Abstract:

As the first step Opencv is with algorithm SSD Mobilenet which is trained on large coco dataset, and this is implemented on PyCharm.

Introduction:

For deep learning based object detection there are three algorithms that can be used

1. Faster R-CNN’s
2. YOLO (You only live once)
3. SSD (Single shot detectors)

Faster R-CNN : Hard to train, difficult to implement and slow process time i.e. 7 FPS (Frame per second)

YOLO: Fast but not very accurate. Capable of processing as much as 155 FPS

SSDs: A compromise between RCNN and YOLO with speed of 22-46 FPS and adequately required accuracy. It is developed by Google.

For object detection, normally an already existing network architecture is used such as VGG or ResNet. But these architectures are not suitable for size constrained systems as they are quite big and around 200-500MB is required for them.

For these purpose MobileNets is used as they differ from traditional CNNs by the usage of depthwise separable convolution.

The convolution is split into the stage of 3x3 depthwise convulation and 1x1 pointwise convolution. This reduces the number of parameters in network. This makes MobileNets more resource efficient on compensation of accuracy.

In this project SSD framework is combined with MobileNet network for object detection.