



Vehicle Management And Monitoring System

Owais Khan¹, Rohit Chaurasiya², Nafisa Sabir³

^{1,2,3}Students, Department of Computer Engineering, M. H. Saboo Siddik College Of Engineering

Abstract; The proposed word we are going one step ahead with global positioning system and going to monitor and track vehicles using global positioning system. Tracking of vehicle is a process in which we track the vehicle location in form of Latitude and Longitude (global positioning system coordinates). global positioning system Coordinates are the value of a location. This system is very efficient for outdoor application purpose. This kind of Vehicle Tracking System Project is widely in tracking Cabs/Taxis, Trucks, school/colleges buses etc. This system is basically an embedded one. Embedded stands for hardware controlled by software. Vehicle tracking and monitoring system will be installed in the vehicle, to track the place where vehicle is moving. The place of the vehicle identified using Global Positioning system (global positioning system). These systems constantly watch a moving Vehicle and report the status on demand

Keywords: global positioning system, Vehicle Tracking System, Monitoring, Vehicle Location

1. INTRODUCTION

Vehicle tracking and monitoring have become an essential part of today's automotive industry with its wide range of applications from security to traveling and fleet monitoring for business. This project aims to create a WebApp that allows us to track and monitor vehicles in real-time. The WebApp will be able to display the current location of vehicles as well as detailed history, information of the vehicle in past days or weeks on a map. This report provides brief information of the current systems, their drawbacks as well as all the details regarding our proposed system

The automobile industry began in the 1860s, since then there has been a very vast development in this industry. Many things have improved since then the car design, color, mileage, and many more. especially in recent years, we have achieved so much like maps, music, tv screens, camera, new locking systems tesla can be the biggest and recent one, auto-driving cars have been a dream for all of us. However, tracking and monitoring systems are something that belongs to the big giants and the luxurious cars segment. even in the current era of computers and the internet, most cars do not have tracking systems that can help many common people and businesses. The Global Positioning System (global positioning system) based vehicle location and tracking system provided effective, real time vehicle location, mapping and reporting this information value and add by improving this level of service provided. The global positioning system based vehicle tracking system is designed to find out the exact location of any vehicle and intimate the position to the concerned authority about through an SMS. The system includes a global positioning system modem that it retrieves the location of a vehicle in terms of its longitude and latitude. The system uses geographic position and time information from the global positioning system. The system has an onboard module that it resides in the vehicle to be tracked and a based station that monitors data from the various vehicles. The onboard module consists of global positioning system receiver, a GSM modem. This hardware is fitted on to the vehicle in such a manner that it was not visible to anyone. That system sends the location data to the monitoring unit continuously therefore it is used as a covert unit. The location data from tracking system uses to find the location and to give the information to police when the vehicle is stolen. This gives an edge over other pieces of technology for the same purpose. The system automatically sends a return reply to that particular mobile indicating the position of the vehicle in terms of latitude and longitude when a request by user is sent to the number at the modem. A program has been developed that it is used to locate the exact position of the vehicle and also to navigated track of the moving vehicle on Google map. The system allows to track the target anytime and anywhere in any weather conditions. This system is user friendly, easily installable, easily accessible and can be used for various other purpose.

2. LITERATURE REVIEW

Vehicle Tracking system is getting popular and widely used in a lot of countries Worldwide. It has tons of advantages to users even more to the vehicle users in which it will make it easier for them to track their vehicles. Nowadays, everyone cannot be separated from their smartphones. A number of five thousands individuals from USA, UK, South Korea, India, China, South Africa, Indonesia and Brazil took a survey regarding which was done by Time magazine. The result proved most of them is inseparable from their smartphones, eighty four per cent allegedly claimed that survive without their smartphones. Another study shows that seventy five per cent of the market share is smartphone and a total of one hundred and six million smartphone were shipped in



the second half of 2012. Smartphone became the top telecommunication medium in the market in the present time worldwide and it became the most popular used telecommunication medium known to man. System text message oriented so that we can take care of our own vehicle in just one touch of our hand. Through smart phone we can track real time location of our vehicle with the help of internet connection. In such a manner, this tracking and monitoring system designed so that users can have easy and user friendly interface to fetch their vehicle

Survey Existing system at present, most of vehicle does not have any tracking or monitoring system connected to mobile. Only some of the very recent models which come under relatively higher price category have this technology.

Limitation existing system or research gap Very low percentages of vehicle have this tracking system. According to transport ministry number of old cars will grow to more than 2.3 crore in next 3 years these are just those cars which are nearly 15 years old . they have a market share of around 35% .If we compare , recent sale of new cars in 2019 (pre-covid) is 2 million and sale of used car is 4 million This just displays the preference of people to buy used cars instead of new ones which seems a lot better deal since a car just 3 years old loses its value by 30-50% . .

Thus taking this system further away from the hands of people

Problem statement In the present day vehicle tracking is becoming essential for the purpose of improving our life condition Convenience and ease of using vehicle is what vehicle tracking and monitoring system is offering. Vehicle tracking offers a futuristic way of life in which an individual gets to control his vehicle using a smart phone for tracking a vehicle; it also offers an efficient use of technology.

But to get or acquire such system installed will cost a lot of money and that is the major reason of why vehicle tracking has not received much demand and attention, adding to that also the complexity of installing it and configuring it. Thus it is essential to make it cost effective and easy to configure, if this is granted to people then they will be willing to acquire it in their personal vehicles, school buses and taxis/cabs etc. In other words, a system modification for the vehicle tracking is required in order to lower the price of applying it to vehicles. this tracking project can be used to purpose of women safety as well as parents can be used to take care of their child/kid for the safety or missing purpose or to track their activities for their future.

Objective of the vehicle tracking

To construct a vehicle tracking system controlled by a smartphone specifically an Embedded device. To design and implement cost effective vehicle tracking system yet an efficient one. To design a user friendly and a safe system to control vehicles especially aimed to aid the all useful to track soldiers or to track child/ kid for their safety or missing purpose and also can be useful for women safety purpose. So when this embedded system design take care of every aspect of its purpose as it mentioned above.

3. PROPOSED SYSTEM

Analysis/Framework/Algorithm



Fig-3.1 Framework

Proposed work mainly has 3 components WebApp, server, tracking device (hardware). The tracking hardware will be installed in the vehicle; this hardware will send real time data to the server. Server will send this data to the WebApp or might store in data base and on the WebApp the vehicles data will be visible.



Details of Hardware & Software

Hardware Requirements

Vehicle gnss tracker the gt06n gps vehicle tracker is trusted by customers around the world for its rich feature set and durability from standard tracker telematics like gps tracking and acc status to more advanced functions like an sos button and audio monitoring

Must have a compact space available , where the device won't be damaged due external environment (like water , dust etc)

Software Requirements

4g internet and 5g internet. can be significantly faster than 4g, delivering up to 20 Gigabits-per-second (Gbps) peak data rates and 100+ Megabits-per-second (Mbps) average data rates. 5g has more capacity than 4g. 5g is designed to support a 100x increase in traffic capacity and network efficiency. 5g has lower latency than 4g.

Chrome or any web browser. The Google Chrome Web browser is based on the open source Chromium project. Google released Chrome in 2008 and issues several updates a year. It is available for Windows, Mac OS X, Linux, Android and iOS operating systems. The Google Chrome browser takes a sandboxing-based approach to Web security

Technology Used

Reactjs (frontend library to create single page application)

Reactecosystem (libraries to support function of WebApp)

Leaflet (opensource tile renderer) and openstreetmap (tile provider)Design details

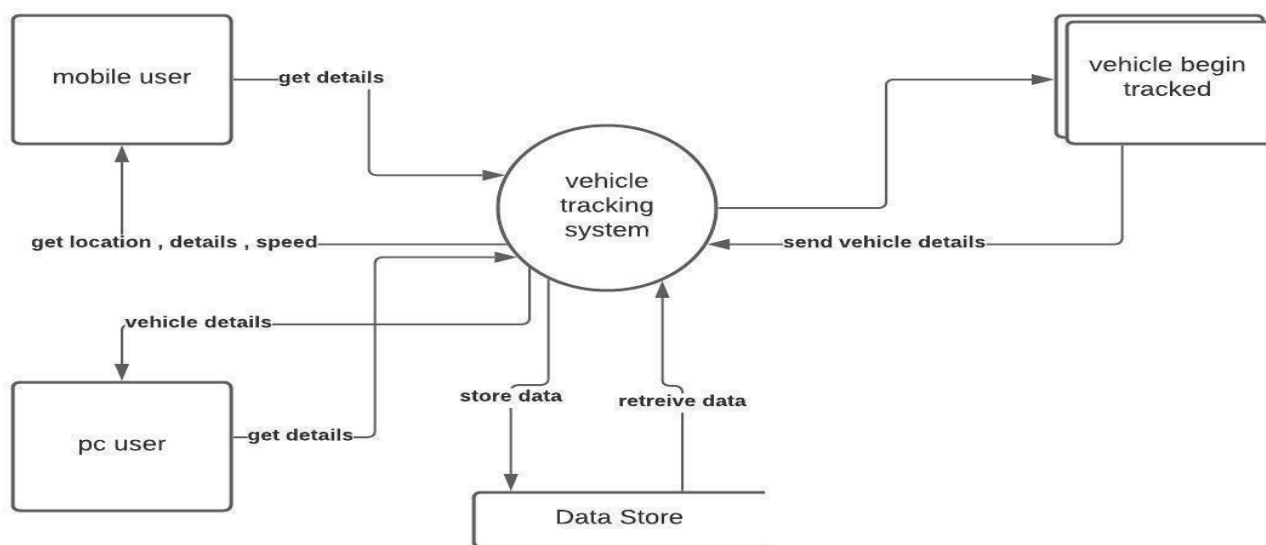


Fig-3.2 Data Flow Diagram

4. RESULTS

GSM module used to send and receive message from another GSM number. If the owner of the vehicle wants to know their vehicle location, they have to send find message firstly. At that time, GSM module was working to send back to the owner mobile phone number. In this thesis, global positioning system module also contains so that message contains the location of their vehicle latitude and longitude. If the owner wants to see on Google map, it shows the location of their vehicle. Therefore, the user easily knows their vehicle location when the vehicle was stolen. If the nothing message is sending the owner, the operation is performed according to the code so LCD was displaying "HI". Firstly, this system had to wait a little second to active GSM module and global positioning system module. After active system, it had to show the result on serial monitor.

5. CONCLUSIONS

Tracking system is nowadays the most important system for the person, they want their car security in efficient hands this is the main reason. So the vehicle tracking system are getting popular day by day not only in metropolitan areas but



also in small cities. This system is completely integrated and it becomes possible to the user to track their car very easily at any time and from anywhere. As the vehicle theft is increasing day by day but due to this people wasn't avoid using vehicles but they found an efficient way to keep an eye on their vehicle without being very close to them. These systems keep a good control on the thefts and help avoiding them to some extent. Basically in all these systems the global positioning system and GSM are used to track the vehicle. Using this system the user determine the position of the vehicle, and the distance completed by it. The user is able to access the position of their vehicle at any instant of time. This system is reliable any very secure. Upgrading this setup is very easy which makes it open to future requirements without the need of rebuilding everything from scratch, which also makes it more efficient. GSM module used in this paper to send and receive SMS. GSM module can supported 2G, 3G and 4G but only 2G can supported in this country. Because each country used different frequencies bands for GSM sim 900A. So, MPT and telenor were used and ooredoo and mytel were not used in this thesis. And then GSM module can also interfaced with Arduino when using AT command. Adding that, global positioning system module was not get the signal from global positioning system Satellite easily.

REFERENCES

- [1] Ghosh, Argha. (2018). Vehicle Tracking System using Internet of Things. 10.13140/RG.2.2.12437.96482.
- [2] (2020, September 28). India will have over 2 crore end-of-life vehicles by 2025: CSE Report. <https://www.autocarpro.in/news-national/india-will-have-over-2-crore-endoflifevehicles-by-2025-cse-report-67303>
- [3] India Has 51 Lakh Light Motor Vehicles Older Than 20 years According Scrapping Policy Detailss. (2021, March 19). Business Standard. Retrieved May 3, 2022, from https://www.business-standard.com/article/news-cm/india-has-51-lakh-light-motor-vehicles-older-than-20-years-according-scrapping-policy-details-121031900177_1.html
- [4] Shaikh Zoaib. (2019, May 16). Why the second-hand car market is seeing a boom. <https://www.livemint.com/auto-news/why-the-second-hand-car-market-is-seeing-a-boom-1557940318102.html>
- [5] C, Amey. (n.d.). • India: number of operating vehicles. Statista. Retrieved May 3, 2022, from <https://www.statista.com/statistics/664729/total-number-of-vehicles-india/>
- [6] S. Shah, P. Abhishek, D. Shrivastava and A. S. Ponraj, "Vehicle Service Management and Live Monitoring With Predictive Maintenance System," 2019 International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN), 2019, pp. 1-8, doi: 10.1109/ViTECoN.2019.8899668.
- [7] S.Dukare, Sumit & Patil, Dattatray & Rane, Kantilal. (2015). Vehicle Tracking, Monitoring and Alerting System: A Review. International Journal of Computer Applications. 119. 39-44. 10.5120/21107-3835.
- [8] Hlaing, Ni & Naing, Ma & Naing, San. (2019). GPS and GSM Based Vehicle Tracking System. International Journal of Trend in Scientific Research and Development. Volume-3. 271-275. 10.31142/ijtsrd23718. x
- [9] Sathe Pooja, Vehicle Tracking System Using GPS, International Journal of Science and Research (IJSR), India Online ISSN: 2319-7064, 2013.
- [10] Engr. Nwukor Frances Nkem (2020); Implementation of Car Tracking System using GSM/GPS; International Journal of Scientific and Research Publications (IJSRP) 10(03) (ISSN: 2250-3153), DOI: <http://dx.doi.org/10.29322/IJSRP.10.03.2020.p9947>