Intelligent Vehicle Tracking System Using GPS on Android Smartphone and Pothole Detection

Pradnya Botre, Bharat Dhangar, Gaurav Gandhi, Saurabh Joshi

botrepradnya11@gmail.com
dhangar.bharat13@gmail.com
gauravgandhi1008@gmail.com
sao2295@rediffmail.com

UG Student, Dept. of Information Technology, JSCOE, Hadapsar, Pune, India.

ABSTRACT

GPS is one of the technologies that are widely accepted and used in a huge number of applications today. One of the applications is keeping regular monitoring and tracking your vehicle. Intelligent Vehicle Tracking System (IVTS) can inform you information can be observed from any remote location and the route and location travelled by vehicle. Intelligent Vehicle Tracking System (IVTS) includes the web application that provides exact and precise location of target vehicle. Intelligent Vehicle Tracking System (IVTS) helps user to track target vehicle in any weather conditions. In Intelligent Vehicle Tracking System (IVTS), GPS tracker device is attached to the vehicle. If the vehicle is stolen it automatically sends location of the vehicle to its owner as a SMS through GSM modem. Intelligent Vehicle Tracking System (IVTS) will be a much simpler and cost effective technique compared to others. Through Intelligent Vehicle Tracking System (IVTS) technique additional information about vehicles (e.g. exact location, speed) will be obtained. In Intelligent Vehicle Tracking System (IVTS), Pothole detection is the additional feature added.

Keywords: GPS (Geo-positioning system), VTS (Vehicle Tracking System), And IoT (Internet of Things), and IVTS (Intelligent Vehicle Tracking System).

I. INTRODUCTION

The ability to track, trace and control anything by anyone from anywhere on the planet has been mankind’s unfulfilled desire. The usefulness of GSM and GPS has made them popular in their own context; integrating these technologies can prove to be an accurate solution for many unsolved problems. The idea of IVTS is to integrate these two technologies into one system and provide an effective application for vehicle tracking as well as personal tracking. To implement a multi tracking system use of the following two technologies can be made, firstly GSM (Global System for Mobile) which is a set of standards to describe technologies for Second Generation (2G) and GPS (Global Positioning System) which is a satellite-based navigation system consisting several satellites revolving around the earth. IVTS will provide solution for tracking and tracing of multiple movable objects at a same time, so the name Intelligent Vehicle Tracking System (IVTS). IVTS shows current location of the object and other add-on features, for vehicles there will be live tracing, tracking and pothole detection GPS, controlling its subsystem parts via GSM network using SMS or GPRS. IVTS will be implemented in java with android application.

What is IVTS?

Intelligent Vehicle Tracking system (IVTS) is tracking or tracing system for vehicles. IVTS will be useful because of its features such as Pothole detection and vibration sensing technology. Pothole detection is used to see the quality of the road by the sensor. The sensor here used is ultrasonic sensor. The sensor uses a threshold value in which if it triggers the threshold value then it will signal through the android application and plot the point on the map.

II. RELATED WORK

In Real time tracking system GM862 quad band of cellular module is used for implementation. [1] A graphical user interface and monitoring server on a website is also developed using ASP.net and Microsoft SQL Server 2003 to
view the proper location of a vehicle on a specific map like google, bing. Real time tracking system provides information about the vehicle status such as mileage, speed. Automobile anti-theft system using GSM and GPS module system [2] allows anti-theft system which makes easy for the user to protect their vehicle on the basis of RFID tracking system. Automobile anti-theft system using GPS module and GSM module system uses geo-fencing. Automobile anti-theft system using GPS module and GSM module system alerts the user by message on the user’s android smart phone. Main advantage of Automobile anti-theft system using GPS module and GSM module system is tracking of vehicle is easy because of RFID tag. Development and deployment of GPS and GSM module based Vehicle Tracking and Alert System. [4] Development and deployment of GPS and GSM module based Vehicle Tracking and Alert system allows inter-city, intra-city transport companies to track their vehicles in real-time and provides security from accident occurrences and armed robbery. Development and deployment of GPS module and GSM based Vehicle Tracking and Alert System useful for large size organization. Tracking and Routing System for Mobile Vehicles in Large Area system allows vehicle tracking system using GPS tracker and sensor attached to the vehicle. [5] As transport companies travel a long distance in a circuit Routing and Tracking System for Mobile Vehicles in Large Area system helps the companies to track their particular vehicles. Development and deployment of GPS module and GSM based Vehicle Tracking and Alert system and Routing and Tracking System for Mobile Vehicles in Large Area system are developed for same purpose. Cloud Computing for Agent Based Urban Transportation System [7] allows storing the information of the particular vehicle. The coordinates (latitude and longitude) are stored as the vehicle moves through a path. Coordinate information helps the user to track the vehicle. The server stores the information in a key format and used later for tracking operation. Real time pot-hole detection system using Android smart phones with ultrasonic sensors system allows [8] the user to get the reliability of the road. The ultrasonic sensor is a sensor which gives the intensity of the obstacles in the road. Real time pot-hole detection system using Android smart phones with ultrasonic sensor will also indicate the driver with an audio and also plot the points on the map. Android Interface Definition Language (AIDL) [9] system allows the user to navigate through the application. Android is used to make an application for the ease of the user. An efficient GUI is designed to get the tracking details about the vehicle and to show the details of the sensor and the points on the map where the potholes are plotted. Advantage of Android Interface Definition Language (AIDL) system is user friendly GUI. Safe Driving Using Mobile Phones system allows [10] the user to track the motion of the vehicle. The android application provides a graphical view of the moving of the vehicle with the help of Google maps. As pothole detection is used the user is aware of the quality of the road which eventually will help user to save some time by using a different route. Intelligent Transportation Systems Society of Canada [6] is knowledgeable source for advice and information on intelligent transportation systems in Canada, and positions itself to be fair and unbiased by not lobbying for or promoting government policy or any specific commercial interest.
which are easy to carry same goes to the system proposed as a simple android application helps the user to register the vehicles and track them whenever needed. It also provides a security to the rental data which is stored neat, clear, and not lost or spilled.

VI. RESULT

Fig 2. GPS Tracker Device

Fig 3. Pinpoint location of vehicle

Fig 4. Route to the pinpoint location

Fig 5. Pin point values(Lat, long values)

Fig 6. GUI of GPS Tracker application

Fig 7. GUI of Pothole detection
REFERENCES


