International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 06 | June 2019 www.irjet.net p-ISSN: 2395-0072

Front View Identification of Vehicles by using Machine Learning Technique

Akshaykumar Gokavi[1], K.V. Prasad[2], J. Jyotheswar[3]

[1]Dept of E & C, Bangalore Institute of Technology
[2]Professor & HOD of E & C, Bangalore Institute of Technology
[3]Senior Research Staff CRL BEL, Bangalore.

Abstract — *In method of vehicle identification of front view, first task is to detect the moving vehicle.The vehicle type classification is big challenge in a toll collection because of 1% of accuracy loss is turns into significant economic loss. To identify the vehicle classification, many companies are uses Optical-Sensors (O.S.) and Human Observers for correct the classification. The detection of vehicle speed based on information from video record. In theoretical part we describe the most important methods, namely Gaussian mixture models, DBSCAN, Kalman filter, Optical flow and alsocount the number of vehicles in a real time action*.

1. INTRODUCTION

Classification of vehicle type is important step to develop the different types of intelligent systems for transformation, Traffic management, in a smart city etc. The automatic toll collection is used in some countries and which is very important case in smart cities. The classification of vehicle is based on the physical measurements like-Weights, Height and Number of axels. The counting of vehicles are also difficult task in this process. So that first we detect the vehicles by using the background subtraction method. The vehicle speed is also defined in this project.

These days the most everything considered seen approach to manage regulate measure speed is by utilizing the radar gear; thusly it is critical to propose some various bits of knowledge like surveying vehicle speed from video stream. Rather than equipment reliance that is issue with radar structures we can utilize picture overseeing, which is on an outstandingly essential measurement set up on programming use. There are several papers where different vehicles speed surveying systems. Most basic piece of speed estima1tion structure is object revelation and following are proposed. In bosses portray structure, where plan differencing is utilized for moving thing introduction. That objectivity is able if, where is no improvement out of sight. Gaussian blend model is appeared as answer for a frontal locale subtraction with dynamic foundation. For thing following optical stream is utilized that picks speed of progression similarly as heading of the improvement. where vehicle speed request structure keeps running on installed contraption Raspberry Pi. Thing authentication is understood additionally by Gaussian Mixture model, which displays that this system is appropriate in like way for gadgets with bound assets. Speed estimation from video outlines utilizing corner seeing assertion. For vehicle division in addition mix of edge pioneers,corner region and morphological errands is utilized. They will in all likelihood see speed from single obfuscated picture.

2. SYSTEM EXISTING

The field of picture managing has grown by and large in the midst of the before decade. This has been driven bythe comprehensive use of imagery in pack applications, joined with updates in the size, speed and cost manuscript. The sufficiency of cutting-edge computers and related sign orchestrating headways. Picture managing has found a basic development in shrewd, current, space and government applications. Various structures nowadays can be displaced by picture overseeing trade systems that perform better than the past structures. A SDCS system is one of these structures that can annul ordinary radars. A SDCS system is critical as a choice rather than current radar structures. This is ideal financially sharp system over current ones. It in like manner has careful yields as ordinary radars or far unrivaled. SDCS structure can be joined with Automatic Number Plate Recognition (ANPR) system to shape a full- scale radar structure. ANPR structure is a mass recognition methodology that uses optical character affirmation on pictures to research the imprints on vehicles. In the mentioning makers present the key steps towards structure up the Speed Detection Radar. Here makers present another hypothesis in thing ID system, which is "flexible establishment subtraction" as it proofs that it's not sensitive to startling enlightening changes. Another part is appeared here concerning address following by making "object following blueprints".

3. PROPOSED METHODOLOGY

The proposed system is shown in fig 1. The system is composed of input video, preprocessing object detection, object tracking and speed estimation.

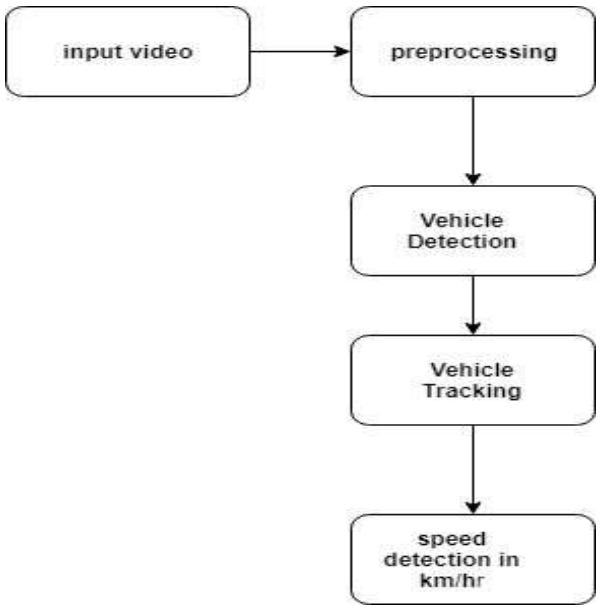

Fig 1. Proposed System

fitting Gaussian dispersal. A Gaussian blend model is a probabilistic model that expect the majority of the server farms are passed on from a blend of a foreordained number of Gaussian streams with cloud parameters. Gaussian blend models are a probabilistic model for tending to constantly passed on subpopulations inside a general people. Blend models when all is said in done don't require knowing which subpopulation GMM) is an information point has a spot with, interfacing with the model as far as possible with the subpopulations routinely. Since subpopulation task isn't known, this contains a sort of unsupervised learning.

3.1 METHODOLOGY

A data stream layout is a graphical depiction of the "stream" of data through an information structure, showing its system edges. A huge piece of the time they are an important improvement usedto make a blueprint of the system which can later be outlined. DFDs can in like manner be used for the portrayal of data overseeing (made design).The DFD is other than called as air stash chart. It is a major graphical formalism that can be used to address a structure similarly as the data to the system, arranged managing did on these data, and the yield data is made by the system.

Our reasoning depends on adaptable foundation subtraction procedure called Gaussian blend model. After every pixel is gathered by foundation subtraction framework, portions of frontal area focuses are showed up by bunches that are made by DBSCAN (Density based spatial social affair of organizations with tumult) gathering technique and these parts are free by Bounding boxes.

A typical structure for suffering division of moving areas in picture groupings. Every pixel is named closer view or foundation dependent on his delineation in the most

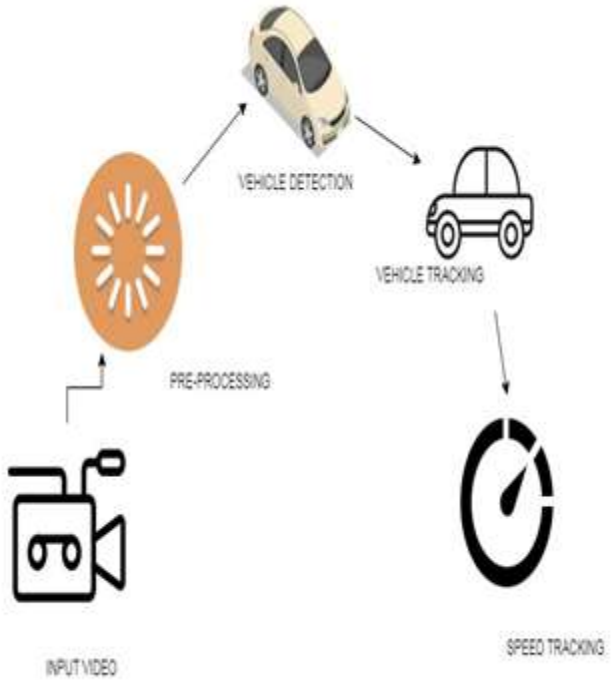

Fig 2. Graphical representation of algorithm

As frequently as could reasonably be typical, we need to get live stream with camera. OpenCV gives a brief interface to this. We ought to get a video from the camera (I am utilizing the in-made webcam of my workstation), convert it into grayscale video and show it. Only a fast errand to begin.cap.read() restores a bool (True/False). In the event that arrangement is investigated definitely, it will be True. So you can check end of the video by checking this area respect. From time to time, top likely won't have exhibited the catch. Everything considered, this code exhibits mishandle. You can check whether it is shown or not by the system cap.isOpened(). In the event that it is True, OK. All things considered open it utilizing cap.open. You can in like way get to a dash of the highlights of this video utilizing cap.get(propId) framework where propId is a number from 0 to 18. Each number techniques a property of the video (on the off chance that it is suitable to that video) and full subtleties can be seen here: Property Identifier. A dash of these attributes can be adjusted utilizing cap.set(propId, respect). Respect is the new respect you need. To get a video, you have to make a VideoCapture object. Its debate can be either the contraption report or the name of a video record. Gadget list is only the number to indicate which camera. Typically one camera will be related (as for my condition). So, I essentially pass 0 (or - 1). You can pick the second camera by passing 1, etc. Beginning there forward, you can get setup by-plot. All things considered, near the end, make a point to discharge the catch. It is same as getting from Camera, essentially change camera list with video report name. Also, while demonstrating the edge, utilize ongoing for cv2.waitKey(). On the off chance that it is an unrestrained proportion of less, video will be canny and, in the event, that it is incredibly high, video will be moderate (Well, that is the course by which you can demonstrate accounts in moderate movement).

25 milliseconds will be OK in regular cases.

3.2 SPEED DETECTION

Kalman channel with Optical stream isolates each improvement of pixels reliably what is likewise delineation of advancement of vehicle. For affirmation of speed, system has to know weight of the pixel. This shows general data about speed insistence by secluding veritable width of twofold way national street with pixel delineation. By at that point, the speed of the objective is enrolled by the common speed of all focuses in the objective. Resulting to following everything in video the ensuing stage is to spare the bundling number that the article entered the scene, and the bundling number that the thing left

the scene at, by then speed estimation should be conceivable by figuring the measure of edges eaten up by the article to go by the scene and as the length of each bundling is known, the out and out time taken by the article to go by the entire scene can be settled.

3.3 COUNTING AND CALSSIFICATION

The detection of line is a virtual line that cuts through the road. The camera and detection line are not have a much distance. These are very close to each other. The detection of line should reach the two sides of a single lane on the road. The vehicles across the detection line is always intersect the line in the perspective of the image plane. The segment of the line is cut when the vehicle is reaches this line already we have to set the state of the segment as occupied from this line vehicle is deviated. Then the segment is released and it's status is set to released .So that the vehicle is count for the corresponding lane. The existing video-based vehicle counting system is usually apply a single algorithm to count the vehicles. In this method we are using a line. This line detection is used for the vehicle counting and also lines are used for identifying the speed of the vehicles. In a traffic congestion, the vehicles are side by side to each other and run at a slowly. In this matter, the vehicle counting method is very difficult task. The virtual loops are rectangles inside the single lane. They can be related to a extension of parallel line detection pair or as a simulation of inductance loop. So that whole area of the loop is to be calculated. In this method, the computational time is high. However that method is commonly performs the vehicle counting in congested traffic. Based on advantages of the two methods. We are commonly using a adaptive counting algorithm which is automatically shift between two patterns using detection lines for normal traffic and virtual loops for congestion. Classification of vehicle type is important step to develop the different types of intelligent systems for transformation, Traffic management, in a smart city etc. The automatic toll collection is used in some countries and which is very important case in smart cities. The classification of vehicle is based on the physical measurements like-Weights, Height and Number of axels.By using machine learning technique, training set is consists of 80% of the total data and testing set consists of remaining data. These conditions are failing to ensure that lead to absurdly high accuracy.

4. RESULT

In this paper speed is assessing using Kalman channel and optical stream Lucas Kanade system. First, we are giving a data video and after that it is preprocessing. By then vehicle is perceiving and following using channel and optical stream Lucas Kanade method. By then detecting speed from vertically advancement by using adaptable heaps of pixels. The vehicles are count one by one when each vehile passes the the crossed line and also shows the class of the vehicles or variety of the vehicles.

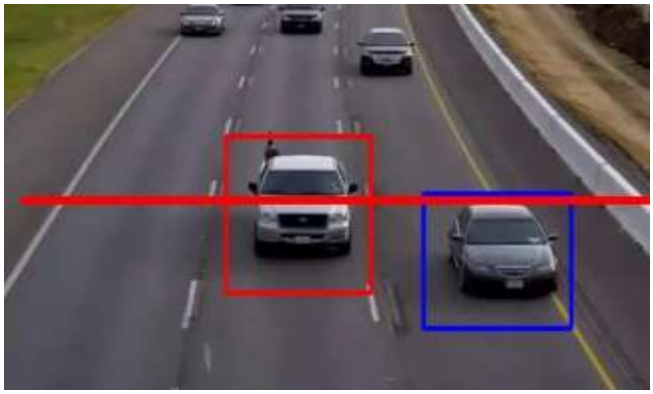

Fig 3. Detection of cars

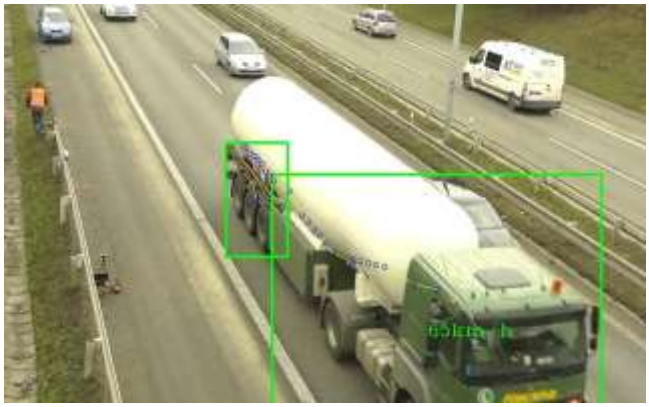

Fig 4.Speed Detection

Fig 5.Vehicle Classification

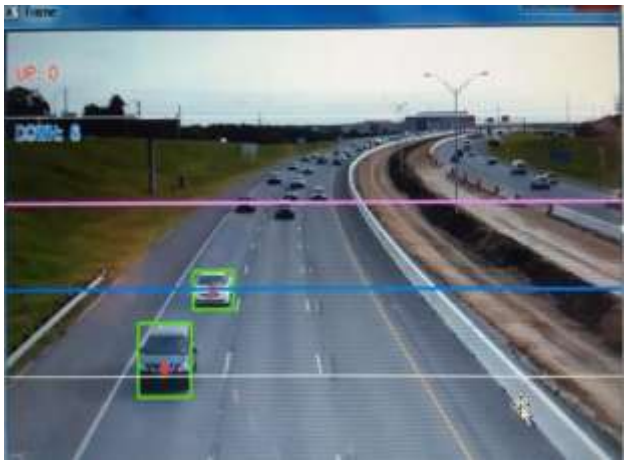

Fig 6. Vehicle Counting

5. CONCLUSION

In this front vehicle recognition is combines the vehicles speed, type of vehicle and it also count the vehicles. In the vehicle speed estimation system, where we improve optical low technique with Kalman channel following to deal with the issue

with overlays with static closer view objects and besides improve speed area. In light of our results we can reason that mix of optical stream and Kalman channel systems pass on tolerably incredible results even by virtue of low picture quality conveyed by mechanical camera. Our future research will perceive speed from vertically advancement by using flexible heaps of pixels and improve DBSCAN division to perceive each article in gathering of vehicles.

ACKNOWLEDGEMENT

We would like to thank J.Jyotheswar, Senior Research Staff of CRL BEL, for his technical help on this article.

REFERENCES

[1] J. X. Wang, "Research of vehicle speed detectionalgorithm in video surveillance," in 2016 International Conference on Audio, Language and Image Processing (ICALIP), pp. 349–352, July 2016.

[2] O. Smirg, Z. Smekal, M. K. Dutta, and B. Kakani, "Automaticdetection of the direction and speed of movingobjects in the video," in 2013 Sixth International Conference on ContemporaryComputing (IC3), pp. 86–90, Aug 2013.

[3] Jasdeep, K. and Pawandeep, K. ''Review of impulse noise reduction technique usingfuzzylogic for the image processing, International journal of engineering and technology'',pp 103-110, Feb 2003.

[4] K. V. K. Kumar, P. Chandrakant, S. Kumar, and K. J. Kushal, "Vehicle speed detectionusing corner detection," in Proceedings of the 2014 Fifth InternationalConference on Signal and Image.Processing, ICSIP '14, (Washington, DC, USA), pp. 253–258, IEEE Computer Society, 2014.

[5] H. Y. Lin, K.-J. Li, and C.-H. Chang, "Vehicle speed detectionfrom a single motion blurred image," Image and Vision Computing, vol. 26, no. 10, pp. 1327 – 1337, 2008.

[6] C. Stauffer and W. E. L. Grimson, "Adaptive background mixture models for real-time tracking," in Computer Vision and Pattern Recognition, 1999. IEEE Computer Society Conferenceon., vol. 2, pp. 246–252, IEEE, 1999.

[7] D. H. Warren and E. R. Strelow, Electronic Spatial Sensing for the Blind: Contributions from Perception, Rehabilitation, and Computer Vision, vol. 99. Springer Science & Business Media, 2013.

[8] G. Bradski and A. Kaehler, Learning OpenCV: Computer vision with the OpenCVlibrary. " O'ReillyMedia, Inc.", 2008.

[9] ParminderKaur and Jagroop Singh. ''A StudyEffect of Gaussian Noise on PSNR Value for Digital Images International Journal of Computer and Electrical E ngineering'',pp.9-15, Jan 2000.

[10] Stefan Schulte, Valérie De Witte, and Etienne E. ''Noise ReductionMethod for IEEE Transactions On Image Processing'',pp 18-26, Aug 2004.

[11] M. A. Alavianmehr, A. Zahmatkesh, and A. Sodagaran, "A new vehicledetectmethodbased on gaussian mixture model alongwithestimate moment velocityusingoptical flow," pp 113-121, July 2002.

[12] I.Iszaidy, A. Alias, R. Ngadiran, R. B. Ahmad, M. I. Jais, and D. Shuhaizar, "Video size comparison for embeddedvehicle speed detectiontravel time estimation system by usingraspberry pi," in 2016 International Conference on Robotics, Automation and Sciences (ICORAS), pp. 1–4, Nov 2016.