

A Study on Real Time Video Analysis for Vehicle Traffic Movement

^[1] Dr.Sandhya N, ^[2]Harshit Wadhvani, ^[3]Aditya Bhardwaj, ^[4]Shipra Sinha, ^[5]Sejal Kaur Virdi ,
^[6]Priyansh Kapadia, ^[7]Yamini Mandagiri

^{[1][2][3][4][5][6][7][8]} Dept of AIML, DSATM, Bengaluru, Karnataka, INDIA

Abstract— Traffic evaluation has many purposes such as protection of community operations and management, background updating, feature extraction, and automobile monitoring & classification. Network traffic evaluation is considered quintessential for enhancing the traffic surveillance in many cities. The site visitors measurements that are extracted from cameras are notably less in range therefore the actual time information that is on hand is also less in number. To enlarge the precision of car categorizing the relation of shifting things traced from video frames is given a thought. The consequences of a survey shows us that organization charges of 96.39% and 92.69% for motors and bikes respectively. In this paper the actual time car detection method for the system is elaborated.

Index Terms— P2P, Android OS, Mobile Environment

I. INTRODUCTION

In the closing few decades traffic congestion has turn out to be a main problem in a typical up-to-date-day civilization due to the expand of vehicles and accidents which are taking place. Studies have been carried out on smart transportation structures, i.e. ITSs, which put control, micro-electronics, AI, sensing, robotics and communication. ITSs are regarded to have maximum possibilities for resolving the issues of visitors cramming the place actual period laptop imaginative and prescient can force visible capability which is the most attractive features. Traffic monitoring systems is divided in two different categories. First one works as regular embedded gadget with a voltage return circuit. These types of devices are dependable however the value of enactment is comparatively high. Also, roads want to be excavated up for installation purposes and renovation that have an effect on site visitors movement. And others are the placing type of systems that use sensors such as radar, infrared sensors and cameras. ‘Camera’ based structures are mostly used to decrease fee of set up and protection associated to other kind of systems.

Here in we talk about the camera based vehicle glide study and dimension system that maybe used in checking actual time site visitors control and monitoring that are significant for ITSs and for safety of people. This record examines the options of the two challenges mentioned above. To begin with, we suggest a vision based site visitors drift facts abstraction algorithm to assist multichannel live site visitors video streams in actual time applying recently developed view point analytic video prototype. Secondly for validating the success of the vision based system for traffic.

In this relaxation of paper, we provide and discuss systems for vehicle recognition and following and document outcomes attained with the aid of imposing these algorithms on quite a few video recordings taken at one-of-a-kind time

intervals. All we need is the protection for people.

II. RELATED WORK

Seon Ho Kim et.al [1] proposes to create a vision-based algorithm for extracting site visitors glide facts to assist real-time multi-channel stay traffic video streams the usage of Intel, Corp.'s recently established Viewmont video evaluation prototype co-processor and To Find if their vision-based algorithm is effective, they evaluate it with few real records from the loop sensors in LA (Los Angeles).

Their Algorithm desires a location to be described first, which is the section of the video where the evaluation happens. That region is referred to as Region of Interest (ROI).The algorithm takes into account visitors monitoring video and ROI, and outputs Critical visitors waft data. The Vehicles are represented by blocks and are sensed through testing the version of movement pixel values over a period.

Zhiyuan Wang et.al [2] proposed approach additionally improves the resilience of H-SqueezeNet in terms of accuracy. Due to its resilience, the original MOG2 is generally used to abstract vehicle fore-ground in premature city observation systems. They add Suzuki’s theory as well as a number of morphologic processes into it, then efficaciously hire it in order to create ROIs.

The primary contribution of their paper are as observed -

1.For sensible visitors surveillance systems, a simple yet superb automobile detection approach is given.

2.The proposed approach introduces MOG2 to gain scale-insensitivity and uses H-SqueezeNet in order to assure splendid routine. In the meantime, this approach realizes traffic datasets in real time using digicam sensors at metropolitan intersections using minimal space/storage items, that makes it less difficult to integrate into systems.

3.The H-SqueezeNet model is a modified SqueezeNet model that solely maintains the top 4 Fire units from the unique SqueezeNet and adds the last 2 Fire units harvests. It

performs quite well in relation of precision.

Deng-Yuan Huan et.al [3] proposed techniques for counting car flow, Vehicle segmentation, function extraction and car monitoring are methods to do so.

Vehicle segmentation - They modelled the historical past for each factor the usage of the temporary data of the suggest and trendy unorthodoxy of grey level delivery in successive frames, and updating is adaptively performed, with the grey level offering the perfect incidence chance being assigned to the absolute history for that point.

Vehicle Tracking - They projected codes for automobile tracking given here-

1. Adopt that the pursuits to be tracked are the shifting objects detected.

2. Adopt the model listing is bare at first. Moving gadget is brought to the template listing if they are noticed in the cutting-edge frame.

3. If the pattern list incorporates about archives of transferring objects, the recognized shifting object can be one of two things:

- The template listing has already been up to date to encompass the moving items.

- The objects that move are company new. If this is the case, the template list is up to date to encompass the identified shifting items.

4. There are two possibilities if moving objects registered in the template listing are now undetected in the cutting-edge frame.

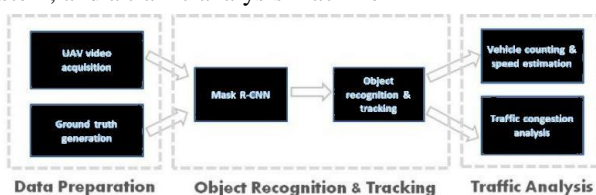
- The transferring object has exited the video camera's monitoring area.

- There has been a monitoring failure.

5. To verify the entries in the pattern listing suit the shifting items identified in present day frame, the monitoring system is repeated for each input frame.

Erhan Bas et.al [4] offer new visitors video study method which takes into account the scene's geometry, with adaptive bounding field measurement being utilised to discover and music cars based on estimated distance from the camera. They supply vehicle recognition and tracking algorithms and description on the outcomes carried out by making use of these algorithms to multiple video recordings received at one of a kind of time intervals at 1 (one) website at Istanbul.

Huaizhong Zhang et.al [5] suggested approach consists of a UAV-based video gathering system, a automobile tracking system, and a traffic analysis machine



The technique, which used to be introduced in and is based on the detection line, is used to count automobiles and people.

The main technique is based on the overlap ratio R, which

is calculated as follows:

$$R = \begin{cases} (p_2 - q_1)/(p_2 - p_1), & \text{if } p_1 \leq q_1 \leq p_2 \leq q_2 \\ (q_2 - p_1)/(p_2 - p_1), & \text{if } q_1 \leq p_1 \leq q_2 \leq p_2 \\ 1, & \text{if } q_1 \leq p_1 \leq p_2 \leq q_2 \\ (q_2 - q_1)/(p_2 - p_1), & \text{if } p_1 \leq q_1 \leq q_2 \leq p_2 \\ 0, & \text{otherwise} \end{cases}$$

the place the X-coordinates of the quit factors of the segments the place the automobile hits the detection line are p_1, p_2, q_1, q_2 .

They advised the following adjustments to improve the preceding algorithm in light of our UAV-based research. The detected line is chosen to be shut to the street end, where the UAV can quite simply distinguish between subsequent vehicles. It is the line with the Y-coordinate of 900 in this investigation.

A threshold is used to measure the automobile moving with the centre function of the bounding field between two consecutive frames in order to judge whether the car is parked on the roadside. We investigate this motion thru three consecutive frames.

Brendan Tran Morris et.al [6] introduced two awesome site visitors situational attention systems in their research for sturdy real-time car classification, traffic statistic accumulation, and highway modelling for flow analysis, the first machine is the visual Vehicle Classifier and Traffic float analyzer (VECTOR) module. The direction behaviour block is the second undertaking evaluation module introduced, and it constructs a probabilistic scene movement model for activity evaluation in an unsupervised manner. This method detects odd trajectories and sudden behaviours by using robotically defining traffic lanes without the want for guide input.

Guohui Zhang et.al [7] cautioned a technique for gathering automobile rely and classification data called Video-based Vehicle Detection and Classification (VVDC) in their article. Using uncalibrated video pictures, the counselled approach can realise and classify cars. The prototype VVDC system's utility is stronger by the capacity to capture real-time traffic facts the use of uncalibrated surveillance cameras.

III. COMPARATIVE STUDY

The table 1 given below shows a comparative study of the different research papers corresponding to the same domain of "Real Time Video Analysis". The table demonstrates the relative information about the advantages, disadvantages, technologies used and objective of different paper works.

IV. CONCLUSION

This paper gives an in-depth precis related to exceptional vehicle velocity estimation techniques. A few techniques were determined beneficial at the same time as some were no longer top-quality. Here we can discuss approximately the first-rate approach that's the SDCS technique. There are 3 steps to realize such processing specifically, heritage subtraction, item extraction and velocity detection. In the first step the suggest filter for heritage generation that was one of the powerful methods for historical past extraction was used. Inside the 2nd step, a singular set of rules which takes gain of the two-colour based totally traits and combines them for object extraction is added. This technique is sturdier towards misdetections and the problem of the merging or splitting of automobiles and sooner or later, in the third step the car velocity is determined. The approach used is not affected by climate adjustments. Car extraction and velocity detection were applied the usage of the python. Also, SDCS system affords a software program package deal particularly designed to manage a car's visitors offers a number of blessings:

- SDCS is a reasonably-priced alternative gadget to the conventional radar system and the need for luxurious sensors is likewise
- SDCS is considered as an excellent software for a few hard picture processing algorithms and theories (object movement detection, shadow removal, and item monitoring).
- SDCS doesn't need professional folks to cope with it because it has a easy interface and properly layout.

REFERENCES

- [1] Real-Time Traffic Video Analysis Using Intel Viewmont Coprocessor Integrated Media Systems Centre, University of Southern California, CA, USA 2 Department of Electrical Engineering, University of Southern California, CA, USA 3 Department of Computer Science, University of Southern California, CA, USA
 - [2] A Robust Vehicle Detection Scheme for Intelligent Traffic Surveillance Systems in Smart Cities1College of Information, Mechanical and Electrical Engineering, Shanghai Normal University, Shanghai 200234, China 2Department of Mathematics and Computer Science, North-eastern State University, Tahlequah, OK 74464, USA
 - [3] Feature-Based Vehicle Flow Analysis and Measurement for a Real-Time Traffic Surveillance System Journal of Information Hiding and Multimedia Signal Processing c 2012 ISSN 2073-4212 Ubiquitous International Volume 3, Number 3, July 2012
 - [4] Automatic Vehicle Counting from Video for Traffic Flow Analysis Conference Paper · July 2007 DOI: 10.1109/IVS.2007.4290146 · Source: IEEE Explore
 - [5] Real-time Traffic Analysis Using Deep Learning Techniques And UAV Based Video Huaizhong Zhang, Mark Liptrott, Nik Bessis Edge Hill University St Helens Road, Ormskirk, UK L39 4QP zhangh@edgehill.ac.uk Jianquan Cheng Manchester Metropolitan University Manchester, UK M15 6BH
 - [6] Learning, Modelling, and Classification of Vehicle Track Patterns from Live Video Brendan Tran Morris, Student Member, IEEE, and Mohan Manubhai Trivedi, Senior Member, IEEE
-