Vehicle Tracking and Identifying Based on Android

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Abstract-Now a day's, vehicle thefts are huge problem in anywhere and to overcome that situation we design a project for providing protection and security based on embedded system technology. The main aim is to provide low cost device which is used monitor and track the exact location and intimate to mobile phone via Bluetooth. By using android phone we used to design an application depending our requirement and perform a specific task. In our project we develop an application related to avoid vehicle theft, identifying exact location through GPS Technology and getting alertness through mobile phones via Bluetooth module. We used to monitor the vehicle condition at every moment and also the user /police station can get intimation through mobile phone when vehicle is theft by any person. Hence this is easy way to find out exact location based on advance technology.

Keywords: ARM 7 LPC2148, Bluetooth Module, android mobile phone application, vibration sensor, GSM and GPS.

I. INTRODUCTION

Now a day's nearly vehicle theft are frequently occurred in many areas. To avoid that situation we design a project based on android application. We need to secure and protection in vehicle and focus on eco-friendly safety. Everyone has to reach his/her home in safe condition with avoiding theft incident occurred in any areas. In recent years the tracking location is based GPS Technology and GSM whereas in this project we implemented based on advanced technology such as android mobile phones. Collecting the required data from sensors which is attached to microcontroller ARM 7 LPC2148 and monitor each moment at vehicle condition. The vehicle condition status has been updated to a specific mobile phone via Bluetooth .In case a theft incident occurred then getting alertness through mobile phone and as well as to police station.ARM 7 microcontroller is controls the all devices and performs a specific task.To avoid serious faults occurred in vehicle. Therefore, the system has been develop and helpful for avoiding theft vehicle in any areas.Weimplemented this project based on combination of android mobile and GPS technology integrated to embedded technology and used to perform the require task.

The purpose of this project is security of the person when an uneven condition happened to vehicle .In our Project GPS and GSM Technology have been implemented for tracking at exact location and intimate to specific owner of person. Here we operate the vehicle over Bluetooth Technology using android app. Our android app hasdesigned an application related to control the vehicle depending upon corresponding directions. In Our controlling section consists of vibration sensor which responses the sound produce at vehicle. At that moment we are going to send a message to nearby hospital and family members through GPS location.

II.SYSTEM BLOCK DIAGRAM

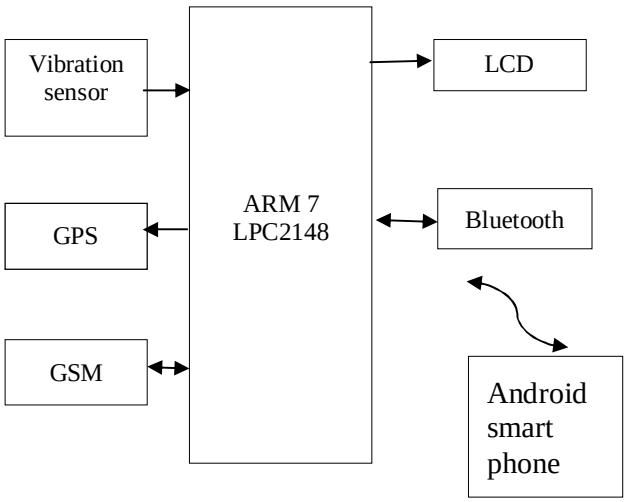

Fig1: System Block diagram

The Block Diagram describes the overall system development for vehicle tracking and detection. The system consists of ARM 7 Microcontroller, vibration senor, Android Smart phone mobile, Bluetooth and LCD.

ARM 7 Microcontroller: It is advance Technology compare to different controllers like 8051, PIC and AVR etc. It consists of features like

1. It has 32 bit GPIO pins used for both input as well as output.

2. It has data memory16 kB on-chip Static RAM.
3. It consists of on-chip Flash Program Memorywith 128/256 kB in size.
4. It accelerates operating speed of 60 MHz range of frequency.
5. In-System Programming (ISP) and also In-Application Programming (IAP) via on-chip boot-loader software.
6. It has 2 CAN communication protocol, interfaces for control of several devices.
7. It provide inbuilt ADC consists of 14 channel A/D converter.
8. It has multiple serial interfaces including two UARTs, Fast I2C (400kbps)
9. It 2 SPIs and 2 CAN 60 MHz maximum CPU clock available for programmable on-chip Phase-Locked Loop with settling time of 100ms.
10. It has PWM unit (6 outputs), RTC, Watchdog and two 32-bit timers (with 4 capture and 4 compare channels),

***Android Smart Phone mobile*:** It is advanced version of phones developed in several mobiles. It provides several applications dependingupon specific task. It plays a prominent role in several mobiles. for example if we want to track the location and identify the exact person and also intimate to specific person, several ways to develop using advanced android Embedded Technology. In our project the smart phone is used for getting alertness to a specific person without using GSM .It is a cross platform mobile web application framework.

Bluetooth:It is type of short distance communication. Now-a-days it plays a prominent role in each and every mobile. It is a wireless communication used to interact up to 10m distance.

Vibration Sensors:Generally, sensors used to sense anything and give required output in desired form. In our project we use different sensors like vibration sensor. It is used to detect the sound produce at vehicle whenever accident occurred and getting alertness to a specific person.

GSM (Global system for mobile): It is a long distance communication device used to interact similar like our mobile phones. The modem is used for voice (call), send and receive depending upon require application. The ARM 7 have two serial ports i.e. UART0 and UART1.By using these two serial ports we are easy to communicate with GSM. We can simultaneously send and receive data to ARM 7 microcontroller and perform the task depending upon application. This Modem used to get alertness whenever accident occurs to a respective owner or hospital or police station.

GPS: It is used to find the exact location and time in climate condition anywhere on the earth.The GPS module is arranged at baud rate 9600.It can interface with TTL/CMOS logic.
The detail protocol of NMEA:
1:GPVTG: Track Made Good and Ground
2: GPGGA - Global Positioning System Fix Data
3:GPGSV - GPS Satellites in view
4: GPGSA - GPS DOP and active satellite
5: GPRMC: Recommended minimum specific GPS/Transit data Speed.

III. SOFTWARE REQURIMENTS

Kiel µvision4 IDE:

In this software we write embedded c programming for developing require application.

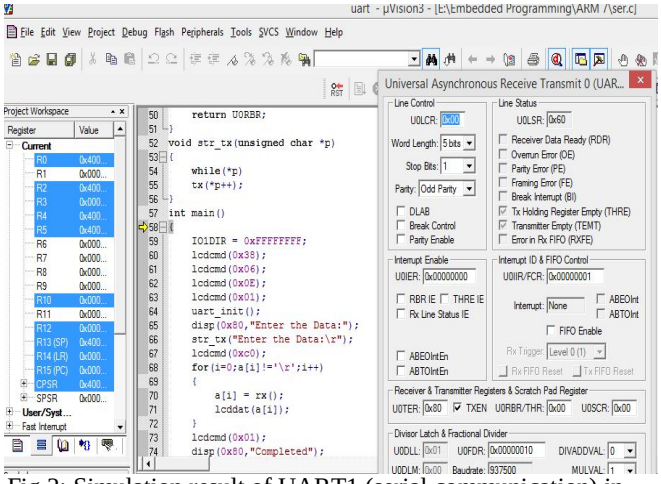

Fig 2: Simulation result of UART1 (serial communication) in LPC2148 Microcontroller.

Flash Magic:

It is used for dumping purpose which perform the task depending upon application which we generate the application in Kiel µvision4 IDE. The following figure describes simulation results which we dump hex file code in ARM 7 lpc2148 Microcontroller. It is used for dump the hex file code to hardware of controller and perform corresponding task.

IV. Working

The main aim of this project has been implemented for security solution that protects against attacks by addressing the challenges raised above, meeting both performance and

real-time constraints. The Microcontroller LPC2148 is plays a vital role to communicate to all devices.

Here in our project main aim is security of the person. Here we operate the vehicle over Bluetooth using android app. Our android app consists of 5 buttons which indicates left, right, forward, and backward and stop. Whenever we press a button an android app a coded message is generated and it is transmitted to control kit through Bluetooth. The received message at controlling section by the controller will be decoded and it is going to control the vehicle.Our controlling section consists of vibration sensor which response the accident occurred in vehicle. At that moment we are going to send a message to nearby hospital and family members. We track the location through GPS and send location to particular person.

In our project, the main aim is to provide accurate results on vehicle theft incidents occurred in surrounding areas. We design the project based on advance technology such as android application. We configure menu on mobile application such as left, right, backward and stop.Collecting the required data from sensor and communicate mobile phone via Bluetooth.Wetrack the location through GPS in case theft incident occurred in any surrounding areas then getting alertness through mobile phone via Bluetooth.

V. CONCLUSION

We implemented a project based on android application which is used to protect theft incident occurred in any situation and intimate through mobile phone via Bluetooth.We also track exact location using GPS Technology.Hence this is useful for finding exact location and get alertness to a specified person or to a police station. In future we maintain a database and give update to server HTTP.

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