



IOT based Smart Helmet

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ABSTRACT:

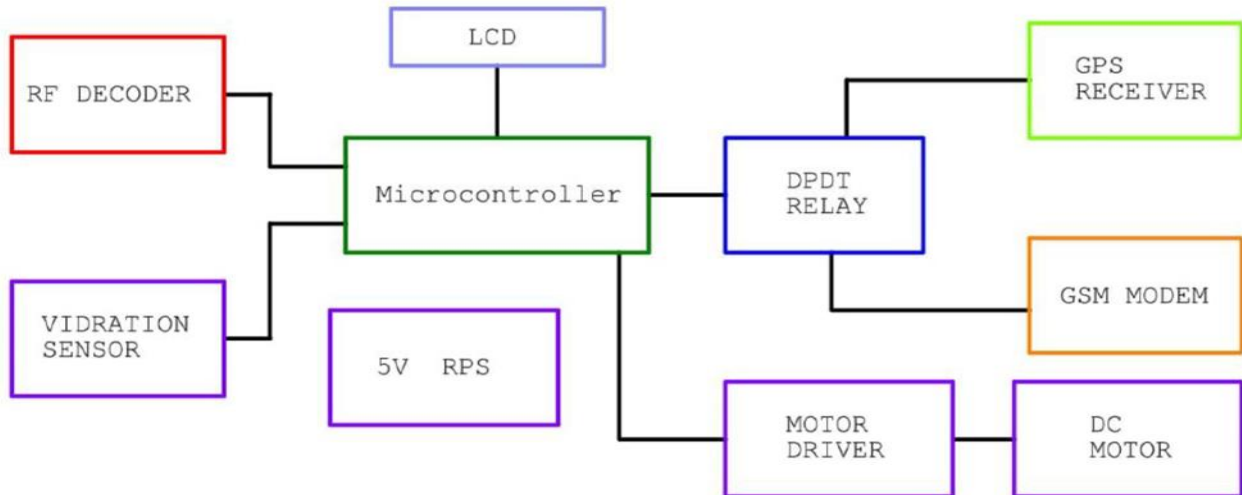
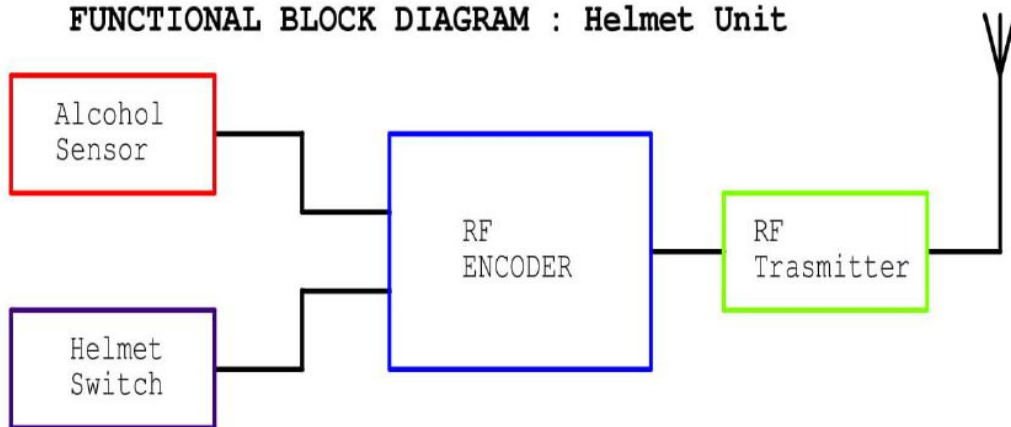
India, known for its large youth population, has a high incidence of bike accidents due to a lack of helmet usage. Many young people are more interested in following fashion trends than protecting themselves from head injuries. Unfortunately, this has resulted in an increase in bike accident fatalities. Drunk driving is also a significant contributing factor to bike accidents, with many accidents occurring due to negligence. To address these issues, a smart helmet utilizing the internet of things has been developed. This helmet has several features, including only allowing the bike to start if the rider is wearing a helmet, shutting off the ignition if the rider is over the legal alcohol limit, and sending an alert to a registered contact in the event of an accident. Additionally, a speed lock feature prevents the rider from exceeding 60km/hr, with an audible warning triggered if they do. This system is comprised of two modules, one on the helmet and one on the bike. The helmet module includes an alcohol sensor and a helmet switch, while the bike module includes a vibration sensor, GPS, and GSM. These two modules communicate wirelessly using an RF transmitter and receiver with an encoder and decoder, all controlled by an 8051 microcontroller.

INTRODUCTION

We have created a new design for a SMART HELMET FOR BIKE RIDER'S SAFETY, which is described in detail below. The claimed portion of the design of the SMART HELMET FOR BIKE RIDER'S SAFETY includes advanced features such as alcohol detection, accident identification, location tracking, hands-free device usage, and fall detection, all of which are designed to enhance rider safety. This smart helmet also functions as a feature of a smart bike, with a compulsory requirement to wear it. If the rider fails to wear the helmet, the ignition switch will turn on and an alarm will start beeping to alert the rider, while a message will be sent to the RTO. An RF Module is used as a wireless link for communication between the transmitter and receiver. If the rider is drunk, the ignition gets automatically locked and a message with the location is sent through the GSM module with the help of GPS. The distinctive utility of this project is fall detection; if the rider falls off the bike, a message is sent to alert others. Finally, a speed lock is set at 60km/hr, and if the rider exceeds that speed, a buzzer will start beeping to warn them.

LITERATURE SURVEY:

Mohammad Ehsanul Alim et.al [1] has given an approach Arduino NANO and Arduino Mega-2560 are microcontrollers which control the entire components of the system. Two 2.4 GHZ nRF24L01 for communication between sender and receiver. MQ-3 alcohol sensor is used which can detect whether the bike rider is consumed alcohol or not. If the bike rider is alcoholic, then the MQ3 sensor detects it and turn off engine. A Sharp IR sensor detects the head of the rider within the specified range. The Bike rider's engine will start only when the rider will buckle the helmet. GPS & GSM Technology is used for tracking the location of the bike rider and sending text message to the family members of the Bike rider when an accident occurs. Dhruvesh H. Patelhas et.al [2] proposed an approach which the System is plan and implemented such a way that the bike will not ignite until the rider wear helmet and pass an alcohol test, this will help to solve the problem of 'drink and drive'. It consists of GSM GPS technology which sends the message to the family member as well as hospital with the current location at the time of an accident

BLOCK DIAGRAM:**FUNCTIONAL BLOCK DIAGRAM : Vehicle Unit****FUNCTIONAL BLOCK DIAGRAM : Helmet Unit****RESULT AND CONCLUSION:**

With accidents happening even during the night when there is no one around to help, the rate of fatalities has increased significantly. The implementation of smart helmets in the future could potentially reduce accidents and provide immediate prevention measures by sending messages to nearby hospitals and using GPS to locate the rider's position. These helmets could be used by people of all economic backgrounds due to their affordability.

FUTURE SCOPE:

In the future, we can incorporate an invisible camera into smart helmets to gather valuable information about accidents that can assist in future investigations. To prevent damage to the camera, it can retract into the helmet when not in use. Additionally, solar panels could replace traditional batteries as a power source for the helmet. To prevent theft, the helmet could be secured with a password or biometric authentication.

REFERENCES:

- 1.Souhardya Das,Sahadeb Santra,Sanket Sinha” Smart Helmet with Quick Ambulance Response System”. Paper ID: IJERTV10IS080210.
- 2.Pranav Pathak ”IoT based Smart Helmet with Motorbike Unit for Enhanced Safety “ ISBN:978-1-7281-83381. DOI.10.1109/ICACCCN51052.2020.9362986.