A Review on Real Time Vehicle Tracking with Number Plate and Counting using OCR Technique

Payal Dewangan[1], Abhishek Kumar Dewangan[2]

1,2Dept of Computer Science and Engineering, Shrishankaracharya Group of Institute, Bhilai, C.G., India

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Abstract: Vehicle tracking system is very important in present scenario and is used to find the lost vehicles, to monitor and regulate the traffic. Number plate extraction for vehicle tracking has been developed, but each has its advantages and disadvantages. It is assumed that this system worked on images which have been captured in different climatic conditions. An automated system for extracting text is developed to extract and verify text from an image then we use OCR (Optical Character Recognition) technology. OCR software extracts all the information from the image into easily editable text format.OCR is a system of converting scanned printed/handwritten image files into its machine readable text format. OCR software works by analyzing a document and comparing it with fonts stored in its database and/or by noting features typical to characters. This paper gives the description of various studies that have been done for vehicle tracking system.

Keyword: Vehicle Tracking, OCR, Number Plate, Counting, Real Time

Literature Survey:

K.P.Kamble (2012) proposed It is amazing to know how simple ideas can give a whole new dimension to the tracking and navigation industry and smart vehicle tracking system is used for tracking the vehicles. You can optimize driver routes, save petrol or gas and time, reduce theft and control the vehicle functions. Many a times it is not required to track your vehicle or target globally. In majority of cases tracking is more restricted to local purposes only, such as tracking movement of vehicle within city, tracking the raw materials within industrial estate or to know the present position of your daughter or son within city. But unfortunately in the pursuit of making things complex this simple idea is forgotten. This simple yet powerful idea forms the basis of this revolutionary project. All this coupled with a very low cost, a robust design and tremendous market potential makes this model even more attractive.

Sathe Pooja (2013) proposed a practical model for routing and tracking of mobile vehicles in a large area outdoor environment based on the Global positioning system (GPS) and Global system for mobile communication (GSM). The supporting device GPS continuously move with the car and will calculate the co-ordinates of each position and when required by the owner it can be communicated with the help of GSM modem which is installed in both Transmitter and receiver section. GSM modem is controlled by a 32 bit ARM7 LPC2148. The device will collect position to supervised center by the SMS (Short Message Service) or GPRS (General Package radio service) and which can be located in the Google Earth and so the current position of the car can be known.

Shital Mohol (2014) et al. proposed an automotive localization system using GPS and GSM-SMS services. The system permits localization of the automobile and transmitting the position to the owner on his mobile phone as a short message (SMS) at his request. The system can be interconnected with the car alarm system and alert the owner on his mobile phone. This tracking system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The Microcontroller processes this information and this processed information is sent to the user/owner using GSM modem. The presented application is a low cost solution for automobile position and status, very useful in case of car theft situations, for monitoring adolescent drivers by their parents as well as in car tracking system applications. The proposed solution can be used in other types of application, where the information needed is requested rarely and at irregular period of time (when requested).

Sagar Badgujar (2015) et al. described the GPS technology using various algorithms. A camera based algorithm for real-time robust number plate detection and recognition was proposed, and especially designed for autonomous vehicles. The image processing of can be divided into three steps, including pre- processing, detection and recognition. Firstly Vehicle information registration module involves-main content of pre-processing. Such as new registration, Username, Vehicle Number Plate, Image of Vehicle and Related information about vehicle. In detection step, Video and Image as the prior knowledge is performed to scan the scene in order to quickly identify the number plate. Using image processing characters has been analysed as position of pixels. For recognition, Optical character Recognition

(OCR) Algorithm is used. By using these three steps number plate should be recognize. Global Positioning System (GPS) tool kit analyse the speed, working of engine and SMS service has been provided. Project presents a novel vehicle speed measurement method, which contains the improved three frame deference algorithm and the proposed grey constraint optical algorithm. The contour of moving vehicles can be detected exactly. Through the proposed grey constraint optical algorithm, the vehicle contour as optical own value, which is the speed (pixels/s) of the vehicle in the image, can be computed accurately. Then, the velocity (km/h) of the vehicles is calculated by the optical flow value of the vehicles contour and the corresponding ratio of the image pixels to the width of the road experimental comparisons between the method and other VSM methods show that the proposed approach has a satisfactory estimate of vehicle speed.

B. Hari Kumar (2016) et al. proposed vehicle security means providing security to the vehicle against any possible thefts. Vehicle security has become a matter of concern these days. The manufacturers of vehicles have been trying to implement different methods in order to provide better security systems. Security for the vehicle can be provided by the use of GPS and GSM technologies. GPS stands for the Global Positioning System, which is a satellite based communication system and provides the details of particular location. GSM, the Global System for Mobile Communication is used for communication between different GSM devices. Vehicle monitoring is also done by the monitoring of different parameters like temperature. In this project the security of a vehicle is provided by tracking its location. The project also has the feature of automatically slowing down of the vehicle speed as soon as the locations detected by GPS are schools, hospitals. There is also a voice output for these particular zones to alert the driver.

Hazza Alshamisi (2017) et al. proposed currently almost of the public having an own vehicle, theft is happening on parking and sometimes driving insecurity places. The safe of vehicles is extremely essential for public vehicles. The Global Positioning System (GPS) is being used for fleet management, stolen vehicle recovery, surveillance and mapping. This paper, designing and implementation a real time GPS tracker system using Arduino. When user sends SMS on the number which is registered on the GPS-GSM shield attached to Arduino then user receives the location coordinates and data will get stored continuously on SD card at the same time. This work has significant application for vehicle security, salesman tracking and private driver. This is more secured, reliable and low cost.

Kunal Maurya (2017) et al. proposed a vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle's location. This paper proposed to design a vehicle tracking system that works using GPS and GSM technology, which would be the cheapest source of vehicle tracking and it would work as anti-theft system. It is an embedded system which is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). This design will continuously monitor a moving Vehicle and report the status of the Vehicle on demand. For doing so an AT89C51 microcontroller is interfaced serially to a GSM Modem and GPS Receiver. A GSM modem is used to send the position (Latitude and Longitude) of the vehicle from a remote place. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle. The same data is sent to the mobile at the other end from where the position of the vehicle is demanded. When the request by user is sent to the number at the GSM modem, the system automatically sends a return reply to that mobile indicating the position of the vehicle in terms of latitude and longitude in real time.

Ramiz Khan (2017) et al. described GPS based tracking system has many application in today's world. For example Vehicle tracking, children tracking, any equipment tracking, fleet management etc. A very useful vehicle tracking system is developed for tracking the movement of any equipped vehicle from any location at any time. With the help of Global Positioning System (GPS), Global System for Mobile communication (GSM) modem with teltonic device the aim of enabling users to locate their vehicles with ease and in a convenient manner. This system provides the facility to the user to track their vehicle remotely through the mobile network.

Kismat Pradhan (2018) et al. described vehicle tracking is one of the most important techniques mostly used in today's world. A vehicle tracking system works with the installation of a tracking device which is kept inside vehicles, so it allows the user or an owner to track the vehicle's location. Now a day's vehicle tracking systems are normally work on Global Positioning System (GPS) technology for tracing the vehicle, but other forms of vehicle tracing technology can also be used. In this paper, a survey is done on various vehicle tracking method using GPS. Vehicle information can be viewed and located on the maps via the Internet or specialized software. In this paper, study is done on a real-time vehicle tracking system that works using GPS and GSM technology, which would be the easiest and inexpensive source of vehicle tracing.

Prof. (Dr.) Bharati Wukkadada (2018) et al. proposed A vehicle tracking system is an automated device that makes it easier to locate and at the same time monitor the position, timing, and mobility of a carriage. This paper proposes a tracking system that makes use of "GPS" and "GSM" technologies. It works as the most inexpensive form of the system that can help identify vehicle theft. It is an enclosed system that uses a GPS receiver along with a GSM modem monitoring the movement of vehicle and briefs the status. GSM modem shows the location with respect to longitude and latitudes.

Conclusion: Vehicle tracking is important in many applications traffic information Collection, intelligent transportation systems. Real time number plate recognition is important for person as well as police in order to find lost vehicle. Number plate recognition used by various police forces and as a method of electronic toll collection on pay-per-use roads and cataloguing the movements of traffic or individuals .Automatic Number Plate Recognition is useful for the many applications because the license number is the most widely accepted, primary,mandatory X identifier for vehicles. Number plate recognition system is useful to detect and arrest criminal at a local, regional and national level. In order to detect number plate of vehicle in real Time environment as well as to track that vehicle which is helpful for police to arrest that thief, we proposed one complete and novel system which will use technologies like OCR, Image Processing etc. There is a separate interface for the police station, and through that authorized person is able to provide information of lost vehicle. This information forward to the toll service for further processing. Using inbuilt CCTV, system can recognize and detect particular Number plate. As soon as the number plate is detected by a system, our system is going to track the position of that vehicle using vehicle speed, vehicle movement through GPS. Finally all information will be send to the police station for the further.

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