

Advanced Tracking And Choking Vehicle Using GSM & GPS

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Abstract- This research aims to design an advanced vehicle tracking and immobilization system utilizing GSM and GPS technologies to enhance vehicle security and management. By leveraging GPS for real-time location tracking, the system provides accurate monitoring of vehicle movements and locations. The integration of GSM technology allows for remote communication and control, enabling users to send commands to the vehicle for immobilization in cases of theft or unauthorized usage. The system features a chokeage mechanism that can remotely disable the vehicle, offering immediate response capabilities to security breaches. Additionally, robust encryption and secure communication protocols ensure data privacy and protection against unauthorized access. This solution combines technological advancements to deliver a comprehensive and reliable vehicle security system develop a vehicle tracking system using GSM and GPS to monitor real-time location and movement, with features to detect and respond to unauthorized usage or theft. Integrate a remote immobilization mechanism to disable the vehicle in emergencies. Ensure secure communication and data encryption to protect against unauthorized access and maintain privacy. Existing vehicle position estimation methods often rely on GPS, which faces limitations in tunnels and widespread application. This study proposes a highway vehicle position estimation method using ETC transaction data, short-term driving styles, road characteristics, and achieving an error of less than 50m over 2km.—

I. INTRODUCTION

Conventional carry select adder performs better in terms of speed. In the last few decades, India has progressed at such an enormous rate that many companies have strongly established themselves here. These companies bring a huge amount of workforce with them. Arranging transportation to such a huge mass is a cumbersome task involving many intricacies. Generally, this transport is arranged through the local transport vendors on a yearly contract basis, recently happen mishaps such as burglary, rape cases etc. The development of satellite communication technology is easy to identify the vehicle locations. Vehicle tracking systems have brought this technology to the day-to-day life of the common person. Today GPS used in cars, ambulances

fleets and police vehicles are common sights on the roads of developed countries. All the existing technology support tracking the vehicle place and status. The GPS/GSM Based System is one of the most important systems, which integrate both GSM and GPS technologies. It is necessary due to

the many of applications of both GSM and GPS systems and the wide usage of them by millions of people throughout the world. This system designed for users in land construction and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy-to-read format. This system may also useful for communication process among the two points. Currently GPS vehicle tracking ensures their safety as travelling. This vehicle tracking system found in client's vehicles as a theft prevention and rescue device. Vehicle owner or Police follow the signal emitted by the tracking system to locate a robbed vehicle in parallel the stolen vehicle engine speed going to decreased and pushed to off. After switch of the engine, motor cannot restart without permission of password. This system installed for the four wheelers, Vehicle tracking usually used in navy operators for navy management functions, routing, send off, on board information and security. The applications include monitoring driving performance of a parent with a teen driver. Vehicle tracking systems accepted in consumer vehicles as a theft prevention and retrieval device. If the theft identified, the system sends the SMS to the vehicle owner. After that vehicle owner sends the SMS to the controller, issue the necessary signals to stop the motor. In this paper, the reviewed related technology in section. The vehicle tracking and locking systems. In recent years, with the continuous integration of information technology and the transportation industry, the concept of transportation systems, which has important applications in path navigation, vehicle collaborative control, vehicle collision warning, and other aspects.

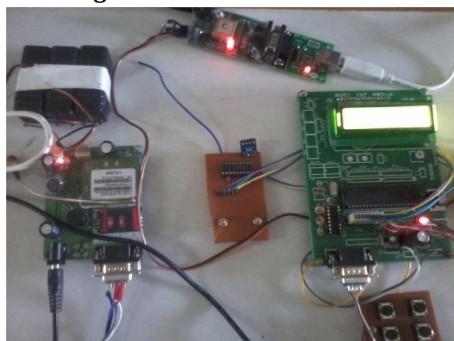
For highways, accurately estimating the location of vehicles can monitor traffic flow and congestion in real-time, which helps traffic managers understand the condition of the road, take timely measures to alleviate congestion, guide traffic flow to idle roads, and more effectively optimize road conditions.

Secondly, by estimating the location of vehicle in , more accurate navigation services can be provided for vehicles based on their real-time location information a traffic conditions, optimizing their driving routes, avoiding congestion and cumbersome routes, and thereby improving driving efficiency and safety. In addition, by collecting vehicle location data, traffic management can analyze the traffic flow patterns of different periods and regions, providing a basis for traffic policy formulation and rational planning. This helps to plan road construction and transportation facility layout reasonably to meet the growing transportation demand. Therefore, accurately obtaining the location of vehicles in transit is of great significance for ensuring the safety of highway driving and improving the efficiency of highway operation, and is also a key technology necessary for building a smart highway.

GPS-GSM BASED TRACKING SYSTEM FOR SPECIAL USER GROUPS

Tracking system is mainly used for anti- theft system using GSM-GPS technology. This paper is mainly designed for special user groups to track the bus and move to their planned destination. Here, the GPS-GSM is the main part of this design; it will continuously monitor a moving bus and report the status of the vehicle to the special user. These systems continuously watch a moving bus and report the status to the blind person according to their request. The methodology involves three major modules, firstly the blind person unit sends the request through the ZigBee to the bus stop unit, and subsequently the bus stop unit gets information through the satellite using the GPS from the bus driver unit, finally the blind person takes the correct bus parked in front of the user using a two way voice conversation. The special user groups gives the input about the place through the microphone used for receiving the command and GPS used to transmit the latitudes and longitudes of the precise location of the bus.

Figure 1 : Connection of the module



II. DESIGN AND IMPLEMENTATION FOR TRUCKS TRACKING SYSTEM USING GPS BASED ON SEMANTIC WEB

This paper proposed design and implementation of trucks tracking system using GPS based on semantic web for vehicle tracking in real time. In-vehicle unit and a tracking server is used. The information is transmitted to tracking server using GSM/GPRS modem on GSM network by using SMS or using direct TCP/IP connection with tracking server through GPRS. The received SMS contain longitude and latitude that are used to locate the vehicle on the Google maps. Tracking server also has GSM/GPRS modem that receives vehicle location information via GSM network and stores this information in database. It has been explored that most of the GPS based tracking systems are user friendly, cost effective, reliable and can be easily validated through different experiments and simulations which means that tracking system will send notifications periodically to the main station about the current position of the vehicle. Moreover, those tracking notifications (GPS) will be stored in the database for future revising or generating required reports. The tracking system will be better for cars, trucks, trailers, railways, containers and boats that can be traced using GPS vehicle tracking.



Figure 2: The Trucks Tracking System Overview

II. GPS BASED VEHICLE TRACKING SYSTEM

The research is about creating system for tracking vehicle. Objective of the research is to design and develop a GPS based Vehicle Tracking System in order to display location of vehicle on Google Maps. This system used Arduino MEGA as a microcontroller and it will besides the main processing unit. Next, Ubl ox NEO-6m GPS module is used to routing the coordinate while SIM 900A GSM module is used to connecting with the user. The product was successfully run at outdoor and having some problem at indoor due to GPS module cannot extract the accurate coordinate when there is a roof or obstructer that block the direct signal connection between the GPS and satellite. For the next improvement, the researcher can use the high quality of GPS module to connect

with satellite. An example, GPS NEO-6P module where it can collect data more accurate and stay connect to the satellite.

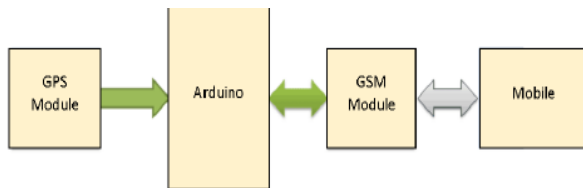


Figure 3: Block Diagram of GPS Based Vehicle Tracking System

IV. VEHICLE TRACKING SYSTEM

The increased rate of vehicle theft led to increasing concern among vehicle owners. In addition, most of the smaller car rental companies or personal car rental are also a concern when their rented vehicles are not returned on the date line. Thus, the purpose of this project is to study and analyses the existing vehicle tracking system. Next, a tracking system is configured and developed using the Internet of Things platform (Arduino) and web-based application. Then, the usability and functionality of the Global Positioning System and Global System for Mobile Communications module are tested together with Arduino to get the location for vehicle tracking. This project is developed using the Extreme Programming methodology. During the planning phase, requirements are gathered through a questionnaire from 40 participants. Requirements and data collected are analyzed, and features that need to be included are identified. Iteration starts at design phase where every time there are changes to the system, the design needs to be changed first. Coding is done based on the features, functions, flows, and interfaces from the design phase. The code is tested before small release of part of the system. Feedback is gathered from the user after every small release of the system during the iteration. The completed system enables vehicle owners to track their vehicle through web application or Short Message Service (SMS) anytime, anywhere.

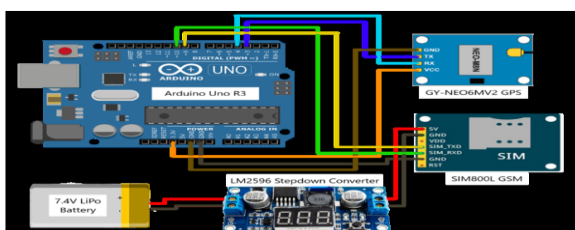


Figure: 4 Pinout Diagram of Tracking Device for Vehicle Tracking System

V. A HIGHWAY IN-TRANSIT VEHICLE POSITION ESTIMATION METHOD CONSIDERING ROAD CHARACTERISTICS AND SHORT-TERM DRIVING STYLE

In response to the challenges faced by existing methods and the existing infrastructure, this paper proposes a highway in transit vehicle position estimation method that considers road features and short-term driving style by integrating ETC data (Edita) and in vehicle GPS positioning data. As of the end of 2022, Fujian Province's highways have generated over 5 million ETC transaction data daily, providing basic driving characteristics for estimating the position of vehicles in transit on highways. However, since Edita only records the status information of vehicles during information exchange with the gantry, the vehicle status information within the highway segment cannot be obtained. GPS positioning data records the driving status of vehicles within a certain time interval, providing a modeling basis for estimating the position of vehicles within a highway segment.

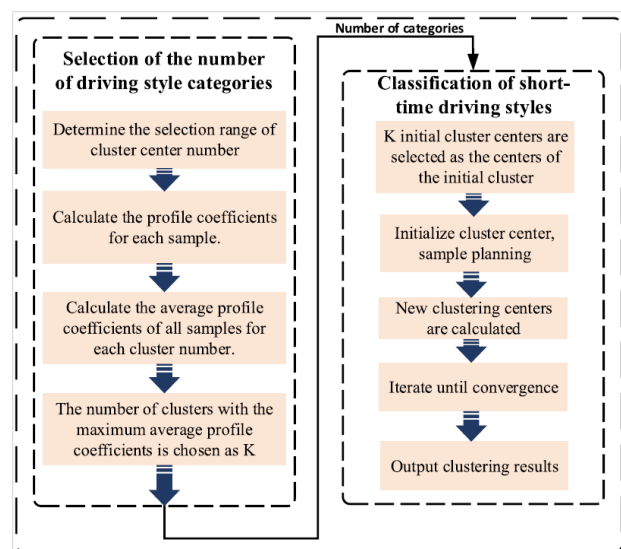
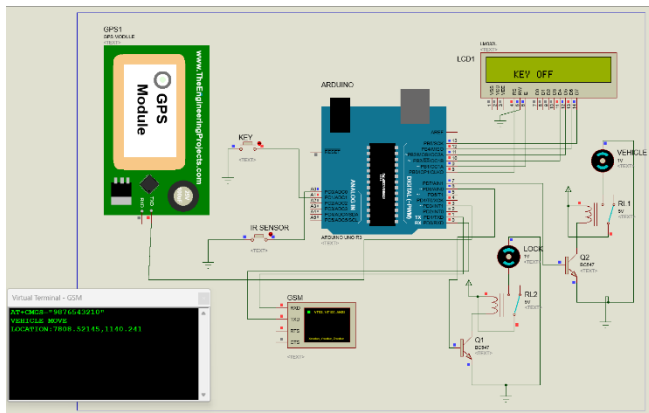


Figure 5: Flow chart of short-term driving style construction.

HARDWARE DIAGRAM

OUTPUT



1. Arduino Uno controls the other components and executes the programmed code.
2. LCD functions enhance projects by providing real-time feedback, making them essential for applications like status monitoring or user interfaces.
3. GSM functions are widely used in IoT applications, remote monitoring, and automation systems, offering reliable long-range wireless communication.
4. GPS functions are essential in applications like vehicle tracking, mapping, geofencing, and outdoor navigation systems.
5. IR sensors are commonly used in robotics, obstacle detection, remote controls, and proximity sensing.
6. Key is used for the vehicle ON and OFF purpose.
7. Hand brakes are essential for safety, particularly during parking and in situations requiring extra braking control.

VI. RESULT

A backup power source ensures that critical systems or devices continue to operate during power outages, providing an uninterrupted supply of electricity when the main power source fails. It typically includes features like automatic switching and sufficient capacity to keep essential equipment running.

This feature ensures that power is readily available during an outage, with the ability to recharge or refuel the source for continued operation.

VII. CONCLUSION

In this paper, we have proposed a novel method of vehicle tracking and locking systems used to track the theft vehicle by using GPS and GSM technology. This system puts into the sleeping mode vehicle handled by the owner or authorized persons; otherwise goes to active mode. The mode of operations changed by persons or remotely. When the theft

identified, the responsible people send SMS to the micro controller, then issue the control signals to stop the engine motor. After that all the doors locked. To open the doors or to restart the engine authorized person needs to enter the passwords. In this method, easily track the vehicle place and doors locked.

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