Fleet Management System Using GPS

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Abstract- *Nowadays most of the public and commercial transportation organizations are using the fleet tracking system to track the fleet in real time. But, in many organizations like cab service providing companies, public vehicles and school busses do not have the security system. The purpose of this project is to provide the effective fleet tracking, real time online monitoring, dedicated remote server for fleet data storage and security features in a single system.This Real Time Fleet Management and Security System project is built on a Linux Based embedded microprocessor. GPS Receiver is interfaced for fleet location tracking, GSM-GPRS modem is used for communication and for Security purpose a physical panic button, Biometric sensor, Camera, and speakers are used. A dedicated server used for data acquisition and a GUI renderer is created for user interface. This GUI-renderer will plots and displays the real time data dynamically.*

I. INTRODUCTION

Fleet Management is a function which allows companies which rely on transportation in business to remove or minimize the risks. Improving efficiency, productivity and reducing their overall transportation. There is an increasing needs for tracking devices, which can be a life saving devices.

II. SYSTEM OVERVIEW

The Real Time Fleet Management and Security System have In-vehicle system, in which all the hardware is interfaced to Cubie Truck board. This In-fleet system is placed in the vehicle.A remote server used for data acquisition in real-time and GUI is created for user interface and dynamic plotting.

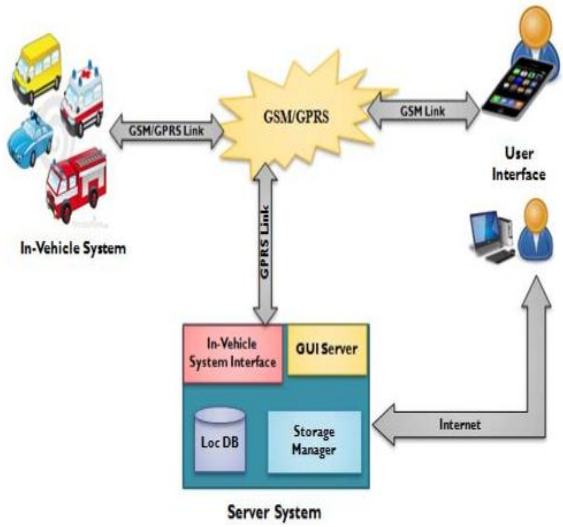

Figure1. System overview

The main function of the In-fleet system is to acquire the vehicle location, speed, time using GPS Receiver, Driver information using Fingerprint sensor then transmitting this data to the remote server at a fixed interval of time using GPRS HTTP protocol. Here a physical panic button is interfaced for emergency situations; this panic situation is informed through SMS, CALL, and Server update along with this Camera will take the pictures from the vehicle and uploads to the server using FTP protocol. The speaker is interfaced as voice alarm for security, from base station this voice help alarm can be activated and deactivated.

III. SYSTEM DESIGN

There are two main parts in this project, i.e building Real Time Fleet Management and Security System.

- In-Fleet System
- Server System

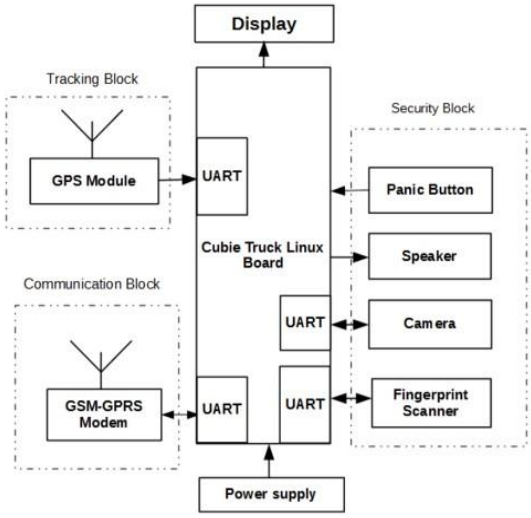

Figure 2. In-Fleet System block diagram

Embedded Linux board Cubietruck is used for building In-Fleet system. The main purpose of In-Fleet system is to get the vehicle location details, monitor and control the Security system devices and use the communication device to communicate between In-Fleet system and base station server.

In-vehicle System collects the location details using the GPS receiver. It will monitor and control the Security devices such as Biometric Fingerprint sensor for driver authentication, panic button to indicate panic situation, Camera for taking picture in the vehicle and remote controllable voice alarm system.A GSM/GPRS modem is used to establish the communication between the In-Fleet system and central server (base station). This GSM/GPRS modem establishes the communication by using SMS, HTTP, FTP protocols. HTTP protocol used to upload the location data and fingerprint driver ID to the server, SMS to user phone. FTP protocol used to upload the captured pictures and data files to the remote server.

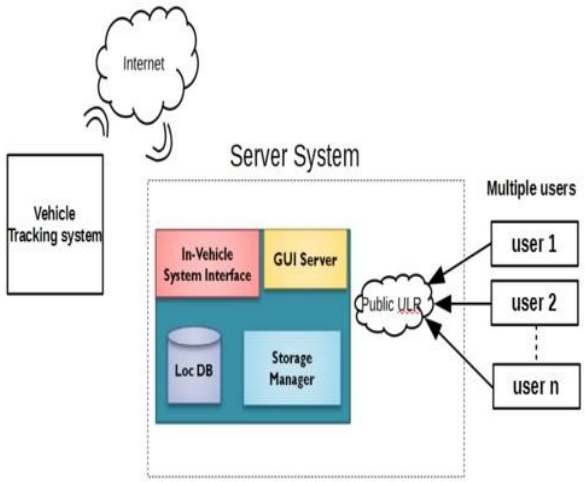

Figure 3. Server System block diagram

Main purpose of server system is to accept the data from the In-Vehicle system and maintain a database to store the accepted data and the GUI server for user interface.In-Vehicle system server interface have the PHP script, which will accept the data from the vehicle module through GPRS HTTP protocol. This acquired data then transferred to the database. Database accepts the data from PHP script and appends the data to the existing data.

A storage manager is used to accept the data files i.e. image and data files from the In-Vehicle system through FTP communication. GUI server will take the real time location details from the location database and plots in the Google maps

IV. SYSTEM IMPLEMENTATION

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users. Which it will work efficiently and effectively. It involves careful planning investigation of the current System and its constraints on implementation, design of methods to achieve the change over. An evaluation, of change over methods.

V. CONCLUSION

By improving the GPS positioning via embedded filters, overall hybrid positioning accuracy will be improved too and hence the accuracy of such hybrid positioning method will out performs the other proposed methods in metropolitan areas. The developed fleet tracking system demonstrates the feasibility of near real-time tracking of fleets, which can be used for security of personal fleet, public transportation systems, fleet management and many other applications. The system can provide improved customizability, global operability and cost when compared to existing solutions. The system allows those companies to monitor the travelled routes through a web client that uses the google maps API and shows colors on the map to indicate if the devices on route. The general evaluation result is that the system proved to be reliable as to view the positioning of the devices.

VI. RESULTS

The proposed Real Time Fleet Management and Security System is implemented and obtained the results.

GPS receive data time interval	Every 1 second
Average time taken for HTTP POST	3-5 Seconds
Average time taken to upload a 20480kb image/data file using FTP protocol	20-25 Seconds

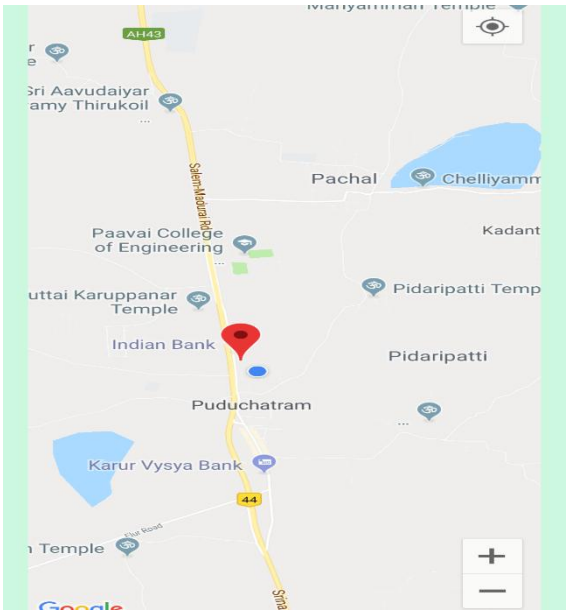

Figure 4. Google Maps

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