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SMART HELMET & FEATURE BIKE

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Abstract - *In India most of the people prefer two wheelers compared to other vehicle due to simplicity and its low cost .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 implement by using advance feature like alcohol detection, accident identification, location tracking. This makes not only smart helmet but feature of smart bike. Its compulsory to wear helmet without helmet ignition switch cannot ON. If rider getting drunk it get automatically ignition switch is locked and send message automatically to their 10 digit register number with their current location. So when accident occurs, it will send message by GSM to register numbers with their current location by GPS module.*

***Key Words*: — Biker's safety, Accident detection and alert system, Smart helmet, Alcohol detection**

1. INTRODUCTION

In recent times people prefer motorcycles over car as it is much cheaper to run, easier to repair or easier to park, and flexible in traffic. In India more than 37 million people are using two wheelers also high compared to four wheelers. Nearly 600 people lost their lives in road accidents in last year [2] one third of all those who died in road accidents could have survived had they worn a helmet. Studies shows that usage of helmet can save accident death by 30 to 40 percent. The risk of death is 2.5 times more among riders not wearing a helmet [3]. According to statistics serious head injuries can happen even in low speed. 90 percent of head injuries cases are due to road traffic accidents or not wearing helmet, about 72 percent are youngsters in the age group of 18 to4o years. At least three young men using two wheelers die every ten minutes in India due to head injury. For a young Indian chance of being killed or disabled by road traffic injury is higher than HIV, heart attack, cancer. The three main issues which motivate us for developing this project. 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. For these we use IR sensor. The second step is alcohol detection. Alcohol sensor is uses as breath analyzer which detect the presence of alcohol in rider breath if it is exceeds ignition cannot start. It will send the message to register number. MQ3 sensor is used for these condition. Third main issue is accident and late medical help. For these we can use the GPS when accident occurs it will send message by GSM to register number with their current location by GPS module. The aim of this project is to make protection system in a helmet for a good of safety of bike rider.

1.1 Literature Survey

Smart Helmet is a system which makes all motorcycles in Malaysia aware and compulsory to wear helmet whether the distance is 100 meter radius or long distance. The system which will connect from the transmitter at helmet to the receiver at bike. Many type of switches being used such as temp. Sensor, 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 introduce 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

1.2 Project Planning

With the advancement in the field of technology human invention is becoming less every day and robots are used widely for purpose of safety. In our day to day life road Accidents are very common and sometimes it becomes very difficult for government to save human life. In such a case smart helmet comes in picture. This is an advance project For us as an Electronics student, interested in "Technology" which uses GSM module for operation of this helmet and uses ARM lPC 2138. The method used to carry out this project is the principle of serial communication in collaboration with embedded system. This project has a GPS locator, which will be used as the Electronic device and also GSM modem, which is the latest technology used for serial communication between the mobile and embedded devices. This system will work like the user wants to receive the SMS at the time of accident occurs on the roads and the helmet

send message through subscriber identity module (SIM) which is inserted in the display system MODEM

1.2 Objective of Project

Programming of the mobile phone with AT (attention) command sequence.

- Interfacing the programmable chip.
- Interfacing of the mobile phone with programmable chip.
- Sending messages from GSM module to mobile phones

1.3 Construction

To construct the helmet first printed circuit board was designed and component ware mounted on it as required. The circuit is based on ARM LPC 2138.The device pro- vided three sensors at the different directions to detect the accidents, alcohol and react accordingly to the situation. These sensors are dependent in LPC 2138 for their operation. An alcohol sensor also deployed in the device to keep a sense on alcohol. LM 384 an IC provided which is connected to the relay

2. BlOCK DIAGRAM

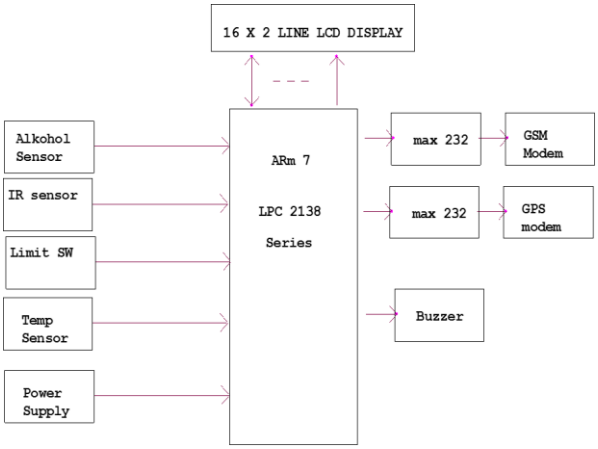

Fig. Block Diagram of Smart Helmet

2.1 IR Proximity Sensor

Proximity sensor are used to object or obstacles in front of sensor. This sensor keep transmitting modulated infrared light .when any object can be occur, it is detected by the sensor by using monitoring the reflected light from the object

2.2 MQ-3 Alcohol Sensor-

MQ-3 gas sensor is used for identify the alcohol content from breath. The sensor can be used for identify various gases.it determines by helmet unit whether driver is drunk or not .MQ-3 sensor has potentiometer to identify different concentration of gasses. We calibrate the detector for 0.4 mg/L for alcohol concentration in air or use value of resistance is 200k ohm

2.3 GPS Receiver with Active Antenna – RS232

Global positioning system (GPS) Satellites Broadcast signals from Space that GPS receivers, use to provide

fig2. GPS Receiver

Three dimensional location latitude, longitude and altitude .plus precise time GPS receiver plus precise time. GPS receivers provides reliable positioning navigation and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere or near the Earth. GPS receiver acquire GPS signals from 65 channel of satellite and output position data. The GPS receiver 160 dB tracking sensitivity allowing continuous position coverage in nearly all application.

1.4 Limit Switch

In electrical engineering a limit switch is a switch operated by motion of machine part by presence of an object of an object they can be used for control machinery as part of control system. A limit switch is an electromechanical device that consist of an actuator mechanically linked to set of contacts. Limit switches are used in a variety of applications and environment because of their ruggedness, ease of installation, and reliability of operation. They were first used to define the limit of travel of an object, hence the name is limit switch.

3. ADVANTEGES

1. Accidents can be detected in accident prone zones easily and thus medical services can be provided.
2. By using alcohol detector, drunken drive will be simply avoided. Hence reduces the probability of accident.
3. It even works on solar energy.

4. If in a case helmet gets stolen then the bike can be started by the password.

3.1 Application

1. Efficient to be used in real time safety system
2. The whole circuit can be implanted in a small module.
3. If accident occurred, then it sends the message to register number with their current graphical location.

3.2 Future Scope

1. Various bioelectric sensors can be implemented on the helmet to measure various activity.
2. Small camera can be fitted on helmet to record driver's activity.
3. By using wireless transmitter message can be passed by from one vehicle to another

3.3 Result

Fig. Final output of Smart Helmet

4. CONCLUSION

Design such a project and implement it, we gather great practical experience. We tried to implement our theoretical knowledge successfully. This course teaches us about the far difference between theoretical and practical knowledge. The outcomes of project says that the bike ignition will start if the helmet is worn. This will automatically decrease the effect from accident and it can avoid bike from getting stolen. LPC 2138 is good in controlling all the systems and the sensors. Executing the wireless system which radio frequency module to send signal from helmet unit to the bike unit. Due to this, wireless connection is better than wired link.

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