

“Traffic Control System using Machine learning”

Sujit Bagade¹, Sumaiyya Inamdar², Surekha Jadhav³, Sushil Lahade⁴

¹Sujit Bagade, student, Dept. Computer Engineering, ICOER, Pune.

²Sumaiyya Inamdar, student, Dept. Computer Engineering, ICOER, Pune.

³Surekha Jadhav, student, Dept. Computer Engineering, ICOER, Pune

⁴Sushil Lahade, student, Dept. Computer Engineering, ICOER, Pune

Abstract - In our day to day life we hear that big cities like Los Angeles, Beijing, New York, are facing the challenges related congestion the traffic is increased because of increased in density of vehicle the survey shows that almost 43 cities in the china facing the huge problem in transport 5h each day of the duration of all the time In the meanwhile, it affect the financial growth as well To reduce such kind of activity and increase the efficiency of transport related activity in big cities we have to use such methodologies like Histogram of Oriented Acclivity This algorithm have various functionalities to target the vehicles, the features of histogram can help reduce a congested roads issue Due to increasing demand in city mobility result in vehicle population. and it increases day by day, In our methodologies we are going to make count of visitors. We are going to detect through CCTV cameras which are connected to road signals it will work as multilevel. This all is going to count traffic condition. In this system we are going to check traffic signals through algorithm

Key Index: Multi-class classification, Histogram of Oriented Gradients, Detection, Recognition, scheduled algorithm.

1. INTRODUCTION

As we know there is tremendous increase in the population of vehicles. the vehicles are increasing day by day as number of vehicles increases this causes traffic problem and it increase visitors which make bigger problem like congestion and all of this Normal traffic signal performance requires more than just moderate control and Coordinate Ensure that site visitors and pedestrians pass as smoothly and safely and quickly They are used to accomplish this, from intuitive clockwork mechanisms to the latest computerized management and coordination systems that self-adjust to reduce human delay with the use of crosslinks This cutting-edge software initiative is a high-quality site visitor scene perception project that allows for the management of traffic signal systems of management There are four warnings on the device, one for each lane. We recommend a density-based approach. The algorithm is used to schedule all signals.

The process is designed to handle guest sign-in times solely based on the density of visitor, location arrivals on the path that corresponds to it. Signal timings are changed based on the amount of traffic lined up on a specific path, allowing the

one-of-a-kind route to clear out. and the next one that is occupied. The entire device operates in accordance with an algorithm that allows for smooth and environmentally friendly operation. Pleasant travelers move in all four directions. The traffic constable can easily control the remaining traffic let go a specific signal in case an ambulance or essential car arrives on that way.

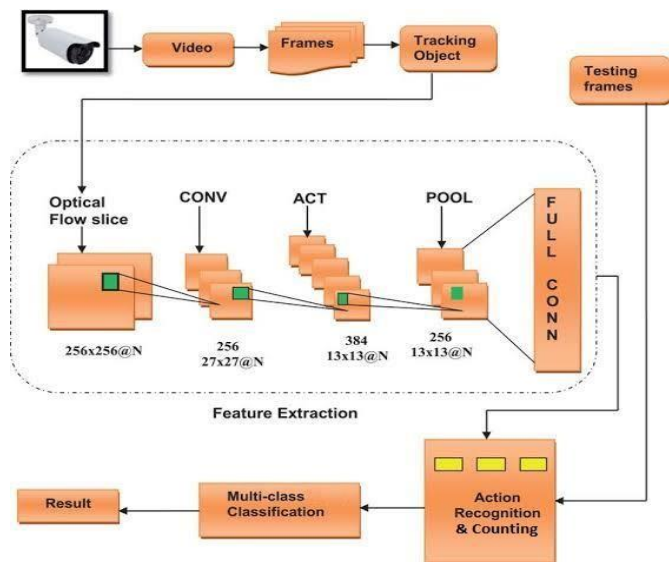
2. RELATED WORK -

Sr. no	Real time working	Accuracy	Spe-ed	In/outdoor	Ref .
1.	yes	less	less	out	[1]
2.	yes	Less	less	in	[2]
3.	yes	high	less	out	[7]
4.	yes	less	less	both	[6]

Numerous studies have examined varying kinds of methods for huge traffic scene based perception, as well as the role of social networks in this multi traffic incident based perception for object recognition [1]. seen from research paper studied and enforced twitter stream by actual traffic sensing and discovered the foundation that inspected the activity event location through the evaluation of twitter stream [2] approaches and perspectives on socioeconomic sensors and widespread services investigated how this social sensing technique integrated into computing methodology[7] to improve performance for high traffic at prediction in complex urban environments using a two-step detection algorithm This system has a high detection rates as well as a higher efficient This camera continuously monitors the speed of vehicles at road crosslinks Sensors were also used in this system to detect street info throughout congestion. The whole sensor supports traffic flows and avoids the waste of green given timeline to phases. Hulin Kuang improved the vehicle detector using a Microbially image enhancement approach and a weighted score level feature matching methodology. It was able to detect vehicles at night by using this technique. Because of this system, it was possible to deal with a variety of different types of

scenes, including vehicles of various sizes and types. It also identified vehicles at various locations and vehicular figures [4]. A Olivier Regniers created a variate approach based on multiresolution feature vectors for the classification purpose resolution optical images. This model was built using the supervised learning approach.

3. PROPOSED SYSTEM :



4. METHODOLOGY:

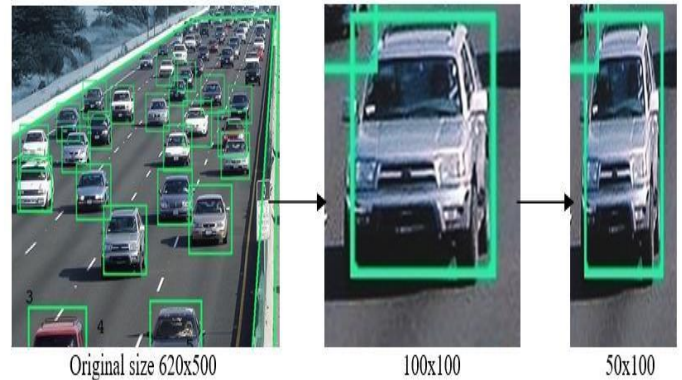
Convolutional Neural Networks (CNNs) are one of the most widely used deep learning algorithms. Convolutional neural network are used to identify and classify images and videos. This algorithm is used in our system to compute congestion. their should getting all information from original database. Every image is classified, and the result is displayed in the visual feature frame.

Working of CNN algorithm :

1. Preprocessing

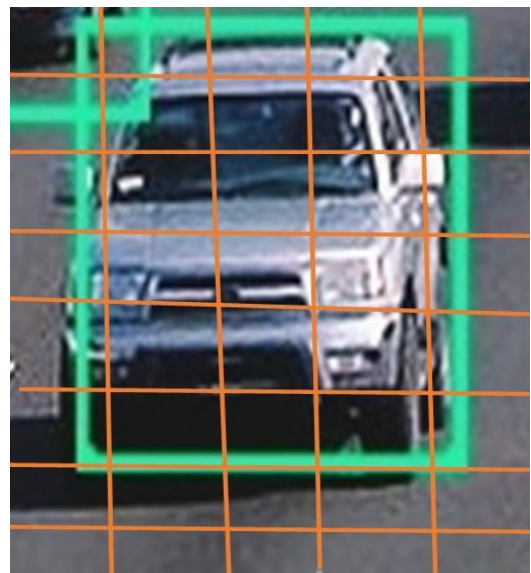
As previously stated, the Hoard highlight descriptor used for vehicle discovery is based on a 64*128 image fix. Needless to say

The size of a picture is not limited. Repairs at various scales are frequently investigated in a wide range of image areas. The primary constraint is The angular proportion of the spots being broken down is fixed. The spots must have a viewpoint proportion of 1:2 for our situation they can be 100×200, 128×256, or 1000×2000 yet not 101×205.



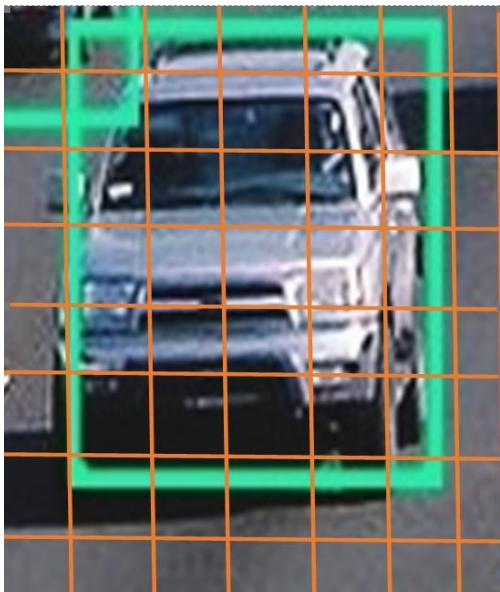
2. Calculate the Gradient pictures ;

To compute a HOG descriptor, we must first compute the horizontal and vertical gradients, and then compute the gradient bar graph. This is easily accomplished by filtering the image with the following kernels.

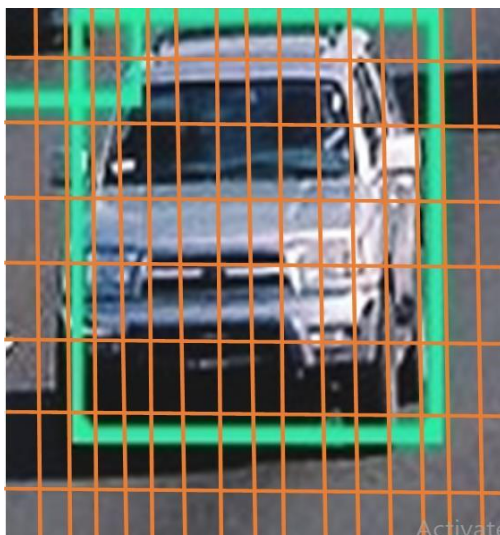


3. Compute Histogram of Gradients in 8×8 cells :

The image is divided into 8×8 cells in this step, and a bar graph of gradients is calculated for each of the 8×8 cells.



4. 16x16 Block Normalization :



In the preceding step, we created a histogram based on the angle of the image. In general lighting, a picture's gradient is sensitive.

5. Compute the HOG feature vector :

The 36x1 vectors are connected into one goliath vector to predict the final element vector for the entire picture fix. What is the dimensions of this vector? Help to calculate How many places are there in the 16x16 squares? There are 7 level positions and 15 vertical positions, for a total of 7 x 15 = 105 positions. 2. A 361 vector addresses each 16x16 square. As a result, when we combine them all into one giant vector, we get a 36x105 = 3780 dimensional vector.

6. PROBLEM STATEMENT :

The current traffic light configuration provides a set traffic control plan, the settings of which are based on previous traffic checks but can be change in real time It is the most frequently used type of sign control nowadays, and it results in incorrect behaviour in rush hour gridlock that differs from that on which the arrangement was based, for example, the use of unnecessary stages when traffic is not that a lot.

7. OUTCOME AND ANALYSIS:

1. Vehicle Detection Study :

The videoed 24-hour footage is analyze by having to count the variety of types of vehicles by playing the video at a slower speed in player of media This 24-hour video is divided into two-hour segments, such as 6 to 8 a.m., 8.00 a.m to 11.00 a.m., and so on, and analyses the number of different types of vehicles detected.

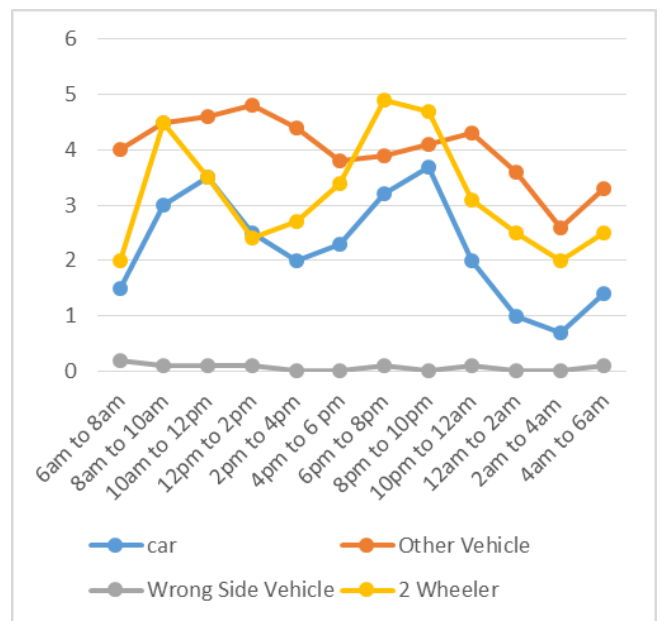


Fig. Vehicles were detected throughout the day.

Conclusion :

The system design is divided into two modules: the first is a web service, and the second is a traffic signal that is released based on the vehicle. They have a database in web service. The traffic database is used for quick processing and storing large amounts of data in a database. For classifying traffic-related notifications, a classification algorithm is used. The primary goal is to detect traffic-related events in social networks. It performs multi-class classification, recognising traffic, non-traffic as a result of a crash or congestion, and traffic as a result of external events. Real-time detection of traffic events is provided by the system.

REFERENCES:

[1] F. Atefeh and W. Khreich, "A survey of techniques for event detection in Twitter," *Comput. Intell.*, vol. 31, no. 1, pp. 132–164, 2015.

[2] P. Ruchi and K. Kamalakar, "ET: Events from tweets," in *Proc. 22nd Int. Conf. Found across all over*, Rio de Janeiro, Brazil, 2013, pp. 613–620.

[3] A. Mislove, M. Marcon, K. P. Gummadi, P. Druschel, and B. Bhattacharjee, "Measurement and analysis of online social networks," in *Proc. Internet Measurement, 7th ACM SIGCOMM Conf.*, San Diego, CA, USA, 2007, pp. 29–42.

[4] G. Anastasi et al., "Proc. IFI, Urban and social sensing for sustainable mobility in smart cities," in *Proc. IFIP/IEEE Int. Conf. Sustainable Internet ICT Sustainability*, Palermo, Italy, 2013, pp. 1–4.

[5] A. Rosiet et al., "Social sensors and pervasive services: Approaches and perspectives," in *Proc. IEEE Int. Conf. PERCOM Workshops*, Seattle, WA, USA, 2011, pp. 525–530.

[6] T. Sakaki, M. Okazaki, and Y. Matsuo, "Tweet analysis for real-time event detection and earthquake reporting system development," *IEEE Trans. Knowl. Data Eng.*, vol. 25, no. 4, pp. 919–931, Apr. 2013.

[7] J. Topic Detection and Tracking: Event-Based Information Organization, by Allan. Norwell, MA, USA: Kluwer, 2002.