

The Write-up of CV

1 Project overview: This section should contain a brief description of the project and what we are trying to achieve. Why is object detection such an important component of self-driving car systems?

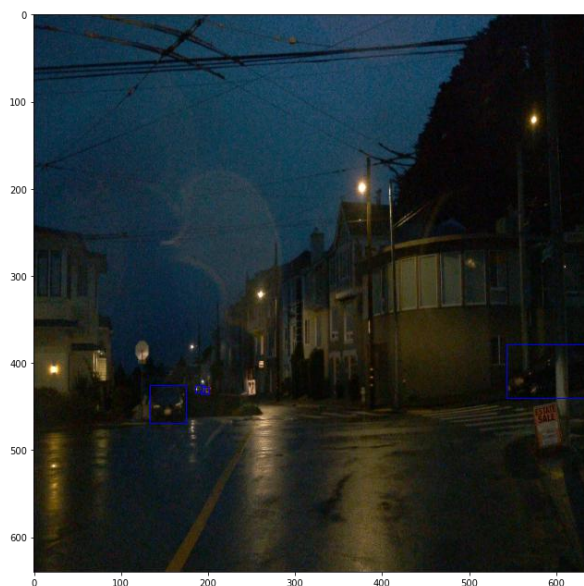
The project is to train a object-detection model to detect the vehicle pseudo cyclist on the waymo dataset.

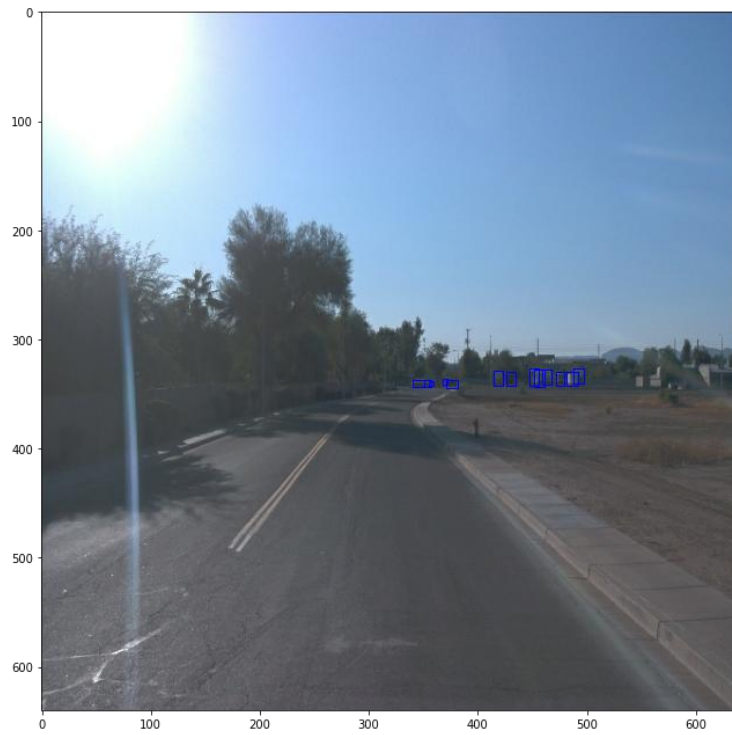
The object detection is an important component of self-driving car systems,it can help to drive car safely, It can complement other sensors to ensure the robustness and stability of unmanned driving

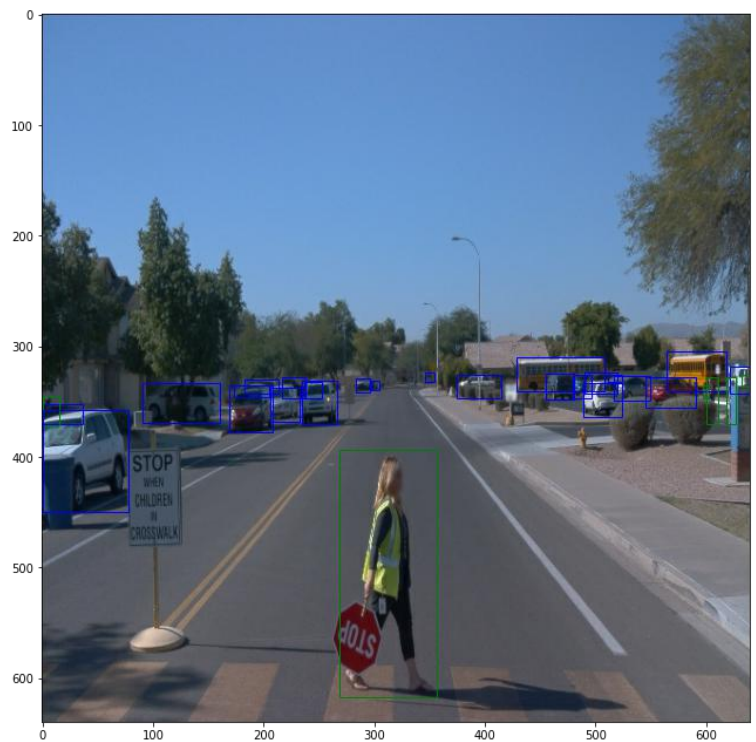
2 Set up: This section should contain a brief description of the steps to follow to run the code for this repository.

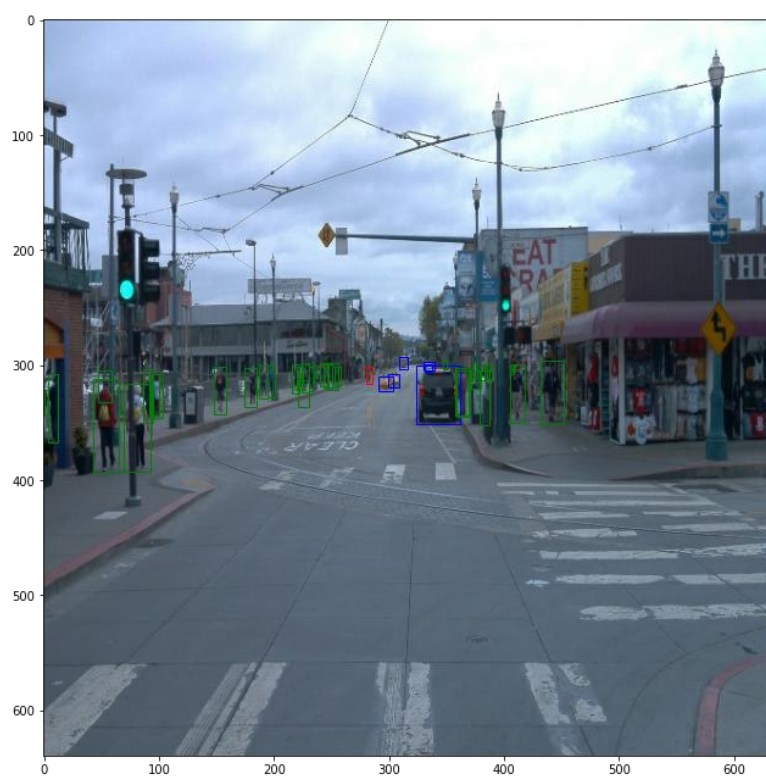
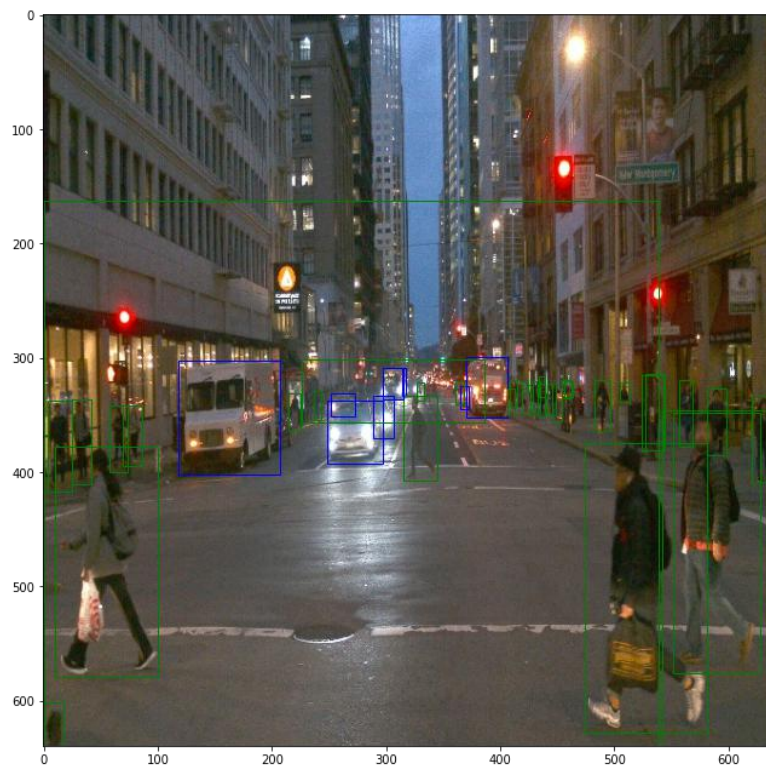
see readme.md

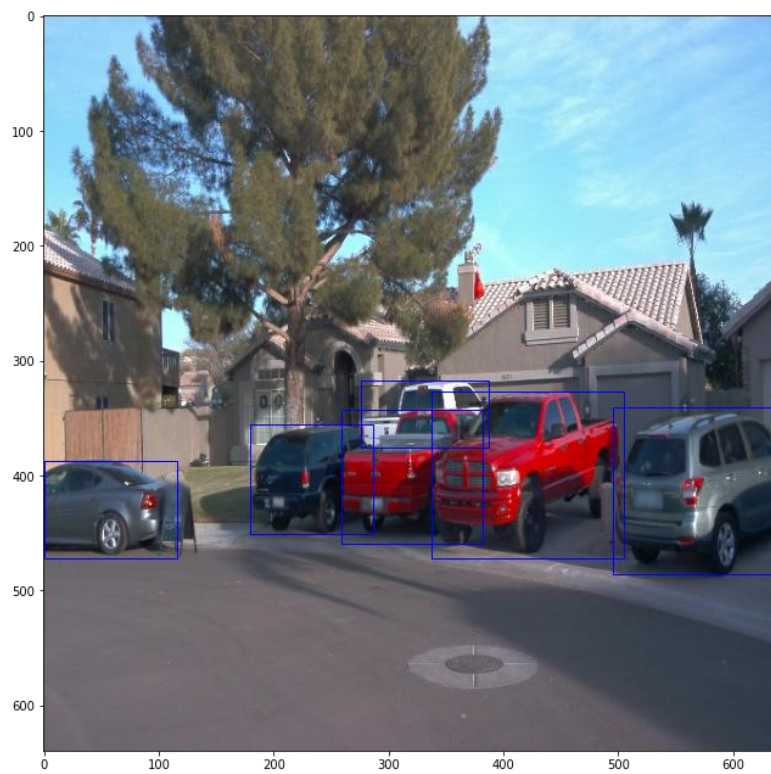
3 The write-up and the code capture the dataset variability (classes distribution, images variability).

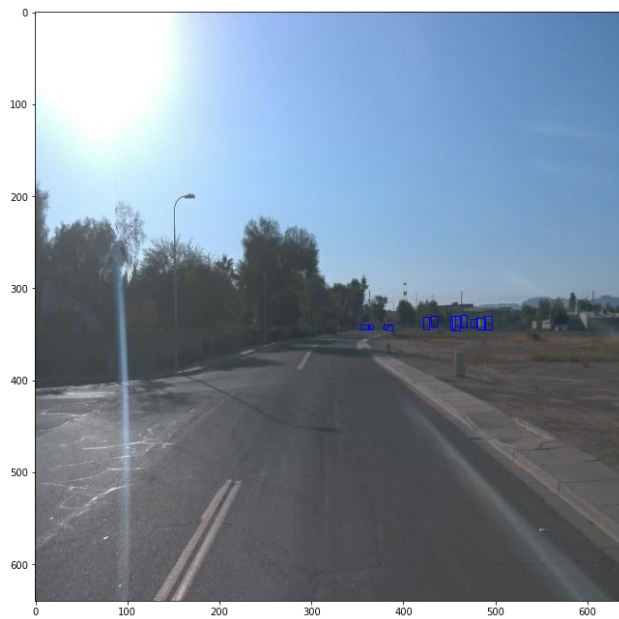








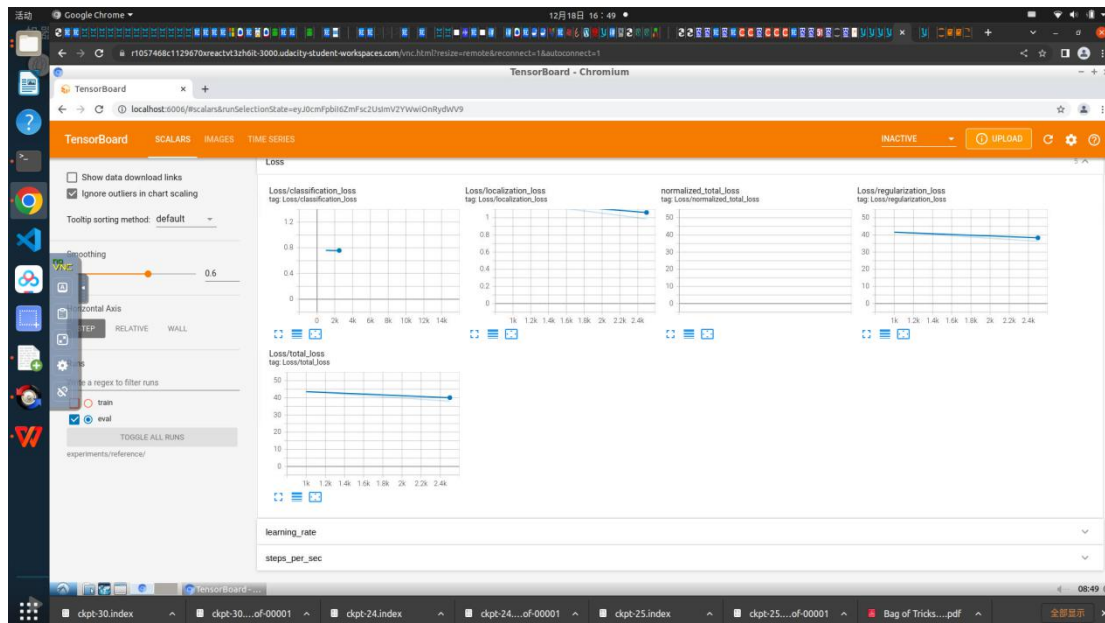
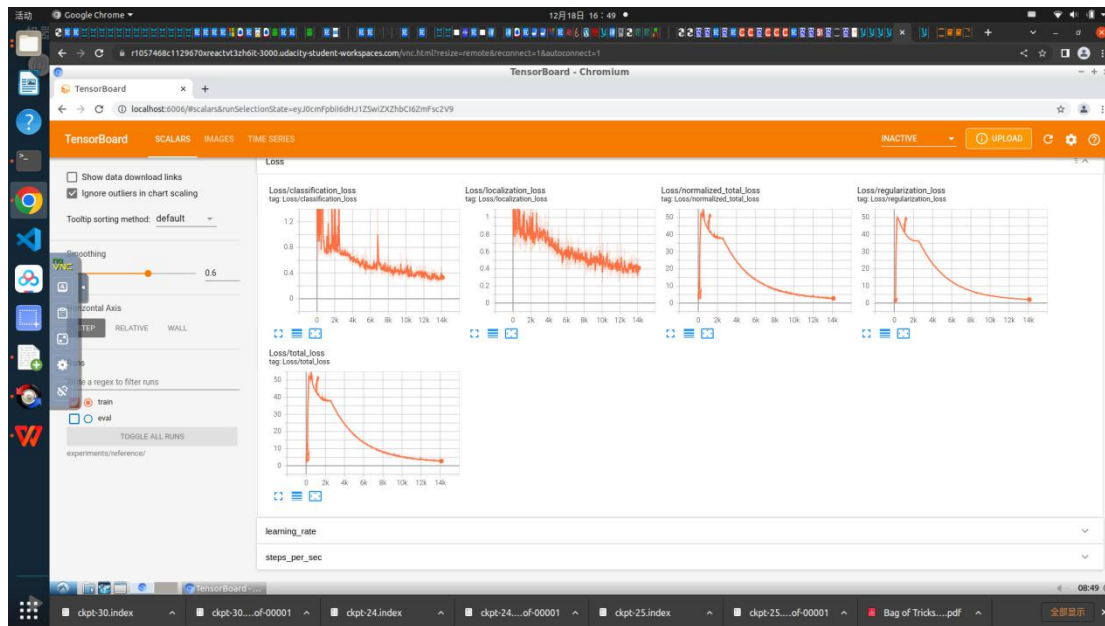




4 The write up contains a screenshot of the different Tensorboard charts and the write up describes these charts. For example, how does the validation loss compare to the training loss? Did you expect such behavior from the losses / metrics?

The training loss is oscillation and the validation loss compare to the training loss is approximate straight line as follows image shows:

Yes,I expect such behavior from the losses.because the training loss is not stable and sometimes oscillation when the dataset is in training ,and the val loss is gradually decrease as the epohs of training model are finished .



5 A new version of the config file is created and contains modifications to improve the model performances. A new config file is created with meaningful modifications.

The write up details why these modifications were made. New augmentations are visualized and displayed in the writeup.

Add the following code in pipline_new0aug.config ,and modify total_steps: 25000 from 2500

```
data_augmentation_options {
  random_adjust_brightness {
  }
}
data_augmentation_options {
```

```

    random_adjust_contrast {
    }
}

```

It can augmentate the dataset by implementating “random_adjust_brightness” ‘random_adjust_contrast’ on the image in dataset by each training.

when total_steps: 25000 in pipline_new0aug.config,we can get a model with lower loss (loss=2.651)

Object Detection in an Urban Environment

43 minutes remaining

```

153 }
154 sync_replicas: true
155 optimizer {
156   momentum_optimizer {
157     learning_rate {
158       cosine_decay_learning_rate {
159         learning_rate_base: 0.04
160         total_steps: 25000
161         warmup_learning_rate: 0.013333
162         warmup_steps: 2000
163       }
164     }
165     momentum_optimizer_value: 0.9

```

```

I1218 08:10:54.355496 139776017950464 model_lib_v2.py:682] Step 13600 per-step time 1.332s loss=2.976
INFO:tensorflow:Step 13700 per-step time 1.347s loss=2.830
I1218 08:13:08.313829 139776017950464 model_lib_v2.py:682] Step 13700 per-step time 1.347s loss=2.830
INFO:tensorflow:Step 13800 per-step time 1.326s loss=2.756
I1218 08:15:21.089833 139776017950464 model_lib_v2.py:682] Step 13800 per-step time 1.326s loss=2.756
INFO:tensorflow:Step 13900 per-step time 1.387s loss=2.934
I1218 08:17:34.752725 139776017950464 model_lib_v2.py:682] Step 13900 per-step time 1.387s loss=2.934
INFO:tensorflow:Step 14000 per-step time 1.339s loss=2.597
I1218 08:19:47.811934 139776017950464 model_lib_v2.py:682] Step 14000 per-step time 1.339s loss=2.597
INFO:tensorflow:Step 14100 per-step time 1.310s loss=2.651
I1218 08:22:01.649455 139776017950464 model_lib_v2.py:682] Step 14100 per-step time 1.310s loss=2.651
^CTraceback (most recent call last):
  File "experiments/model_main_tf2.py", line 113, in <module>

```

I1218 08:22:01.649455 139776017950464 model_lib_v2.py:682] Step 14100 per-step time 1.310s loss=2.651