VEHICLE DETECTION, TRACKING, SPEED COUNT, DIRECTION CHECK AND COLOR CLASSIFER

In this code, we perform vehicle detection using ssd mobilener and perform speed count, color classifier and direction check

*The* [*TensorFlow Object Counting API*](https://github.com/ahmetozlu/tensorflow_object_counting_api) *is used as a base for object counting on this project, more info can be found on this* [*repo*](https://github.com/ahmetozlu/tensorflow_object_counting_api)*.*

*Features*

*Recognition of approximate vehicle color  
Detection of vehicle's direction of travel  
Prediction the speed of the vehicle  
Prediction of approximate vehicle size  
The images of detected vehicles are cropped from video frame and they are saved as new images under "detected\_vehicles" folder path  
The program gives a .csv file as an output (traffic\_measurement.csv) which includes "Vehicle Type/Size", " Vehicle Color", " Vehicle Movement Direction", " Vehicle Speed (km/h)" rows, after the end of the process for the source video file.*

***Installation***

*1.) Python and pip*Python is automatically installed on Ubuntu. Take a moment to confirm (by issuing a python -V command) that one of the following Python versions is already installed on your system:  
  
Python 3.3+  
The pip or pip3 package manager is usually installed on Ubuntu. Take a moment to confirm (by issuing a pip -V or pip3 -V command) that pip or pip3 is installed. We strongly recommend version 8.1 or higher of pip or pip3. If Version 8.1 or later is not installed, issue the following command, which will either install or upgrade to the latest pip version:  
  
$ sudo apt-get install python3-pip python3-dev # for Python 3.n  
2.) OpenCV  
  
See required commands to install OpenCV on Ubuntu in here.  
  
3.) TensorFlow  
  
Install TensorFlow by invoking one of the following commands:  
  
$ pip3 install tensorflow # Python 3.n; CPU support (no GPU support)  
$ pip3 install tensorflow-gpu # Python 3.n; GPU support  
4.) TensorFlow Object Detection API  
  
See required commands to install TensorFlow Object Detection API on Ubuntu in here.  
  
If you are still getting problem about installation after completed the installation of the packet that are given above, please check that link out to get detailed info about installation.  
  
After completing these 4 installation steps that are given at above, you can test the project by this command:  
  
python3 vehicle\_detection\_main.py