



Real Time Vehicle Tracking System

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Abstract

Vehicle tracking system is a well-established technology in this era which is used by fleet system and owner of vehicle all over the world. It is a very safe and reliable technology. In our thesis we are going to design a system which is used for tracking and positioning of any vehicle by using Global Positioning System [GPS] and Global System for Mobile Communication [GSM]. We will be primarily focusing on tracking a Solar Assisted Rickshaw Van using Arduino Uno R3 and GSM module sim908. The design is an embedded application, which will continuously monitor a moving vehicle and report the status of vehicle on demand. For doing so the Arduino Uno R3 is interfaced serially to a GSM modem and GPS receiver. The GSM modem is used to continuously send the position of the vehicle from remote place. The GPS modem that uses satellite technology for its navigation system will continuously give data like longitude, latitude, speed, distance travelled etc. When the request by user is sent to the number at the modem in the form of SMS, the system automatically sends a return reply to the mobile indicating the position of the vehicle in terms of latitude and longitude via SMS. We will also view the position of vehicle on a digital mapping i.e. on Google map with the help of software via Internet. For this we will be using the software XAMPP and Google Map API. XAMPP is a free and open source cross-platform web server solution stack package consisting

mainly of the Apache HTTP Server.MySQL database and interpreters for scripts is written in PHP and Perl programming languages. The Google Maps API allow for the embedding of Google Maps onto web pages using a JavaScript interface which is designed to work on desktop browser application. The MySQL database is used to store all the data of the GPS and Google Map API is used display the location information through a Google Map. We will also be able to control the vehicle if it is stolen.

I. Introduction:

The vehicle tracking system is a total security and fleet management solution. It is the technology used to determine the location of a vehicle using different methods like GPS and other navigation system operating via satellite and ground based stations. Modern vehicle tracking system use GPS technology to monitor and locate our vehicle anywhere on earth, but sometimes different types of automatic vehicle location technology are also used. The vehicle tracking system is fitted inside the car that provides

effective real time location and the data can even be stored and downloaded to a computer which can be used for analysis in future. To develop a smart transformation system. Which that aim to provide real-time information to the users regarding the availability of buses and their

upcoming timings. The system will utilise advanced technologies such as GPS(Global Positioning System) and their relevant services to gather the necessary data for providing reliable information to the users. The processed system will have to be designed to facilitate the users in identifying the current status of their desire bus or own vehicle. Along with the estimate time of its arrival at the integration of the real-time data from the buses. As well as from traffic management system. In conclusion, the proposed smart transformation system will significantly enhanced the efficiency and convenience of the public transportation system in Himachal Pradesh. As a sustainably information to the users. Good to indicate emission compliance of the car E.g Bharat stage IV also if the car user clean fuel such as CNG or Electricity. This system is an essential device for tracking car any time the owner wants to monitor it and today it is extremely popular among people having expensive cars, used as theft prevention and recovery of the stolen car.

II. PROPOSED SOLUTION:

To provide real-time transportation data in Himachal Pradesh, we propose a smart system. It integrates GPS, traffic info, bus details, user-friendly interface, security, and sustainability. This comprehensive solution ensures reliable, eco-friendly, and accessible public transportation while complying with regulations and continuously improving user experience.

1. System Architecture and Data Integration:

- Design a scalable system architecture. Integrate GPS, traffic data, and bus-specific information.
- Develop algorithms for real-time data processing.

2. User-Friendly Interface and Notifications:

- Create an intuitive mobile app and/or website.
- Display real-time bus locations and estimated arrival times.
- Implement push notifications for updates and alerts.

3. Payment Integration and Multilingual Support:

- Integrate payment systems for ticket purchase.
- Ensure accessibility for people with disabilities.
- Provide support for multiple languages.

4. Security, Privacy, and Compliance:

- Implement robust security measures. Comply with data privacy regulations. Ensure regulatory compliance in Himachal Pradesh.

5. Testing, Maintenance, and User Feedback:

- Thoroughly test the system for accuracy and usability. Establish a maintenance plan for updates and bug fixes. Collect user feedback for continuous improvement.

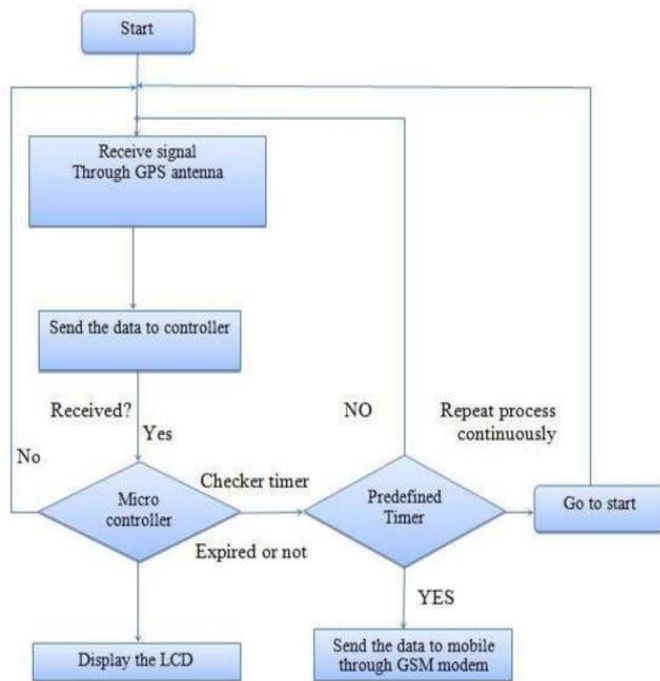
6. Sustainability and Public Awareness:

- Promote clean fuels (CNG, Electricity) and emission compliance. Launch a marketing campaign for user adoption. - Monitor system performance and report to stakeholders.

III. Literature Survey :

There are many vehicle tracking systems in use in both developed and developing countries today. Real-time tracking and management of vehicles has been a field of interest for many researchers and a lot of research work has been done for tracking system. The GPS/GSM based tracking system is a system that makes use of a global positioning system (GPS) to determine the precise location of a vehicle, person or an asset to which it is attached. The gathered information can either be sorted within the tracking unit or transmitted and sorted on a database management system at a remote location. Transmission in real-time ensures that the propagation delay is minimal. The location is visually displayed on a map using a GPS tracking software

IV. Flow Chart:



V. Benefits Of Vehicle Tracking System:

The in-vehicle tracking device or unit working along with a central server and a software, which let the user or owner of a car to know the whereabouts of his own vehicle, surely comes with several benefits. The GPS and GSM installed inside the vehicle fetches its location information and send it to owner on regular intervals according to users preferences, in order to remain up-to-date all the time. As all the relevant information is displayed on the screen, it is very convenient for the user to monitor and take any actions in case of an emergency. Also monitoring discourages dangerous and inefficient driving practices of drivers which lead to increased vehicle security and driver safety. The vehicle tracking system plays a vital role if it is used in any companies or organization for any kind of delivery purposes. Since the driver is being aware of the fact that the car is constantly being monitored so one would be careful while driving and take shortest possible route to reach destination right on time. This system can also be named as an anti-theft tracking system as this advanced yet affordable system ensures the recovery of stolen vehicles too. If the car does not get to designated location or being used by unauthorized user, the location can be traced and then notified to police to reach the unauthorized location where the vehicle is residing

and thus this vehicle tracking system ensures car safety as well.

VI. Future Scope:

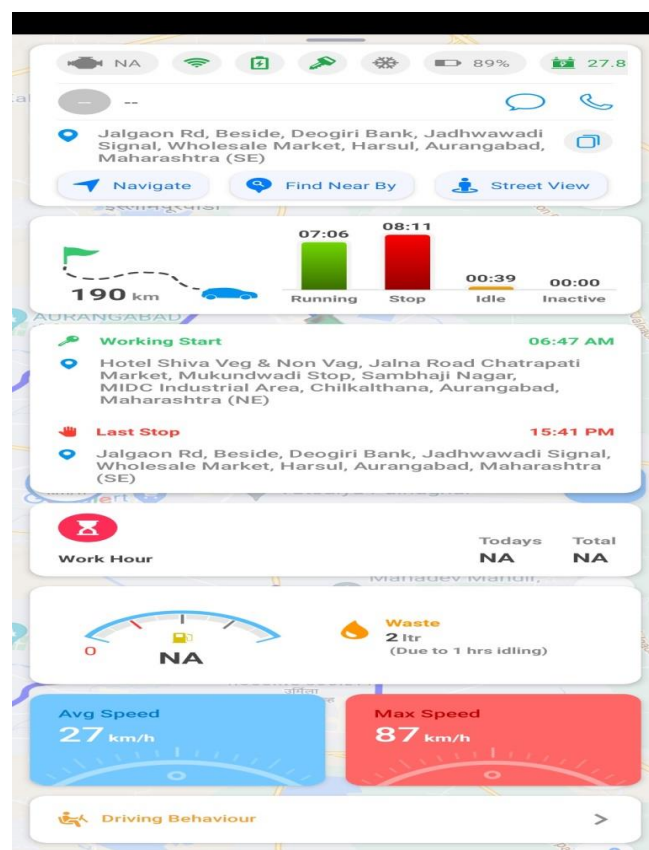
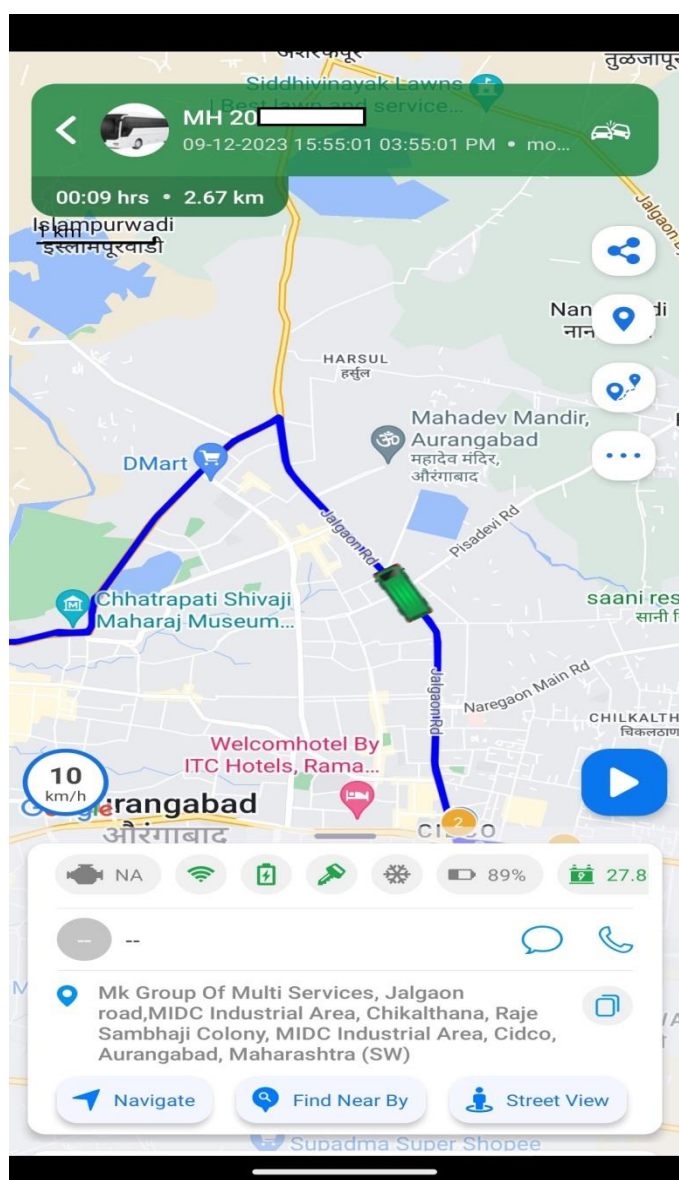
We will track the position of vehicles or we can send information about vehicle to distant user on GOOGLE MAP as well as we can show the running position of a vehicle. The cost of on prototype of our project includes GSM modem which is quite high and can be reduced by designing a GSM modem or by using any other optional wireless medium to communicate with the base server.

VII. Conclusion:

A real-time vehicle tracking system is a technology that allows you to track the location and movement of vehicles in real-time. This system uses GPS and other technologies to provide accurate and up-to-date information about a vehicle's location and movement. It also protect vehicle against theft and enhanced customer service. In our thesis we have developed a vehicle tracking system that is flexible, customizable and accurate. The GSM modem was configured and we tested and implemented the tracking system to monitor the vehicles location via SMS and online on Google map. To display the position on Google map we have used Google map API. The Arduino is the brain of the system and the GSM modem is controlled by AT commands that enable data transmission over GSM network while the GPS provide the location data. Whenever the GPS receives a new data it is updated in the database and hence we are able to see the location on the Google map. We thought of designing a real time vehicle tracking system in our thesis keeping the scenario of Bangladesh in mind where vehicle theft is rapidly increasing. Our device can provide good control on carjacking. The system provides accurate data in real time that makes it possible for the user to track the vehicle and it also enable an early retrieval if the car is stolen. Implementation of GPS tracker in vehicle can certainly bring revolutionary change in that can be built over our existing platform. Hence, we have designed our system in such a way that upgrading this system is very easy which makes it open for future requirement without the

need of rebuilding everything from scratch, which makes our system even more efficient. This thesis has widely increased our knowledge of GPS and also improved our programming skills. We have also ensured the reliability of our system through various field tests that we have done during our thesis and the initial results that we obtained through our prototype are very promising. This makes our thesis complete, robust and we can even think of commercialization of this system in future.

VIII. Real Images:



IX. Refrences:

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