OBJECT DETECTION AND RECOGNITION USING DEEP LEARNING AND TENSORFLOW

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TABLE OF CONTENTS

CHAPTER NO.   **TITLE PAGE NO**.

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ABSTRACT :-

Human visual system is very fast that he can easily detect and identify the objects using this visual system it can easily identify multiple objects and detect the obstacle. This time there are very large amount of data faster Gpu and good algorithm that we can easily train computers to detect and classify multipe objects with the high accuracy. In this we use a algorithm to detect and identify the objects that is "YOU ONLY LOOK ONCE" (YOLO) algorithm. This project is based on deep learning approach to solve the problem of object detection and recognition. This network is trained on the most challenging dataset known as (PASCAL VOC), in which a object detction is conducted in annually manner. The resulting syatem is very fast and accurate.Object recognition is a collectoion of related task for identifying objects in digital photograph. R-CNN are a family of techniques for addressing object localization and recognition tasks.

We propose a new object detection method which improves the existing model at every stage of object detection and identification, In this we also use COCO dataset model in this lots of categories of images are stored. Tensorflow is Google's open source machine learning framework for dataflow programming across a range of tasks.

Keywords:- YOLO, R-CNN, PASCAL VOC, COCO DATASET, TENSORFLOW, DETECTION AND RECOGNITION

INTRODUCTION:-

Object reconization is finding through videos or images. It is very easy to find object thouth the images. This process is very difficult for machine. Object detection is used for finding the real instances of images just like car, dog,cat,tree. Obect detection and identification is used for detect multiple images at same time. Object detection and identification is use to detect the images and identiify the images that which is which class object and predict the classification of the objects. Object recognition is used to identify the images through the digital photograph. R-CNN is a family of techniques that localize and recognize the images. YOLO is another techniques that recognize the images. Object detecetion and identification used for identify and recognize one or more object in the same time.

There is many use of object detection such as facial recognition in this face is recogized through various component of faces such as mouth, eyes, noses etc. Another use is people conting it is used to count the number of peoples from the crowded places its very defficult to count the number of people by one by one so in this method it is very easy to count. Another use is self driving car in this many system is worked under is techniques such as radar, GPS, computer vision etc. If any obsacle is found in the path the image sensor detect the obstacle and chage its diection or autometically stops the vehicles. Its very big step towards the driverless car. Another use of object detecion is security its plays very imprtant role in security such as face id or the ratina scan and it is also used as government purposes. In this we are using COCO model in this model there is catogery of different type of images so we

can easily identify the images which is detected by our system. In this we are using Machine Learning for image processing and we are using google collebs for large amount of passes without the lag and there are many type of tools for images detection and idenification.

Another different application of object detection and identification is Servilances, Biometric recognition, Medical analysis, Robotics, Smart Vehicles system, Text Recoginition.

There is many issue in the existing system such as variation of light affecting large visiblity in diformation persence of shadow and surrounding background colour.

To solve these type of issue focused on the developing new feature extraction algorithm such as Support Vector Machine(SVM), Speeded Up Row Up Feature(SURF). In some years Deep learning are used in the object detection and identification it is very treditional from the others. Deep Learning methods quick learn the features from the input images without using approach such as SIFT, HOG, SURF.

In this research parper we present the different approach such as frame differencing, point detectors, background substraction from the images and we improve the accuracy rate of these methods and identfy the advantage and disadvantes of the method. In this we are showing the avaiblity percentage of each and every images and also recognize the movable object and identify that images.

Object recognition is used to deal with to training the computer to identify the object from various perspective such as various lightining conditions and the various background. For example, a robot is used to deal with domestic work is trained to recognize if a object is coffee mug and trained for various works. In this we classify the 3d object through the feature extraction or deep learning methods.

LITERATURE SURVEY:-

S.NO	NAME	PROPOSED MODEL	DESCRIPTION	YEAR
1.	Xu,N. et al.	Propesed model for adapticve brightness changes	In this reserach observed that YOLO is much better then other method of detectors.	2019
2.	Cadoni, M. et al	Novel image-based approach for identifying the objects	Recognition rates hits 91.17 percent at rank one, which compare favorably with the 81.75 recognition rate achieved through a competiive Bag-of-Words-based Process	2019

3	Muhhamad Zeeshan Khan		This excessive use of the unmanned aerial vehicles also demands the devices and the deployment system that device are fully automated efficient and accurate. Classification of vehicle type is the major component of intelligent transportation sysytem.	2020
4.	Jian Bang & Danni Cheng	Detecting and identifying vehicle part	Capture the image of vehicles includes the part of the vehicles.	2018
5.	Mohammad F.AL-Sa'd	RF based drone detection and identification	Rf based drone detection is on of the most effective methods for drone detection. Collect analyze and record rf signals of different drones under different fight statuses.	2019

	Bo Ke, Huicheng Zheng	Multi-object tracking by joint detection and identification	MOT is closely related to video based object detection and target re-identication.It is used to videos based object detection, cross dataset person re-identification, and multi-object tracking.	2019
6.				

PROBLEM STATEMENT:-

To development of the algorithm of padestrain detection and identification is a big challenge for this system. The challenges faced in padestrain detection and tracking is vaariation of height and the body shape of the padestrain.

Due to illumination changes problems are more complex so that diferent lightning condition change the visiblity of that object or should be alter the appearance of that objects.

In low visibility object should not be visible enough for recognize to it. System may fail in case of object size is too small or distance should be very far from the system. Various Lightning condition and shadow should also difficult to recognize the images.

One of the major problem in object detection and identification is image classification to determine the class of the images. System couldn't predict the location of the object in the images. So there is big issue of image classification.

Padestrain issue is very big issue many of the researchers applied different approach to resolve that issue but in this time still no any algoritm found in terms of speed and accuracy.

Occlusion when object is not fully visible in an image object detection system should to handle this type of problem.

Another problem is object detection system should recognize the image of mirror imaged of any object in our surroundings. Mirror images recognition is to be difficult.

If the image is rotating then object detetion cant identify that object or cant recognize that object this is also a big problem in this system.

PROPOSED MODEL:-

YOLO :- "YOLO" is known as you only look once is this method which is different from the region based image. All previous method is region based in this localize the image within the image processing.

Faster-R-CNN:- Faster-R-CNN is the extended version of CNN. From this method generate a map from that feature map wrap them into the square by using ROI POOLING to resize them.And also find the offset of the bounding box.
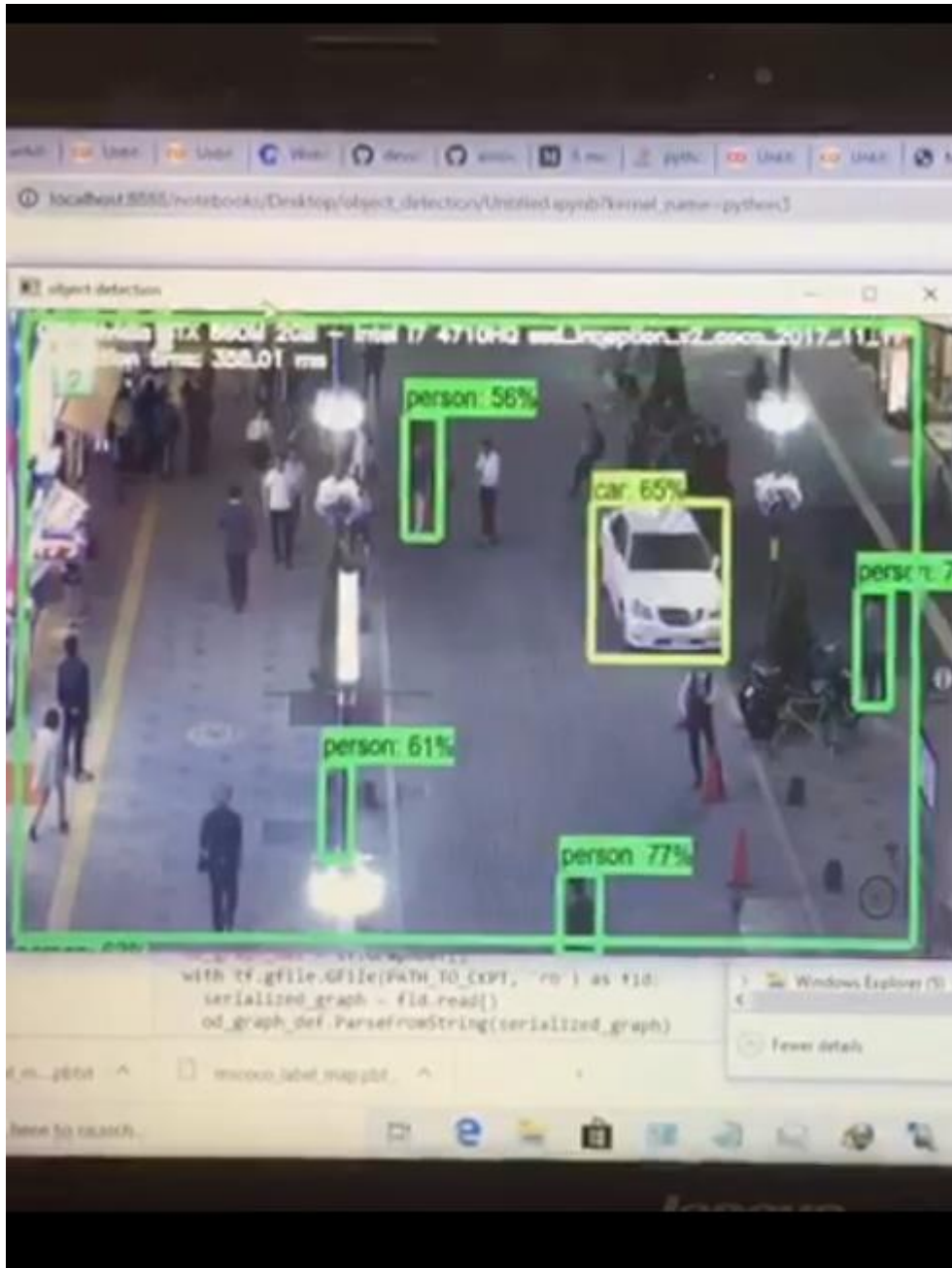
ROI POOLING:- ROI POOLING is the method of CNN to train the network and fixed the size of image and fixed the value of image. Also used to zoop the image into the desire size.

SDD:-

There is two type of SDD is used in object detection and identification

1. Feature Extraction

2. Apply convolutional filters innto the images.

OUTPUT:-

CONCLUSION:-

In this research paper review on object detection and idetification and recognition of various objects. In this we can find the object in video also through the feature extraction. We can handle the slightly illumination changes and dark shadow of the object. We can use various data set to identify the object very easily and accurate. In this paper we can identify the template matching in this large amount of data set is needed for right image recognition.

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