Safe Driving Using Mobile Phones

G.SRINIVASA RAO[1], B.PREMALATHA[2]

[1]M.Tech, Dept of ECE, CMR College of Engineering and Technology, Hyderabad, AP-India,
[2]Assoc Prof, Dept of ECE, CMR College of Engineering and Technology, Hyderabad, AP-India,

Abstract— In present days mobile phones are plays most important role in every human life, but at the same time in driving of automobile, mobile phones using is the main reason for accidents of automobiles. This Paper is designed and implemented for Safe driving using mobile phones with ARM7 and GSM modules. The use of mobile phones affected driving in different ways. Drivers missed exits, failed to observe traffic signals, and forgot to adjust the speed according to the limit. It was not unusual with incidents or near collisions with other vehicles or objects, or driving off the road, when mobile phones were used while driving. So the driver compulsory take some kind of safety precaution in conjunction with a mobile phone call. By using this system those problems are maximum reduced and safely drive the automobile.

Keywords— ARM7, GSM, 8052 Microcontroller, RF modules.

I.INTRODUCTION

Cellular .phones were first introduced in the United States in the mid-1980s, and their use has since experienced explosive growth. Today there are more than 262 million cell phone subscribers, representing 84 percent of the United States population. Recent surveys demonstrated that majority of mobile phone users while driving are increased day by day. It has been also proved that use of cell phones while driving puts a driver at a significantly higher risk of collision by distracting his or her mind. It hardly matters whether the person makes use of hands free or hand-held phones, there's no escape to it. The use of mobile phones affected driving in different ways. Drivers forgot to adjust the speed according to the limit. So the driver compulsory take some kind of safety precaution in conjunction with a mobile phone call.. In this paper a concept for overcome the automobile accidents, which the person (driver) mobile phones using while driving. This system consists of two sections, one is mobile section and another is the vehicle section. The functional operation of the system and related work result analysis explained given below.

II. RELATED WORK

A.GSM MODEM:

GSM stands for Global System for Mobile Communication..it is a globally accepted standard for digital cellular communication. GSM is the name of a standardization group established in 1982 to create a common European mobile.

Telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz

The GSM modem basically consists:

- SIM card holder to hold the activated SIM card for sending and receiving SMS.
- 5V AC power supply header to which the 5v ac adapter is connected.
- Power led which gives the indication of modem status that is on or off.
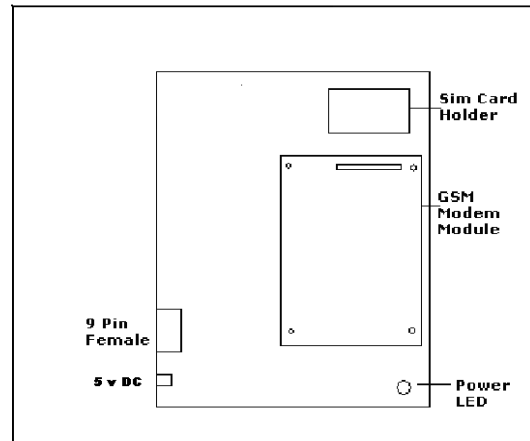- 9 pin female to which the GSM antenna is connected.

Figure1: GSM Modem Block Diagram.

Through the mobile equipment the network messages are sent and received. These messages are sent to the terminal adapter which is nothing but a GSM data card. Now if there is some data to be sent to the mobile equipment then the terminal equipment that is basically a computer or processor sends out AT commands to the terminal adapter which in turn sends the mobile equipment the required data. The GSM modem being a serial communication device is connected to the serial port or a serial device through a serial connector. The power input to the modem is given through a 9v ac adapter.
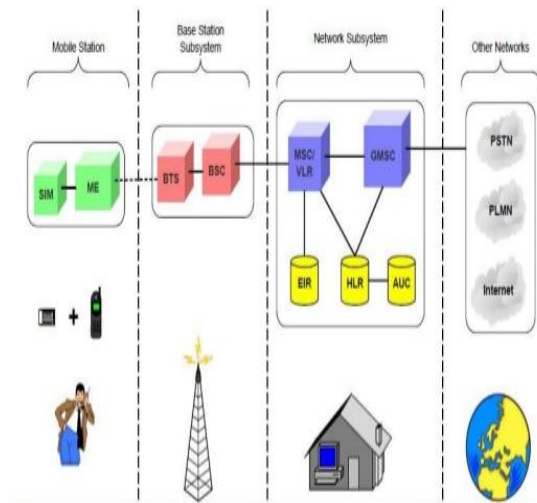
Figure2: Architecture of GSM network

B. ARM7 (LPC2148):

The ARM7TDMI-S is a general purpose 32-bit microprocessor, which offers high performance and very low power consumption. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles, and the instruction set and related decode mechanism are much simpler than those of micro programmed Complex Instruction Set Computers. This simplicity results in a high instruction throughput and impressive real-time interrupt response from a small and cost-effective processor core. Pipeline techniques are employed so that all parts of the processing and memory systems can operate continuously. Typically, while one instruction is being executed, its successor is being decoded, and a third instruction is being fetched from memory. The ARM7TDMI-S processor also employs a unique architectural strategy known as THUMB, which makes it ideally suited to high-volume applications with memory restrictions, or applications where code density is an issue. The key idea behind THUMB is that of a super-reduced instruction set. Essentially, the ARM7TDMI-S processor has two instruction sets:

• The standard 32-bit ARM instruction set.
• A 16-bit THUMB instruction set.

The THUMB set's 16-bit instruction length allows it to approach twice the density of standard ARM code while retaining most of the ARM's performance advantage over a traditional 16-bit processor using 16-bit registers. This is possible because THUMB code operates on the same 32-bit register set as ARM code. THUMB code is able to provide up to 65% of the code size of ARM, and 160% of the performance of an equivalent ARM processor connected to a 16-bit memory system.

C. RF MODULES:
RF TRANSMITTER:

The transmitter output is up to 8mW at 433.92MHz with a range of approximately few meters. It accepts both linear and digital inputs It can operate from 1.5 to 12 Volts-DC. It is approximately the size of a standard postage stamp.HT-12E ENCODER operating voltage:2.4V~12V for the HT12E.it has low power and high noise immunity.

RF RECEIVER:

It also operates at 433.92MHz, and has a sensitivity of 3uV. It operates from 4.5 to 5.5 volts-DC, It has both linear and digital outputs. HT12D Decoder operating voltage: 2.4V~12V. I t has low power and high noise immunity.

III. SYSTEM IMPLIMENTATION

In this section Encoder, Decoder, RS232cable and RFID applications environment are reviewed. RS232 cable is used for serial communication and MAX232 is used to convert the signals suitable for use in TTL compatible digital logic circuits. The Encoder, which we are using in this system, is HT12E series.
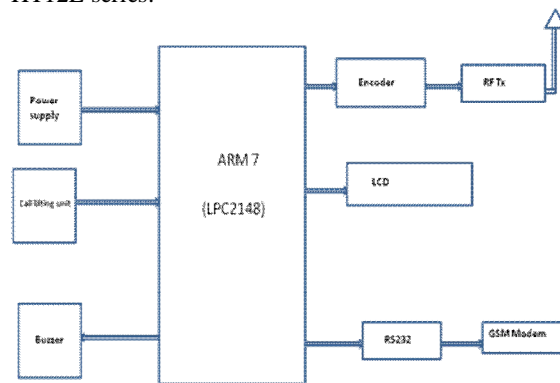

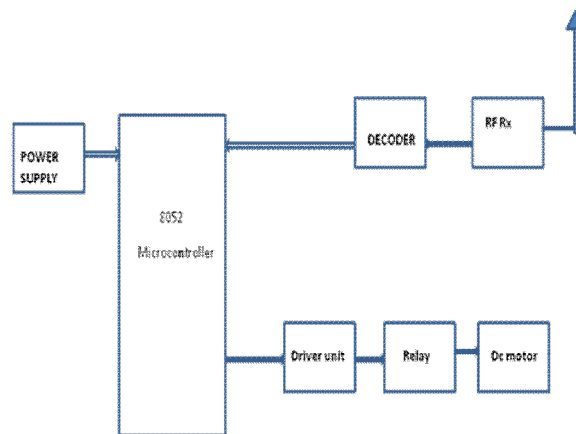Figure3: Block diagram of Mobile section

Figure4: Block diagram of Vehicle section

Encoder function is data from the controller address (data) is added with carry and produce signal format (frames) of 4bit

data frequency. And The Decoder, which we are using in this system, is HT12D series, decoder function is receiving the encoder freq (4bit data) of signal format frames is separated with carry only address data is giving to microcontroller. Driver unit function is motor on or off the voltage direction giving 4v, 6v, 12v.The block diagrams of mobile section and vehicle section are shown in below figures. Here RF Transmitter, RF receiver are used to transmit and receives the data information. In this system we have two sections. One is mobile section and another will be the vehicle section. In mobile section will be having RF transmitter with frequency 433MHz. At the same time in vehicle section will be having RF Receiver with frequency 433 MHz Next coming to the operation and working process of this project is explained below. Now if a person is calling to the mobile means one signal will be transmitted to the GSM network. In that first time call, mobile not makes any ringing or sound. On that time message information will be transmitted to the calling mobile. That message is person is in driving mode call after some time. Here the Microcontroller is the flash type reprogrammable micro controller in which we have already programmed. Suppose, if urgent then the person is calling second time, in that second time also mobile not makes a ring or sound. Only message information will be transmitted. If urgent person calling another time. So same number will be repeated. On that third time call situation buzzer making some sound like phone ringing. Then the drivers recognize that urgent call will be ringing. So when the person need to attend the phone means by pressing call lifting unit, then automatically one signal will be transmitted to vehicle section. When the transmitted signal is received by receiver of vehicle section then automatically relay will be activated. When relay is activated means voltage giving to the motor will be decreases to slowly. In this way motor speed will be decreased.

IV. RESULT ANALYSIS

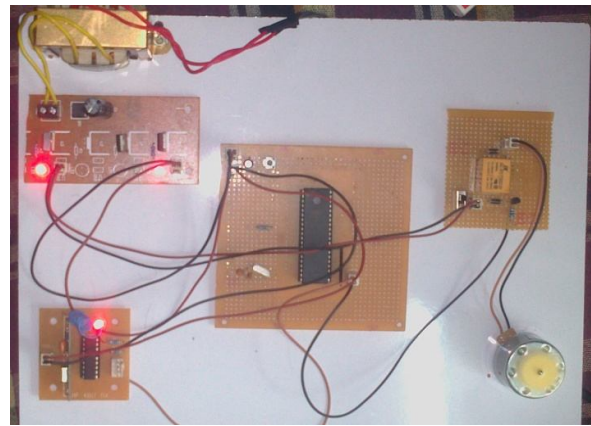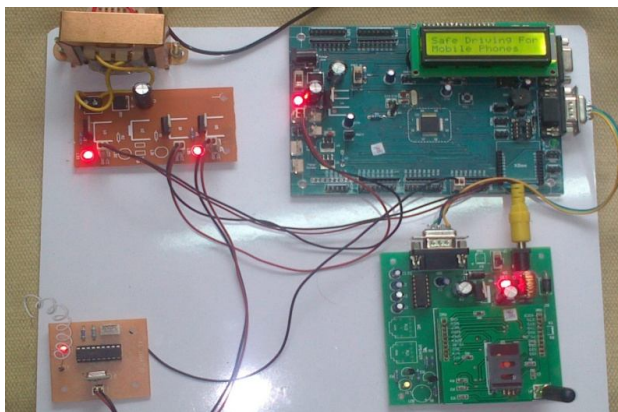Figure5: Hardware design of the mobile section

Figure6: Hardware design of the vehicle section

The hardware design of the systems is shown in figure above. In this system mobile section having RF transmitter with frequency 433MHz. At the same time in vehicle section will be having RF Receiver with frequency 433MHz. Next SIM is inserted to the GSM module and then SIM registration is completed then GSM network is activated successfully. Now if a person is calling to the mobile means one signal will be transmitted to the GSM network. In that first time call mobile not making any ringing or sound. On that time message information will be transmitted to the calling mobile. That message is person is in driving mode call after some time. Here the Microcontroller is the flash type reprogrammable micro controller in which we have already programmed. Suppose, if urgent then the person is calling second time, in that second time also mobile not makes a ring or sound. Only message information will be transmitted. If urgent person calling another time, So same number will be repeated. On that third time call situation buzzer making some sound like phone ringing. Then the driver recognize that urgent call will be ringing. So when the person need to attend the phone means by pressing call lifting unit, then automatically one signal will be transmitted to vehicle section. When the transmitted signal is received by receiver of vehicle section then automatically relay will be activated. When relay is activated means voltage giving to the motor will be decreases to slowly. In this way DC motor speed will be decreased.

V. CONCLUSION AND FUTURE SCOPE

Using mobile phones, we have demonstrated some innovative applications that are integrated inside an automobile to evaluate a vehicle's condition. The purpose of this study is to examine drivers' use of mobile phones while driving In this proposed paper is used to driving of automobile, mobile phones using are maximum reduced or avoid so in this way safely drives the automobile. The future scope of this project is move the automobile to the left side of the road and stops the functioning of the automobile.

REFERENCES

[1] P.Mohan, V. N. Padmanabhan, and R. Ramjee, "Nericell: Rich monitoring
of road and traffic conditions using mobile smart phones," in *Proc. ACM
SenSys*, Raleigh, NC, Nov. 2008.

[2] L. Langle and R. Dantu, "Are you a safe driver?" in *Proc. Int. CSE Conf.*,
Aug. 2009, vol. 2, pp. 502–507.

[3] J. Dai, J. Teng, X. Bai, Z. Shen, and D. Xuan, "Mobile phone based
Drunk driving detection," in *Proc. 4th Int.*

[4]Jun He echo and woon-sung Lee," Development of a safe driving management system" the Korea society of Automotive Engineers.

[5] Namju Jeon, Hyeong cheot Lee, and Kiyun Jung, Development of safe driving monitoring Algorithom. The Korea society of Automotive Engineers.

[6] C.-Y. Chan, "On the detection of vehicular crashes-system characteristicsand architecture," *IEEE Trans. Veh. Technol.*, vol. 51, no. 1, pp. 180–193,Jan.