

# Simple Video object Detection

## Problem Statement

Your task is to detect objects from a video, classify the object and then count the object.

## Solution

To solve this problem we need a standard video where a couple of objects are moving from one direction to another, also there should be multiple types of items so the tracker can also discriminate between objects.

## Dataset

The dataset has been taken from the following link [Pysource Dataset](#) . The video contains a series of motorbikes and cars passing through a road. Our objective is to locate these motorbikes and cars and then track them and count total vehicles. A snippet of the video is given below :



Fig: Highway.mp4 video for object detection

## Method

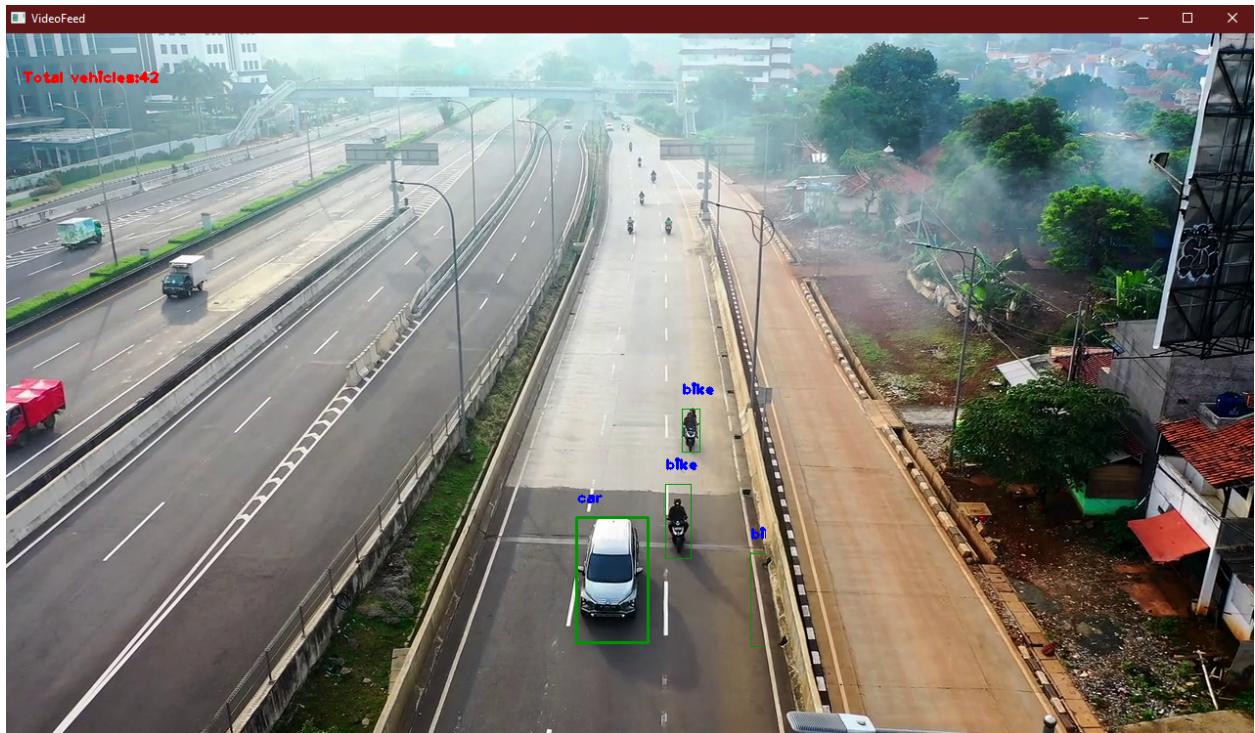
The method of solving the problem is described below via step by step:

If we explain it in pseudocode format it is as below:

1. At first , import all the necessary libraries (in our case they are opencv and tracker(**Tracker is a function which helps tracking the object**) )
2. Load the video in your py file and display it using python.
3. Determine the contour points from the video.
4. Mask the video so that you can visualize those points better.
5. Instead of working on the whole video field , create a ROI(Region of Interest) where you want to focus on detecting.
6. Create a tracker and track the movements of the objects inside the roi.
7. Create a bounding box around those moving objects using a tracker.
8. Now classify the object as a bike or car using the shape of the bounding box.
9. Initiate each bounding box with an id and count total vehicles using the id.

## Result

A snipped of the result is given below :



## Limitation

Although the classification goes pretty well, there is a small problem in counting the vehicles. This system that I have implemented here is for fixed camera situations where the video feed will be stable and the objects will be moving only. However at the end of the video the camera moves a bit which causes a bad classification and total number of vehicles changes because of that. So I think this sector can be improved in further exploration.

## References

The implementation was possible with the help of the following website where necessary instruction was given for a basic classification.

Link : [Pysource Dataset](#)

## Code and Dataset

I have uploaded the codes along with the dataset in my github repository. You can Download the zip file and run the code in a python supported IDE.

**Repository link :** [Video Object Segmentation](#)