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# Task : Object Detection Practice (Yolo v4 Custom Data)

**Dataset Creation:(Group work)**
We are decided to take MS COCO datasets for Yolo v4 training.
Categories are,
  ➢ Aeroplane
  ➢ Cow
  ➢ Bird
  ➢ Boat
  ➢ Motorcycle
  ➢ Umbrella

we took totally 1200 datasets, each class have 200 data. We are used Labelimg tool for annotations.

**Custom model training:**
I have used Official Yolo v4 Darknet framework for model training. I configured .data file , .names , .cfg file to customize model.

**Configurations:**
Batch = 64
Subdivisions = 16
Max_batches = 12000
steps = (9600,10800)
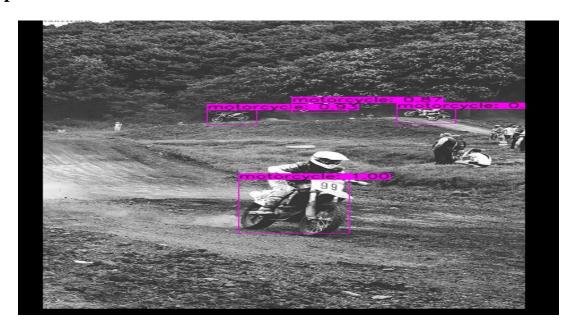Filters = 33
Classes = 6

I have used Google colab and drive for model training . It took 7-8hrs for training.

**Prediction :**
After model training , I have downloaded trained weights and converted to TensorFlow form.

Finally I got output of object detector with help of TensorFlow code.

**Output :**

**Model Evaluation:**

```
class_id = 0, name = aeroplane, ap = 98.36%      (TP = 126, FP = 21)
class_id = 1, name = bird, ap = 92.00%           (TP = 159, FP = 41)
class_id = 2, name = boat, ap = 96.14%           (TP = 260, FP = 60)
class_id = 3, name = cow, ap = 97.52%            (TP = 204, FP = 33)
class_id = 4, name = motorcycle, ap = 99.09%     (TP = 198, FP = 25)
class_id = 5, name = umbrella, ap = 99.91%       (TP = 125, FP = 8)

 for conf_thresh = 0.25, precision = 0.85, recall = 0.96, F1-score = 0.90
 for conf_thresh = 0.25, TP = 1072, FP = 188, FN = 41, average IoU = 66.67 %

 IoU threshold = 50 %, used Area-Under-Curve for each unique Recall
 mean average precision (mAP@0.50) = 0.971710, or 97.17 %
Total Detection Time: 39 Seconds
```

GitHub link :

https://github.com/Panneer003/Aero2Astro_intern/tree/master/Yolov4_custom_model

References:

https://youtu.be/mmj3nxGT2YQ
https://github.com/theAIGuysCode/tensorflow-yolov4-tflite.git
https://youtu.be/yGMZOD44GrI