Motion And Appearance Detection Based On Deep learning For Autonomous Driving

G.RANI
Assistant Professor
Department of CSE
ranicse@tkrec.ac.in
Teegala Krishna Reddy Engineering College, Hyderabad

CHATURI SHAHKUMAR
Department of CSE
sk7995812332@gmail.com
Teegala Krishna Reddy Engineering College, Hyderabad

NAZREEN SULTANA
Department of CSE
naazreen.md@gmail.com
Teegala Krishna Reddy Engineering College, Hyderabad

G.NEERAJ
Department of CSE
neerajgantaji@gmail.com
Teegala Krishna Reddy Engineering College,Hyderabad

Abstract - For autonomous driving, moving objects like vehicles and pedestrians are of critical importance as they primarily influence the maneuvering and braking of the car. Typically, they are detected by motion segmentation of tensor optical flow augmented by a SSD based object detector for capturing semantics. In this project, our aim is to jointly model motion and appearance cues in a single short detector. We propose a novel two-stream architecture for joint learning of object detection and motion segmentation. We designed three different flavours of our network to establish systematic comparison. It is shown that the joint training of tasks significantly improves accuracy compared to training them independently. Although motion segmentation has relatively fewer data than vehicle detection. The shared fusion encoder benefits from the joint training to learn a generalized representation. We created our own publicly available dataset that contains some frame sets that is passed through the tensor flow object to algorithm model. As compare with the pervious algorithm the confidence level and prediction level increases the map score up to 20.2%. We also evaluated our algorithm on the non-automotive DAVIS or motion dataset and obtained accuracy close to the state-of-the-art performance.

I INTRODUCTION

A few years ago, the creation of the software and hardware image processing systems was mainly limited to the development of the user interface, which most of the programmers of each firm were engaged in. The situation has been significantly changed with the advent of the Windows operating system when the majority of the developers switched to solving the problems of image processing itself. However, this has not yet led to the cardinal progress in solving typical tasks of recognizing faces, car numbers, road signs, analyzing remote and medical images, etc. Each of these "eternal" problems is solved by trial and error by the efforts of numerous groups of the engineers and scientists. As modern technical solutions are turn out to be excessively expensive, the task of automating the creation of the software tools for solving intellectual problems is formulated and intensively solved abroad. In the field of image processing, the required tool kit should be supporting the analysis and recognition of images of previously unknown content and ensure the effective development of applications by ordinary programmers. Just as the Windows toolkit supports the creation of interfaces for solving various applied problems. Object recognition is to describe a collection of related computer vision tasks that involve activities like identifying objects in digital photographs. Image classification involves activities such as predicting the class of one object in an image. Object localization is refers to identifying the location of one or more objects in an image and drawing an abounding box around their extent. Object detection does the work of combines these two tasks and localizes and classifies one or more objects in an image. When a user or practitioner refers to the term “object recognition“, they often mean “object detection “One of the further extension to this breakdown of computer vision tasks is object segmentation, also called “object instance segmentation” or “semantic segmentation,” where instances of recognized objects are indicated by highlighting the specific pixels of the object instead of a coarse bounding box. From this breakdown, we can understand that object recognition refers to a suite of challenging computer vision task For example, image classification is simply straight forward, but the differences between object localization and object detection can be confusing, especially when all three tasks may be just as equally referred to as object recognition

II. LITERATURE SURVEY

In various fields, there is a necessity to detect the target object and also track them effectively while handling occlusions and other included complexities. Many researchers (Almeida and Guting 2004, Hsiao-Ping Tsai 2011, Nicolas Papadakis and Aure lie Bugeau 2010) attempted for various approaches in object tracking. The nature of the techniques largely depends on the application domain. Some of the research works which made the evolution to proposed work in the field of object tracking are depicted as follows

II.1OBJECT DETECTION

Object detection is an important task, yet challenging vision task. It is a critical part of many applications such as image search, image auto-annotation and scene understanding, object tracking. Moving object tracking of video image sequences was one of the most important subjects in computer vision. It had already been applied in many computer vision fields, such as smart video surveillance (Arun Hampapur 2005), artificial intelligence, military guidance, safety detection and robot navigation, medical and biological application. In recent years, a number of successful single-object tracking system appeared, but in the presence of several objects, object detection becomes difficult and when objects are fully or partially occluded, they are obtruded from the human vision which further increases the problem of detection. Decreasing illumination and acquisition angle. The proposed MLP based object tracking system is made robust by an optimum selection of unique features and also by implementing the Adaboost strong classification method

II.1.1BACKGROUND SUBTRACTION

The background subtraction method was able to cope with local illumination changes, such as shadows and highlights, even globe illumination changes. In this method, the background model was statistically modelled on each pixel. Computational color mode, include the brightness distortion and the chromaticity distortion which was used to distinguish shading background from the ordinary background or moving foreground objects. The background and foreground subtraction method used the following approach. A pixel was modelled by a 4-tuple where E- a vector with expected color value, s - a vector with the standard deviation of color value, ai - the variation of the brightness distortion and bi was the variation of the chromaticity distortion of the i pixel. In the next step, the difference between the background image and the current image was evaluated. Each pixel was finally classified into four categories: original 8 background, shaded background or shadow, highlighted background and moving foreground object. Liyuan Li et al (2003), contributed a method for detecting foreground objects in non-stationary complex environments containing moving background objects. A Bayes decision rule was used for classification of background and foreground changes based on inter-frame color co-occurrence statistics. An approach to store and fast retrieve color co-occurrence statistics was also established. In this method, foreground objects were detected in two steps. First, both the foreground and the background changes are extracted using background subtraction and temporal differencing. The frequent background changes were then recognized using the Bayes decision rule based on the learned color co-occurrence statistics. Both short-term and long term strategies to learn the frequent background changes were used. An algorithm focused on obtaining the stationary foreground regions as said by Álvaro Bayona et al (2010), which was useful for applications like the detection of abandoned/stolen objects and parked vehicles. This algorithm mainly used two steps. Firstly, a sub-sampling scheme based on background subtraction techniques was implemented to obtain stationary foreground regions. This detects foreground changes at different time instants in the same pixel locations. This was done by using a Gaussian distribution function. Secondly, some modifications were introduced on this base algorithm such as thresh holding the previously computed subtraction. The main purpose of this algorithm was reducing the amount of stationary foreground detected

II.1.2TEMPLATE MATCHING

Template Matching is the technique of finding small parts of an image which match a template image. It slides the template from the top left to the bottom right of the image and compares for the best match with the template. The template dimension should be equal to the reference image or smaller than the reference image. It recognizes the segment with the highest correlation as the target. Given an image S and an image T, where the dimension of S was both larger than T, output whether S contains a subset image I where I and T are suitably similar in pattern and if such I exists, output the location of I in S as in Hager and Bellhumear (1998). Schweitzer et al (2011), derived an algorithm which used both upper and lowers bound to detect ‘k’ best matches. Euclidean distance and Walsh transform kernels are used to calculate match measure. The positive things included the usage of priority queue improved quality of decision as to which bound-improved and when good matches exist inherent cost was dominant and it improved performance. But there were constraints like the absence of good matches that lead to queue cost and the arithmetic operation cost was higher. The proposed methods dint use queue thereby avoiding the queue cost rather used template matching. Visual tracking methods can be roughly categorized in two ways namely, the feature-based and region-based method as proposed by Ken Ito and Shigeyuki Sakane (2001). The feature-based approach estimates the 3D pose of a target object to fit the image features the edges, given a 3D 9 geometrical model of an object. This method requires much computational cost. Region-based can be classified into two categories namely, parametric method and view-based method. The parametric method assumes a parametric model of the images in the target image and calculates optimal fitting of the model to pixel data in a region. The view-based method was used to find the best match of a region in a search area given the reference template. This has the advantage that it does not require much computational complexity as in the feature-based approac

III EXISTING SYSTEM

Time complexity of algorithms increases gradually for that instance because the algorithm is trained independently .The object detection and motion detection is trained separately with required a lager data set. Accuracy of resultant output will be effected.

In existing system the algorithm which undergoes major disadvantages which includes localisation and complex network between the neural nodes.

Due to this presence that effects the rate of classification and prediction, map score, accuracy ect.

IV PROBLEM STATEMENT

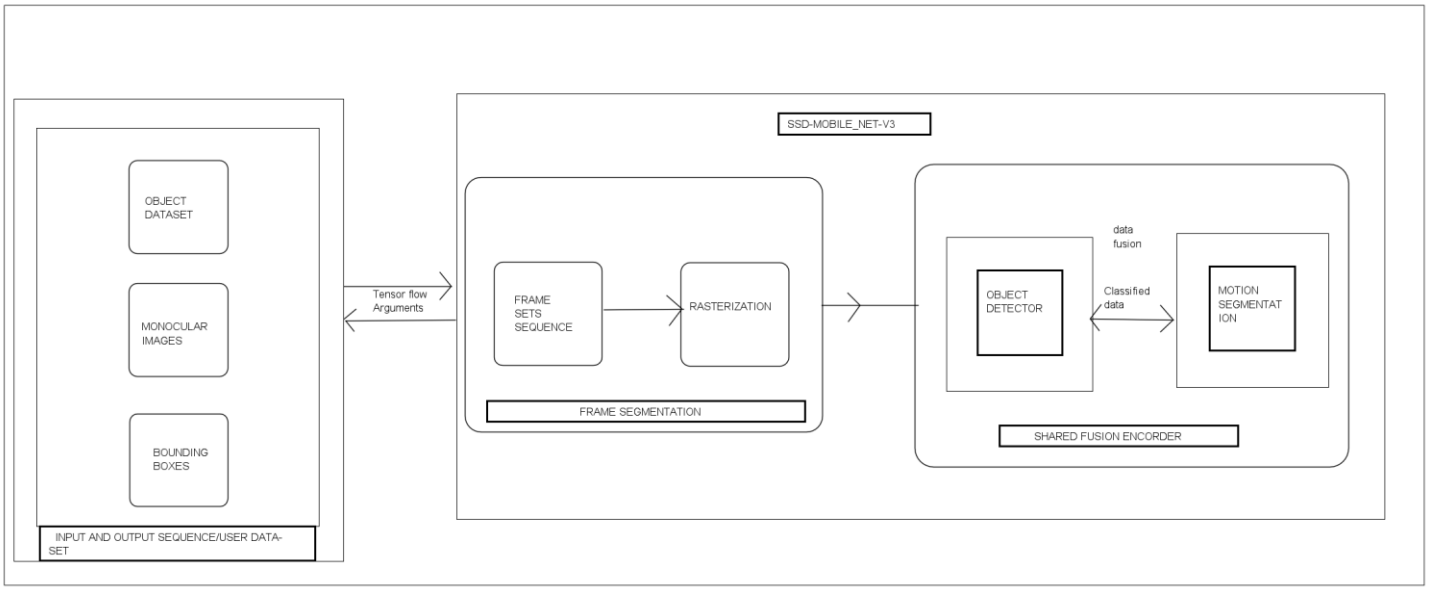
Based on the existing system that

We introduced the concept called localisation to increases the verification analysis of any object (Van, Ambulance) this help us in increase in the classification and prediction rate and finally increase in map score.

V.PROPOSED SYSTEM

- We proposed two stream architecture that help in training both object and motion detector to train at a time by introducing a new concept of data fusion in between them. This help the time management and response rate to be increased.
- We introduced the concept called localisation to increases the verification analysis of any object (Van, Ambulance) this help us in increase in the classification and prediction rate and finally increase in map score.

V.SYSTEM ACHITECTURE



System Architecture

VI.CONCLUSIONS

Here is our project that address problems with existing system and solves them effectively. In the end, we have achieved a fully functional model that efficiently extracts fake reviews from given website. Below is the result analysis of the model we developed.

Fig 7.1 Result Before Detection

This is a sample image we feed to the algorithm and expect our algorithm to detect and identify objects in the image and label them according to the class assigned to it.

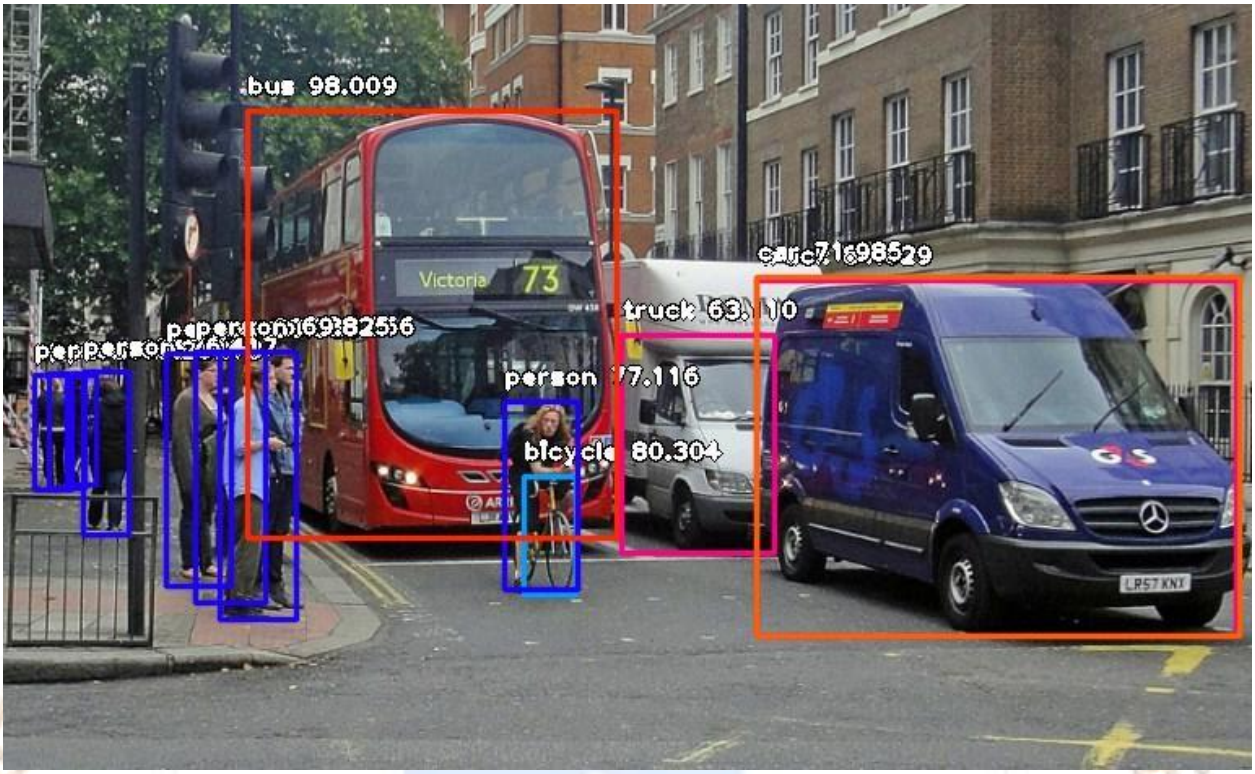


Fig 7.2 Result.After Detection

As expected our algorithm identifies the objects by its classes assigns each object by its tag and has dimensions on detected image

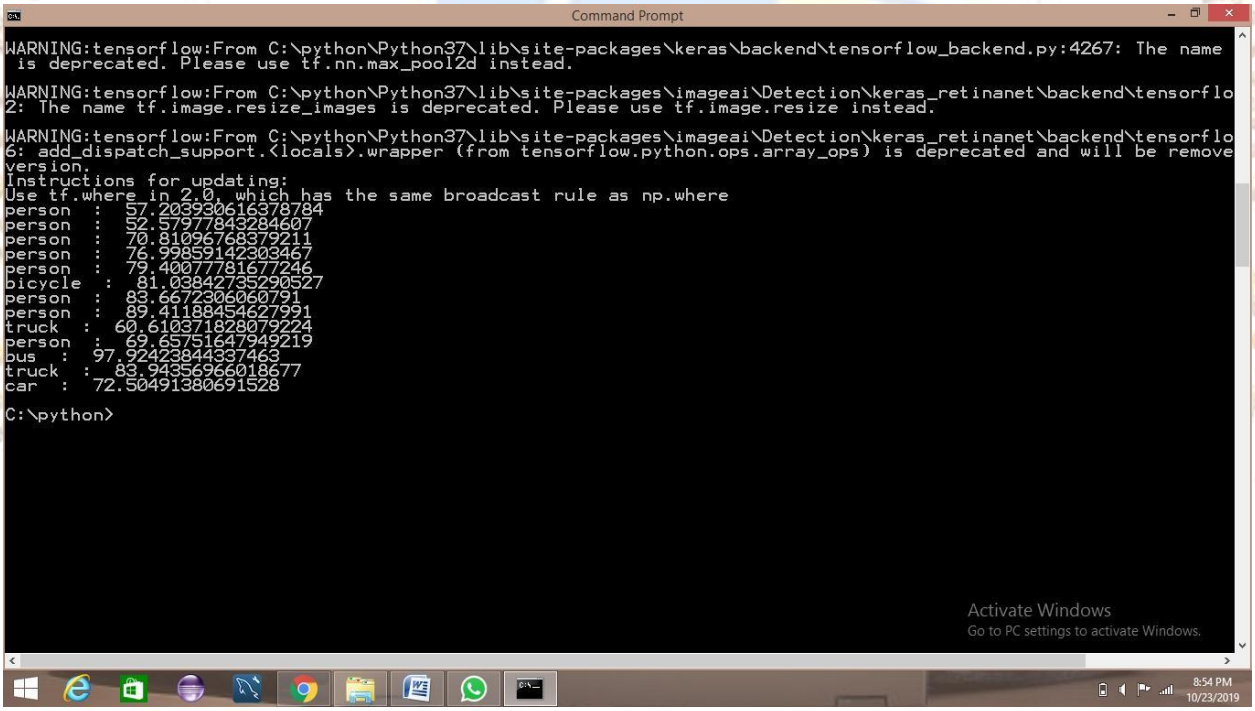


Fig 7.4 Console Result analysis

Prediction source layers from:						mAP use boundary boxes?		# Boxes
38 × 38	19 × 19	10 × 10	5 × 5	3 × 3	1 × 1	Yes	No	
✔	✔	✔	✔	✔	✔	74.3	63.4	8732
✔	✔	✔				70.7	69.2	9864
	✔					62.4	64.0	8664

VII REFERENCES

[1] Aakash Negandhi, Soham Gawas, Prem Bhatt , Priya Porwal Detect Online Spread of Terrorism Using Data Mining.IOSR Journal of Engineering Volume 13,17 April 2019. So here they propose an efficient web data mining system to detect such web properties and flag them automatically for human review. Keywords: Anti-Terrorism, Data Mining, Online, Terrorism,World

[2] Avishag Gordon The spread of terrorism publications: A database analysis,Terrorism and Political Violence journal publishedin Dec 2007.This research note focuses on the spread of terrorism publications from 1988 to 1995 compared to their frequency of appearance from 1996 to 1998. It also identifies the core journals of this research field.

[3] A.Sai Hanuman, G.Charles Babu , P.Vara Prasad Rao, P.S.V.Srinivasa Rao ,B.Sankara Babu A Schematic Approach on Web Data Mining In Online Spread Detection of Terrorism,International Journal of Recent Technology and Engineering Volume-8, Issue-1, May 2019.So here they have propose a compelling web data mining structure to recognize such web properties and standard them thusly for human review. Index Terms: web data mining, terrorism, web structure mining, dread monger affiliations.

[4] Counter Terrorism on Online Social Networks Using Web Mining Techniques Fawad Ali, Farhan Hassan Khan, Saba Bashir, and Uzair Ahmad, Department of Computer Science, Federal Urdu University of Arts, Science and Technology (FUUAST), Islamabad, Pakistan.In this paper some major web mining techniques have been discussed which can be helpful to identify such people and terrorism may be countered from OSN. Each technique is discussed thoroughly, and effectiveness along with its pros and cons are also presented.

[5] Chen, H.. "entiment Analysis in Multiple Languages: Feature Selection for Opinion Classification in Web Forums." ACM Transactions on Information Systems, forthcoming,June 2008.In this study the use of sentiment analysis methodologies is proposed for classification of Web forum opinions in multiple languages. The utility of stylistic and syntactic features is evaluated for sentiment classification of English and Arabic content.

[6] J. Kiruba, P. Sumitha, K. Monisha, S. Vaishnavi Enhanced Content Detection Method to Detect Online Spread of Terrorism,International Journal of Engineering and Advanced Technology Volume-8, Issue-6S3, September 2019.They proposed a system delivery event notification which is used to monitor the activities and delivers notification according to the investigation knowledge. Alert reporting system is developed that takes earthquakes from websites and a message is sent the registered user.

[7] Michael Grenieri, Anthony Estrada Down Converter Characterization in a Synthetic Instrument Context 2006 IEEE Autotestcon.This paper provides an overview of the need for a common set of specification parameters to characterize a down converter in a synthetic instrument (SI).The paper then provides an in-depth technical discussion of two of the less understood down converter related intermediate frequency (IF) output parameters: group delay and phase linearity.

[8] Naseema Begum Detection of online spread of terrorism using web data mining A. Institute of Engineering and Technology, Coimbatore, Tamil Nadu, International Journal of Advance Research, Ideas and Innovations in Technology- Volume 5, Issue

[9] The basic idea of this project is to reduce or stop spreading of terrorism and to remove all these accounts

[10] T.Anand,S. Padmapriya,E. Kirubakaran Terror Tracking Using Advanced Web Mining 2009 International Conference on Intelligent Agent & Multi-Agent Systems.Web mining techniques can be used for detecting and avoiding terror threats caused by terrorists all over the world.