

**Name : Panneerselvam N**

**Role: Research Intern - inspect**

**Date : 25/06/2021**

## **Task : Yolo v4 Repository Optimization**

Today I made some changes in repository and tried to training with colab. Initiall I got GPU error due TensorFlow version conflicts. I fixed with commenting that unwanted line . After I got file missing error. I have used try and except concept to handle such type error.

I have changed sigmoid activation to Tanh activation in bounding box prediction layers. I noticed that it take long time for training and computation . And also loss changing continuously like (34,67,144,56,99,179,31). it's not stable.

```
=> STEP 2184/23750 lr: 0.000993 giou_loss: 2.32 conf_loss: 46.23 prob_loss: 4.54 total_loss: 53.09
=> STEP 2185/23750 lr: 0.000993 giou_loss: 2.54 conf_loss: 53.22 prob_loss: 5.95 total_loss: 61.71
=> STEP 2186/23750 lr: 0.000993 giou_loss: 19.70 conf_loss: 145.37 prob_loss: 38.22 total_loss: 203.29
=> STEP 2187/23750 lr: 0.000993 giou_loss: 2.38 conf_loss: 48.12 prob_loss: 6.69 total_loss: 57.20
=> STEP 2188/23750 lr: 0.000993 giou_loss: 3.78 conf_loss: 29.49 prob_loss: 8.36 total_loss: 41.63
=> STEP 2189/23750 lr: 0.000993 giou_loss: 1.25 conf_loss: 23.60 prob_loss: 4.27 total_loss: 29.13
=> STEP 2190/23750 lr: 0.000993 giou_loss: 41.01 conf_loss: 205.51 prob_loss: 67.11 total_loss: 313.63
=> STEP 2191/23750 lr: 0.000993 giou_loss: 2.37 conf_loss: 18.61 prob_loss: 3.00 total_loss: 23.98
=> STEP 2192/23750 lr: 0.000993 giou_loss: 1.92 conf_loss: 40.71 prob_loss: 4.88 total_loss: 47.51
=> STEP 2193/23750 lr: 0.000993 giou_loss: 4.28 conf_loss: 61.49 prob_loss: 8.99 total_loss: 74.76
=> STEP 2194/23750 lr: 0.000993 giou_loss: 3.49 conf_loss: 59.74 prob_loss: 6.04 total_loss: 69.28
=> STEP 2195/23750 lr: 0.000993 giou_loss: 9.63 conf_loss: 22.12 prob_loss: 31.27 total_loss: 63.01
=> STEP 2196/23750 lr: 0.000993 giou_loss: 1.91 conf_loss: 37.95 prob_loss: 4.13 total_loss: 43.99
=> STEP 2197/23750 lr: 0.000993 giou_loss: 2.72 conf_loss: 54.22 prob_loss: 4.90 total_loss: 61.84
=> STEP 2198/23750 lr: 0.000993 giou_loss: 4.07 conf_loss: 28.47 prob_loss: 9.89 total_loss: 42.44
```

Screenshot at steps : 2198 (Tanh activation function)

After I have changed Tanh to Sigmoid , It starts loss from 322 and gradually decrease to 4.

```
Code + text Busy Editing
=> STEP 2191/23750 lr: 0.000993 giou_loss: 8.07 conf_loss: 14.54 prob_loss: 12.25 total_loss: 34.85
=> STEP 2192/23750 lr: 0.000993 giou_loss: 0.55 conf_loss: 6.58 prob_loss: 1.94 total_loss: 9.06
=> STEP 2193/23750 lr: 0.000993 giou_loss: 5.56 conf_loss: 13.03 prob_loss: 4.67 total_loss: 23.27
=> STEP 2194/23750 lr: 0.000993 giou_loss: 1.07 conf_loss: 6.46 prob_loss: 0.50 total_loss: 8.04
=> STEP 2195/23750 lr: 0.000993 giou_loss: 1.65 conf_loss: 6.85 prob_loss: 1.00 total_loss: 9.50
=> STEP 2196/23750 lr: 0.000993 giou_loss: 0.64 conf_loss: 6.23 prob_loss: 2.62 total_loss: 9.49
=> STEP 2197/23750 lr: 0.000993 giou_loss: 6.88 conf_loss: 17.51 prob_loss: 9.49 total_loss: 33.88
=> STEP 2198/23750 lr: 0.000993 giou_loss: 2.46 conf_loss: 9.37 prob_loss: 3.96 total_loss: 15.78
=> STEP 2199/23750 lr: 0.000993 giou_loss: 1.48 conf_loss: 6.93 prob_loss: 2.77 total_loss: 11.18
=> STEP 2200/23750 lr: 0.000993 giou_loss: 1.36 conf_loss: 6.77 prob_loss: 2.26 total_loss: 10.39
=> STEP 2201/23750 lr: 0.000993 giou_loss: 3.79 conf_loss: 10.38 prob_loss: 2.07 total_loss: 16.24
=> STEP 2202/23750 lr: 0.000993 giou_loss: 5.00 conf_loss: 12.15 prob_loss: 9.81 total_loss: 26.97
=> STEP 2203/23750 lr: 0.000993 giou_loss: 9.09 conf_loss: 15.50 prob_loss: 27.19 total_loss: 51.78
=> STEP 2204/23750 lr: 0.000993 giou_loss: 2.04 conf_loss: 7.98 prob_loss: 2.71 total_loss: 12.73
=> STEP 2205/23750 lr: 0.000993 giou_loss: 2.02 conf_loss: 8.07 prob_loss: 2.63 total_loss: 12.72
=> STEP 2206/23750 lr: 0.000993 giou_loss: 3.99 conf_loss: 9.27 prob_loss: 5.78 total_loss: 19.04
=> STEP 2207/23750 lr: 0.000993 giou_loss: 2.44 conf_loss: 8.08 prob_loss: 4.15 total_loss: 14.67
=> STEP 2208/23750 lr: 0.000993 giou_loss: 1.43 conf_loss: 7.57 prob_loss: 3.24 total_loss: 12.24
```

Screenshot at steps : 2198 (Sigmoid activation function)

Comparison of above two images shows that sigmoid is better than Tanh. Tomorrow on words I will try to change others like batch size , image size , layers and cost function to optimize model more.