Realtime Object Detection Using Ssd

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Abstract: Object detection is closely related to video analysis and image understanding, it has attracted researchers' attention over the recent years as technology advanced. Earlier object detection methods are built on handmade features and shallow trainable algorithms and architectures. Their performance easily saturates by giving them a complex image to computer vision. Human vision has got millions of years of evolution as a result human vision is fast reliable and accurate whereas the computer is century old, with exponential development of computer into a supercomputer, there exists rapid progress in deep learning, powerful tool, which are able to learn semantic segmentation, high level, deeper features to solve the traditional problem. Our model uses ssd mobile net algorithm to accurately detect objects in images. Our model generates a score in percent of the object present in the image.

Keywords*: object detection, image processing, realtime object , images

I. INTRODUCTION

Every object detection has two parts Viz category recognition and its detection in the image. Category Recognition deals with comparing the object present in the image with one of the predefined objects. It is a process in which it will match, compare and identify those specific objects present in the digital image and videos. And category detection deals with subtracting the object present in the image from its background. It will enhance the object present in an image.

In general, object detection algorithms depend on comparing or matching the object present in the image with its predefined dataset. Object recognition using appearance-based or featurebased technics. For example, it is used to detect instances of real-life objects like bottles, cellphones, etc. In digital images or videos.
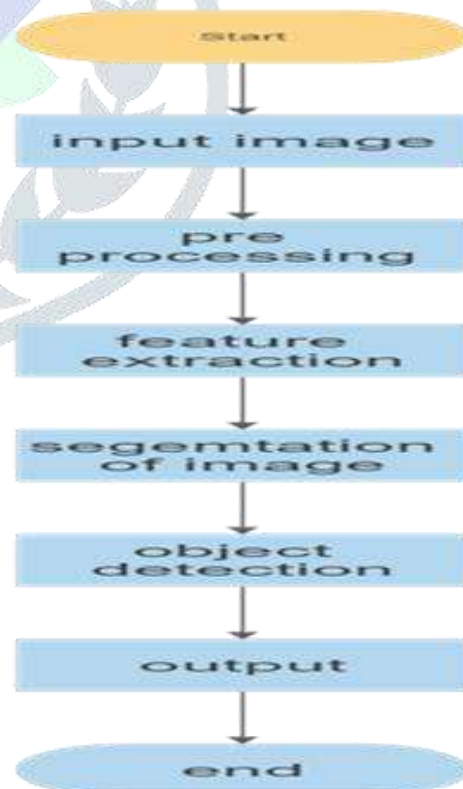
Our object detection model uses Ssd mobile net algorithm to recognize and detect the object in the image. Our model's algorithm uses appearance present in an image to recognize a particular object. The model is relatively simple and easy to

implement. Object detection is a regression problem that detects directly from bounding box coordinates and class probability. Every object has its own class such as all dish plates are circle i.e round, which are used in object detection.

II. LITERATURE SURVEY

There are many object detection technology came into existence in last few years. The main motive of object detection is two identify the key features of the image and leaving out unnecessary things from an image. Also, there are having many fields in which detecting the target object and track them properly is very important. So the need for object detection increased

A. Survey of the existing system:

There are having many object detection algorithms present in the market. Image recognition technology first came into existence in 1980. After that many technologies developed in the image processing field.

Here are some of the technologies of image processing that are previously used

1) ResNet:

Over the last few years, there have been a lot of discoveries in the field of computer vision. The computer had achieved the ability of image recognition and image classification with the introduction of convnets (Convolutional neural network) in the 1980s by Yann lecun. For years, researchers were making the neural network deeper (adding more layers) to overcome complex tasks and to improve classification/recognition accuracy.

But they witnessed, as there were adding more layers to the neural network, it became difficult to train them, and then the accuracy starts to degrade. Hence to overcome this problem resnet was introduced.

2) RCNN:

R-CNN is composed of three modules: Module 1: Region proposal: create and extract independent region proposal.
Module 2: Feature extractor: get a feature from each candidate region using convnets.
Module 3: Classify features.
The work of R-CNN is to take an image and identify where the main object (via a bounding box) is in the image.

Problems with R-CNN:
I. It takes a lot of time as it classifies 2000 regions proposals per image. II. Cannot be implemented in real-time.
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III. PROPOSED SYSTEM

We have used python as a programming language to code the system. In python, we will use the python library opencv. Opencv helps in real-time computer vision. It mainly focuses on image processing, object detection. With the help of opencv, we can detect 2D ,3D objects easily. With the help of opencv, we not only identify an object but also can identify faces and human handwriting.

To identify the object properly we will use an SSD(Single Shot multibox Detector) mobile net algorithm. SSD mobile net uses a technology in which it divides the object into small boxes and then it will identify the object. With this, we can identify many objects in a single image. As it can segment the image into many parts and try to identify as many objects as it can. It has more accuracy than the r-CNN algorithm. It can identify any object in real-time. The main benefit of using SSD mobile net is it can identify images in realtime

with this we can identify objects present on live images in real-time. Realtime object detection is very helpful.

A. ALGORITHM

1. It takes the image as input from the user via webcam.
2. It processes the image.
3. It extracts all the necessary features from the image.
4. It segments the image in small pieces to identify more object present in the image.
5. After segmenting it try to identify objects.
6. T starts detecting objects present in the image.
7. It shows the output to the user.

Here we can clearly see that it can easily identify more than one object. Also, this is a realtime working model. This will easily identify 3 objects properly. This is a working model.

IV. FUTURE SCOPE

1. This system can used by government in security cctv cameras in which a security camera can identify the person who has any criminal background.
2. Object detection can also be used in nursery kids learning. It can help kids to identify the objects.
3. It can also be used in self driving cars to identify object whle driving a car. It can

B. RESULT

As we run our code it will start a webcam and start identifying the object which is coming on the screen. So for example, if a person is sitting in front of the webcam then the system will detect it as a person. Also, it can easily identify many objects such as a person,cat,dog,bottle,phone, etc.

help in parking to find a empty parking space.

4. It can also be used in iris scan technology.
5. This can help many teachers and student for understanding images and various things.
6. It can help for Crowd counting.
7. Object detection can also be used in nursery kids learning. It can help kids to identify the objects.

V. CONCLUSION

By using the algorithm and OpenCV we are able to detect the object present on the screen precisely and able to identify the objects individually with the proper location pointing to the object. Different types of objects can be detected and identified with the help of the SSD algorithm. This paper also provides a result that shows the object detection and identification of objects in real-time.

The real-time object detection is working properly and giving results also accurate. After getting the result we can conclude that our project can identify the real-time objects accurately.

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