Chapter 1

**Introduction**

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There is tremendous demand for object tracking application for the business process. The real-time tracking information on valuable things and assets like vehicles could solve many problems in the world. GPS is the Global Positioning System which provides the location, using oﬄine and on-line both in any atmospheric conditions.

There are several types of GPS tracking system available in the market. Oﬀ-

line GPS tracking system, GPRS based tracking, SMS-based tracking, Android

phone based GPS tracking applications etc.

The GPS-based oﬀ-line tracking and alert system works oﬀ-line without using

the Internet. When the GPS in a device is on the GPS satellites broadcast the

signals and GPS receivers uses the signals and provides the latitude, longitude, and altitude information along with the time.

The main aim of the present work is to develop a vehicle location Tracker management system that ensures substantial productivity and gains including greater efficiency of fleet operations, higher field workforce productivity, lower fleet operating costs and better customer service with the help of a microcontroller interfaced serially to a GSM Modem and GPS Receiver.

The GPS modem gives many parameters as the output, but only the NMEA data coming out is read and displayed on to the LCD. The same data is sent to the mobile at the other end from where the position of the vehicle is demanded. An EEPROM is used to store the mobile number. When the request by user is sent to the number at the modem, the system automatically sends a return reply to that mobile indicating the position of the vehicle in terms of latitude and longitude.

**1.2 Problem statement**

A popular model to enforce vehicle tracking and positioning system is the use of vehicle log books or sheets. This traditional way has its disadvantages as it allows the university drivers to log and input data at their discretion. Vehicle Tracking and Positioning System (VTPS) is a GPS microcontroller based oﬄine device which is aimed at :

1. Tracking the location of vehicles.
2. Flagging on opening of fuel tanks among other.
3. Flagging on breakage in windscreens
4. Flagging on opening of bonnet
5. Speedometer Red Zones
6. Deployment of Airbags

**1.3 Objectives**

The objective of this work is to broaden the idea of vehicle tracking and positioning system for University Fleet Management to support real time notification to fleet administrators and in our case, University Transport Officers. An SMS alert or message is sent to the authorized number informing him / her if parameters have been exceeded.

I intend to focus on institutions like Universities that have vehicles that need to be managed.

The system will be built around a microcontroller. The microcontroller will be programmed with a calculated program logic needed to attain maximum productivity. The controller will also be interfaced with a GSM module and GPS module.

The device would be powered by the 12v D.C battery of the vehicle which runs through a voltage regulator to give an output of 5V. An LCD will show the current state of the vehicle at any point in time.

**1.4 Research question**

**SMS Alert**

The device has a built in gsm which sent the gps coordinates to the customer.The problem of the device is that when the vehicle is at a location of no cell service and the user sends a request for gps location and reaches a dead-end. The user who is also demanding the location of the vehicle should also have a cell service before he/she can communicate with the device.

**Gps**

The device has a built in gps which download the location coordinates from the satellite. The problem of the device is that when the vehicle is at an enclosed location such as in a garage or under a bridge, the device fails to read the location coordinates from the satellite

**1.5 Significance of the Study**

This study will contribute to the improvement of Gps car tracking and not only for the university but for any individual or corporate entity who would want to use the system. I hope that this research will encourage the university fleet management and also ease the drivers of vehicle log books.

This device is driver and university management centred and to adapt it as an effective monitoring strategy that will benefit the university. The outcomes to be considered consist of the following:

* The capability of the device to read location coordinates from the satellite.
* The capability of the device to detect the red zone speed limit if a driver exceeds.
* The capability of the device to detect opening of fuel tanks and vehicle bonnets.
* Close surveillance of drivers activities if far from reach.