

GPS Car Tracking System

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Introduction

Depending on the high usage of mobile phones, and the large services that it provides, and the needs to always be connected to other, and share information with them, we built mobile based car tracking system.

Car tracking system, that will give users the ability to determine their locations, and other cars locations, during any travel interval; by providing an obvious and clear observation, to the movement of group of cars in different places, and reflecting their paths on a map. Also it provides the ability of continuously checking of speed of the moving car.

Project Objectives

1. Provide mainly car tracking system, that will give the system users a clear vision about there cars movements through its travel at every moment in real time .
2. Provide objects tracking system to some degree of accuracy, that can be tracked during walking beside driving.
3. Keep watching the speed of the tracked car over the travel and view it on the screen all the time, to control and monitor it .
4. Design history part that will be used to retrieve all cars that interacted with the system previously, with whole vision about its movement in the system, from point of registration until last time.

Results:

1. Built mobile application that read GPS coordinates and cars speed and transmit it periodically to main server.
2. Built server application that receive transmitted data, and process in some how, then plot as continuous path of movement, on tacked region geographic map's.
3. View the tracked cars speed at every moment, and display on the screen at real time, to control any Irregularities.
4. Built database that used to store the customers car's information, with all actions that it did at any time, and provide form to display these history in clear and accurate ways.

Proposed project

GPS Car Tracking System (GCTS) is a real time project that aims to track group of cars at the same time by enrolling them into the system, then start sending their coordinates to the main server, in order to be drawn after being processed by accurate equations. Also the speed of the travelling cars will be sent to get continuously check of the speed of drivers.

The system aims also to provide accessible data base can be retrieved any time, to draw the line of movement of any car at previous time, and show the speed history or the registration information of any driver.

Many components are needed to implement this idea mentioned in figure1.

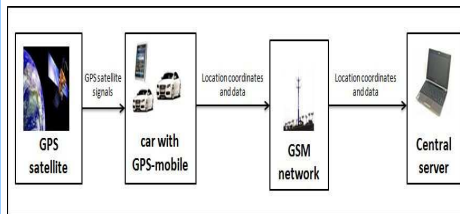


Figure 1: GCTS Idea

Project Block Diagram

Figure 2 is the general block diagram for the project, as illustrated below, the GPS satellites always available and send signals, those signals received by the receiver inside the mobile and sent with other registration data and speed through GSM network over HTTP connection to the main server. At the main server side, there will be maps and a connection with data base to store needed data.

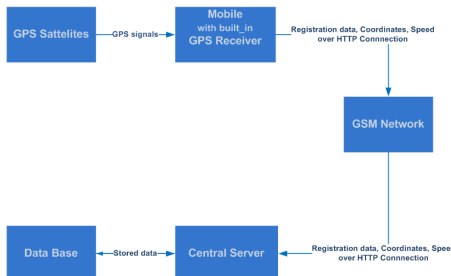


Figure 2 : System General Block Diagram.

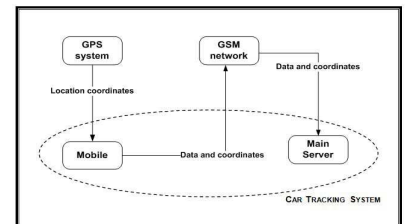
A complete program on the main server will process the received cars coordinates, then display it on maps with different zoom degrees. Updates to the paths will occurred each time the coordinates being received.

System Design and Implementation

An android application written in java using Eclipse was installed to the specific mobile which has a GPS receiver. An C# application was built on the server.

The mobile application is prepared for the user to enter his information(car no., mobile no., driver name), then a selection of the mode of travelling will be selected either walking or driving, and finally start receiving coordinates and speed from the GPS satellites and send them to server application, to be processed and plotted then stored.

Figures 3 show the block diagrams for this design options:



The general flowchart diagram that controls the flow of information between system components is shown in Figure 4.

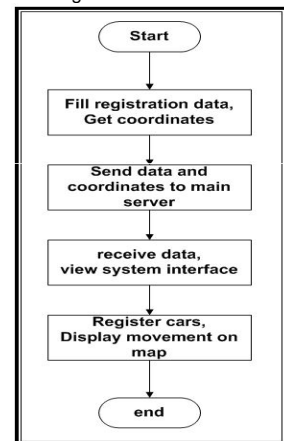


Figure 4: System Flowchart diagram

The following figure describe the registration and the tracking screens on the mobile application, and part of the map with path of movements on the server side.

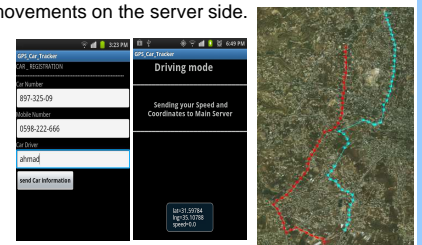


Figure 5: System screens on mobile and server