

Name Thao Vy Tran

EE 104 Lab 7

## README

Youtube video link <https://youtu.be/WkVAAf01Mfk>

Link github: <https://github.com/vyvy92/Lab-7>

### **Take picture of myself and objects I want to recognize and save it in**

Downloading ModifiedOpenLabelling and install packages: **pip install -r requirements.txt**

Then **python run.py** to run the python file that

Add two more classes to the coco128.yaml: lipsticks and Thao Vy Tran

Install ultralytics using this code:

```
git clone https://github.com/ultralytics/ultralytics
```

```
pip install -e ultralytics
```

```
cd c:\ultralytics
```

**Split the picture:** run python yolov5\_ee104\_split\_train\_val\_files.py to split the picture to training and validation images folder. The result shown as below:

```
Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\vytha> cd lab7yolo
PS C:\Users\vytha\lab7yolo> cd yolov5
PS C:\Users\vytha\lab7yolo\yolov5> cd yolov5
PS C:\Users\vytha\lab7yolo\yolov5\yolov5> python yolov5_ee104_split_train_val_files.py
Traceback (most recent call last):
  File "yolov5_ee104_split_train_val_files.py", line 45, in <module>
    totalImgcount = len(os.listdir(coco_images))
FileNotFoundError: [WinError 3] The system cannot find the path specified: 'c:\\Users\\vytha\\lab7yolo\\yolov5\\yolov5\\datasets\\coco128\\images\\ee104_val\\train2017'
PS C:\Users\vytha\lab7yolo\yolov5\yolov5> python yolov5_ee104_split_train_val_files.py
Traceback (most recent call last):
  File "yolov5_ee104_split_train_val_files.py", line 45, in <module>
    totalImgcount = len(os.listdir(coco_images))
FileNotFoundError: [WinError 3] The system cannot find the path specified: 'c:\\Users\\vytha\\lab7yolo\\yolov5\\yolov5\\datasets\\coco128\\images\\ee104_val\\train2017'
PS C:\Users\vytha\lab7yolo\yolov5\yolov5> python yolov5_ee104_split_train_val_files.py
Total number of COCO images are : 179
Number of training images are : 143
Number of validation images are : 35
Traceback (most recent call last):
  File "yolov5_ee104_split_train_val_files.py", line 99, in <module>
    shutil.move(coco_images, ee104ValImagePath)
  File "C:\Users\vytha\AppData\Local\Programs\Python\Python38\lib\shutil.py", line 778, in move
    raise Error("Destination path '%s' already exists" % real_dst)
shutil.Error: Destination path 'C:\Users\vytha\lab7yolo\yolov5\yolov5\datasets\coco128\images\ee104_val\train2017' already exists
PS C:\Users\vytha\lab7yolo\yolov5\yolov5>
```

### **Do a trial run with epochs=20**

```

Windows PowerShell
, show=False, save_txt=False, save_conf=False, save_crop=False, show_labels=True, show_conf=True, vid_stride=1, line_thi
ckness=3, visualize=False, augment=False, agnostic_nms=False, classes=None, retina_masks=False, boxes=True, format=torch
script, keras=False, optimize=False, int8=False, dynamic=False, simplify=False, opset=None, workspace=4, nms=False, lr0=
0.01, lrf=0.01, momentum=0.937, weight_decay=0.0005, warmup_epochs=3.0, warmup_momentum=0.8, warmup_bias_lr=0.1, box=7.5
, cls=0.5, dfl=1.5, pose=12.0, kobj=1.0, label_smoothing=0.0, nbs=64, hsv_h=0.015, hsv_s=0.7, hsv_v=0.4, degrees=0.0, tr
anslate=0.1, scale=0.5, shear=0.0, perspective=0.0, flipud=0.0, fliplr=0.5, mosaic=1.0, mixup=0.0, copy_paste=0.0, cfg=N
one, v5loader=False, tracker=botsort.yaml, save_dir=c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train
21
Downloading https://ultralytics.com/assets/Arial.ttf to C:\Users\vytha\AppData\Roaming\ultralytics\Arial.ttf...
100%| 755k/755k [00:00<00:00, 2.69MB/s]
Overriding model.yaml nc=80 with nc=83

      from  n  params module                                arguments
0         -1 1    464 ultralytics.nn.modules.Conv          [3, 16, 3, 2]
1         -1 1   4672 ultralytics.nn.modules.Conv          [16, 32, 3, 2]
2         -1 1   7360 ultralytics.nn.modules.C2f           [32, 32, 1, True]
3         -1 1  18560 ultralytics.nn.modules.Conv          [32, 64, 3, 2]
4         -1 2  49664 ultralytics.nn.modules.C2f           [64, 64, 2, True]
5         -1 1  73984 ultralytics.nn.modules.Conv          [64, 128, 3, 2]
6         -1 2 197632 ultralytics.nn.modules.C2f           [128, 128, 2, True]
7         -1 1 295424 ultralytics.nn.modules.Conv          [128, 256, 3, 2]
8         -1 1 460288 ultralytics.nn.modules.C2f           [256, 256, 1, True]
9         -1 1 164608 ultralytics.nn.modules.SPPF           [256, 256, 5]
10        -1 1      0 torch.nn.modules.upsampling.Upsample    [None, 2, 'nearest']
11        [-1, 6] 1      0 ultralytics.nn.modules.Concat          [1]
12        -1 1 148224 ultralytics.nn.modules.C2f           [384, 128, 1]
13        -1 1      0 torch.nn.modules.upsampling.Upsample    [None, 2, 'nearest']
14        [-1, 4] 1      0 ultralytics.nn.modules.Concat          [1]
15        -1 1   37248 ultralytics.nn.modules.C2f           [192, 64, 1]
16        -1 1   36992 ultralytics.nn.modules.Conv          [64, 64, 3, 2]
17        [-1, 12] 1      0 ultralytics.nn.modules.Concat          [1]
18        -1 1  123648 ultralytics.nn.modules.C2f           [192, 128, 1]
19        -1 1  147712 ultralytics.nn.modules.Conv          [128, 128, 3, 2]
20        [-1, 9] 1      0 ultralytics.nn.modules.Concat          [1]
21        -1 1  493056 ultralytics.nn.modules.C2f           [384, 256, 1]
22        [15, 18, 21] 1 924475 ultralytics.nn.modules.Detect          [83, [64, 128, 256]]

YOLOv8n summary: 225 layers, 3184011 parameters, 3183995 gradients, 9.0 GFLOPs

optimizer: SGD(lr=0.01) with parameter groups 57 weight(decay=0.0), 64 weight(decay=0.0005), 63 bias
train: Scanning C:\Users\vytha\lab7yolo\ultralytics\ultralytics\datasets\coco128\labels\train2017... 179 images, 2 back
train: New cache created: C:\Users\vytha\lab7yolo\ultralytics\ultralytics\datasets\coco128\labels\train2017.cache
val: Scanning C:\Users\vytha\lab7yolo\ultralytics\ultralytics\datasets\coco128\labels\train2017.cache... 179 images, 2
Plotting labels to c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21\labels.jpg...
Image sizes 640 train, 640 val
Using 0 dataloader workers
Logging results to c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21
Starting training for 20 epochs...

   Epoch    GPU_mem  box_loss  cls_loss  dfl_loss  Instances    Size
0%|          | 0/12 [00:00<?, ?it/s]

```

### 3. Do a trial run with epochs=100

```
Windows PowerShell

all      179      982      0.659      0.142      0.162      0.09

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
93/100   0G       2.045     3.383     2.361     36          640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.628      0.145      0.161      0.0919

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
94/100   0G       2.108     3.458     2.395     16          640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.608      0.143      0.159      0.0881

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
95/100   0G       2.109     3.579     2.33      16          640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:45<0
      all    179      982      0.606      0.135      0.16      0.0878

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
96/100   0G       2.024     3.408     2.321     14          640: 100%|██████████| 12/12 [59:35<00:00, 297
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:45<0
      all    179      982      0.602      0.146      0.162      0.0917

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
97/100   0G       2.038     3.382     2.314     22          640: 100%|██████████| 12/12 [04:53<00:00, 24.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:53<0
      all    179      982      0.639      0.136      0.159      0.0911

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
98/100   0G       2.12      3.495     2.394     23          640: 100%|██████████| 12/12 [05:00<00:00, 25.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:53<0
      all    179      982      0.651      0.138      0.16      0.0912

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
99/100   0G       2.074     3.409     2.323     54          640: 100%|██████████| 12/12 [03:23<00:00, 17.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:45<0
      all    179      982      0.654      0.137      0.165      0.0928

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
100/100  0G       2.09      3.356     2.318     38          640: 100%|██████████| 12/12 [02:03<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.631      0.142      0.161      0.0918

100 epochs completed in 24.829 hours.
Optimizer stripped from c:\users\vytha\ultralytics\ultralytics\runs\detect\train22\weights\last.pt, 6.6MB
Optimizer stripped from c:\users\vytha\ultralytics\ultralytics\runs\detect\train22\weights\best.pt, 6.6MB

Validating c:\users\vytha\ultralytics\ultralytics\runs\detect\train22\weights\best.pt...
Ultralytics YOLOv8.0.75 Python-3.8.0 torch-2.0.0+cpu CPU
YOLOv8n summary (fused): 168 layers, 3178697 parameters, 0 gradients, 8.9 GFLOPs
Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 33%|███████| 2/6 [00:11<0
```

skis	179	1	0	0	0	0
snowboard	179	7	0.611	0.714	0.704	0.395
sports ball	179	6	0	0	0	0
kite	179	10	0	0	0	0
baseball bat	179	4	0	0	0	0
baseball glove	179	7	1	0	0	0
skateboard	179	5	1	0	0.0281	0.0152
tennis racket	179	7	0	0	0	0
bottle	179	18	1	0	0	0
wine glass	179	16	1	0	0	0
cup	179	36	1	0	0.00911	0.00475
fork	179	6	1	0	0	0
knife	179	16	1	0	0.0738	0.0228
spoon	179	22	1	0	0	0
bowl	179	28	0.36	0.214	0.194	0.0892
banana	179	1	0	0	0	0
sandwich	179	2	1	0	0.0948	0.026
orange	179	4	1	0	0.408	0.177
broccoli	179	11	1	0	0	0
carrot	179	24	0.317	0.292	0.303	0.209
hot dog	179	2	1	0	0.118	0.0502
pizza	179	5	0.411	0.562	0.565	0.319
donut	179	14	0.678	0.604	0.611	0.328
cake	179	4	1	0	0.0283	0.0148
chair	179	35	0.397	0.343	0.268	0.126
couch	179	6	1	0	0.202	0.0565
potted plant	179	14	1	0	0.0152	0.00999
bed	179	3	1	0	0.384	0.0896
dining table	179	13	0.368	0.385	0.23	0.0715
toilet	179	2	1	0	0	0
tv	179	2	1	0	0	0
laptop	179	3	1	0	0	0
mouse	179	2	0	0	0	0
remote	179	8	1	0	0.01	0.00197
cell phone	179	8	0	0	0	0
microwave	179	3	1	0	0.0393	0.0393
oven	179	5	1	0	0.033	0.00866
sink	179	6	1	0	0.0285	0.00984
refrigerator	179	5	1	0	0.201	0.161
book	179	29	1	0	0.00922	0.0032
clock	179	9	1	0	0.0906	0.0649
vase	179	2	0	0	0	0
scissors	179	1	1	0	0	0
teddy bear	179	21	0.192	0.0952	0.125	0.0521
toothbrush	179	5	0	0	0.0284	0.0123
Thao Vy Tran	179	22	0.958	1	0.995	0.739
water bottle	179	12	0.334	1	0.846	0.604
lipstick	179	19	0.771	0.895	0.914	0.58

Speed: 2.0ms preprocess, 176.8ms inference, 0.0ms loss, 13.0ms postprocess per image

Results saved to c:\users\wytha\ultralytics\ultralytics\ultralytics\runs\detect\ttrain22

```
Windows PowerShell

all      179      982      0.000948      0.00284      0.00215      0.000362

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
13/20   0G        3.459    5.395    3.971     21         640: 100%|██████████| 12/12 [02:02<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [29:16<0
      all    179      982      0.000689    0.000871    0.000401    7.86e-05

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
14/20   0G        3.484    5.266    3.924     47         640: 100%|██████████| 12/12 [02:02<00:00, 10.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:42<0
      all    179      982      0.53      0.00569    0.00313    0.000999

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
15/20   0G        3.433    5.213    3.875     45         640: 100%|██████████| 12/12 [50:41<00:00, 253
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:35<0
      all    179      982      0.555     0.00853    0.0027     0.000616

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
16/20   0G        3.325    5.209    3.839     20         640: 100%|██████████| 12/12 [01:25<00:00, 7.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:31<0
      all    179      982      0.623     0.0064     0.00233    0.000805

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
17/20   0G        3.372    5.146    3.793     37         640: 100%|██████████| 12/12 [01:28<00:00, 7.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:31<0
      all    179      982      0.666     0.00687    0.00351    0.00134

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
18/20   0G        3.371    5.139    3.802     25         640: 100%|██████████| 12/12 [01:27<00:00, 7.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.655     0.00782    0.00708    0.00201

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
19/20   0G        3.31     5.142    3.792     12         640: 100%|██████████| 12/12 [01:28<00:00, 7.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.478     0.00535    0.00287    0.00075

Epoch  GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
20/20   0G        3.288    5.124    3.78      28         640: 100%|██████████| 12/12 [01:27<00:00, 7.
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.494     0.00711    0.00594    0.00165

20 epochs completed in 2.298 hours.
Optimizer stripped from c:\users\vytha\ultralytics\ultralytics\runs\detect\train21\weights\last.pt, 6.6MB
Optimizer stripped from c:\users\vytha\ultralytics\ultralytics\runs\detect\train21\weights\best.pt, 6.6MB

Validating c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21\weights\best.pt...
Ultralytics YOLOv8.0.75 Python-3.8.0 torch-2.0.0+cpu CPU
YOLOv8n summary (fused): 168 layers, 3178697 parameters, 0 gradients, 8.9 GFLOPs
      Class  Images  Instances  Box(P      R      mAP50  mAP50-95): 67%|██████████| 4/6 [00:16<0
```

```
Windows PowerShell

all      179      982      0.659      0.142      0.162      0.09

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
93/100   0G       2.045    3.383    2.361    36         640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.628      0.145      0.161      0.0919

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
94/100   0G       2.108    3.458    2.395    16         640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.608      0.143      0.159      0.0881

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
95/100   0G       2.109    3.579    2.33     16         640: 100%|██████████| 12/12 [02:04<00:00, 10.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:45<0
      all    179      982      0.606      0.135      0.16       0.0878

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
96/100   0G       2.024    3.408    2.321    14         640: 100%|██████████| 12/12 [59:35<00:00, 297
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:45<0
      all    179      982      0.602      0.146      0.162      0.0917

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
97/100   0G       2.038    3.382    2.314    22         640: 100%|██████████| 12/12 [04:53<00:00, 24.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:53<0
      all    179      982      0.639      0.136      0.159      0.0911

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
98/100   0G       2.12     3.495    2.394    23         640: 100%|██████████| 12/12 [05:00<00:00, 25.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [01:53<0
      all    179      982      0.651      0.138      0.16       0.0912

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
99/100   0G       2.074    3.409    2.323    54         640: 100%|██████████| 12/12 [03:23<00:00, 17.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:45<0
      all    179      982      0.654      0.137      0.165      0.0928

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
100/100  0G       2.09     3.356    2.318    38         640: 100%|██████████| 12/12 [02:03<00:00, 10.
      Class  Images  Instances  Box(P)    R      mAP50  mAP50-95): 100%|██████████| 6/6 [00:46<0
      all    179      982      0.631      0.142      0.161      0.0918

100 epochs completed in 24.829 hours.
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Optimizer stripped from c:\users\vytha\ultralytics\ultralytics\runs\detect\train22\weights\best.pt, 6.6MB

Validating c:\users\vytha\ultralytics\ultralytics\runs\detect\train22\weights\best.pt...
ultralytics YOLOv8.0.75 Python-3.8.0 torch-2.0.0+cpu CPU
YOLOv8n summary (fused): 168 layers, 3178697 parameters, 0 gradients, 8.9 GFLOPs
Class      Images  Instances  Box(P)    R      mAP50  mAP50-95): 33%|███████| 2/6 [00:11<0
```

```
Windows PowerShell

all      179      982      0.000948      0.00284      0.00215      0.000362

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
13/20    0G       3.459     5.395     3.971     21         640: 100%|██████████| 12/12 [02:02<00:00, 10.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [29:16<0
      all    179      982      0.000689    0.000871  0.000401  7.86e-05

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
14/20    0G       3.484     5.266     3.924     47         640: 100%|██████████| 12/12 [02:02<00:00, 10.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:42<0
      all    179      982      0.53       0.00569   0.00313   0.000999

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
15/20    0G       3.433     5.213     3.875     45         640: 100%|██████████| 12/12 [50:41<00:00, 253
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:35<0
      all    179      982      0.555     0.00853   0.0027    0.000616

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
16/20    0G       3.325     5.209     3.839     20         640: 100%|██████████| 12/12 [01:25<00:00, 7.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:31<0
      all    179      982      0.623     0.0064    0.00233   0.000805

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
17/20    0G       3.372     5.146     3.793     37         640: 100%|██████████| 12/12 [01:28<00:00, 7.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:31<0
      all    179      982      0.666     0.00687   0.00351   0.00134

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
18/20    0G       3.371     5.139     3.802     25         640: 100%|██████████| 12/12 [01:27<00:00, 7.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.655     0.00782   0.00708   0.00201

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
19/20    0G       3.31      5.142     3.792     12         640: 100%|██████████| 12/12 [01:28<00:00, 7.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.478     0.00535   0.00287   0.00075

Epoch   GPU_mem  box_loss  cls_loss  dfl_loss  Instances  Size
20/20    0G       3.288     5.124     3.78      28         640: 100%|██████████| 12/12 [01:27<00:00, 7.
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 100%|██████████| 6/6 [00:30<0
      all    179      982      0.494     0.00711   0.00594   0.00165

0 epochs completed in 2.298 hours.
optimizer stripped from c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21\weights\last.pt, 6.6MB
optimizer stripped from c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21\weights\best.pt, 6.6MB

validating c:\users\vytha\ultralytics\ultralytics\ultralytics\runs\detect\train21\weights\best.pt...
ultralytics YOLOv8.0.75 Python-3.8.0 torch-2.0.0+cpu CPU
YOLOv8n summary (fused): 168 layers, 3178697 parameters, 0 gradients, 8.9 GFLOPs
      Class  Images    Instances  Box(P)    R          mAP50  mAP50-95): 67%|██████████| 4/6 [00:16<0
```

Run this code to test the image

```
yolo task=detect mode=predict
model=C:/Users/vytha/ultralytics/ultralytics/ultralytics/runs/detect/train22/weights/best.pt
source=0 show=True
```

### Game development: Balloon

Click the mouse to adjust the position of the balloon

