Digital Image Processing
Final Project

Title: Violations Detection in traffic

Group 1

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Introduction

We are applying YoLo-v4 to the image recognition of a vehicle.

Using Numpy and math as a tool

We are trying to locate the car that we recognize and track it with a green bracket.

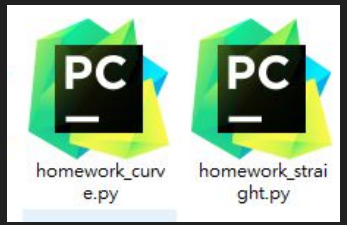
Once there are violations detected, the bracket of the car will turn red.

Solution

scenario1

scenario2 →

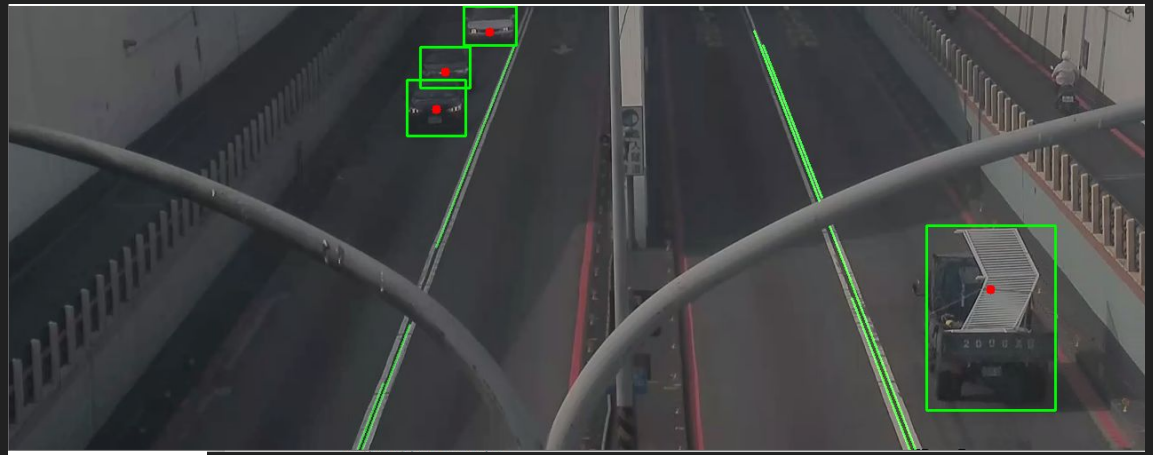
execution files for different scenarios

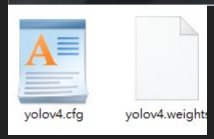


straight for scenario1
curve for scenario2

Solution

Applying yolo-v4 , label with green bracket and the centre point of the vehicle

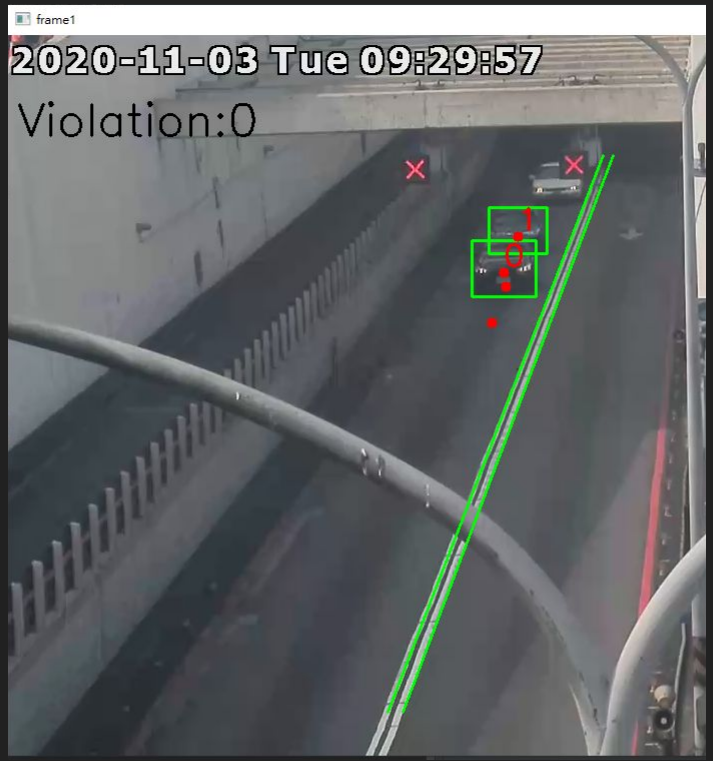


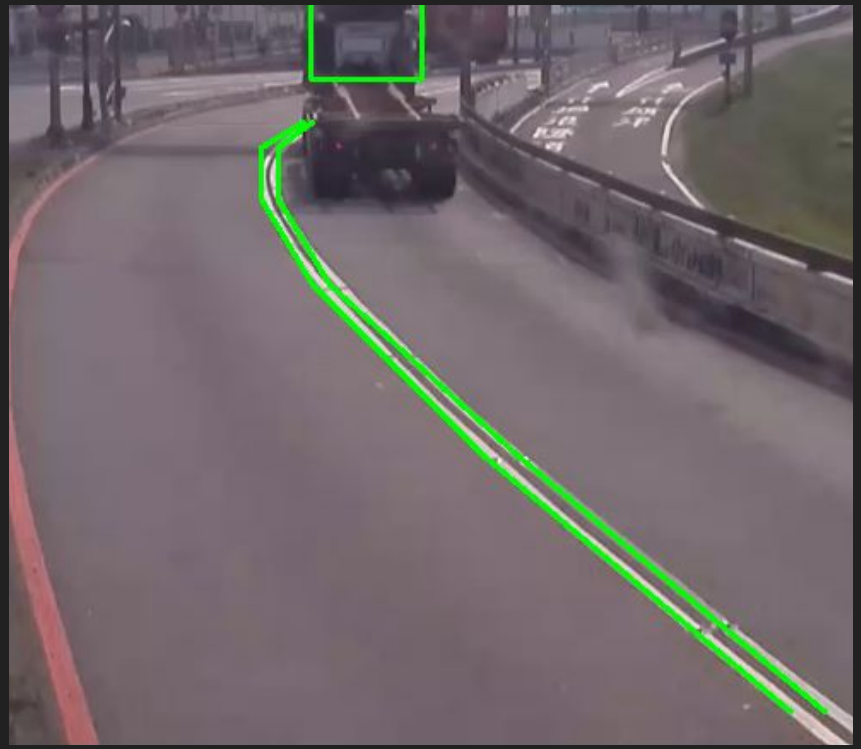


we are using pre-trained model from github(AlexeyAB/darknet#pre-trained-models)

Solution

ROI is designed manually by programmer





Solution

After Yolo-v4 detected the vehicle, a green bracket and a cneter dot will be given. an ID will generated, it will be stick with the vehicle unless there are getting some detection error. But most cases it will generate a new ID as recognize as a new vehicle.

It will record the ID with coordinates in each frame.

```
{1: (491, 396, 445, 350, 93, 87), 9: (899, 200, 868, 169, 63, 50), 15: (828, 262, 791, 225, 74, 71)}
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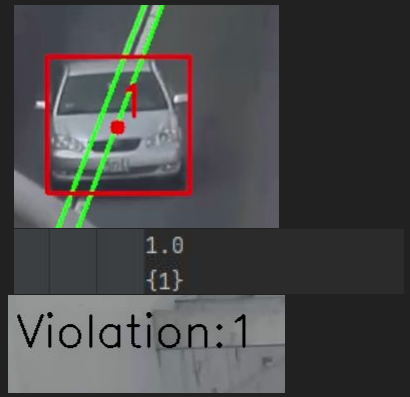
In this case, there are 3 vehicles ID:1,9,15

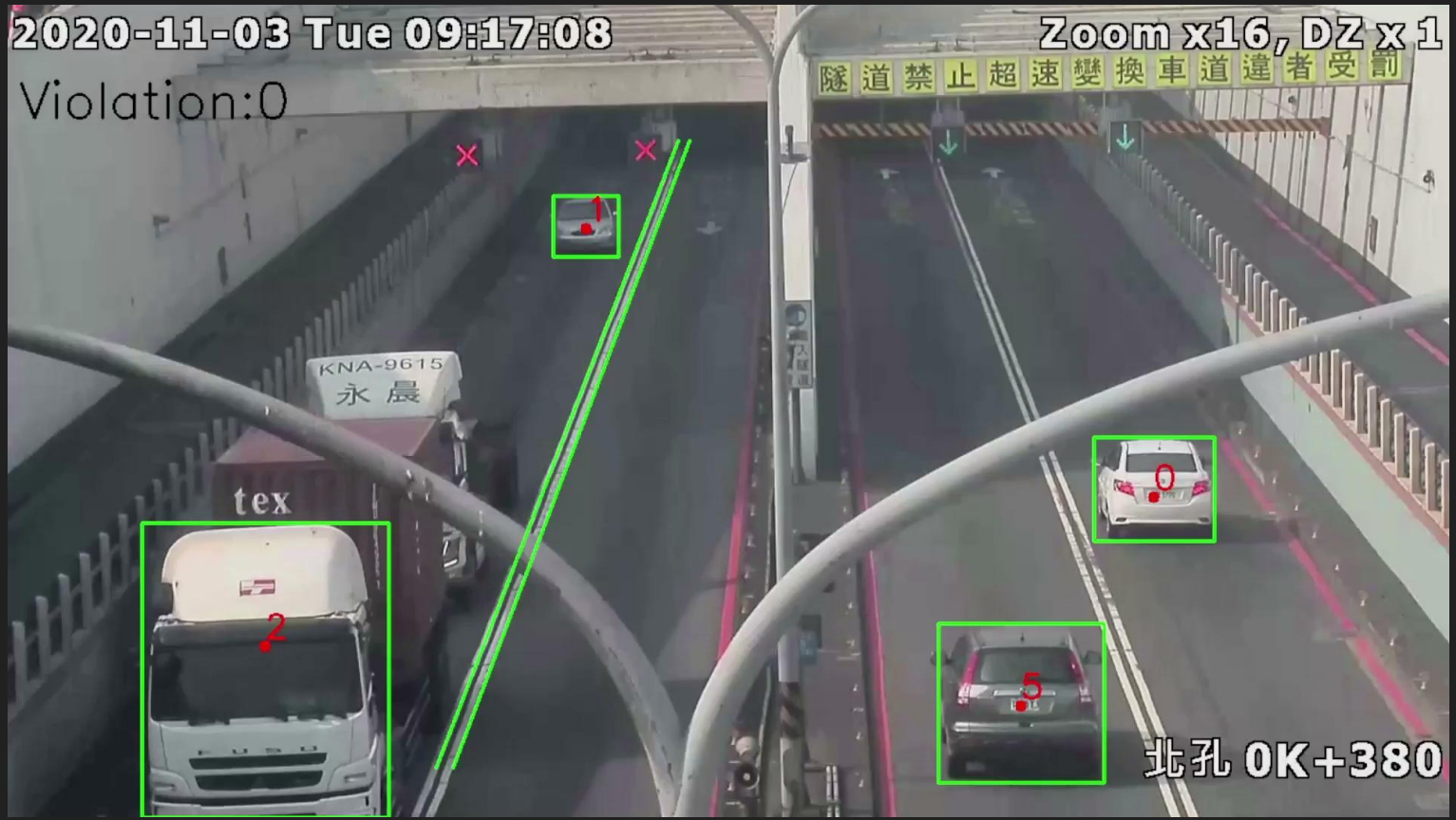
Solution

if there are violations detected, green bracket will turn red and assign the id into the violations list.



It will count if there are violations occur, but it wont be count the violation if the id included in the violations list.

DEMO


2020-11-03 Tue 09:17:08
Zoom x16, DZ x 1
Violation:0
隧 道 禁 止 超 速 變 換 車 道 違 者 受 罰
KNA-9615
永 晨
tex
1
2
0
5
北孔 0K+380

DEMO