只需要70个epoch

from n params module arguments

0 -1 1 928 ultralytics.nn.modules.conv.Conv [3, 32, 3, 2]

1 -1 1 18560 ultralytics.nn.modules.conv.Conv [32, 64, 3, 2]

2 -1 1 29056 ultralytics.nn.modules.block.C2f [64, 64, 1, True]

3 -1 1 73984 ultralytics.nn.modules.conv.Conv [64, 128, 3, 2]

4 -1 2 197632 ultralytics.nn.modules.block.C2f [128, 128, 2, True]

5 -1 1 295424 ultralytics.nn.modules.conv.Conv [128, 256, 3, 2]

6 -1 2 788480 ultralytics.nn.modules.block.C2f [256, 256, 2, True]

7 -1 1 1180672 ultralytics.nn.modules.conv.Conv [256, 512, 3, 2]

8 -1 1 1838080 ultralytics.nn.modules.block.C2f [512, 512, 1, True]

9 -1 1 656896 ultralytics.nn.modules.block.SPPF [512, 512, 5]

10 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

11 [-1, 6] 1 0 ultralytics.nn.modules.conv.Concat [1]

12 -1 1 591360 ultralytics.nn.modules.block.C2f [768, 256, 1]

13 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

14 [-1, 4] 1 0 ultralytics.nn.modules.conv.Concat [1]

15 -1 1 148224 ultralytics.nn.modules.block.C2f [384, 128, 1]

16 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

17 [-1, 12] 1 0 ultralytics.nn.modules.conv.Concat [1]

18 -1 1 493056 ultralytics.nn.modules.block.C2f [384, 256, 1]

19 -1 1 590336 ultralytics.nn.modules.conv.Conv [256, 256, 3, 2]

20 [-1, 9] 1 0 ultralytics.nn.modules.conv.Concat [1]

21 -1 1 1969152 ultralytics.nn.modules.block.C2f [768, 512, 1]

22 [15, 18, 21] 1 597843 ultralytics.nn.extra\_modules.head.Detect\_Efficient[1, [128, 256, 512]]

YOLOv8s-EfficientHead summary: 202 layers, 9617395 parameters, 9617379 gradients, 21.7 GFLOPs

Downloading https://github.com/ultralytics/assets/releases/download/v8.1.0/yolov8s.pt to 'yolov8s.pt'...

100% 21.5M/21.5M [00:00<00:00, 256MB/s]

Transferred 271/304 items from pretrained weights

New https://pypi.org/project/ultralytics/8.2.7 available 😃 Update with 'pip install -U ultralytics'

Ultralytics YOLOv8.1.9 🚀 Python-3.10.12 torch-2.2.1+cu121 CUDA:0 (NVIDIA L4, 22700MiB)

engine/trainer: task=detect, mode=train, model=/content/GP/ultralytics-main/dataset/yolov8s-EfficientHead.yaml, data=/content/GP/ultralytics-main/dataset/person\_datasets1/data1.yaml, epochs=100, time=None, patience=100, batch=64, imgsz=640, save=True, save\_period=-1, cache=True, device=0, workers=8, project=/content/GP/ultralytics-main/runs/train, name=exp\_0503\_s, exist\_ok=False, pretrained=True, optimizer=SGD, verbose=True, seed=0, deterministic=True, single\_cls=False, rect=False, cos\_lr=False, close\_mosaic=10, resume=False, amp=True, fraction=1.0, profile=False, freeze=None, multi\_scale=False, overlap\_mask=True, mask\_ratio=4, dropout=0.0, val=True, split=val, save\_json=False, save\_hybrid=False, conf=None, iou=0.7, max\_det=300, half=False, dnn=False, plots=True, source=None, vid\_stride=1, stream\_buffer=False, visualize=False, augment=False, agnostic\_nms=False, classes=None, retina\_masks=False, embed=None, show=False, save\_frames=False, save\_txt=False, save\_conf=False, save\_crop=False, show\_labels=True, show\_conf=True, show\_boxes=True, line\_width=None, format=torchscript, 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, 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, auto\_augment=randaugment, erasing=0.4, crop\_fraction=1.0, cfg=None, tracker=botsort.yaml, prune\_method=None, speed\_up=2.0, global\_pruning=False, max\_sparsity=1.0, iterative\_steps=200, reg=0.0005, delta\_reg=0.0001, sl\_epochs=100, sl\_model=None, sl\_hyp=ultralytics/cfg/hyp.scratch.sl.yaml, reg\_decay\_type=linear, reg\_decay=0.1, reg\_decay\_step=10, prune\_model=False, teacher\_weights=None, teacher\_cfg=None, kd\_loss\_type=logical, kd\_loss\_decay=constant, logical\_loss\_type=l2, logical\_loss\_ratio=1.0, teacher\_kd\_layers=15,18,21, student\_kd\_layers=15,18,21, feature\_loss\_type=cwd, feature\_loss\_ratio=1.0, save\_dir=/content/GP/ultralytics-main/runs/train/exp\_0503\_s

Downloading https://ultralytics.com/assets/Arial.ttf to '/root/.config/Ultralytics/Arial.ttf'...

100% 755k/755k [00:00<00:00, 22.2MB/s]

2024-05-03 09:42:02.255036: E external/local\_xla/xla/stream\_executor/cuda/cuda\_dnn.cc:9261] Unable to register cuDNN factory: Attempting to register factory for plugin cuDNN when one has already been registered

2024-05-03 09:42:02.255091: E external/local\_xla/xla/stream\_executor/cuda/cuda\_fft.cc:607] Unable to register cuFFT factory: Attempting to register factory for plugin cuFFT when one has already been registered

2024-05-03 09:42:02.256883: E external/local\_xla/xla/stream\_executor/cuda/cuda\_blas.cc:1515] Unable to register cuBLAS factory: Attempting to register factory for plugin cuBLAS when one has already been registered

from n params module arguments

0 -1 1 928 ultralytics.nn.modules.conv.Conv [3, 32, 3, 2]

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2 -1 1 29056 ultralytics.nn.modules.block.C2f [64, 64, 1, True]

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7 -1 1 1180672 ultralytics.nn.modules.conv.Conv [256, 512, 3, 2]

8 -1 1 1838080 ultralytics.nn.modules.block.C2f [512, 512, 1, True]

9 -1 1 656896 ultralytics.nn.modules.block.SPPF [512, 512, 5]

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13 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

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16 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

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22 [15, 18, 21] 1 597843 ultralytics.nn.extra\_modules.head.Detect\_Efficient[1, [128, 256, 512]]

YOLOv8s-EfficientHead summary: 202 layers, 9617395 parameters, 9617379 gradients, 21.7 GFLOPs

Transferred 304/304 items from pretrained weights

TensorBoard: Start with 'tensorboard --logdir /content/GP/ultralytics-main/runs/train/exp\_0503\_s', view at http://localhost:6006/

Freezing layer 'model.22.dfl.conv.weight'

AMP: running Automatic Mixed Precision (AMP) checks with YOLOv8n...

Downloading https://github.com/ultralytics/assets/releases/download/v8.1.0/yolov8n.pt to 'yolov8n.pt'...

100% 6.23M/6.23M [00:00<00:00, 122MB/s]

AMP: checks passed ✅

train: Scanning /content/GP/ultralytics-main/dataset/person\_datasets1/labels/train... 14728 images, 0 backgrounds, 0 corrupt: 100% 14728/14728 [00:10<00:00, 1393.16it/s]

train: New cache created: /content/GP/ultralytics-main/dataset/person\_datasets1/labels/train.cache

train: Caching images (11.3GB True): 100% 14728/14728 [00:11<00:00, 1317.22it/s]

albumentations: Blur(p=0.01, blur\_limit=(3, 7)), MedianBlur(p=0.01, blur\_limit=(3, 7)), ToGray(p=0.01), CLAHE(p=0.01, clip\_limit=(1, 4.0), tile\_grid\_size=(8, 8))

val: Scanning /content/GP/ultralytics-main/dataset/person\_datasets1/labels/val... 1637 images, 0 backgrounds, 0 corrupt: 100% 1637/1637 [00:01<00:00, 1005.24it/s]

val: New cache created: /content/GP/ultralytics-main/dataset/person\_datasets1/labels/val.cache

val: Caching images (1.2GB True): 100% 1637/1637 [00:03<00:00, 501.78it/s]

Plotting labels to /content/GP/ultralytics-main/runs/train/exp\_0503\_s/labels.jpg...

optimizer: SGD(lr=0.01, momentum=0.937) with parameter groups 48 weight(decay=0.0), 58 weight(decay=0.0005), 54 bias(decay=0.0)

TensorBoard: model graph visualization added ✅

Image sizes 640 train, 640 val

Using 8 dataloader workers

Logging results to /content/GP/ultralytics-main/runs/train/exp\_0503\_s

Starting training for 100 epochs...

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

1/100 15.5G 2.164 1.501 2.378 78 640: 100% 231/231 [02:28<00:00, 1.56it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:09<00:00, 1.34it/s]

all 1637 8530 0.79 0.787 0.85 0.42

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

2/100 15.7G 1.452 1.014 1.51 77 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.50it/s]

all 1637 8530 0.858 0.79 0.874 0.516

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

3/100 15.8G 1.411 0.9918 1.423 69 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:09<00:00, 1.43it/s]

all 1637 8530 0.839 0.75 0.84 0.48

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

4/100 15.8G 1.39 0.925 1.382 82 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.50it/s]

all 1637 8530 0.81 0.749 0.837 0.51

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

5/100 15.2G 1.362 0.8696 1.345 56 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.836 0.759 0.852 0.518

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

6/100 15G 1.327 0.8302 1.318 82 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.868 0.793 0.885 0.544

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

7/100 15.3G 1.307 0.8042 1.301 116 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.881 0.801 0.892 0.555

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

8/100 15.3G 1.296 0.7899 1.289 68 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.876 0.805 0.891 0.554

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

9/100 15.8G 1.279 0.7724 1.276 71 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.48it/s]

all 1637 8530 0.875 0.809 0.895 0.567

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

10/100 15.2G 1.264 0.7566 1.265 76 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.892 0.81 0.903 0.583

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

11/100 14.9G 1.257 0.7463 1.26 52 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.51it/s]

all 1637 8530 0.868 0.827 0.904 0.59

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

12/100 15.8G 1.247 0.7354 1.252 132 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.882 0.828 0.91 0.585

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

13/100 15.3G 1.243 0.7248 1.248 89 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.891 0.825 0.912 0.596

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

14/100 15.2G 1.232 0.7183 1.238 95 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.889 0.832 0.915 0.593

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

15/100 16.8G 1.222 0.7095 1.234 69 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.89 0.83 0.914 0.592

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

16/100 16.7G 1.216 0.7037 1.23 97 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.888 0.837 0.919 0.597

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

17/100 15.2G 1.219 0.6981 1.226 47 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.889 0.84 0.922 0.6

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

18/100 14.5G 1.208 0.6906 1.224 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.51it/s]

all 1637 8530 0.891 0.841 0.922 0.607

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

19/100 16.6G 1.201 0.6887 1.218 100 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.896 0.843 0.924 0.605

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

20/100 16.6G 1.194 0.6779 1.211 55 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.886 0.846 0.925 0.612

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

21/100 15.2G 1.193 0.6743 1.207 75 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.892 0.848 0.926 0.608

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

22/100 15.4G 1.185 0.6708 1.207 103 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.892 0.848 0.926 0.614

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

23/100 15.2G 1.184 0.6677 1.2 73 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.897 0.851 0.93 0.62

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

24/100 14.6G 1.174 0.6613 1.195 53 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.901 0.85 0.931 0.618

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

25/100 15G 1.17 0.6585 1.193 78 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.895 0.851 0.931 0.619

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

26/100 15.1G 1.169 0.6546 1.194 75 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.893 0.856 0.93 0.621

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

27/100 15.2G 1.165 0.6515 1.191 63 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.895 0.851 0.933 0.624

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

28/100 15.2G 1.162 0.6471 1.185 132 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.901 0.855 0.934 0.624

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

29/100 14.6G 1.16 0.6454 1.185 70 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.895 0.864 0.934 0.624

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

30/100 14.4G 1.154 0.6422 1.184 66 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.899 0.861 0.934 0.628

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

31/100 15.8G 1.15 0.6357 1.178 74 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.897 0.859 0.934 0.628

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

32/100 15.9G 1.143 0.6313 1.175 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.906 0.857 0.934 0.628

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

33/100 16.4G 1.14 0.6287 1.175 81 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.897 0.858 0.934 0.632

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

34/100 14.1G 1.134 0.6269 1.172 112 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.903 0.854 0.936 0.632

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

35/100 15.2G 1.134 0.623 1.17 65 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.901 0.862 0.936 0.636

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

36/100 15.6G 1.133 0.623 1.168 129 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.901 0.86 0.936 0.636

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

37/100 17.1G 1.123 0.618 1.164 88 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.858 0.936 0.637

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

38/100 16.7G 1.125 0.6153 1.16 61 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.908 0.86 0.939 0.639

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

39/100 15.1G 1.12 0.6113 1.16 77 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.9 0.866 0.938 0.635

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

40/100 15.9G 1.116 0.6117 1.16 87 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.902 0.866 0.939 0.64

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

41/100 15.2G 1.115 0.6101 1.157 78 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.901 0.864 0.939 0.641

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

42/100 15.2G 1.109 0.6038 1.156 49 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.902 0.868 0.94 0.64

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

43/100 15.4G 1.109 0.6037 1.152 96 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.862 0.94 0.641

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

44/100 15G 1.103 0.5986 1.146 80 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.903 0.864 0.939 0.64

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

45/100 15.1G 1.099 0.596 1.145 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.899 0.873 0.94 0.641

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

46/100 15G 1.098 0.5955 1.147 43 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.9 0.876 0.942 0.643

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

47/100 15.5G 1.092 0.5921 1.145 102 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.898 0.872 0.941 0.644

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

48/100 15.8G 1.091 0.5908 1.139 78 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.896 0.875 0.941 0.642

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

49/100 15.3G 1.084 0.5869 1.137 61 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.904 0.867 0.941 0.643

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

50/100 14.8G 1.083 0.5842 1.141 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.906 0.864 0.94 0.642

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

51/100 15G 1.079 0.5832 1.136 70 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.867 0.941 0.644

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

52/100 15.8G 1.079 0.5797 1.134 65 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.901 0.871 0.942 0.645

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

53/100 16G 1.074 0.5781 1.132 52 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.896 0.874 0.941 0.646

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

54/100 16.6G 1.069 0.5738 1.132 99 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.9 0.872 0.942 0.645

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

55/100 16.7G 1.062 0.57 1.126 88 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.898 0.874 0.941 0.645

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

56/100 15.9G 1.062 0.5702 1.129 56 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.902 0.873 0.942 0.645

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

57/100 15.1G 1.057 0.5683 1.126 75 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.9 0.873 0.942 0.647

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

58/100 14.8G 1.056 0.5658 1.121 80 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.902 0.874 0.942 0.646

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

59/100 15.8G 1.049 0.5629 1.119 112 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.902 0.875 0.942 0.647

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

60/100 15.9G 1.051 0.5611 1.12 75 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.904 0.874 0.943 0.648

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

61/100 15G 1.042 0.5555 1.116 79 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.904 0.875 0.943 0.649

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

62/100 16.5G 1.039 0.5538 1.114 105 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.905 0.873 0.943 0.648

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

63/100 15.8G 1.031 0.549 1.113 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.87 0.943 0.649

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

64/100 15.5G 1.029 0.5477 1.107 67 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.907 0.872 0.943 0.649

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

65/100 15.9G 1.029 0.5476 1.11 79 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.871 0.943 0.649

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

66/100 15.2G 1.026 0.5438 1.106 136 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.907 0.873 0.943 0.649

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

67/100 15.2G 1.017 0.5422 1.104 91 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.907 0.875 0.944 0.649

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

68/100 15.9G 1.017 0.5413 1.103 117 640: 100% 231/231 [02:23<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.876 0.944 0.65

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

69/100 16.4G 1.01 0.5359 1.098 84 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.55it/s]

all 1637 8530 0.903 0.877 0.944 0.65

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

70/100 15.5G 1.008 0.5331 1.096 119 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.876 0.944 0.65

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

71/100 14.4G 1.004 0.5345 1.099 52 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.904 0.877 0.944 0.65

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

72/100 15.2G 1.006 0.5341 1.099 88 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.877 0.944 0.65

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

73/100 15.2G 1 0.5285 1.095 79 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.876 0.944 0.65

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

74/100 15.8G 0.9949 0.5285 1.092 55 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.876 0.945 0.65

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

75/100 16G 0.9911 0.5245 1.092 107 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.875 0.944 0.65

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

76/100 16.1G 0.9856 0.5204 1.086 89 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.908 0.875 0.944 0.65

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

77/100 15.3G 0.9836 0.5199 1.085 108 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.875 0.944 0.65

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

78/100 15.3G 0.9765 0.5138 1.084 65 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.875 0.945 0.65

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

79/100 15.1G 0.9766 0.5151 1.084 70 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.877 0.945 0.65

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

80/100 15.2G 0.9685 0.5114 1.081 99 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.877 0.945 0.65

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

81/100 15G 0.9671 0.5104 1.079 82 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.906 0.877 0.945 0.65

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

82/100 16G 0.9679 0.5075 1.079 92 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.907 0.876 0.945 0.65

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

83/100 14.6G 0.9587 0.5037 1.075 101 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.906 0.877 0.945 0.65

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

84/100 16G 0.9547 0.5022 1.074 99 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.906 0.877 0.945 0.65

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

85/100 15.2G 0.9493 0.5005 1.069 81 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.877 0.945 0.65

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

86/100 16.2G 0.9469 0.4986 1.069 75 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.878 0.944 0.65

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

87/100 16G 0.9418 0.4941 1.066 76 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.878 0.945 0.65

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

88/100 16.6G 0.9377 0.4926 1.062 56 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.905 0.878 0.945 0.65

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

89/100 14.9G 0.9312 0.4894 1.061 44 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.878 0.944 0.65

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

90/100 16.2G 0.9276 0.4886 1.062 90 640: 100% 231/231 [02:23<00:00, 1.61it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.904 0.877 0.944 0.65

Closing dataloader mosaic

albumentations: Blur(p=0.01, blur\_limit=(3, 7)), MedianBlur(p=0.01, blur\_limit=(3, 7)), ToGray(p=0.01), CLAHE(p=0.01, clip\_limit=(1, 4.0), tile\_grid\_size=(8, 8))

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

91/100 14.5G 0.8898 0.4438 1.028 38 640: 100% 231/231 [02:24<00:00, 1.60it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.906 0.875 0.945 0.65

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

92/100 14.4G 0.8719 0.4347 1.018 43 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.906 0.875 0.945 0.65

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

93/100 14.4G 0.8628 0.4312 1.013 43 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.906 0.876 0.945 0.65

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

94/100 14.4G 0.8561 0.4273 1.01 51 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.906 0.875 0.945 0.65

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

95/100 14.4G 0.8472 0.424 1.005 44 640: 100% 231/231 [02:21<00:00, 1.64it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.906 0.875 0.945 0.65

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

96/100 14.4G 0.8431 0.4215 1.003 41 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.906 0.875 0.945 0.65

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

97/100 14.5G 0.8384 0.419 0.9991 51 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.54it/s]

all 1637 8530 0.905 0.877 0.945 0.651

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

98/100 14.4G 0.8347 0.4161 0.9981 57 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.905 0.877 0.945 0.651

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

99/100 14.4G 0.8252 0.4143 0.9968 30 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.53it/s]

all 1637 8530 0.904 0.878 0.945 0.651

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

100/100 14.5G 0.8258 0.4127 0.9966 36 640: 100% 231/231 [02:21<00:00, 1.63it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.52it/s]

all 1637 8530 0.903 0.879 0.945 0.651

100 epochs completed in 4.246 hours.

Optimizer stripped from /content/GP/ultralytics-main/runs/train/exp\_0503\_s/weights/last.pt, 19.5MB

Optimizer stripped from /content/GP/ultralytics-main/runs/train/exp\_0503\_s/weights/best.pt, 19.5MB

Validating /content/GP/ultralytics-main/runs/train/exp\_0503\_s/weights/best.pt...

Ultralytics YOLOv8.1.9 🚀 Python-3.10.12 torch-2.2.1+cu121 CUDA:0 (NVIDIA L4, 22700MiB)

YOLOv8s-EfficientHead summary (fused): 154 layers, 9607635 parameters, 0 gradients, 21.5 GFLOPs

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:12<00:00, 1.04it/s]

all 1637 8530 0.903 0.879 0.945 0.651

Speed: 0.1ms preprocess, 1.8ms inference, 0.0ms loss, 0.8ms postprocess per image

Results saved to /content/GP/ultralytics-main/runs/train/exp\_0503\_s

from n params module arguments

0 -1 1 464 ultralytics.nn.modules.conv.Conv [3, 16, 3, 2]

1 -1 1 4672 ultralytics.nn.modules.conv.Conv [16, 32, 3, 2]

2 -1 1 7360 ultralytics.nn.modules.block.C2f [32, 32, 1, True]

3 -1 1 18560 ultralytics.nn.modules.conv.Conv [32, 64, 3, 2]

4 -1 2 49664 ultralytics.nn.modules.block.C2f [64, 64, 2, True]

5 -1 1 73984 ultralytics.nn.modules.conv.Conv [64, 128, 3, 2]

6 -1 2 197632 ultralytics.nn.modules.block.C2f [128, 128, 2, True]

7 -1 1 295424 ultralytics.nn.modules.conv.Conv [128, 256, 3, 2]

8 -1 1 460288 ultralytics.nn.modules.block.C2f [256, 256, 1, True]

9 -1 1 164608 ultralytics.nn.modules.block.SPPF [256, 256, 5]

10 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

11 [-1, 6] 1 0 ultralytics.nn.modules.conv.Concat [1]

12 -1 1 148224 ultralytics.nn.modules.block.C2f [384, 128, 1]

13 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

14 [-1, 4] 1 0 ultralytics.nn.modules.conv.Concat [1]

15 -1 1 37248 ultralytics.nn.modules.block.C2f [192, 64, 1]

16 -1 1 36992 ultralytics.nn.modules.conv.Conv [64, 64, 3, 2]

17 [-1, 12] 1 0 ultralytics.nn.modules.conv.Concat [1]

18 -1 1 123648 ultralytics.nn.modules.block.C2f [192, 128, 1]

19 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

20 [-1, 9] 1 0 ultralytics.nn.modules.conv.Concat [1]

21 -1 1 493056 ultralytics.nn.modules.block.C2f [384, 256, 1]

22 [15, 18, 21] 1 164627 ultralytics.nn.extra\_modules.head.Detect\_Efficient[1, [64, 128, 256]]

YOLOv8n-EfficientHead summary: 202 layers, 2424163 parameters, 2424147 gradients, 5.6 GFLOPs

Downloading https://github.com/ultralytics/assets/releases/download/v8.1.0/yolov8n.pt to 'yolov8n.pt'...

100% 6.23M/6.23M [00:00<00:00, 118MB/s]

Transferred 271/304 items from pretrained weights

New https://pypi.org/project/ultralytics/8.2.8 available 😃 Update with 'pip install -U ultralytics'

Ultralytics YOLOv8.1.9 🚀 Python-3.10.12 torch-2.2.1+cu121 CUDA:0 (NVIDIA L4, 22700MiB)

engine/trainer: task=detect, mode=train, model=/content/GP/ultralytics-main/dataset/yolov8n-EfficientHead.yaml, data=/content/GP/ultralytics-main/dataset/person\_datasets1/data1.yaml, epochs=100, time=None, patience=100, batch=64, imgsz=640, save=True, save\_period=-1, cache=True, device=0, workers=8, project=/content/GP/ultralytics-main/runs/train, name=exp\_0504\_n, exist\_ok=False, pretrained=True, optimizer=SGD, verbose=True, seed=0, deterministic=True, single\_cls=False, rect=False, cos\_lr=False, close\_mosaic=10, resume=False, amp=True, fraction=1.0, profile=False, freeze=None, multi\_scale=False, overlap\_mask=True, mask\_ratio=4, dropout=0.0, val=True, split=val, save\_json=False, save\_hybrid=False, conf=None, iou=0.7, max\_det=300, half=False, dnn=False, plots=True, source=None, vid\_stride=1, stream\_buffer=False, visualize=False, augment=False, agnostic\_nms=False, classes=None, retina\_masks=False, embed=None, show=False, save\_frames=False, save\_txt=False, save\_conf=False, save\_crop=False, show\_labels=True, show\_conf=True, show\_boxes=True, line\_width=None, format=torchscript, 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, 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, auto\_augment=randaugment, erasing=0.4, crop\_fraction=1.0, cfg=None, tracker=botsort.yaml, prune\_method=None, speed\_up=2.0, global\_pruning=False, max\_sparsity=1.0, iterative\_steps=200, reg=0.0005, delta\_reg=0.0001, sl\_epochs=100, sl\_model=None, sl\_hyp=ultralytics/cfg/hyp.scratch.sl.yaml, reg\_decay\_type=linear, reg\_decay=0.1, reg\_decay\_step=10, prune\_model=False, teacher\_weights=None, teacher\_cfg=None, kd\_loss\_type=logical, kd\_loss\_decay=constant, logical\_loss\_type=l2, logical\_loss\_ratio=1.0, teacher\_kd\_layers=15,18,21, student\_kd\_layers=15,18,21, feature\_loss\_type=cwd, feature\_loss\_ratio=1.0, save\_dir=/content/GP/ultralytics-main/runs/train/exp\_0504\_n

Downloading https://ultralytics.com/assets/Arial.ttf to '/root/.config/Ultralytics/Arial.ttf'...

100% 755k/755k [00:00<00:00, 22.6MB/s]

2024-05-04 01:41:13.389848: E external/local\_xla/xla/stream\_executor/cuda/cuda\_dnn.cc:9261] Unable to register cuDNN factory: Attempting to register factory for plugin cuDNN when one has already been registered

2024-05-04 01:41:13.389891: E external/local\_xla/xla/stream\_executor/cuda/cuda\_fft.cc:607] Unable to register cuFFT factory: Attempting to register factory for plugin cuFFT when one has already been registered

2024-05-04 01:41:13.392164: E external/local\_xla/xla/stream\_executor/cuda/cuda\_blas.cc:1515] Unable to register cuBLAS factory: Attempting to register factory for plugin cuBLAS when one has already been registered

from n params module arguments

0 -1 1 464 ultralytics.nn.modules.conv.Conv [3, 16, 3, 2]

1 -1 1 4672 ultralytics.nn.modules.conv.Conv [16, 32, 3, 2]

2 -1 1 7360 ultralytics.nn.modules.block.C2f [32, 32, 1, True]

3 -1 1 18560 ultralytics.nn.modules.conv.Conv [32, 64, 3, 2]

4 -1 2 49664 ultralytics.nn.modules.block.C2f [64, 64, 2, True]

5 -1 1 73984 ultralytics.nn.modules.conv.Conv [64, 128, 3, 2]

6 -1 2 197632 ultralytics.nn.modules.block.C2f [128, 128, 2, True]

7 -1 1 295424 ultralytics.nn.modules.conv.Conv [128, 256, 3, 2]

8 -1 1 460288 ultralytics.nn.modules.block.C2f [256, 256, 1, True]

9 -1 1 164608 ultralytics.nn.modules.block.SPPF [256, 256, 5]

10 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

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12 -1 1 148224 ultralytics.nn.modules.block.C2f [384, 128, 1]

13 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

14 [-1, 4] 1 0 ultralytics.nn.modules.conv.Concat [1]

15 -1 1 37248 ultralytics.nn.modules.block.C2f [192, 64, 1]

16 -1 1 36992 ultralytics.nn.modules.conv.Conv [64, 64, 3, 2]

17 [-1, 12] 1 0 ultralytics.nn.modules.conv.Concat [1]

18 -1 1 123648 ultralytics.nn.modules.block.C2f [192, 128, 1]

19 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

20 [-1, 9] 1 0 ultralytics.nn.modules.conv.Concat [1]

21 -1 1 493056 ultralytics.nn.modules.block.C2f [384, 256, 1]

22 [15, 18, 21] 1 164627 ultralytics.nn.extra\_modules.head.Detect\_Efficient[1, [64, 128, 256]]

YOLOv8n-EfficientHead summary: 202 layers, 2424163 parameters, 2424147 gradients, 5.6 GFLOPs

Transferred 304/304 items from pretrained weights

TensorBoard: Start with 'tensorboard --logdir /content/GP/ultralytics-main/runs/train/exp\_0504\_n', view at http://localhost:6006/

Freezing layer 'model.22.dfl.conv.weight'

AMP: running Automatic Mixed Precision (AMP) checks with YOLOv8n...

AMP: checks passed ✅

train: Scanning /content/GP/ultralytics-main/dataset/person\_datasets1/labels/train... 14728 images, 0 backgrounds, 0 corrupt: 100% 14728/14728 [00:10<00:00, 1385.51it/s]

train: New cache created: /content/GP/ultralytics-main/dataset/person\_datasets1/labels/train.cache

train: Caching images (11.3GB True): 100% 14728/14728 [00:11<00:00, 1319.38it/s]

albumentations: Blur(p=0.01, blur\_limit=(3, 7)), MedianBlur(p=0.01, blur\_limit=(3, 7)), ToGray(p=0.01), CLAHE(p=0.01, clip\_limit=(1, 4.0), tile\_grid\_size=(8, 8))

val: Scanning /content/GP/ultralytics-main/dataset/person\_datasets1/labels/val... 1637 images, 0 backgrounds, 0 corrupt: 100% 1637/1637 [00:01<00:00, 1040.04it/s]

val: New cache created: /content/GP/ultralytics-main/dataset/person\_datasets1/labels/val.cache

val: Caching images (1.2GB True): 100% 1637/1637 [00:03<00:00, 469.92it/s]

Plotting labels to /content/GP/ultralytics-main/runs/train/exp\_0504\_n/labels.jpg...

optimizer: SGD(lr=0.01, momentum=0.937) with parameter groups 48 weight(decay=0.0), 58 weight(decay=0.0005), 54 bias(decay=0.0)

TensorBoard: model graph visualization added ✅

Image sizes 640 train, 640 val

Using 8 dataloader workers

Logging results to /content/GP/ultralytics-main/runs/train/exp\_0504\_n

Starting training for 100 epochs...

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

1/100 10.9G 2.281 1.575 2.593 68 640: 100% 231/231 [01:24<00:00, 2.72it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:08<00:00, 1.60it/s]

all 1637 8530 0.808 0.708 0.8 0.435

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

2/100 9.81G 1.596 1.103 1.717 77 640: 100% 231/231 [01:19<00:00, 2.91it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.845 0.708 0.818 0.475

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

3/100 10.1G 1.516 1.111 1.558 69 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.89it/s]

all 1637 8530 0.782 0.654 0.756 0.426

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

4/100 11G 1.469 1.049 1.48 71 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.823 0.677 0.789 0.457

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

5/100 11.3G 1.44 0.978 1.428 125 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.838 0.733 0.838 0.502

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

6/100 10.8G 1.401 0.9254 1.399 82 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.84 0.745 0.841 0.501

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

7/100 9.57G 1.383 0.8967 1.376 127 640: 100% 231/231 [01:19<00:00, 2.90it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.846 0.696 0.802 0.477

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

8/100 9.93G 1.364 0.874 1.363 68 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.866 0.761 0.861 0.527

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

9/100 10.2G 1.353 0.8563 1.351 48 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:07<00:00, 1.85it/s]

all 1637 8530 0.865 0.751 0.859 0.53

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

10/100 10.4G 1.337 0.8373 1.335 76 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.89it/s]

all 1637 8530 0.853 0.752 0.85 0.524

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

11/100 11.2G 1.329 0.8235 1.329 52 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.86 0.768 0.87 0.532

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

12/100 10.7G 1.322 0.8174 1.325 45 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.873 0.779 0.881 0.561

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

13/100 9.84G 1.319 0.8072 1.318 84 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.871 0.79 0.885 0.557

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

14/100 10.8G 1.308 0.8017 1.315 95 640: 100% 231/231 [01:19<00:00, 2.90it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.874 0.781 0.883 0.552

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

15/100 12.9G 1.301 0.7903 1.304 69 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.885 0.787 0.888 0.56

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

16/100 11.2G 1.296 0.785 1.298 97 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.864 0.795 0.885 0.564

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

17/100 9.6G 1.299 0.7814 1.294 65 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.885 0.784 0.89 0.567

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

18/100 10.8G 1.286 0.775 1.292 67 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.873 0.797 0.89 0.566

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

19/100 11.1G 1.285 0.7706 1.286 100 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.881 0.783 0.884 0.562

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

20/100 11.3G 1.277 0.764 1.28 72 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.884 0.807 0.898 0.577

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

21/100 9.56G 1.276 0.757 1.279 62 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.888 0.805 0.901 0.58

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

22/100 11.6G 1.268 0.7537 1.278 103 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.884 0.804 0.901 0.585

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

23/100 10.3G 1.273 0.7544 1.276 73 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.896 0.808 0.904 0.588

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

24/100 11.1G 1.264 0.7501 1.271 53 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.89 0.813 0.906 0.585

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

25/100 9.58G 1.26 0.7426 1.264 133 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.896 0.808 0.905 0.585

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

26/100 10.7G 1.257 0.7393 1.262 75 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.895 0.809 0.907 0.591

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

27/100 10.2G 1.253 0.7358 1.261 63 640: 100% 231/231 [01:20<00:00, 2.86it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.887 0.82 0.909 0.591

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

28/100 10.1G 1.245 0.7302 1.259 70 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.885 0.825 0.911 0.599

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

29/100 9.25G 1.246 0.7308 1.258 64 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.891 0.814 0.909 0.595

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

30/100 9.25G 1.242 0.728 1.255 66 640: 100% 231/231 [01:20<00:00, 2.86it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.892 0.818 0.91 0.597

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

31/100 11.5G 1.244 0.7225 1.254 74 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.894 0.82 0.91 0.6

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

32/100 10.5G 1.235 0.7171 1.248 67 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.894 0.82 0.912 0.599

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

33/100 11.2G 1.231 0.7162 1.246 83 640: 100% 231/231 [01:20<00:00, 2.86it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.898 0.816 0.912 0.599

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

34/100 9.04G 1.228 0.7125 1.242 112 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.898 0.82 0.916 0.6

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

35/100 10.9G 1.23 0.7134 1.243 65 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.889 0.828 0.915 0.604

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

36/100 10.3G 1.23 0.7129 1.24 54 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.893 0.829 0.915 0.603

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

37/100 10.7G 1.222 0.7081 1.24 79 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.899 0.825 0.916 0.605

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

38/100 11.7G 1.224 0.7065 1.237 61 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.891 0.832 0.916 0.607

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

39/100 12.5G 1.218 0.7023 1.233 77 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.898 0.829 0.918 0.605

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

40/100 10.6G 1.218 0.7044 1.235 87 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.902 0.828 0.918 0.607

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

41/100 11.1G 1.215 0.7004 1.23 96 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.896 0.832 0.919 0.608

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

42/100 11G 1.213 0.6945 1.231 49 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.9 0.831 0.918 0.607

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

43/100 11.8G 1.211 0.6934 1.23 96 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.899 0.831 0.918 0.608

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

44/100 10.1G 1.208 0.6918 1.224 59 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.902 0.831 0.92 0.611

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

45/100 10.7G 1.208 0.6907 1.224 80 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.902 0.832 0.92 0.612

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

46/100 9.89G 1.21 0.6911 1.225 43 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.899 0.831 0.92 0.612

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

47/100 10.4G 1.203 0.6891 1.222 102 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.901 0.83 0.921 0.613

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

48/100 9.93G 1.203 0.6841 1.218 78 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.895 0.834 0.921 0.614

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

49/100 9.89G 1.195 0.6822 1.212 47 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.897 0.834 0.922 0.615

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

50/100 10.9G 1.201 0.684 1.217 67 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.898 0.836 0.922 0.615

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

51/100 10.2G 1.196 0.6818 1.214 70 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.896 0.837 0.921 0.615

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

52/100 9.75G 1.195 0.6778 1.211 57 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.897 0.838 0.921 0.616

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

53/100 10.4G 1.193 0.675 1.209 66 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.895 0.837 0.922 0.615

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

54/100 10.8G 1.188 0.6735 1.208 99 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.896 0.837 0.923 0.616

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

55/100 9.77G 1.185 0.6746 1.205 88 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.897 0.836 0.923 0.616

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

56/100 10.9G 1.185 0.6706 1.208 56 640: 100% 231/231 [01:19<00:00, 2.90it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.897 0.836 0.923 0.617

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

57/100 11G 1.18 0.6683 1.205 56 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.895 0.837 0.923 0.618

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

58/100 9.65G 1.182 0.6671 1.203 80 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.897 0.836 0.923 0.617

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

59/100 11.2G 1.176 0.6659 1.202 112 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.898 0.835 0.924 0.617

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

60/100 11.3G 1.178 0.6658 1.201 84 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.9 0.836 0.924 0.618

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

61/100 9.48G 1.174 0.665 1.199 59 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.899 0.837 0.924 0.618

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

62/100 12.5G 1.174 0.6601 1.2 105 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.898 0.838 0.924 0.619

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

63/100 10.3G 1.168 0.6574 1.198 67 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.9 0.835 0.924 0.619

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

64/100 10.9G 1.169 0.6531 1.195 67 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.9 0.836 0.924 0.619

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

65/100 10.4G 1.169 0.6558 1.194 62 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.9 0.837 0.924 0.619

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

66/100 10G 1.16 0.6525 1.189 136 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.903 0.836 0.924 0.62

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

67/100 10.9G 1.16 0.6506 1.189 91 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.9 0.838 0.924 0.62

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

68/100 11.7G 1.16 0.6517 1.19 83 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.9 0.835 0.924 0.62

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

69/100 11.1G 1.155 0.6474 1.186 110 640: 100% 231/231 [01:19<00:00, 2.90it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.9 0.837 0.924 0.62

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

70/100 10.5G 1.157 0.6464 1.185 119 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.901 0.836 0.924 0.62

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

71/100 10.5G 1.154 0.6463 1.184 52 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.902 0.834 0.924 0.62

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

72/100 12.2G 1.153 0.6442 1.186 88 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.9 0.836 0.924 0.62

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

73/100 9.96G 1.153 0.6411 1.184 79 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.9 0.836 0.925 0.62

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

74/100 10G 1.147 0.6404 1.18 55 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.899 0.836 0.925 0.62

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

75/100 10.6G 1.145 0.6387 1.179 107 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.898 0.838 0.924 0.621

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

76/100 11.6G 1.143 0.6356 1.178 90 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.898 0.839 0.925 0.621

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

77/100 12.3G 1.142 0.6348 1.177 64 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.898 0.839 0.925 0.621

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

78/100 10G 1.138 0.6302 1.175 65 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.90it/s]

all 1637 8530 0.898 0.839 0.925 0.62

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

79/100 10.5G 1.135 0.6298 1.174 70 640: 100% 231/231 [01:20<00:00, 2.86it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.897 0.84 0.925 0.621

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

80/100 12.3G 1.136 0.6278 1.173 99 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.899 0.84 0.925 0.621

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

81/100 11.2G 1.129 0.6239 1.17 95 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.899 0.839 0.925 0.621

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

82/100 12.7G 1.134 0.6258 1.172 92 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.9 0.839 0.925 0.621

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

83/100 10.6G 1.129 0.6235 1.171 101 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.899 0.839 0.925 0.621

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

84/100 12.1G 1.125 0.6208 1.168 103 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.9 0.84 0.925 0.621

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

85/100 9.35G 1.123 0.6191 1.165 104 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.901 0.838 0.925 0.621

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

86/100 11.3G 1.121 0.6181 1.168 75 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.901 0.838 0.925 0.621

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

87/100 10.6G 1.114 0.6138 1.161 76 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.903 0.837 0.926 0.622

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

88/100 12.2G 1.117 0.6146 1.161 56 640: 100% 231/231 [01:20<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.901 0.838 0.925 0.622

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

89/100 10.1G 1.111 0.6116 1.159 44 640: 100% 231/231 [01:20<00:00, 2.87it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.903 0.837 0.926 0.622

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

90/100 10.4G 1.111 0.6113 1.161 90 640: 100% 231/231 [01:19<00:00, 2.89it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.902 0.838 0.926 0.622

Closing dataloader mosaic

albumentations: Blur(p=0.01, blur\_limit=(3, 7)), MedianBlur(p=0.01, blur\_limit=(3, 7)), ToGray(p=0.01), CLAHE(p=0.01, clip\_limit=(1, 4.0), tile\_grid\_size=(8, 8))

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

91/100 9.97G 1.078 0.5596 1.129 38 640: 100% 231/231 [01:20<00:00, 2.88it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.903 0.838 0.926 0.622

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

92/100 9.45G 1.067 0.5515 1.122 43 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.903 0.838 0.926 0.622

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

93/100 10.7G 1.061 0.549 1.118 43 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.91it/s]

all 1637 8530 0.904 0.838 0.926 0.622

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

94/100 11.9G 1.059 0.545 1.116 51 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.903 0.839 0.926 0.622

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

95/100 9.38G 1.05 0.541 1.115 44 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.903 0.839 0.925 0.623

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

96/100 9.53G 1.048 0.5403 1.112 41 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.93it/s]

all 1637 8530 0.903 0.839 0.925 0.623

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

97/100 9.58G 1.047 0.5394 1.109 51 640: 100% 231/231 [01:17<00:00, 2.98it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.94it/s]

all 1637 8530 0.902 0.84 0.926 0.623

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

98/100 10.6G 1.044 0.5366 1.108 57 640: 100% 231/231 [01:17<00:00, 2.98it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.902 0.84 0.926 0.623

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

99/100 10.3G 1.037 0.5338 1.105 30 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.95it/s]

all 1637 8530 0.901 0.84 0.926 0.624

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

100/100 11G 1.038 0.5328 1.106 36 640: 100% 231/231 [01:17<00:00, 2.99it/s]

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:06<00:00, 1.92it/s]

all 1637 8530 0.901 0.84 0.926 0.623

100 epochs completed in 2.424 hours.

Optimizer stripped from /content/GP/ultralytics-main/runs/train/exp\_0504\_n/weights/last.pt, 5.0MB

Optimizer stripped from /content/GP/ultralytics-main/runs/train/exp\_0504\_n/weights/best.pt, 5.0MB

Validating /content/GP/ultralytics-main/runs/train/exp\_0504\_n/weights/best.pt...

Ultralytics YOLOv8.1.9 🚀 Python-3.10.12 torch-2.2.1+cu121 CUDA:0 (NVIDIA L4, 22700MiB)

YOLOv8n-EfficientHead summary (fused): 154 layers, 2419283 parameters, 0 gradients, 5.5 GFLOPs

Class Images Instances Box(P R mAP50 mAP50-95): 100% 13/13 [00:10<00:00, 1.18it/s]

all 1637 8530 0.901 0.84 0.926 0.623

Speed: 0.1ms preprocess, 0.8ms inference, 0.0ms loss, 0.8ms postprocess per image

Results saved to /content/GP/ultralytics-main/runs/train/exp\_0504\_n