REAL TIME OBJECT DETECTION USING YOLO ALIGORITHM

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ABSTRACT: The Objective is to detect of objects using You Only Look Once (YOLO) approach. This method has several advantages as compared to other object detection algorithms. In other algorithms like Convolutional Neural Network, Fast Convolutional Neural Network the algorithm will not look at the image completely but in YOLO the algorithm looks the image completely by predicting the bounding boxes using convolutional network and the class probabilities for these boxes and detects the image faster as compared to other algorithms

I. INTRODUCTION

Object detection is a technology that detects the semantic objects of a class in digital images and videos. One of its real-time applications is self-driving cars. In this, our task is to detect multiple objects from an image. The most common object to detect in this application is the car, motorcycle, and pedestrian. For locating the objects in the image we use Object Localization and have to locate more than one object in real-time systems. There are various techniques for object detection, they can be split up into two categories, first is the algorithms based on Classifications. CNN and RNN come under this category. In this, we have to select the interested regions from the image and have to classify them using Convolutional Neural Network. This method is very slow because we have to run a prediction for every selected region. The second category is the algorithms based on Regressions. YOLO method comes under this category. In this, we won't select the interested regions from the image. Instead, we predict the classes and bounding boxes of the whole image at a single run of the algorithm and detect multiple objects using a single neural network. YOLO algorithm is fast as compared to other classification algorithms. In real time our algorithm process 45 frames per second. YOLO algorithm makes localization errors but predicts less false positives in the background.

II. LITERATURE SURVEY

You Only Look Once: Unified, Real-Time Object Detection, by Joseph Redmon. Their prior work is on detecting objects using a regression algorithm. To get high accuracy and good predictions they have proposed YOLO algorithm in this paper [1]. Understanding of Object Detection Based on CNN Family and YOLO, by Juan Du. In this

paper, they generally explained about the object detection families like CNN, R-CNN and compared their efficiency and introduced YOLO algorithm to increase the efficiency [2]. Learning to Localize Objects with Structured Output Regression, by Matthew B. Blaschko. This paper is about Object Localization. In this, they used the Bounding box method for localization of the objects to overcome the drawbacks of the sliding window method [3].

III. EXISTING SYSTEM

- Deep learning has gained a tremendous influence on how the world is adapting to Artificial Intelligence since past few years. Some of the popular object detection algorithms are Region-based Convolutional Neural Networks (RCNN), Faster- RCNN, Single Shot Detector (SSD) and You Only Look Once (YOLO).

IV. PROPOSED SYSTEM

- Dense Optical flow: These algorithms help estimate the motion vector of every pixel in a video frame.
- Sparse optical flow: These algorithms, like the Kanade-Lucas-Tomashi (KLT) feature tracker, track the location of a few feature points in an image.
- Kalman Filtering: A very popular signal processing algorithm used to predict the location of a moving object based on prior motion information. One of the early applications of this algorithm was missile guidance! Also as mentioned here, “the on-board computer that guided the descent of the Apollo 11 lunar module to the moon had a Kalman filter”.

ADVANTAGES OF PROPOSED SYSTEM

- Here we can detect the object for uploaded video file

V. MODULES

- Browse System Videos: Using this module application allow user to upload any video from his system and application will connect to that video and start playing it, while playing if application detect any object then it will mark that object with bounding boxes, while playing video if user wants to stop tracking then he need to press ‘q’ key from keyboard to stop video playing.
- Start Webcam Video Tracking: Using this module application connect itself with inbuilt system webcam and start video streaming, while streaming if application detect any object then it will surround that object with bounding boxes, while playing press ‘q’ to stop web cam streaming.

VI. CONCLUSION

In this paper, we proposed about YOLO algorithm for the purpose of detecting objects using a single neural network. This algorithm is generalized, it outperforms different strategies once generalizing from

natural pictures to different domains. The algorithm is simple to build and can be trained directly on a complete image. Region proposal strategies limit the classifier to a particular region. YOLO accesses to the entire image in predicting boundaries. And also it predicts fewer false positives in background areas. Comparing to other classifier algorithms this algorithm is much more efficient and fastest algorithm to use in real time

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