Smart Bike

S. Naveen kumar, C. Sasikumar, R. Prakasam

Abstract: ***In present scenario the uses of mobile phones are increasing, the people attend the phone even while driving without their knowledge, this cause distraction and leads to accident. This project detects and avoids the usage of mobile phones automatically while riding two wheelers and in case of any accident occurs GSM module fixed in the bike communicates to the concerned mobile number which is stored. The components used are Global System for Mobile Communication (GSM) Module, Microcontroller (Atmega162V), Liquid Crystal Display (LCD), Global Positioning System (GPS) and Vibration Sensor. The software used is "AVR studio". When the key is inserted the bike starts only after verification of the user through message reply. If the reply is not received from the owner the bike is not allowed to start without password. While riding, if any call comes to the rider's mobile the call is automatically dejected by the Mobile snifferand the reply message is sent to the caller about the riding information by the GSM fixed in the bike. The LCD display is used to indicate the incoming call list. The vibration sensor fixed in the bike is used to sense the vibration if any accident occurs based on defined conditions. The GSM module sends a message with the location indicated by the GPS of accident spot to the specified mobile number.By rejecting incoming calls this system prevents from accidents while riding bike. The bike is secured by the password. In case any accident occurs, this system reduces the manual process and avoids delay. The location tracking of accident spot is very fast.***

Keywords: GSM, GPS, Smart Monitoring; Embedded Model

I. INTRODUCTION

In present scenario the uses of mobile phones are increasing, the people attend the phone even while driving without their knowledge, this cause distraction and leads to accident. This project detects and avoids the usage of mobile phones automatically while riding two wheelers and in case of any accident occurs GSM module fixed in the bike communicates to the concerned mobile number which is stored.

A. Existing System

At present the vehicle based projects comprises automatic speed control system, detecting the tire pressure and monitoring the tire whether the tire is puncture. And other project is based on smart helmet with the alcohol sensor and the bike is allowed to start if the alcohol is not sensed. [2] [3]

B. Proposed System

By rejecting incoming calls this system prevents from accidents while riding bike. The bike is secured by the reply from the phone. In case any accident occurs, this system reduces the manual process and avoids delay. The location tracking of accident spot is very fast.

II. METHODOLOGY

This project starts after the initialization of the key the bike starts only after verification of the user through message reply. If the reply is not received from the owner the bike is not allowed to start without password and it authenticate the person by alarm ifhe password is not correct. While riding, if any call comes to the rider's mobile the call is automatically detected by the mobile sniffer and the reply message is sent to the caller about the riding information by the GSM fixed in the bike. The vibration sensor fixed in the bike is used to sense the vibration if any accident occurs based on defined conditions. The GSM module sends a message with the location indicated by the GPS of accident spot to the specified mobile number. The LCD display is used to indicate the incoming call. [1]

The figure 1.shows the methodology of the smart bike. This process starts after the insertion of the key and automatically message is sent to the user, if the reply is positive the bike starts and if the reply is negative the alarm authenticated and if call receives while riding the riding information is sent to the user and in case of accident occurs message is sent with accident location to specified number.

This chapter is about the existing system, proposed system, and overview of the project and methodology of the smart bike.The components used are Global System for Mobile Communication (GSM) Module, Microcontroller (Atmega 162), Global Positioning System (GPS), Mobile sniffer, Vibration Sensor, Bluetooth, Buzzer, Relay and Liquid Crystal Display (LCD). The figure 2 shows block diagram of smart bike.

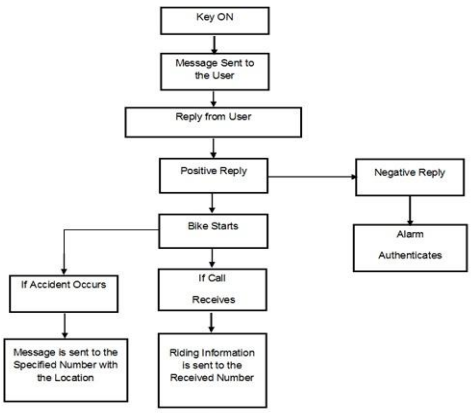

Figure.1 Methodology of Smart Bike

Revised Manuscript Received on December 08, 2018.

S. Naveen kumar, Electrical and Electronics Engineering, Kumaraguru CollegeofTechnology,Coimbatore,Tamilnadu, India
C. Sasikumar, Electrical and Electronics Engineering, Kumaraguru College of Technology,Coimbatore Tamilnadu, India
R. Prakasam, Physics, Kumaraguru College of Technology,Coimbatore, Tamilnadu, India

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Blue Eyes Intelligence Engineering
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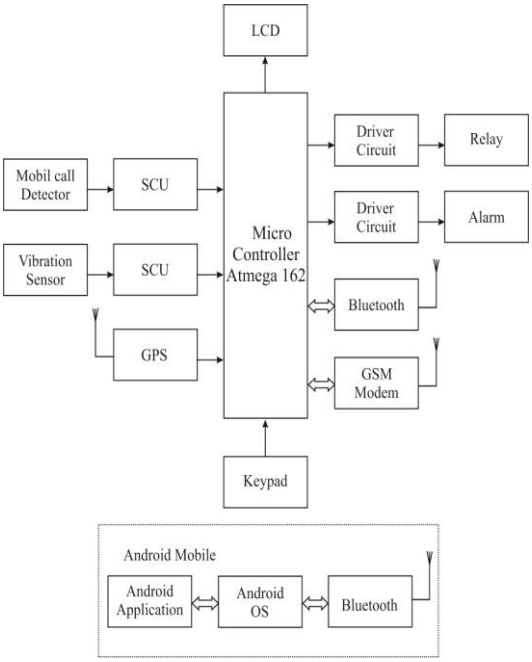
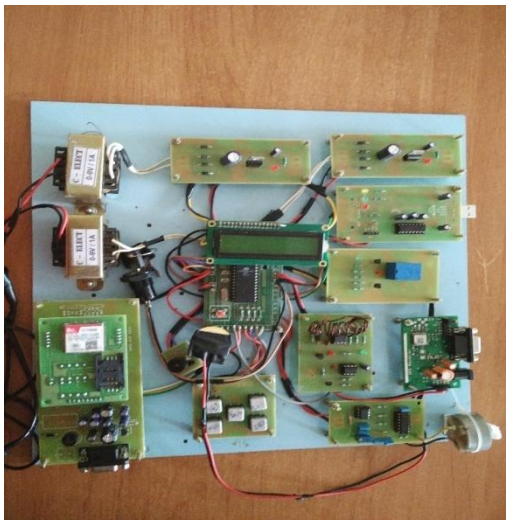


Figure.2 Block Diagram Smart Bike

III. HARDWARE MODULE

The hardware module of the GSM based bike security and mobile call detection system and the module consists of power supply, GSM module, Atmega 162v, Buzzer, relay, mobile sniffer, 16X2 LCD and keypad. The figure 3 shows the Module of smart bike. [6]



A.OutputOfTheModuleAfterInsertingTheKey

The prototype consist of a 16x2 Liquid crystal display, displays the message sending from the bike. Here the motor is considered as a bike. The message sending from the bike is done by the GSM module present in the bike. The messagsent from the module is sent to the number which is stored. The message received to the number which is stored replies the response message to turn on the vehicle. If the reply message is negative the bike authenticates by alarming. The figure 4 shows the Output of the Module after Inserting the Key. The figure 5 shows that the bike gets turned on after the positive reply from the rider. [4] [5] [8][9]

Fig.4 Warning Message

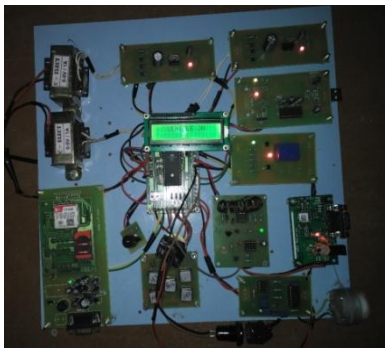


Fig.5 Vehicle ON Indication

B. Output Of The Module When The Call Is Detected

When a call comes to the phone near to the module the mobile sniffer circuit which will detect radio signal and indicates in the LCD display as receiving call. The figure 5.8 shows the Output of the Module When the Call is detected

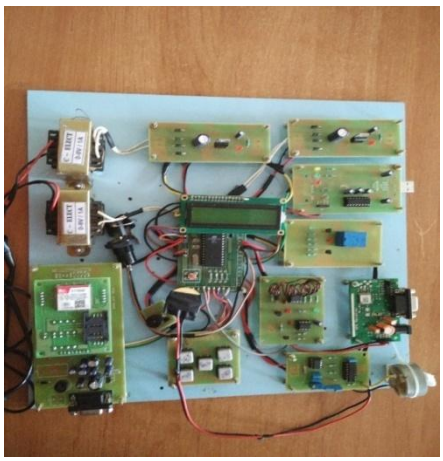


Fig. 6Output of the Module When the Call is Detected

C.Accident Alert

In case of any accident occurs to the person who is riding on the bike the vibration sensor fixed in the bike will sense the vibration of the accident and at the instant the GPS tracks the location of the accident spot and sends message to the required person which is stored with the help of the GSM module. [6] [7]

Fig. 7Accident Alert Indication

The figure 7 shows the accident alert indication and figure 8 shows the sending the alert message through the GSM module to the specified person.

Fig.8Sending Alert Message

The figure 5.11 shows the received message with the location of the accident spot from the bike.

Fig.9 Received Message of Accident Spot

SI.NO.	PROCESS	OUTPUT
1	Key on	Message sent to the user
	Correct password	Bike starts
	Incorrect password	Buzzer alerts
2	Mobile call while riding	LCD indicates (Receiving call) Simultaneously it sends the reply message
3	Accident occurred	Alert message is sent with the accident location

Table 1:Processors Levels

IV. CONCLUSION

This paper, smart bike which works based on microcontroller program to make bike secure and prevent distraction on using mobile phone while riding. This system also alerts the specified person via message with the location of the bike if any accident occurs.The microcontroller that has been used for this project is from Atmega series. Atmega microcontroller is the first RISC based microcontroller fabricated in CMOS (complementary metal oxide semiconductor) that uses separate bus for instruction and data allowing simultaneous access of program and data memory. The main advantage of CMOS and RISC combination is low power consumption resulting in a very small chip size with a small pin count. The main advantage on using this microcontroller is it consist of two serial ports which is helpful for interfacing GSM, GPS and Bluetooth module.

Various microcontrollers offer different kinds of memories. EEPROM, EPROM, FLASH etc. are some of the memories of which FLASH is the most recently developed. Technology that is used in Atmega162V is flash technology, so that data is retained even when the power is switched off. Easy Programming and Erasing are other features of Atmega162V.

The prototype consist of a 16x2 Liquid crystal display, displays the message sending from the bike. Here the motor is considered as a bike. The message sending from the bike is done by the GSM module present in the bike. The message sent from the module is sent to the number which is stored. The message received to the number which is stored replies the response message to turn on the vehicle. If the reply message is negative the bike authenticates by alarming. This project has modules along with a GSM modem. The bike is secured primarily through the messaging process and this security system is connected to the spark plug of the bike, if the reply from the user is false reply the spark plug will not spark due to no voltage through the bike and at the same time the buzzer authenticates the nearby person by alarming.

The chance of accidents happened due to talking on mobile while riding can be minimized by making the use of mobile phone connected to the module in the bike which detects the call and sends the reply message about the riding information. The module is designed as a user-friendly kit. The information and new functional modules can be easily added to the system to upgrade and enhance it. Because of the flexibility of embedded system, this system is very much compatible to any kind of two wheeler. Overall the system is very much affordable to a common man which can be easily implemented. The future scope of this project is that the system can be designed by MEMS technology and make more convenient to fix in the bike and the bike can also be secured by the biometric and even the call can be rejected and authenticate only if it is emergency call.

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