



A Traffic Prediction for Intelligent Transportation System using Machine Learning

V.Geetha, C K Gomathy, T. Harshitha, P. Vijay Nagendra Varma

Abstract: Traffic control has been an issue for a long time from the past. The modern world demands Technology. Now a days cars are one of the main methods of improvement in technology. Intelligent Traffic System is also known as Intelligent Transportation System apply communication and information technology to find the solution for the Traffic control issues. Intelligent Transportation System represents the main problem in transportation. ITS is a program .it is used to improve the efficiency of transportation through advanced technologies by using sensors and communication. Some of the problems like Traffic congestion, Low safety can be solved through this Intelligent Transportation System by Using the Latest techniques in traffic management.ITS is improved by using wireless and wireline communication-based information, control and electronic technologies. Now a days overspeeding is a key issue in the traffic control system to overrule the issue. Doppler Phenomenon is used for speed measurement.

Keywords: Traffic Environment,Genetic algorithm,Machine Learning,Big Data,Image Processing.

I. INTRODUCTION

Intelligent transportation system is used for analyzing the information. ITS is used to control communication technologies for road transportation to improve safety and efficiency. Intelligent transportation system includes a wide range of applications which is used to get information, to control congestion, to improve traffic management, to reduce the environmental effects and increase the benefits of transportation. ITS refers to the different types of needs and the transport field with many others policing. But also due to lessconnection of traffic flow. Smartphones having different sensors.it can be used to detect/track the traffic speed and density.

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Now a days, smartphones are used by drivers and it is monitored to detect the speed of traffic and quality of the road. Data is connected through the audio and GPS .it tracks the identity of traffic and possible jams occurred in the traffic.

II. LITERATURE SURVEY

The review process is divided into five stages to find the process in a simple and adaptable way.

It is necessary to start with a particular domain of any division/city of interest and it causes a specific problem. Literature also tells us that AVs would reduce vehicle ownership, travel timing, parking lots, and emissions It is also telling that AVs would increase the road capacity, traffic flow stability, vehicle miles travelled, fuel efficiency and safety. The ACC (Adaptive Cruise Control) can perform total control of the vehicle byfocussing on the speed without any data from the driver/conductor.

III. PROPOSED METHODOLOGY:

Any technique that uses information and control technologies can be divided into small functions:

- A. Collection of Data
- B. Processing of Data
- C. Decision Making System

Arrangement and inspection support based on information. Multiple forms of wireless communication technologies have been introduced for the intelligent transportation system. Communications of radio modem on UHF and VHF frequencies are highly used for short and long-range communication in transportation system.

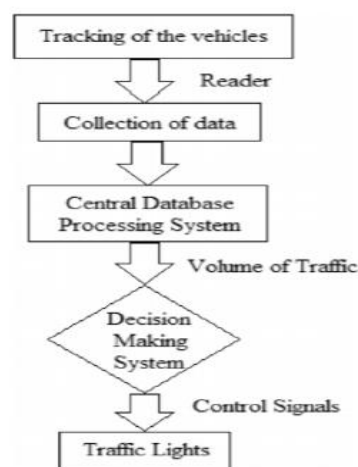


Fig 1: Tracking the Vehicle



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It is focused Collection of Data:

On the data which collects from the congestion area.it also involves the tracking of vehicles in lanes.in this the algorithm is independent.

Processing of Data:

There are so many possible lanes and data are automatically collected and observed and simplified the data and then send to different input and output signals and it is required by Traffic Light Algorithm.some of parameters which can include length,queue, inflow, and outflow

IV. TECHNOLOGIES USED

The technologies used are:

- Sensing Technologies
- Inductive Loop Detection
- Car Floating Data/Car Cellular Data
- Wireless Communication

Sensing Technologies:

Sensing technologies have greatly enhanced the technical capabilities and safety benefits of its. These sensor technologies include inductive loop that can read the vehicles speed, the number of vehicles moving and also the size of the vehicles.

- Infrastructure Sensors
- Vehicle sensors

Wireless communications:

Intelligent Transportation system has been proposed various wireless communication systems. they are:

- short range wireless communications
- long range wireless communications

Inductive Loop Detection:

To detect the vehicles inductive loops are used and it is placed in roadside.it count the vehicles using simple detectors in one minute of time and also it can be placed in different number of lanes/junctions. In this the vehicles are going with high speed.

Block Diagram:

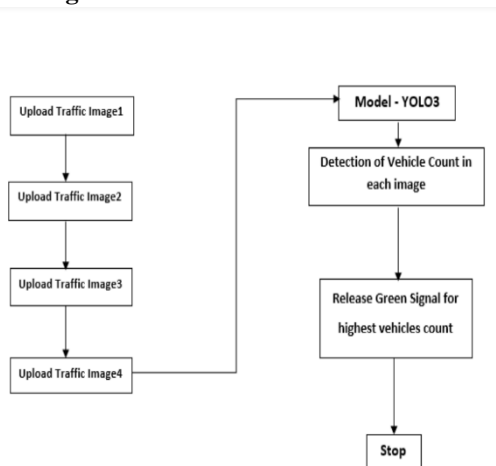


Fig 2: Vehicles control flow

Algorithm:

Step1: open the application

Step2: User have to upload 4 images in 4 traffic lanes one by one in the order.

Step3: After uploading of these images it goes to mode-YOLO3

Step4: It detects the no of vehicles are passing.

Step5: And also count.

Step6: Release Green signal for highest vehicles count.

Step7: So it is being processed under video surveillance

Step8: Stop

V. WORKING PROCEDURE

This project intends to design a system which uses deep neural network algorithm which is a subset of artificial intelligence,which will provide intelligence to the current traffic control system present at a four-way junction. This system is mainly aimed to replace the timer of traffic control system with artificial intelligence system. Nowadays most cities are equipped with CCTV cameras on the roads and the junctions, the basic idea is to collect the live video from the CCTV cameras and detect the number of vehicles on each lane and feed the data into another machine learning algorithm. according to the data of each lane changes into the light phase of the green signal. This system mainly aims to increase the traffic efficiency by increasing vehicle flow which will reduce waiting time for the vehicles



Fig 3: Traffic Signal Flow

Detecting Vehicles:

To detect the number of vehicles. For that we are using neural network algorithm as the basis of the design. Framework for the neural networks is must before starting to design the algorithm. We used Tensor Flow framework and Keras framework to create a neural network which will detect number of vehicles. A convolution neural network is used which is one type of neural network. The datasets will be fed into the designed neural network so to train the neural network in order to get highly accurate results.

VI. RESULTS

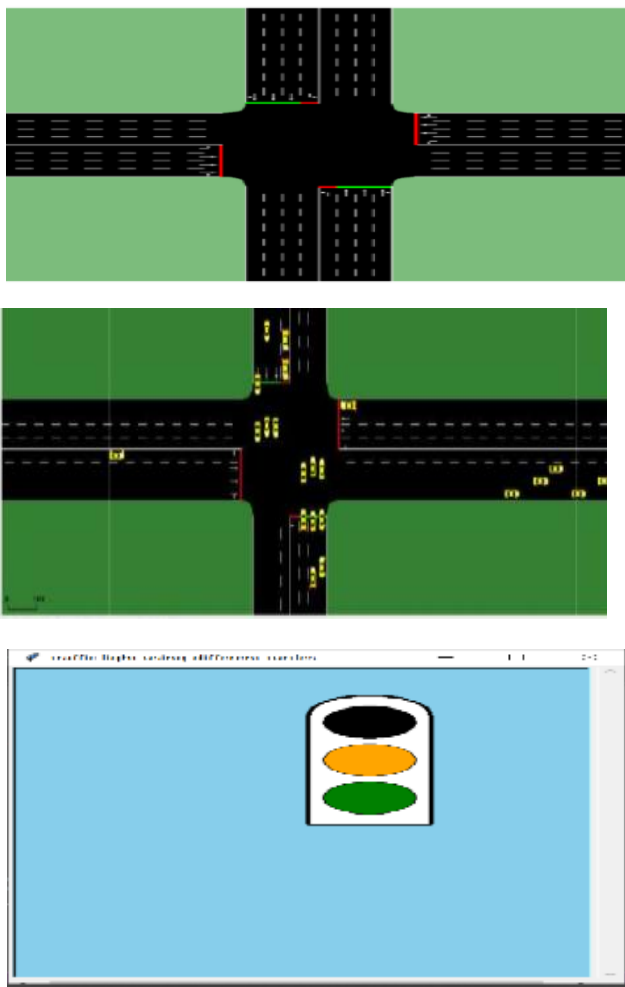


Fig 4: Four Lane Intersection

VII CONCLUSION

It is very important problem in data analysis. Here we are using deep learning and genetic algorithm. These proposed algorithm gives the much higher efficiency than the existing system. From the dataset it modifies the complex issues. So we have to planned to design the web server and web application. All algorithms are furtherly improved.

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