WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

VEHICLE CONTROL SPEED BASED ON GPS MATCHING POSTED SPEEDS/IMAGES

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DOI: https://doi.org/10.55248/gengpi.2022.3.6.21

ABSTRACT

In this paper we are going to control vehicle maximum posted speed without human interaction. Detecting the speed of the vehicle is an important aspect for observing speed limitation law and traffic condition. Safety is very important to reduce the occurrence of accidents in speed restricted zones. According to recent surveys an accidents happen near the school zones, hospital zones and sharp turns. The GPS map plays a major role in this research. The Technology includes GPS navigation receiver, GPS computer ,vehicle engine computer, map database ,speed sensor ,video display, image recognition system, Posted speed Board. The vehicle location,longitude,latitude and speed of the vehicle is identified by GPS computer. The database processing facility can be local or remote is managed by GPS computer. The data processing facility processes the GPS data and obtains the location and maximum posted speed of the vehicle. The comparison between the vehicle speed and the maximum Posted speed is performed by the GPS computer and engine computer, which signals the speedometer to decrease the vehicle speed according to the Posted Speed i f it exceeds the maximum posted speed. RFID is used in tunnels and covered regions where GPS signal cannot be reached. Images recognition is done by Deep Learning and Machine Learning algorithms.

Keywords*: GPS computer, Engine computer, Map database, Speed sensor, Image Recognition, Posted speeds and images .*

1. INTRODUCTION

The main reason for studying this subject is that many accidents occur as a result of over speeding, which can be avoided by installing an automatic speed control system in the vehicle. According to a recent survey, India ranks #1 among the 199 countries in terms of road accident deaths. Every year, approximately 3.5-4.5 lakh accidents occur. Over speeding is responsible for 60% of all accidents in this area. So, in order to decrease accidents, we've chosen the issue of "vehicle speed restriction based on GPS matching advertised speeds/images." In today's envir onment, safety is an essential component of human life. Because of the high number of overspeed accidents, additional research into developing a unique car driving system is required, which will reduce road accidents. This will be put into action. Road accidents are caused primarily by drunk drivers, who cause vehicles to overspeed. However, with today's technology, we can manage drunk drivers by enforcing posted speed limits on streets, which minimizes vehicle speed. Using image recognition techniques in deep learning and machine learning, this concept automatically restricts vehicle speed in response to visuals such as road conditions, the presence of schools, and hospitals. Other works involving automatic vehicle speed control utilizing GPS or RFID are similar. In the event that the GPS system is unable to detect an object, RFID is used in its place. When a GPS system detects a vehicle, it compares the value of longitude and latitude to the data posted on the road to determine the speed limit.

The working process is described in the system model which explains how GPS plays a major role in the project and Deep learning for image recognition and machine learning to training the engine model to reduce the speed automatically with posted speeds without human interaction .This can reduce the road accidents in case of drunk and drive and in mountains areas which works on image identification.

The two types of tracking systems are:

- GPS:
- RFID:

2. TO COMPARE GPS VS RFID FOR ASSET LOCATION PURPOSE:

Global Positioning System(GPS):

A GPS tracking system is mostly used to determine the location of a vehicle using a tracker or a satellite. Which uses GPS to track its movements and pinpoint its exact location. Special satellite signals are sent by GPS tracking systems, which are processed by a receiving vehicle.

Locations are saved in the tracking unit and sent to linked devices over wireless Wi-Fi networks all over the world.

Because RFID active and passive can't be utilized in multiple lanes and GPS can't be identified in tunnels and enclosed spaces, GPS and RFID integrate both because they appear to have restrictions in terms of area and utilization.

As a result, a combination of GPS and RIFD can track the vehicle's speed in any situation, regardless of the site or location.

Radio-Frequency Identification(RFID):

RFID systems have an advantage over alternative technologies that may be used for infrastructure-to-vehicle communications using radio active frequency because of their low cost and low infrastructure maintenance, resulting in high scalability and easy infrastructure implementation.

This can recognize vehicles in tunnels and covered areas where GPS systems cannot be used; tags will be placed in these areas, and the car will follow the speed stated in the tags.

The active RFID tags employed in this study are inexpensive and may readily be added to traffic lights, posted speeds, and graphics.

3. DETAILED INFORMATION OF SYSTEM MODEL

A method for automatically matching the vehicle speed to the maximum posted speed and controlling it if it significantly exceeds the posted speed. The vehicle engine computer also has an engine computer memory and an engine microprocessor, and it is coupled to the GPS computer to receive the maximum map speed limit value from the map data. The real maximum speed value of the vehicle is obtained by adding the speed value stored in the engine computer memory to the maximum speed map restriction. The vehicle engine computer is linked to the speedometer in order to regulate the vehicle's true maximum speed. In another embodiment, the GPS memory unit stores a predetermined speed value that is multiplied by the maximum speed map limit to establish the vehicle's true maximum speed. The GPS computer is linked to the vehicle's engine computer, which regulates the vehicle's true maximum speed. The wireless link is utilized to report the vehicle's location, speed, and maximum posed speed, and the DES algorithm is used to assure secure wireless data transmission.

Using a Deep Learning model, we can predict the images that will be placed on the road, and deep neutral networks will recognize the photos, allowing vehicle speed to be adjusted appropriately.

Using Machine Learning models, the machine itself trains the Engine computer to estimate and control the vehicle's speed.

Images are classified using deep learning, and speed is controlled by a machine learning model.

The method comprises the steps of: determining the position, speed and bearing data of the vehicle by using the GPS computer, transmi tting the position, speed and bearing data of the vehicle to the remote database processing facility by using GPS transmitting means, receiving the vehicle position, speed and bearing data by the remote database processing facility employing said receiving means, processing the position, speed and bearing data by the remote database processing facility to obtain the map location of the vehicle, determining the map data including the maximum speed corresponding to the location of the vehicle by the processing facility, transmitting the map and vehicle data corresponding to the position, speed and bearing data of the vehicle by the transmitting means of the database processing facility, receiving the map and vehicle data including the maximum speed for the vehicle location from the remote database processing facility by the GPS receiving means, downloading the map data to the download port, determining what street the vehicle is on and what is the maximum speed limit for that street, forwarding the maximum speed limit to the engine computer by the GPS computer, using the speed limit information contained in the map database by said engine computer to limit the maximum ground speed of the vehicle, and reporting the location, speed of the vehicle and the maximum posted speed.

4. CONCLUSION

We've shown that utilizing GPS to determine latitude and longitude can be used to manage vehicle speed. The sensor that detects the position of the vehicle. Vehicle tracking data is a significant source of information for the complex of applications that deal with traffic forecasting. This technology is used in one of the key applications presented here to demonstrate how a system can be used to prevent road accidents. This technology aids in the reduction of CC camera installation in hilly places, which is challenging owing to network constraints. Because of its limits in the tracking system and road networks, the GPS algorithm produces good results. Economical roadways must be kept in excellent shape with sufficient signage and posted speed limits. This invention is one-of-a-kind and will help save many human lives in the coming generations

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