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Intelligent Traffic Monitoring System

Manohara A B[1] and Deepa KR[2]
Student, Department of Master of Computer Applications[1]
Assistant Professor, Department of Master of Computer Applications[2]
Rajarajeswari College of Engineering, Bengaluru, India

Abstract: *The increased popularity of private automobile has result in more congested urban traffic. As a result, traffic has become one of the most serious issues in major cities throughout the globe. Congestion and accidents are two major traffic challenges, both of which have resulted in significant time loss, property damage, and pollution. This project entails the development and deployment of a computer vision and image processing-based intelligent and automated traffic control system. This technology recognizes the number of cars on each route and assigns an optimal amount of waiting time based on the the amount more cars on every route. This system is entirely automated and may be used to replace the traditional, dynamically regulated transportation system with a fixed-time transportation system. The planned method has the potential to significantly reduce traffic congestion in congested cities via preserving it considerable number of person time that would otherwise be wasted waiting on congested highways. This research focuses, low-cost image analysis, and load balancing.*

Keywords: Image tracking, Python, Traffic monitoring, CNN, HTML

I. INTRODUCTION

Creating reliable Machine Learning Models suitable of recognising objects in computer vision,localising many in a single item picture has remained a major difficulty.Developing Object Tracking apps is now simple than ever.

Tensor Flow's Object Tracking Application is just a software framework built on the site of Tensorflow that makes building, training, and deploying object detection models simple. Object tracking One of the most investigated fields is from a scenario. By developing a simulation website to load the object tracking findings, the application's usability in a real-world setting is substantially improved.

The goal of this project is to list the processes involved in the object detection process. The major aim of this study is to represent an unique method for detecting then tracking objects in an unfamiliar environment. The unseen backdrop might be anything from a basic fixed or white background to a very complicated background with a variety of things of all shapes and sizes. This dramatically improves the application's usefulness in a real-world setting. by creating simulation website to load the object tracking results. The goal of this work is to list the processes that occur in the particle detector.

II. LITERATURE SURVEY

We should never to mention concentrate on separate classifications visuals to obtain a solid understanding of them,and moreover endeavour to enhance data the ideas and the placements of the objects in each image Thing recognition is the name given to this job, which is made up of several subtasks such as facial recognition, collision avoidance, and bone recognition. Object Among the most important aspects of tracking is that it allows you to keep track of your progress advanced visual software for computers issues, and it can give usefull good data for linguistic comprehension of pictures and videos. It's used in a variety of applications, including image categorization, man bearing, resolution, face identity, and self driving. Furthermore, success in these domains will build artificial neural techniques, as well as get a significant influence on item tracking strategies to may be regarded teaching processes, thanks to neurological system and communication learning systems. However, because to the wide range of views, positions, anomalies, and quality of light , accurate Recognition of items with additional object location duty is tough. This field has garnered a lot of attention in recent years.

Bounding box prediction is used to recognise generic objects, whereas localised image background subtraction and bitmap fragmentation are used to find prominent objects Head and motion tracking are strongly aligned to universal

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target tracking and are primarily performed via multi-scale modification and Head and motion tracking are strongly aligned to universal target tracking and are primarily performed via inter modification Under specific situations, the dashed lines show that the related zones are connected with each other. It's worth noting that the categories considered are varied. The geometric structures and layouts of individual and person pictures are more consistent, whereas generic items and scene images have more complicated object shapes and layouts. As a result, varied photos necessitate different deep models.

III. METHODOLOGY

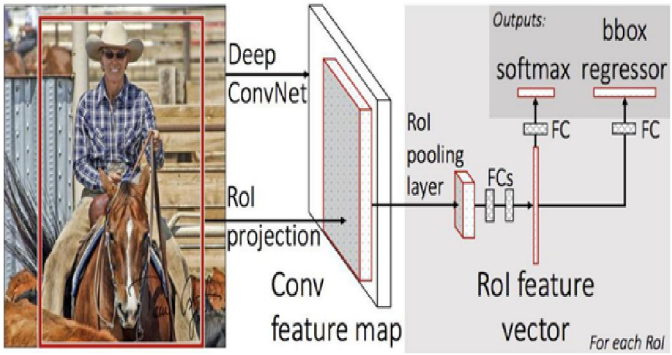

Fig.1: CNN Model

The architecture of convolutional bundles of nerves differs from that of regular neural networks[9]. In a typical neural network, an input is converted by a sequence of hidden layers.Per level is made up of a group of nerves, each of the totally linked to all nerves in the layer preceding it. Finally, the output layer, which represents the predictions, is a completely linked layer. The layers are divided into three dimensions to begin with: width, height, and depth. In addition, axons in one surface don't really interact with one another. to every biological nerve in the following satck, yet only an small part[9].

3.1 Web Simulation

Load the traffic object detection result to website using protocol and provide visual view to user about traffic selection WEB Simulation

For the front end, a webpage uses HTML, CSS, and BOOTSTRAP; for the middle layer or server side scripting, PHP is utilised to offer a simulation protocol that displays observed traffic items graphically. Later, we'll conclude which route takes the least amount of time depending on the frame threshold that was utilised to discover the shortest path (high to low)

IV. SYSTEM ARCHITECTURE

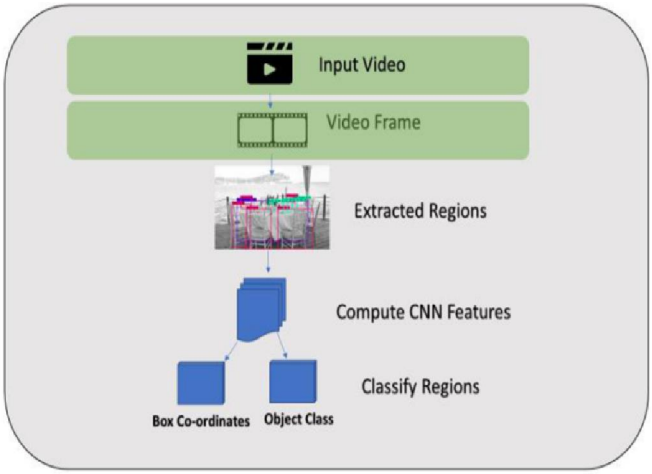

Fig. 2: System Architecture

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A convolutional neural network (CNN) is really a kind of human brain that isn't real that analyses data using perceptrons, which are a machine learning unit algorithm. Computer vision, machine translation, and other thinking problems can all benefit from CNNs.

V. USE CASE DESIGN

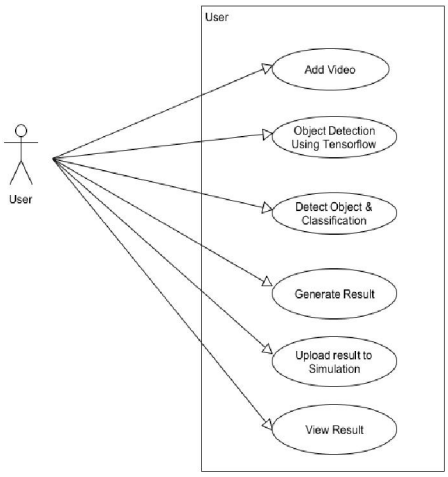

Fig. 3: Use Case Design

Use-case charts are a specific proposed explanation for a phenomenon graphic created from a use-case study in the Unified Modelling Language (UML). Its purpose is to provide a geometric depiction of a machine operation in terms of actors, objectives, and other elements(expressed as use cases), and any connections among such use cases. The main goal of a use case diagram is to show which system operations are carried out for a particular actor. The roles of the actors in the system can be shown.

VI. SEQUENCE DIAGRAMS

A pattern figure describes sequential order of different starting point. It displays the situations objects and classes of the series of messages delivered between objects and classes to complete the possible scenarios performance. Sequence diagrams and use cases are typically connected in the logical view of the system being developed realisation. Flow charts are sometimes known as event charts or scenario charts.

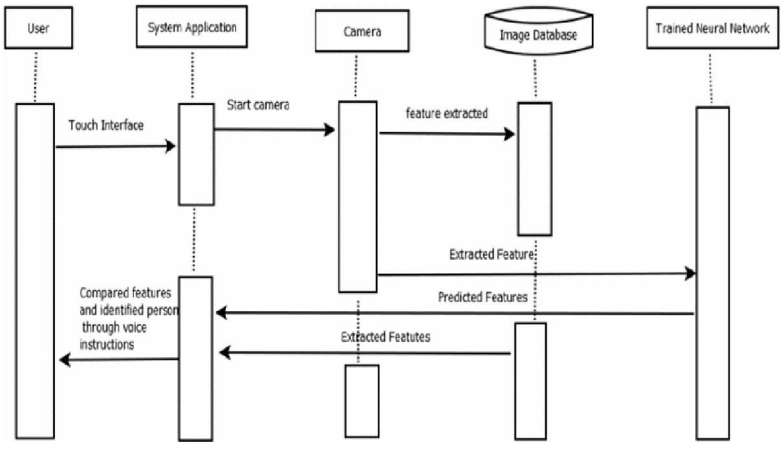

Figure 4: Sequence Diagram

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VII. RESULT

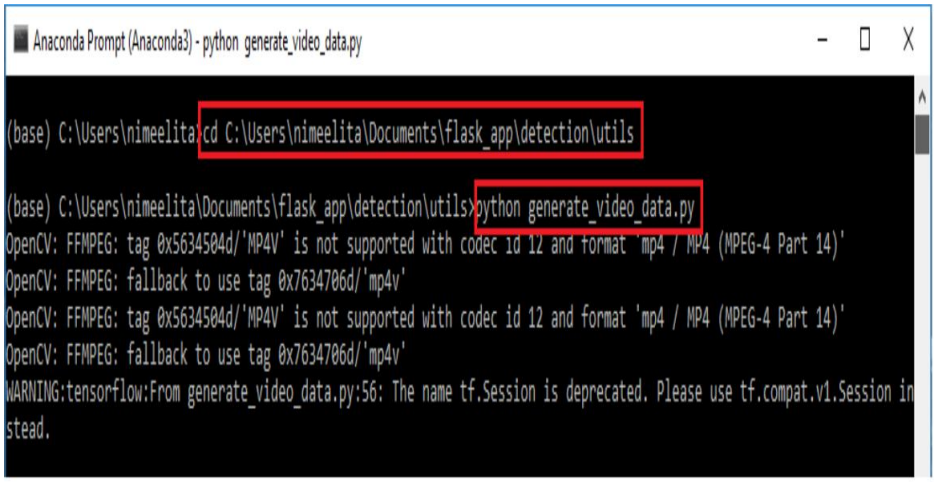

Figure 6.1 Loading video

In this screenshot represents, we have tken an video from CCTV footage from the the then we will upload an video to the tool for the analysing the video then, give the extracted footage.

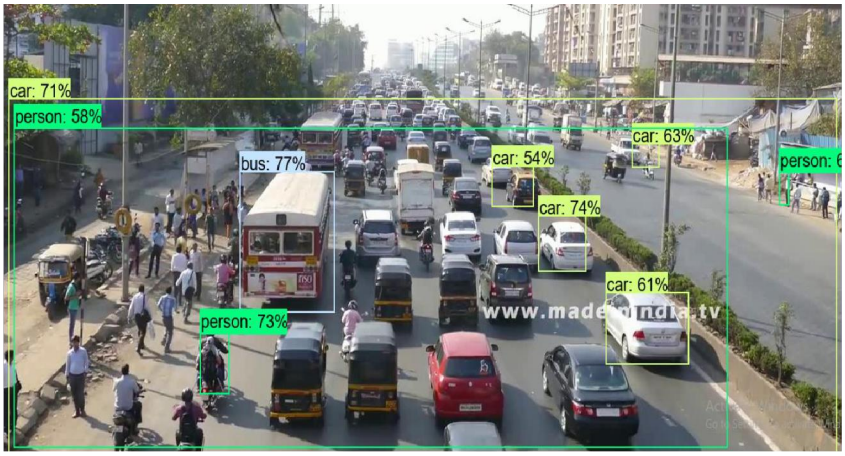

Figure 6.2 Bounded boxed picture

In this screenshot represents, the cctv footages are extracted from the uploaded video and then fixes the bounded box to analysed cars, buses, bikes, humans, from the unknown background. This bounded box are fixed by the Tensorflow library.

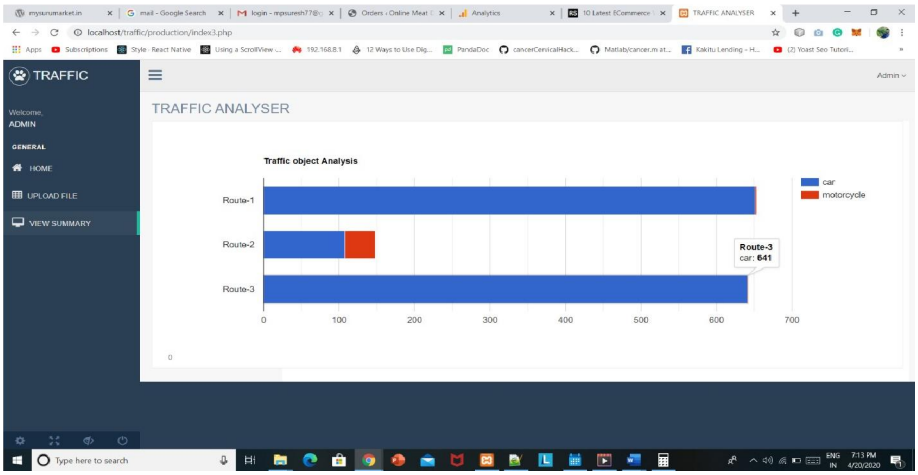

Figure 6.4 Web page with counting

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This screenshot represents, the final result of the video extracted video of the bounded boxed buse, cars, bikes, on the road and it calculates the how many cars, bikes, buses are captured on that video, then upload the information of the vechicals to web application.

VIII. CONCLUSION

Our ability to recognise items more accurately and provide each item a unique identification using the specific location of an object in the photo in the x,y axis utilising this project and based on trial findings. This project also includes experimental findings on several approaches for item detection and identification, as well as a comparison of the efficiency of each method. The result of the traffic object detection will be placed onto the simulation website and utilised to obtain the traffic time using MySQL.

IX. FUTURE WORK

By considering this project we can enhance this to various domains like traffic, aerospace or any other domain to detect object by using Tensor Flow library. This project proposes video processing and machine learning approach which allows utilizing advance technology to detect object in given video.

REFERENCES

[1]. "Object recognition using discriminatively trained part-based models," IEEE Trans. Pattern Analy. Mach. Intell., vol. 32, no. 9, p. 1627, 2010. P. F. Felzenszwalb, R. B. Girshick, D. Mcallester, and D. Ramanan

[2]. K. K. Sung and T. Poggio, "Example-based learning for view-based human face identification," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 20, no. 1, pp. 39-51, 2002

[3]. .C. Wojek, P. Dollar, B. Schiele, and P. Perona, "Pedestrian detection: An evaluation of the state of the art," IEEE Trans. Pattern Anal. Mach. Intell., vol. 34, no. 4, p. 743, 2012.

[4]. H. Kobatake and Y. Yoshinaga, "Detection of spicules on mammogram based on skeleton analysis." IEEE Trans. Med. Imag., vol. 15, no. 3, pp. 235–245, 1996.

[5]. Y. Jia, E. Shelhamer, J. Donahue, S. Karayev, J. Long, R. Girshick, S.

[6]. Guadarrama, and T. Darrell, "Caffe: Convolutional architecture for fast feature embedding," in ACM MM, 2014.

[7]. A. Krizhevsky, I. Sutskever, and G. E. Hinton, "Imagenet classification with deep convolutional neural networks," in NIPS, 2012.

[8]. Z. Cao, T. Simon, S.-E. Wei, and Y. Sheikh, "Realtime multi-person 2d pose estimation using part affinity fields," in CVPR, 2017.

[9]. Z. Yang and R. Nevatia, "A multi-scale cascade fully convolutional network face detector," in ICPR, 2016.

[10]. C. Chen, A. Seff, A. L. Kornhauser, and J. Xiao, "Deepdriving: Learning affordance for direct perception in autonomous driving," in ICCV, 2015.