Vehicle Tracking and Security System Using GSM and GPS

Student Project Proposal Submitted to
Karnataka State Council for Science and Technology
Indian Institute of Science campus, Bangalore-560012.

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Project Guide

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K.S.C.S.T. STUDENT - PROJECT PROPOSAL
YEAR 2009-10

1. Name of the college	: Bapuji Institute of Engineering and Technology
2. Name of the Department	: Electronics and Communication.
3. Name of the Student	: Harish N R Prasanna Kumar G B Sridhar M Manjunath B K
4. Name of the guide	: Asst. Prof. D S Babu
5. Project Title	: Vehicle Tracking and Security System using GSM and GPS
6. Date of commencement of project	: January 2010
7. Probable date of completion of the Project	:April 2010
8. Has a similar project been carried out	:No
9. If the project is an improved or a modified version	: No
10. Is such a device/ machine commercially available	: Yes
11. Objectives of the project	: Enclosed
12. Parameters involved	: ARM controller, GPS and GSM.
13. Is the project a study or survey project	: Study project
14. Budget	: Enclosed

Asst.Prof. D S Babu	**Prof. K M Chandrasekharaiah**	**Dr. B T Achyutha**
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Guide	**HOD**	**Principal**

CONTENTS

Abstract

Now a day's wireless communication is getting more and more popularity and it has entered into the daily life of a common man like mobile phone, Radio etc. The concept behind this project is to develop such an application which includes one of the devices which we are using in our daily life and here we have used mobile phone for controlling a vehicle and to receive the present location of our vehicle continuously in real time.

Our module will be fitted into any vehicle and it has embedded with a GPS modem which will communicate with the satellites and gives us the geographical latitude and longitude readings. GSM modem is used to transmit these data to the owner of the vehicle and if the vehicle is theft then owner can easily block the vehicles ignition system with the help of SMS sending.

Introduction

- Most agree that wireless technology represent the future of Electronic world. GPS and GSM are few technologies which are getting more and more popularity. There are lot of applications which are all based on mobile communication and are applied in position tracking and security systems.
- GSM stands for Global System for Mobile. GSM (group special mobile) was first developed by the CEPT. GSM services follow ISDN and are classified as tele-service and data services. Subscriber Identity Module (SIM) is a memory device storing ID, networks or countries for services, privacy keys, etc.
- In this project we are developing an application to monitor the vehicles present location in real time using GPS and GSM to transmute the information via Short Message Service (SMS).

Objective and Scope

- The motivation behind this project is to design an application on emerging wireless technology which can be implemented in our daily life, simple and of low cost.

- In this project we are using GSM, GPS and sensor logics to develop an application for automobile industry.

Project Description

The project mainly contains two parts. Transmitter part located in the vehicle and receiver part situated at the owner side i.e. monitoring side.

❖ Block Diagram

Transmitter:

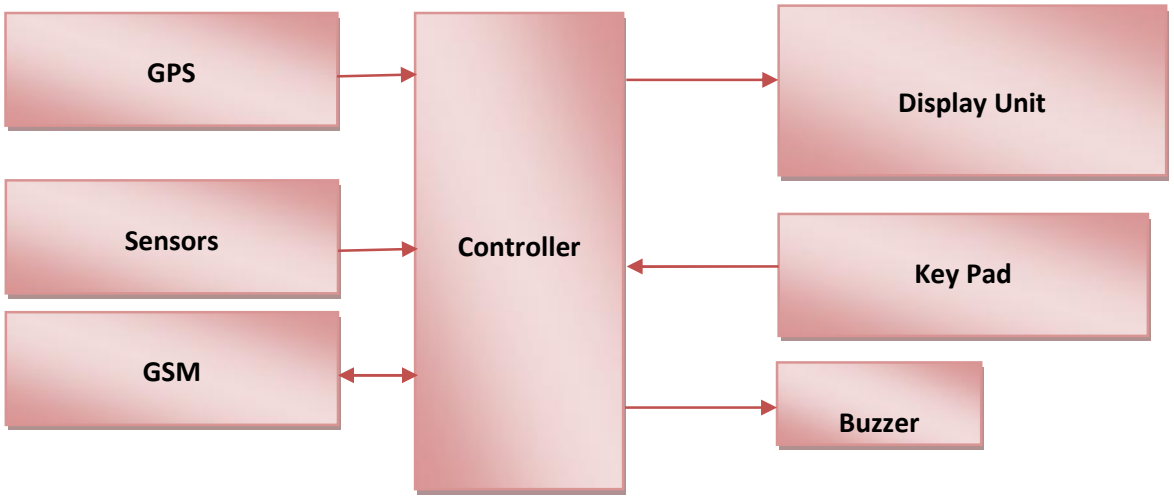

Fig: Block diagram representation of Vehicle Tracking System at Transmitter side

Description:

At the transmitter side the main controlling system will be a microcontroller. Here this microcontroller will be interfaced to a GSM, GPS, Keypad, Sensors, Display and a buzzer. Sensors like dip switches are placed on the body of the vehicle and if any one button is pressed the system give an emergency alert for 5 sec, the driver can suppress this warning else controller will send a SMS alert to the administrator telling that the vehicle is met with an accident.

In any point of time the vehicle owner can send a request message to track the position of the vehicle and also can stop the vehicle by seizing the engine (Shown with switching electrical circuitry blocking using a relay).

Receiver:

Fig: Receiver Side

Description:

Receiver will be a GSM Mobile and all communication will be in the form of SMS.

If the vehicle owner wants to find the present location he has to send a request message and the controlling system will reply back him the present location also if he wants to seize the engine he has to send engine blocking message.

❖ **List of Topics Covered under this project**

- Embedded Systems Design Life Cycle
- Project Analysis and Design
- Embedded C Programming
- Interfacing Techniques (GSM, GPS, LCD, Keypad)
- Communication Protocols
- Radio Frequency Communication
- Device Drivers
- Hardware Design and Circuit Design using OrCAD
- Software Development using Keil
- Test module and Bug Fixing

Applications

- Highway Signaling and warnings.
- Data loggers using GSM and GPS.
- Security Systems.
- Industrial automations and remote controlling.

Advantages

- Simple and low cost design.
- Efficient usage of emerging wireless technology.
- Spontaneous and no data loss in the design.
- Compact design and takes less space as well as runs with low power.
- Can be modified for other application with no or very less modification.

Disadvantage

- Communication depends on the availability of mobile network.

Tools (Hardware & Software)

❖ Hardware :

- 32 bit ARM Controller
- 16x2 LCD
- MAX 232 for serial communication
- Global System for Mobile communication (GSM)
- Global Positioning System (GPS)
- Keypad for security testing
- Buzzer to indicate the emergency

❖ Software :

- KEIL IDE (S/W Development and testing)
- ORCAD to design circuit of the project
- Flash Magic for program burning

Bibliography

- Understanding GPS: Principles and Applications, Second Edition Elliott D.Kaplan (Editor), Christopher Hegarty (Editor)
- http://www8.garmin.com/manuals/GPSGuideforBeginners_Manual.pdf
- http://www.datasheetcatalog.org/datasheets2/10/1046235_1.pdf

Vehicle Tracking Using GSM and GPS
Cost Estimation

SL No	Component/Module	Cost
1	Microcontroller ARM 7 – LPC 2129	Rs.500
2	ARM Development Board	Rs.2,000
3	GSM Modem	Rs.2,500
4	GPS Modem	Rs.3,000
5	LCD	Rs.250
6	Keypad	Rs.250
7	Other Components	Rs.200
8	Connectors	Rs.150
9	Power Supply Adapters	Rs.200
10	Miscellaneous	Rs.500
11	Project Report	Rs.500
	Grand Total	Rs.10,050