Smart Helmet for Safety

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Abstract— As the bikers in our country are increasing day by day, due to most of the common negligence of not wearing a helmet .Without wearing helmet is very dangerous this is impact when motorcyclist driving at high speed .Wearing a helmet can reduce shock from the impact and save a life .A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. The main aim of this smart helmet is to provide safety for rider. This proposed system is a smart helmet. These helmets replace cable connection for wirelessly switching on a bike. There is wireless connection between transmitter and receiver. The working of this smart helmet is very simple, IR sensor are used in helmet. The main purpose of this project is, which protect the rider's head during an accident. Using IR sensor they detect helmet is wearing or not. It is implemented using GSM and GPS technology. The main purpose is GSM is connected to transmitter part and it will send a message to the receiver thorough GSM. When accident occurs, it will send message by GSM to register numbers with their current location by GPS module.

Key words: GSM, GPS, Microcontroller, IR Sensor, Helmet

I. INTRODUCTION

Now a days, there is craze of two wheelers especially in the young generation and also it has low cost as compare to four wheelers. Therefore number of bike in the country is increases day by day. The latest annual statistics revealed by the World Health organization (WHO) in its first Global status report on road safety, 80,000 people are killed on Indian roads due to speeding, drunken driving, less usage of helmets, seat belts and child restraints in vehicles. Due to this road accident also increase by two wheelers. Reportedly 98,254 persons were killed in 2005 on Indian roads [2]. Many deaths are occur due to shock of an impact during the accident. In INDIA ,37 million people are using two wheelers also high compared to four wheelers nearby 600 people lost their lives road accident in last year[5].The aim of this project is safety of the bike rider .In this project if rider does not wear the helmet bike does not start. Therefore there is compulsion on the wearing helmet due to this it may be save the life. The first step is to identify the helmet is wear or not. If helmet is wear ignition will start otherwise it will remains off till helmet is not wear

In this project a LPC2138 is used for controlling the overall system.IR sensor is used for detecting the Helmet. GSM and GPS is used to track the bike and give the location to the mobile.

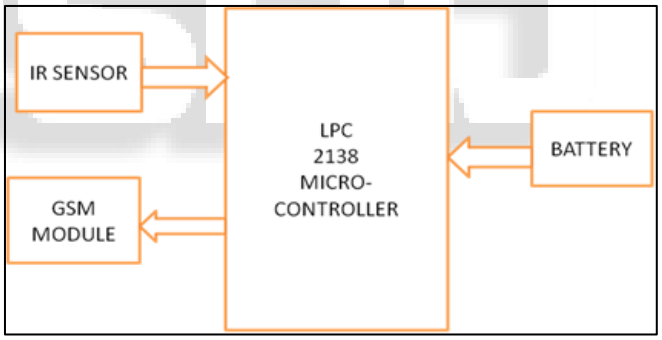
II. LITERATURE SURVEY

The system which will connect from the transmitter at helmet to the receiver at bike. Many type of switches being used such as IR sensor, limit switch, and signal as a switch to make sure the bike not cheating to their self. If the system identified that the rider or user not wearing their helmet properly the signal won't be send the receiver at bike which will cause the bike cannot start. Intelligent safety helmet for bike is a project undertaken to increase the rate of road safety among bikes. The idea is obtained after knowing that the increasing number of fatal road accidents over the years the cause for concerns among motorcycles. Through the study identified it is caused the helmets is not used in safety features, such as not wearing a helmet string and not use the appropriate size.

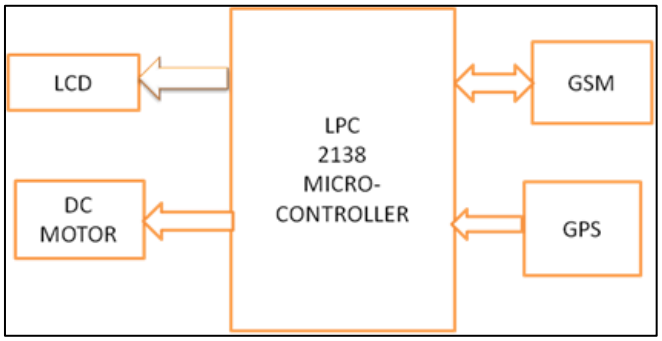
Therefore this project is introducing security system for motorcyclist to wear the helmet properly. With the use of IR transmitter and receiver circuit, the motorcycle can move from the imitation signal from helmet in accordance with the project title "smart helmet" for bike and security System applied to meet the characteristics of a perfect rider and the application should be highlighted .The project excepted to improve the safety and reduce the accidents

III. PROPOSED SYSTEM

A. *Transmitter Part:*



B. *Receiver Part:*



C. *Helmet Part:*

It consist of IR sensor, Microcontroller, GSM and transmitter.

D. *IR Sensor:*

An IR sensor consists of an emitter, detector and associated circuitry. The emitter is simply an IR LED (Light Emitting

Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. The LOW or HIGH output of the IR sensor determines if the helmet is worn or not worn.

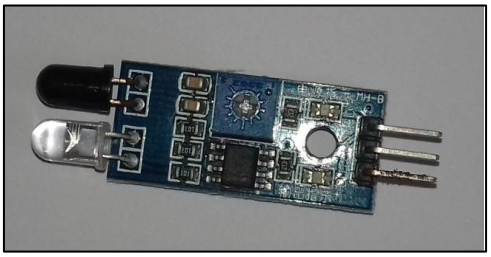


Fig. 1:

E. Microcontroller:

All the analog outputs from all the sensors on the helmet are sent to this microcontroller as input.GSM send a message using IR sensor of Microcontroller and then send a message to the receiver .so it decide the connection is wireless.

F. Transmitter:

A RF transmitter operating at 434 MHz Radio Frequency is used to transmit the serial data to the receiver over wireless media.

G. Receiver Part:

This module consists of a LCD, GSM module, ignition switch and GPS module. The RF receiver receives the data and sends it to the microcontroller for further processing.

H. GSM & GPS:

A smart helmet is an innovative concept which makes motorcycle driving safer than before. It uses the GPS and GSM as its core technologies. The mechanism of this smart helmet is very simple.IR sensors are placed in helmet which are connected to microcontroller board. So when the rider crashes and the helmet hit the ground, these sensors sense and provide it to the microcontroller board. The GSM module automatically sends alerting message to ambulance or family members. The hardware used in this system is IR sensor, GSM, GPS, microcontroller.

Fig. 2: GSM Module

Fig. 3: GPS Module

LCD-In smart helmet LCD display the location in terms of longitude and lattitude. And also display the helmet is detected or not.

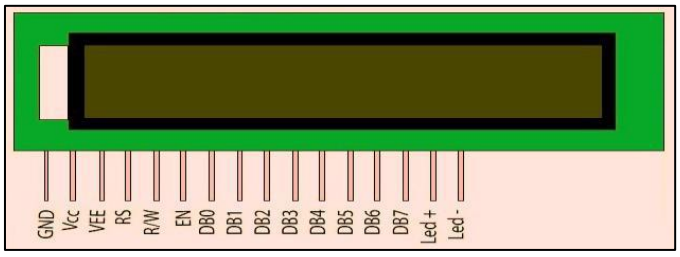


Fig. 4: LCD Display

We use 16*2 character LCD display. LCD is used to display message access granted and access denied. In LCD has 16 characters per line by 2 lines and 20 characters respectively.

I. DC Motor:

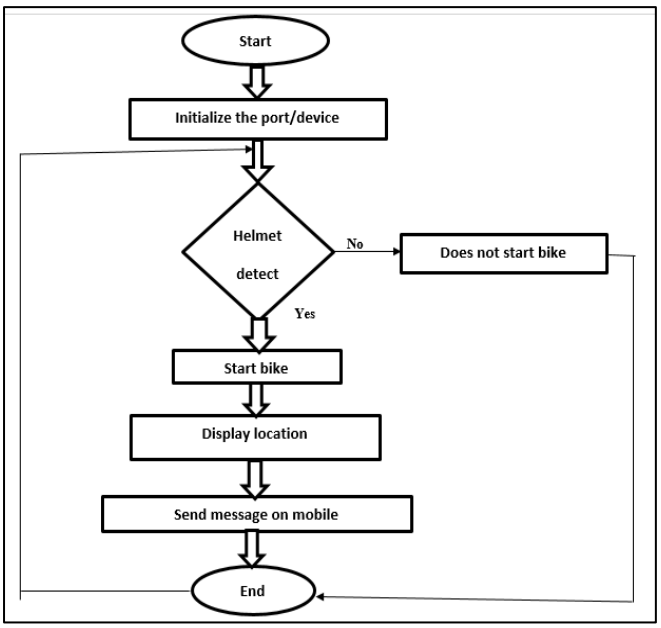
Fig. 5: DC motor

This direct current motors series, whose power range goes from 45Watt to 1500 Watt .Using L293D and L298 are dual H-bridge motor driver ICs. We can control the rotation of two motors in both clockwise and anti-clockwise direction. DC motors are used to physically drive the application as per the requirement of system. The dc motor works on 12V. To drive a dc motor, we need a dc motor driver called L293D.

IV. SOFTWARE IMPLEMENTATION

The software program is written in c or assembly language and compiles using Keil software. After compiler operation the hex code is created and stored in the computer. The hex code of the program is burnt into the LPC2148 by using Top win Universal programmer. The architecture of the ARM7 is more suitable and easily accessible for present code software like as Keil. Keil version web pack is user friendly software tool, which is having many superior developed programs. The program can be downloading into device easily by using parallel ports.

V. FLOWCHART



VI. ADVANTAGES

- It will reduce injury and may save the life
- The project is expected to improve safety and reduce especially fatal to motorcyclist.
- System with low cost and less complexity.
- Reduce workload of Traffic Policemen.

VII. APPLICATION

- It can be used in real time safety system.
- Less power consuming safety system.
- This safety system technology can further be enhanced in car and also by replacing the helmet with seat belt.

VIII. CONCLUSION

In INDEA, people wearing helmet for only save the 100 rupees not for safety also now a days we protect our mobile with a case, then why can't protect our life with a helmet. Most of the deaths are occur due to absence of helmet therefore helmet is most important for saving life. By implementing this system, there is compulsion on the helmet therefore which would decrease the head injuries throughout accident.

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