ubuntu@ip-172-31-9-0:/var/tmp/yolov5$ python3 train.py --img 128 --batch 32 --epochs 100 --data MEL\_128x128.yaml --cfg yolov5s.yaml --weights yolov5s.pt --name MEL\_128x128\_ub

train: weights=yolov5s.pt, cfg=yolov5s.yaml, data=MEL\_128x128.yaml, hyp=data/hyps/hyp.scratch-low.yaml, epochs=100, batch\_size=32, imgsz=128, rect=False, resume=False, nosave=False, noval=False, noautoanchor=False, noplots=False, evolve=None, bucket=, cache=None, image\_weights=False, device=, multi\_scale=False, single\_cls=False, optimizer=SGD, sync\_bn=False, workers=8, project=runs/train, name=MEL\_128x128\_ub, exist\_ok=False, quad=False, cos\_lr=False, label\_smoothing=0.0, patience=100, freeze=[0], save\_period=-1, seed=0, local\_rank=-1, entity=None, upload\_dataset=False, bbox\_interval=-1, artifact\_alias=latest

github: skipping check (not a git repository), for updates see https://github.com/ultralytics/yolov5

YOLOv5 🚀 2022-10-4 Python-3.8.10 torch-1.12.1+cu102 CUDA:0 (Tesla T4, 14910MiB)

hyperparameters: 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=0.05, cls=0.5, cls\_pw=1.0, obj=1.0, obj\_pw=1.0, iou\_t=0.2, anchor\_t=4.0, fl\_gamma=0.0, hsv\_h=0.015, hsv\_s=0.7, hsv\_v=0.4, degrees=0.0, translate=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

Weights & Biases: run 'pip install wandb' to automatically track and visualize YOLOv5 🚀 runs in Weights & Biases

ClearML: run 'pip install clearml' to automatically track, visualize and remotely train YOLOv5 🚀 in ClearML

Comet: run 'pip install comet\_ml' to automatically track and visualize YOLOv5 🚀 runs in Comet

TensorBoard: Start with 'tensorboard --logdir runs/train', view at http://localhost:6006/

Downloading https://ultralytics.com/assets/Arial.ttf to /home/ubuntu/.config/Ultralytics/Arial.ttf...

100%|█████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████| 755k/755k [00:00<00:00, 12.5MB/s]

from n params module arguments

0 -1 1 3520 models.common.Conv [3, 32, 6, 2, 2]

1 -1 1 18560 models.common.Conv [32, 64, 3, 2]

2 -1 1 18816 models.common.C3 [64, 64, 1]

3 -1 1 73984 models.common.Conv [64, 128, 3, 2]

4 -1 2 115712 models.common.C3 [128, 128, 2]

5 -1 1 295424 models.common.Conv [128, 256, 3, 2]

6 -1 3 625152 models.common.C3 [256, 256, 3]

7 -1 1 1180672 models.common.Conv [256, 512, 3, 2]

8 -1 1 1182720 models.common.C3 [512, 512, 1]

9 -1 1 656896 models.common.SPPF [512, 512, 5]

10 -1 1 131584 models.common.Conv [512, 256, 1, 1]

11 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

12 [-1, 6] 1 0 models.common.Concat [1]

13 -1 1 361984 models.common.C3 [512, 256, 1, False]

14 -1 1 33024 models.common.Conv [256, 128, 1, 1]

15 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

16 [-1, 4] 1 0 models.common.Concat [1]

17 -1 1 90880 models.common.C3 [256, 128, 1, False]

18 -1 1 147712 models.common.Conv [128, 128, 3, 2]

19 [-1, 14] 1 0 models.common.Concat [1]

20 -1 1 296448 models.common.C3 [256, 256, 1, False]

21 -1 1 590336 models.common.Conv [256, 256, 3, 2]

22 [-1, 10] 1 0 models.common.Concat [1]

23 -1 1 1182720 models.common.C3 [512, 512, 1, False]

24 [17, 20, 23] 1 18879 models.yolo.Detect [2, [[10, 13, 16, 30, 33, 23], [30, 61, 62, 45, 59, 119], [116, 90, 156, 198, 373, 326]], [128, 256, 512]]

YOLOv5s summary: 214 layers, 7025023 parameters, 7025023 gradients, 16.0 GFLOPs

Transferred 342/349 items from yolov5s.pt

AMP: checks passed ✅

optimizer: SGD(lr=0.01) with parameter groups 57 weight(decay=0.0), 60 weight(decay=0.0005), 60 bias

WARNING ⚠️ DP not recommended, use torch.distributed.run for best DDP Multi-GPU results.

See Multi-GPU Tutorial at https://github.com/ultralytics/yolov5/issues/475 to get started.

train: Scanning '/var/tmp/datasets/labels/train' images and labels...31893 found, 0 missing, 0 empty, 0 corrupt: 100%|██████████| 31893/31893 [00:02<00:00, 14481.32it/s]

train: New cache created: /var/tmp/datasets/labels/train.cache

val: Scanning '/var/tmp/datasets/labels/valid' images and labels...3986 found, 0 missing, 0 empty, 0 corrupt: 100%|██████████| 3986/3986 [00:00<00:00, 15125.92it/s]

val: New cache created: /var/tmp/datasets/labels/valid.cache

AutoAnchor: 6.55 anchors/target, 1.000 Best Possible Recall (BPR). Current anchors are a good fit to dataset ✅

Plotting labels to runs/train/MEL\_128x128\_ub2/labels.jpg...

Image sizes 128 train, 128 val

Using 8 dataloader workers

Logging results to runs/train/MEL\_128x128\_ub2

Starting training for 100 epochs...

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

0/99 0.256G 0.06543 0.01334 0.02401 37 128: 100%|██████████| 997/997 [02:04<00:00, 8.00it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.01it/s]

all 3986 4062 0.607 0.758 0.694 0.365

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

1/99 0.377G 0.03998 0.01089 0.01869 42 128: 100%|██████████| 997/997 [01:47<00:00, 9.28it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.80it/s]

all 3986 4062 0.699 0.757 0.794 0.42

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

2/99 0.377G 0.03643 0.01041 0.01798 44 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:17<00:00, 3.70it/s]

all 3986 4062 0.725 0.769 0.797 0.491

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

3/99 0.377G 0.03332 0.01014 0.01751 48 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.686 0.796 0.801 0.43

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

4/99 0.377G 0.03131 0.009753 0.01675 36 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.686 0.807 0.823 0.415

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

5/99 0.377G 0.0302 0.009581 0.01618 44 128: 100%|██████████| 997/997 [01:41<00:00, 9.78it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.79it/s]

all 3986 4062 0.716 0.81 0.844 0.527

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

6/99 0.377G 0.02936 0.009397 0.0161 38 128: 100%|██████████| 997/997 [01:42<00:00, 9.76it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.79it/s]

all 3986 4062 0.769 0.821 0.87 0.495

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

7/99 0.377G 0.02873 0.009301 0.01576 32 128: 100%|██████████| 997/997 [01:43<00:00, 9.67it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.81it/s]

all 3986 4062 0.777 0.825 0.87 0.542

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

8/99 0.377G 0.02828 0.009191 0.0154 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.72it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.77it/s]

all 3986 4062 0.775 0.835 0.876 0.553

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

9/99 0.377G 0.02796 0.00916 0.01522 41 128: 100%|██████████| 997/997 [01:42<00:00, 9.74it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.771 0.847 0.879 0.47

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

10/99 0.377G 0.02768 0.00909 0.01518 45 128: 100%|██████████| 997/997 [01:42<00:00, 9.73it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.82it/s]

all 3986 4062 0.774 0.832 0.884 0.519

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

11/99 0.377G 0.02748 0.009034 0.01498 40 128: 100%|██████████| 997/997 [01:42<00:00, 9.72it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.793 0.825 0.886 0.483

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

12/99 0.377G 0.02706 0.00891 0.01496 35 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.82it/s]

all 3986 4062 0.806 0.845 0.9 0.568

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

13/99 0.377G 0.02685 0.008949 0.01443 33 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.77it/s]

all 3986 4062 0.802 0.83 0.896 0.563

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

14/99 0.377G 0.02684 0.00893 0.01467 37 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.76it/s]

all 3986 4062 0.799 0.843 0.896 0.571

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

15/99 0.377G 0.02654 0.008877 0.0145 37 128: 100%|██████████| 997/997 [01:42<00:00, 9.68it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.79it/s]

all 3986 4062 0.789 0.868 0.902 0.57

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

16/99 0.377G 0.02642 0.008804 0.01448 38 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.78it/s]

all 3986 4062 0.806 0.844 0.9 0.557

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

17/99 0.377G 0.0263 0.008825 0.01424 38 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.80it/s]

all 3986 4062 0.808 0.843 0.902 0.565

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

18/99 0.377G 0.02618 0.008794 0.01447 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.83it/s]

all 3986 4062 0.815 0.847 0.904 0.549

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

19/99 0.377G 0.02613 0.008831 0.0143 44 128: 100%|██████████| 997/997 [01:42<00:00, 9.77it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.92it/s]

all 3986 4062 0.806 0.856 0.907 0.522

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

20/99 0.377G 0.02603 0.008756 0.0143 35 128: 100%|██████████| 997/997 [01:42<00:00, 9.75it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.808 0.86 0.908 0.56

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

21/99 0.377G 0.02589 0.008702 0.01415 46 128: 100%|██████████| 997/997 [01:42<00:00, 9.75it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.91it/s]

all 3986 4062 0.803 0.862 0.908 0.534

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

22/99 0.377G 0.02583 0.008637 0.01418 44 128: 100%|██████████| 997/997 [01:45<00:00, 9.49it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.89it/s]

all 3986 4062 0.817 0.856 0.911 0.536

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

23/99 0.377G 0.02567 0.00869 0.01415 40 128: 100%|██████████| 997/997 [01:47<00:00, 9.23it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.89it/s]

all 3986 4062 0.827 0.848 0.912 0.537

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

24/99 0.377G 0.02573 0.008667 0.01398 47 128: 100%|██████████| 997/997 [01:47<00:00, 9.28it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.829 0.851 0.912 0.556

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

25/99 0.377G 0.02553 0.008605 0.01408 36 128: 100%|██████████| 997/997 [01:45<00:00, 9.45it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.816 0.859 0.912 0.549

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

26/99 0.377G 0.02551 0.008613 0.01392 44 128: 100%|██████████| 997/997 [01:45<00:00, 9.46it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.91it/s]

all 3986 4062 0.813 0.859 0.912 0.542

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

27/99 0.377G 0.02539 0.008601 0.01387 33 128: 100%|██████████| 997/997 [01:47<00:00, 9.31it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.92it/s]

all 3986 4062 0.827 0.848 0.913 0.545

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

28/99 0.377G 0.02539 0.00861 0.01383 27 128: 100%|██████████| 997/997 [01:44<00:00, 9.55it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.828 0.846 0.914 0.543

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

29/99 0.377G 0.02517 0.008576 0.01371 41 128: 100%|██████████| 997/997 [01:43<00:00, 9.66it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.832 0.845 0.915 0.549

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

30/99 0.377G 0.02517 0.008556 0.01388 37 128: 100%|██████████| 997/997 [01:43<00:00, 9.59it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.827 0.852 0.915 0.551

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

31/99 0.377G 0.02515 0.008568 0.01381 40 128: 100%|██████████| 997/997 [01:43<00:00, 9.59it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.824 0.854 0.916 0.551

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

32/99 0.377G 0.02506 0.008566 0.01381 49 128: 100%|██████████| 997/997 [01:43<00:00, 9.59it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.826 0.854 0.916 0.554

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

33/99 0.377G 0.0249 0.008495 0.01364 38 128: 100%|██████████| 997/997 [01:44<00:00, 9.58it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.89it/s]

all 3986 4062 0.824 0.856 0.916 0.553

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

34/99 0.377G 0.02506 0.008498 0.01357 34 128: 100%|██████████| 997/997 [01:43<00:00, 9.67it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.84it/s]

all 3986 4062 0.825 0.855 0.916 0.551

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

35/99 0.377G 0.02495 0.008524 0.01355 40 128: 100%|██████████| 997/997 [01:43<00:00, 9.66it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.826 0.858 0.916 0.552

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

36/99 0.377G 0.02489 0.008486 0.01357 44 128: 100%|██████████| 997/997 [01:43<00:00, 9.66it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.823 0.86 0.916 0.552

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

37/99 0.377G 0.02474 0.008476 0.01353 46 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.824 0.859 0.917 0.553

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

38/99 0.377G 0.02464 0.00848 0.01342 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.818 0.862 0.917 0.556

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

39/99 0.377G 0.02467 0.008465 0.01339 34 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.818 0.862 0.917 0.557

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

40/99 0.377G 0.02467 0.00844 0.01328 40 128: 100%|██████████| 997/997 [01:42<00:00, 9.72it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.819 0.861 0.917 0.557

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

41/99 0.377G 0.02453 0.008401 0.01338 39 128: 100%|██████████| 997/997 [01:43<00:00, 9.67it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.89it/s]

all 3986 4062 0.824 0.859 0.917 0.558

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

42/99 0.377G 0.02458 0.008453 0.01342 30 128: 100%|██████████| 997/997 [01:43<00:00, 9.68it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.823 0.86 0.918 0.561

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

43/99 0.377G 0.02445 0.008396 0.01326 46 128: 100%|██████████| 997/997 [01:42<00:00, 9.73it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.823 0.861 0.918 0.562

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

44/99 0.377G 0.02445 0.008445 0.01322 32 128: 100%|██████████| 997/997 [01:42<00:00, 9.76it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.822 0.86 0.918 0.565

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

45/99 0.377G 0.02435 0.008361 0.01342 34 128: 100%|██████████| 997/997 [01:41<00:00, 9.78it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.823 0.86 0.918 0.567

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

46/99 0.377G 0.02441 0.008365 0.01321 44 128: 100%|██████████| 997/997 [01:42<00:00, 9.75it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.91it/s]

all 3986 4062 0.821 0.861 0.918 0.568

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

47/99 0.377G 0.02428 0.008357 0.01299 42 128: 100%|██████████| 997/997 [01:43<00:00, 9.67it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.89it/s]

all 3986 4062 0.815 0.869 0.918 0.57

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

48/99 0.377G 0.02422 0.008352 0.01312 39 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.816 0.867 0.918 0.572

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

49/99 0.377G 0.02414 0.008316 0.01306 34 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.92it/s]

all 3986 4062 0.815 0.869 0.918 0.575

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

50/99 0.377G 0.02408 0.008294 0.01304 52 128: 100%|██████████| 997/997 [01:43<00:00, 9.66it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.816 0.867 0.918 0.576

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

51/99 0.377G 0.0242 0.008372 0.01292 36 128: 100%|██████████| 997/997 [01:42<00:00, 9.72it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.84it/s]

all 3986 4062 0.816 0.867 0.918 0.577

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

52/99 0.377G 0.02403 0.008308 0.01293 39 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.84it/s]

all 3986 4062 0.818 0.867 0.918 0.579

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

53/99 0.38G 0.02409 0.008326 0.01302 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.68it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.92it/s]

all 3986 4062 0.819 0.866 0.918 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

54/99 0.38G 0.02384 0.008296 0.01291 41 128: 100%|██████████| 997/997 [01:43<00:00, 9.68it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.821 0.865 0.919 0.579

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

55/99 0.38G 0.02387 0.008253 0.01305 44 128: 100%|██████████| 997/997 [01:43<00:00, 9.67it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.821 0.864 0.919 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

56/99 0.38G 0.0238 0.008249 0.01292 43 128: 100%|██████████| 997/997 [01:43<00:00, 9.65it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.823 0.863 0.919 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

57/99 0.38G 0.02374 0.008209 0.01282 41 128: 100%|██████████| 997/997 [01:43<00:00, 9.60it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.82 0.866 0.919 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

58/99 0.38G 0.02373 0.008248 0.01273 33 128: 100%|██████████| 997/997 [01:44<00:00, 9.59it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.823 0.862 0.919 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

59/99 0.38G 0.02368 0.008192 0.01277 31 128: 100%|██████████| 997/997 [01:44<00:00, 9.57it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.821 0.865 0.919 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

60/99 0.38G 0.02363 0.00828 0.01271 44 128: 100%|██████████| 997/997 [01:43<00:00, 9.64it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.84it/s]

all 3986 4062 0.822 0.866 0.919 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

61/99 0.38G 0.02363 0.008277 0.01264 40 128: 100%|██████████| 997/997 [01:43<00:00, 9.65it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.81it/s]

all 3986 4062 0.817 0.87 0.919 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

62/99 0.38G 0.02355 0.008193 0.01265 39 128: 100%|██████████| 997/997 [01:43<00:00, 9.61it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.817 0.87 0.919 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

63/99 0.38G 0.02356 0.008233 0.01243 33 128: 100%|██████████| 997/997 [01:48<00:00, 9.22it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.818 0.869 0.919 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

64/99 0.38G 0.0234 0.008155 0.01264 42 128: 100%|██████████| 997/997 [01:47<00:00, 9.26it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.87it/s]

all 3986 4062 0.817 0.869 0.92 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

65/99 0.38G 0.02334 0.008173 0.01244 36 128: 100%|██████████| 997/997 [01:47<00:00, 9.30it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.03it/s]

all 3986 4062 0.816 0.869 0.92 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

66/99 0.38G 0.0234 0.008165 0.01255 40 128: 100%|██████████| 997/997 [01:44<00:00, 9.55it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.817 0.868 0.92 0.586

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

67/99 0.38G 0.02321 0.008185 0.01246 39 128: 100%|██████████| 997/997 [01:43<00:00, 9.65it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.819 0.866 0.92 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

68/99 0.38G 0.02317 0.00813 0.01243 46 128: 100%|██████████| 997/997 [01:43<00:00, 9.65it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.822 0.864 0.92 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

69/99 0.38G 0.02318 0.008131 0.01242 49 128: 100%|██████████| 997/997 [01:43<00:00, 9.64it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.822 0.864 0.92 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

70/99 0.38G 0.02331 0.008196 0.01251 28 128: 100%|██████████| 997/997 [01:43<00:00, 9.66it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.822 0.865 0.92 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

71/99 0.38G 0.02301 0.008141 0.01242 42 128: 100%|██████████| 997/997 [01:43<00:00, 9.68it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.94it/s]

all 3986 4062 0.821 0.865 0.92 0.584

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

72/99 0.38G 0.02294 0.00809 0.01235 48 128: 100%|██████████| 997/997 [01:42<00:00, 9.71it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:15<00:00, 3.94it/s]

all 3986 4062 0.821 0.865 0.921 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

73/99 0.38G 0.02296 0.008087 0.01225 41 128: 100%|██████████| 997/997 [01:42<00:00, 9.74it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.821 0.866 0.92 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

74/99 0.38G 0.02299 0.008069 0.0122 42 128: 100%|██████████| 997/997 [01:42<00:00, 9.74it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:15<00:00, 3.95it/s]

all 3986 4062 0.812 0.875 0.921 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

75/99 0.38G 0.02283 0.008055 0.01209 48 128: 100%|██████████| 997/997 [01:42<00:00, 9.75it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.94it/s]

all 3986 4062 0.814 0.874 0.921 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

76/99 0.38G 0.02286 0.008072 0.01217 41 128: 100%|██████████| 997/997 [01:42<00:00, 9.77it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:15<00:00, 3.94it/s]

all 3986 4062 0.816 0.873 0.921 0.583

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

77/99 0.38G 0.02271 0.007949 0.01214 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.817 0.871 0.921 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

78/99 0.38G 0.02273 0.007993 0.01209 43 128: 100%|██████████| 997/997 [01:42<00:00, 9.72it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.93it/s]

all 3986 4062 0.816 0.872 0.921 0.582

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

79/99 0.38G 0.02273 0.008026 0.01196 36 128: 100%|██████████| 997/997 [01:42<00:00, 9.73it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.90it/s]

all 3986 4062 0.817 0.87 0.921 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

80/99 0.38G 0.02253 0.00803 0.0119 47 128: 100%|██████████| 997/997 [01:42<00:00, 9.70it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.86it/s]

all 3986 4062 0.814 0.872 0.921 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

81/99 0.38G 0.02246 0.007996 0.01184 34 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.822 0.868 0.921 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

82/99 0.38G 0.02237 0.007959 0.01191 44 128: 100%|██████████| 997/997 [01:42<00:00, 9.69it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.91it/s]

all 3986 4062 0.82 0.87 0.921 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

83/99 0.38G 0.02236 0.007939 0.01182 41 128: 100%|██████████| 997/997 [01:43<00:00, 9.63it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.88it/s]

all 3986 4062 0.813 0.876 0.921 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

84/99 0.38G 0.0223 0.007925 0.01183 40 128: 100%|██████████| 997/997 [01:44<00:00, 9.54it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.813 0.875 0.921 0.581

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

85/99 0.38G 0.02215 0.007894 0.01152 49 128: 100%|██████████| 997/997 [01:48<00:00, 9.21it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:17<00:00, 3.54it/s]

all 3986 4062 0.814 0.876 0.921 0.58

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

86/99 0.38G 0.02213 0.007932 0.01174 44 128: 100%|██████████| 997/997 [01:50<00:00, 9.05it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:16<00:00, 3.85it/s]

all 3986 4062 0.814 0.876 0.921 0.578

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

87/99 0.38G 0.02217 0.007929 0.01146 32 128: 100%|██████████| 997/997 [01:49<00:00, 9.13it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.03it/s]

all 3986 4062 0.815 0.875 0.92 0.577

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

88/99 0.38G 0.02187 0.007847 0.01147 44 128: 100%|██████████| 997/997 [01:48<00:00, 9.20it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.06it/s]

all 3986 4062 0.815 0.875 0.921 0.576

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

89/99 0.38G 0.02189 0.007854 0.0114 36 128: 100%|██████████| 997/997 [01:46<00:00, 9.33it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.07it/s]

all 3986 4062 0.818 0.874 0.921 0.576

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

90/99 0.38G 0.02188 0.007831 0.01128 37 128: 100%|██████████| 997/997 [01:48<00:00, 9.23it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.07it/s]

all 3986 4062 0.818 0.874 0.921 0.575

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

91/99 0.38G 0.02171 0.007778 0.01136 40 128: 100%|██████████| 997/997 [01:49<00:00, 9.07it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.06it/s]

all 3986 4062 0.817 0.875 0.921 0.574

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

92/99 0.38G 0.0218 0.007825 0.01104 43 128: 100%|██████████| 997/997 [01:49<00:00, 9.07it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.06it/s]

all 3986 4062 0.813 0.879 0.921 0.573

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

93/99 0.38G 0.02161 0.007789 0.01102 40 128: 100%|██████████| 997/997 [01:52<00:00, 8.88it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.08it/s]

all 3986 4062 0.814 0.877 0.921 0.573

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

94/99 0.38G 0.02155 0.007808 0.01108 47 128: 100%|██████████| 997/997 [01:50<00:00, 9.03it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.06it/s]

all 3986 4062 0.813 0.878 0.921 0.572

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

95/99 0.38G 0.02137 0.00775 0.01106 52 128: 100%|██████████| 997/997 [01:49<00:00, 9.08it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.08it/s]

all 3986 4062 0.812 0.878 0.921 0.571

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

96/99 0.38G 0.02144 0.007721 0.01092 41 128: 100%|██████████| 997/997 [01:48<00:00, 9.15it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.07it/s]

all 3986 4062 0.815 0.877 0.921 0.569

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

97/99 0.38G 0.02134 0.007712 0.01082 43 128: 100%|██████████| 997/997 [01:45<00:00, 9.46it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.06it/s]

all 3986 4062 0.819 0.876 0.921 0.568

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

98/99 0.38G 0.02116 0.007682 0.01064 46 128: 100%|██████████| 997/997 [01:47<00:00, 9.29it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.08it/s]

all 3986 4062 0.817 0.877 0.921 0.567

Epoch GPU\_mem box\_loss obj\_loss cls\_loss Instances Size

99/99 0.38G 0.02119 0.007691 0.01063 40 128: 100%|██████████| 997/997 [01:50<00:00, 9.04it/s]

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:20<00:00, 3.09it/s]

all 3986 4062 0.819 0.875 0.921 0.566

100 epochs completed in 3.387 hours.

Optimizer stripped from runs/train/MEL\_128x128\_ub2/weights/last.pt, 14.2MB

Optimizer stripped from runs/train/MEL\_128x128\_ub2/weights/best.pt, 14.2MB

Validating runs/train/MEL\_128x128\_ub2/weights/best.pt...

Fusing layers...

YOLOv5s summary: 157 layers, 7015519 parameters, 0 gradients, 15.8 GFLOPs

Class Images Instances P R mAP50 mAP50-95: 100%|██████████| 63/63 [00:24<00:00, 2.53it/s]

all 3986 4062 0.817 0.868 0.92 0.586

Nonmitosis 3986 2698 0.835 0.893 0.94 0.588

Mitosis 3986 1364 0.8 0.843 0.9 0.583