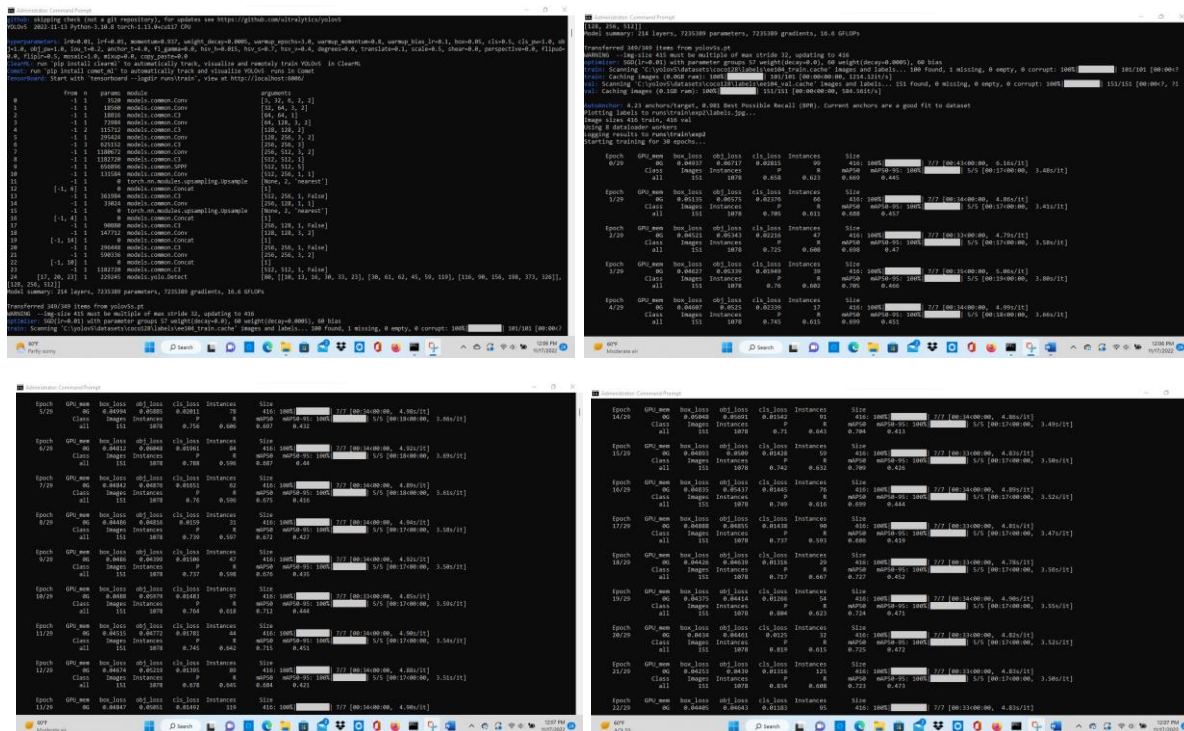


Alhaji A. Sharka

**Project Title:** Laboratory Assignment #8

**Project Description:** The goal of this lab demonstrates the ability to enhance recognition capability based on an existing YOLOv5 dataset. Also, to demonstrate the ability to create an arcade-class game with sound and graphic settings to allow a challenge dance competition between two game players.

The console copied of the training output



```

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
23/29 80 0.84031 0.84030 0.81150 55 430 300K 3.7 [0:17:00.00, 4.09s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.47s(11)
all 151 1878 0.847 0.838 0.758 0.427

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
24/29 80 0.84230 0.84231 0.81170 55 430 300K 3.7 [0:17:00.00, 4.78s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.51s(11)
all 151 1878 0.851 0.832 0.758 0.430

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
25/29 80 0.84232 0.84233 0.81202 59 430 300K 3.7 [0:17:00.00, 4.82s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.49s(11)
all 151 1878 0.855 0.833 0.758 0.437

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
26/29 80 0.84231 0.84232 0.81208 59 430 300K 3.7 [0:17:00.00, 4.79s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.57s(11)
all 151 1878 0.847 0.83 0.755 0.385

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
27/29 80 0.84233 0.84232 0.81228 59 430 300K 3.7 [0:17:00.00, 4.82s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.46s(11)
all 151 1878 0.847 0.83 0.755 0.385

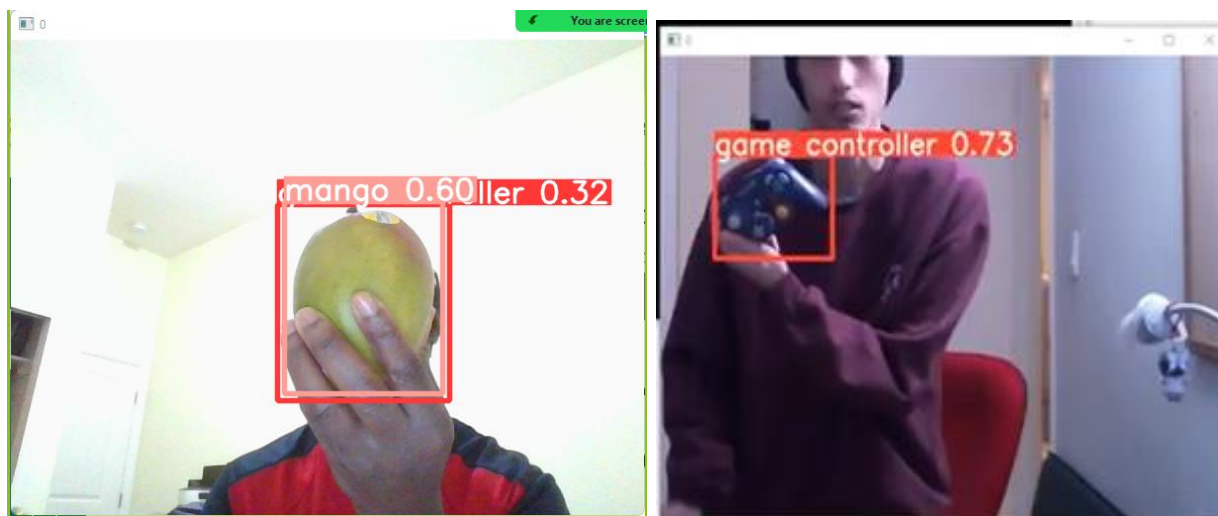
Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
28/29 80 0.84233 0.84232 0.81242 59 430 300K 3.7 [0:17:00.00, 4.90s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.48s(11)
all 151 1878 0.85 0.828 0.75 0.384

Epoch GPU_mem host_loss obj_loss cls_loss Instances Size
29/29 80 0.84233 0.84232 0.81249 59 430 300K 3.7 [0:17:00.00, 5.07s(11)
(class) Images Instances P R mAP0.5 mAP0.5:1000 5/5 [0:17:00.00, 3.49s(11)
all 151 1878 0.851 0.831 0.75 0.384

18 epochs completed in 0.438 hours
optimizer stripped from run/training/weights/last.pt, 14.79M
optimizer stripped from run/training/weights/best.pt, 14.79M
Validating run/training/weights/best.pt...
Testing layers...
Model summary: 157 layers, 7225865 parameters, 0 gradients, 16.4 GUDs
layer class type instances p r mAP0.5 mAP0.5:1000 5/5 [0:16:00.00, 3.38s(11)
ball 151 1878 0.852 0.838 0.758 0.385
person 151 207 0.854 0.831 0.773 0.517
airplane 151 207 0.862 0.839 0.759 0.384
car 151 14 0.861 0.836 0.75 0.378
motorcycle 151 6 0.84 0.83 0.895 0.884
airplane 151 9 0.865 0.831 0.895 0.824
bus 151 6 0.83 0.714 0.889 0.757
train 151 4 0.828 0.81 0.787 0.474
truck 151 11 0.899 0.852 0.839 0.874
boat 151 11 0.853 0.839 0.839 0.874
trufflehog 151 16 0.874 0.862 0.886 0.823
stop sign 151 12 0.852 0.865 0.895 0.833
bird 151 18 0.879 0.861 0.895 0.825
horse 151 5 0.872 0.831 0.895 0.797
dog 151 12 0.874 0.861 0.895 0.824
horse 151 7 0.817 0.831 0.895 0.848
elephant 151 17 0.84 0.841 0.864 0.751
bear 151 1 0.788 0.81 0.895 0.895
elephant 151 8 0.872 0.831 0.895 0.871
giraffe 151 14 0.725 0.735 0.889 0.875
lamborghini 151 8 0.872 0.831 0.895 0.871
umbrella 151 16 0.879 0.889 0.895 0.833
handbag 151 18 0.735 0.831 0.895 0.827
kite 151 8 0.866 0.844 0.895 0.871
cups 151 6 0.868 0.831 0.895 0.889
cups 151 6 0.868 0.831 0.895 0.889
cups 151 1 0.823 0.831 0.895 0.889
cups 151 8 0.91 0.83 0.895 0.825
sports ball 151 8 0.82 0.83 0.895 0.825
kite 151 16 0.881 0.895 0.83 0.837
baseball bat 151 5 0.828 0.82 0.826 0.817
baseball glove 151 11 0.888 0.862 0.887 0.887
starboard 151 5 0.824 0.841 0.862 0.861
tennis racket 151 18 0.756 0.862 0.895 0.895

```

Individual images recognized from the YOLOv5 dataset.



## Game Development

The dance moves of the actor

```
def reset_dancer():  
    global game_over  
  
    if not game_over:  
        dancer.image = "dancer-start"  
        up.image = "up"  
        right.image = "right"  
        down.image = "down"  
        left.image = "left"  
    return
```

To determine the dancing time and scores of the two dancers

```
move_list2 = []  
display_list2 = []  
rounds2 = 0  
score2 = 0  
current_move2 = 0  
count2 = 4  
dance_length2 = 4  
  
moves_complete2 = False  
game_over2 = False
```

The condition set for the two players move set

```
if key == keys.W:  
    update_dancer2(0)  
    if move_list2[current_move2]==0:  
        score2 = score2 + 1  
        next_move2()  
    else:  
        game_over2 = True  
elif key == keys.D:  
    update_dancer2(1)  
    if move_list2[current_move2]==1:  
        score2 = score2 + 1  
        next_move2()  
    else:  
        game_over2 = True  
elif key == keys.S:  
    update_dancer2(2)  
    if move_list2[current_move2]==2:  
        score2 = score2 + 1  
        next_move2()  
    else:  
        game_over2 = True  
elif key == keys.A:  
    update_dancer2(3)  
    if move_list2[current_move2]==3:  
        score2 = score2 + 1  
        next_move2()  
    else:  
        game_over2 = True  
return
```