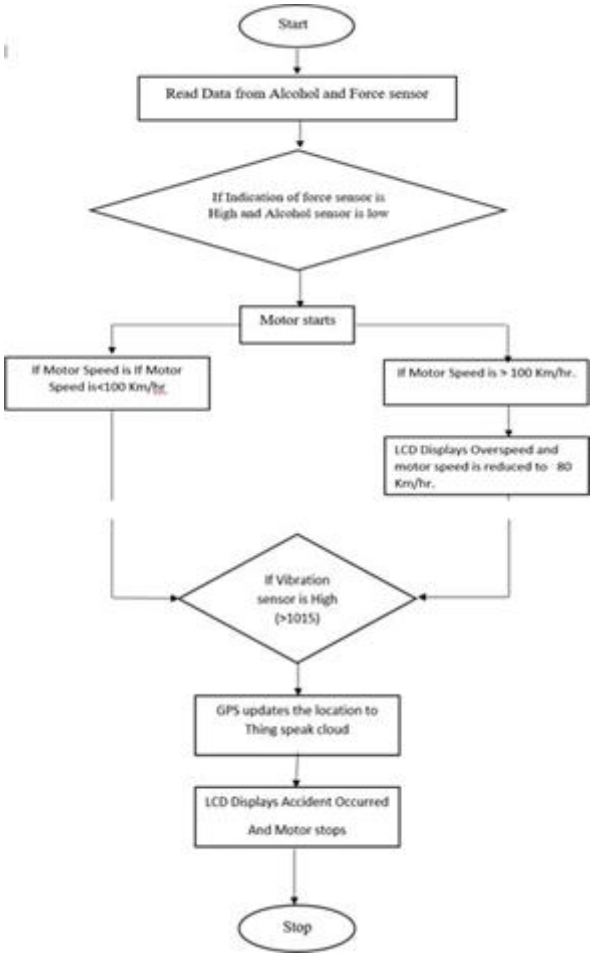

Fig 3 Flow Chart

VI. WORKING

The proposed system includes safety to the vehicle user. The helmet checks if the rider is drunk and driving. If the rider is drunk then the ignition of the bike is locked and also not letting the rider to ride the bike. An Arduino microcontroller interfaced with alcohol sensor monitor user's breath and constantly sends signals to microcontroller. The microcontroller on encountering alcohol signal from sensor and send the information to motor using RF transmitter and that we connect a RF receiver to the motor driver which stops dc motor to demonstrate as engine locking. The system need button to begin the engine. If the alcohol is detected the system locks the engine. It uses a vibration sensor to detect an accident The system also sends a message stating "Accident occurred" including the latitude and longitude location of the incident using GPS.The system also uses acceleration sensor to live the speed of the bike in order that if the speed exceeds the edge value then warnings are given to the rider and therefore the speed of the bike is controlled in keeping with safety limits.

VII. CONCLUSION

IOT Integrated Smart Helmet ensures the protection of the rider, by making it necessary to wear helmet, and ensures that the rider hasn't consumed any alcohol. If any of those prime safety rules are violated, the system will prevent the biker from starting the bike. The IOT Integrated Smart Helmet contains vibration sensor in bike where the probability of hitting is more which are connected to Arduino board. They are wireless, efficient, and supply ultra-clear reception.

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