Import necessary libraries

In [1]:
```python
import torch
from ultralytics import YOLO
import numpy as np
import os
import random
import glob
import shutil
import json
import yaml
from pprint import pprint
from pathlib import Path
```

Check CUDA availability

In [2]:
```python
# Check if CUDA is available
cuda_available = torch.cuda.is_available()
print("CUDA Available:", cuda_available)

# If CUDA is available, print details
if cuda_available:
    DEVICE = torch.cuda.current_device()
    device_name = torch.cuda.get_device_name(DEVICE)
    print(f"Device Name: {device_name}")

else:
    print("CUDA is not available. Please check your GPU drivers and CUDA ins
```

```
CUDA Available: True
Device Name: NVIDIA GeForce RTX 5070 Ti
```

Global Configurations

In [3]:
```python
# Set the random seed for reproducibility
RANDOM_SEED = 300188

random.seed(RANDOM_SEED)
np.random.seed(RANDOM_SEED)
torch.manual_seed(RANDOM_SEED)
torch.cuda.manual_seed_all(RANDOM_SEED)

# Dataset directory
DATASET_DIR = "datasets/Vehicle-License-Plate-Detection"
# YAML config for dataset splits and class names
DATA_YAML = os.path.join(DATASET_DIR, "data.yaml")

# Unique project identifier
PROJECT_NAME = "vehicle-license-plate-detection"
# Which version of the dataset to use
```

```python
DATASET_VERSION = "near-complete"
# Tag for this set of hyperparameters / training settings
EXPERIMENT_NAME = "imgsz640"


RUN_DIR = os.path.join(PROJECT_NAME, DATASET_VERSION, EXPERIMENT_NAME)


# Base folder for saving evaluation outputs
EVALUATION_DIR = os.path.join(RUN_DIR, "evaluation")
# Base folder for saving model architecture & hyperparameters
ARCHITECTURE_DIR = os.path.join(RUN_DIR, "architecture")


# Location of the best-performing weights file of the trained model
TRAINED_MODEL_WEIGHTS = os.path.join(RUN_DIR, "weights/best.onnx")
```

Dataset Splitting

In [17]:
```python
# ─── CONFIG ───────────────────────────────────────────────
TRAIN_IMG_DIR  = os.path.join(DATASET_DIR, "train", "images")
TRAIN_LBL_DIR  = os.path.join(DATASET_DIR, "train", "labels")
VAL_IMG_DIR    = os.path.join(DATASET_DIR, "valid", "images")
VAL_LBL_DIR    = os.path.join(DATASET_DIR, "valid", "labels")
TEST_IMG_DIR   = os.path.join(DATASET_DIR, "test",  "images")
TEST_LBL_DIR   = os.path.join(DATASET_DIR, "test",  "labels")


# Split ratios
TRAIN_RATIO = 7
VAL_RATIO   = 1
# (we leave TEST untouched, so its ratio of 2/10 is implicit)


RANDOM_SEED = 42
random.seed(RANDOM_SEED)


# 1 Ensure split directories exist
for d in (TRAIN_IMG_DIR, TRAIN_LBL_DIR, VAL_IMG_DIR, VAL_LBL_DIR):
    os.makedirs(d, exist_ok=True)


# 2 Gather current train & valid images
train_imgs_before = glob.glob(os.path.join(TRAIN_IMG_DIR, "*.jpg")) + \
                    glob.glob(os.path.join(TRAIN_IMG_DIR, "*.png"))
val_imgs_before   = glob.glob(os.path.join(VAL_IMG_DIR,   "*.jpg")) + \
                    glob.glob(os.path.join(VAL_IMG_DIR,   "*.png"))


# 3 Compute how many should be in valid after split
total_train_valid = len(train_imgs_before) + len(val_imgs_before)
desired_val_count = int(total_train_valid * VAL_RATIO / (TRAIN_RATIO + VAL_R
n_val_to_move     = max(0, desired_val_count - len(val_imgs_before))


# 4 Shuffle and pick from train
random.shuffle(train_imgs_before)
val_selection = train_imgs_before[:n_val_to_move]


# 5 Move images & corresponding labels
for img_path in val_selection:
    fname     = os.path.basename(img_path)
```

```python
        stem     = os.path.splitext(fname)[0]
        lbl_src  = os.path.join(TRAIN_LBL_DIR, stem + ".txt")

        # image → valid/images
        shutil.move(img_path, os.path.join(VAL_IMG_DIR, fname))

        # label → valid/labels (if exists)
        if os.path.exists(lbl_src):
            shutil.move(lbl_src, os.path.join(VAL_LBL_DIR, stem + ".txt"))

# 6 Report final counts
final_train_count = len(glob.glob(os.path.join(TRAIN_IMG_DIR, "*.jpg"))) + \
                    len(glob.glob(os.path.join(TRAIN_IMG_DIR, "*.png")))
final_val_count   = len(glob.glob(os.path.join(VAL_IMG_DIR,   "*.jpg"))) + \
                    len(glob.glob(os.path.join(VAL_IMG_DIR,   "*.png")))
final_test_count  = len(glob.glob(os.path.join(TEST_IMG_DIR,  "*.jpg"))) + \
                    len(glob.glob(os.path.join(TEST_IMG_DIR,  "*.png")))

print("Split complete:")
print(f"  train: {final_train_count} images")
print(f"  valid: {final_val_count} images")
print(f"  test : {final_test_count} images")
```

```
Split complete:
  train: 1279 images
  valid: 182 images
  test : 253 images
```

In [ ]:
```python
# ─── CONFIG ──────────────────────────────────────────────
TRAIN_IMG_DIR = os.path.join(DATASET_DIR, "train", "images")
TRAIN_LBL_DIR = os.path.join(DATASET_DIR, "train", "labels")
VAL_IMG_DIR   = os.path.join(DATASET_DIR, "valid", "images")
VAL_LBL_DIR   = os.path.join(DATASET_DIR, "valid", "labels")
TEST_IMG_DIR  = os.path.join(DATASET_DIR, "test",  "images")
TEST_LBL_DIR  = os.path.join(DATASET_DIR, "test",  "labels")

# Split ratios (train:7, val:2, test:1) out of total parts
VAL_RATIO = 2

# Ensure reproducibility
random.seed(RANDOM_SEED)

# 1 Ensure all split directories exist
for d in (TRAIN_IMG_DIR, TRAIN_LBL_DIR, VAL_IMG_DIR, VAL_LBL_DIR, TEST_IMG_D
    os.makedirs(d, exist_ok=True)

# 2 Count current images in each split
train_imgs_before = glob.glob(os.path.join(TRAIN_IMG_DIR, "*.jpg")) + glob.g
val_imgs_before   = glob.glob(os.path.join(VAL_IMG_DIR,   "*.jpg")) + glob.g
test_imgs_before  = glob.glob(os.path.join(TEST_IMG_DIR,  "*.jpg")) + glob.g

total_images = len(train_imgs_before) + len(val_imgs_before) + len(test_imgs
# Desired count for validation based on overall ratio
desired_val   = int(total_images * VAL_RATIO / 10)

# 3 Shuffle remaining train images
```

```python
all_train_imgs = train_imgs_before.copy()
random.shuffle(all_train_imgs)

# 4 Determine how many to move into validation
n_val_to_move = max(0, desired_val - len(val_imgs_before))
val_to_move   = all_train_imgs[:n_val_to_move]

# 5 Move selected images and corresponding labels
for img_path in val_to_move:
    fname   = os.path.basename(img_path)
    stem    = os.path.splitext(fname)[0]
    lbl_src = os.path.join(TRAIN_LBL_DIR, stem + ".txt")

    # Move image file to validation folder
    shutil.move(img_path, os.path.join(VAL_IMG_DIR, fname))

    # Move label file if it exists
    if os.path.exists(lbl_src):
        shutil.move(lbl_src, os.path.join(VAL_LBL_DIR, stem + ".txt"))

# 6 Report final counts
final_train_count = len(glob.glob(os.path.join(TRAIN_IMG_DIR, "*.jpg"))) + l
final_val_count   = len(glob.glob(os.path.join(VAL_IMG_DIR,   "*.jpg"))) + l
final_test_count  = len(glob.glob(os.path.join(TEST_IMG_DIR,  "*.jpg"))) + l

print("Split complete:")
print(f"  train: {final_train_count} images")
print(f"  valid:  {final_val_count} images")
print(f"  test:  {final_test_count} images")
```

```
Split complete:
  train: 1290 images
  valid:   171 images
  test:  253 images
```

Ensure full path dataset in data.yaml

```python
BASE_DIR = Path(os.getcwd()) / DATASET_DIR

# 1 Load existing YAML
with open(DATA_YAML, "r") as f:
    config = yaml.safe_load(f)

print("Original paths:")
pprint({k: config.get(k) for k in ("train", "val", "test")})

# 2 Update train/val/test entries to absolute POSIX paths with uppercase dr
for split in ("train", "val", "test"):
    orig = config.get(split, "")
    if orig.startswith(".."):
        # Build new path by appending subpath beyond '..'
        rel = Path(orig)
        parts = rel.parts[1:]  # drop leading '..'
        new_path = BASE_DIR.joinpath(*parts)
    else:
```

```
        new_path = Path(orig)
    # Convert to forward-slash style
    path_str = new_path.as_posix()
    # Ensure drive letter is uppercase (e.g. 'c:/...' → 'C:/...')
    if len(path_str) >= 2 and path_str[1] == ':' and path_str[0].islower():
        path_str = path_str[0].upper() + path_str[1:]
    config[split] = path_str

print("\nUpdated paths:")
pprint({k: config.get(k) for k in ("train", "val", "test")})

# 3 Overwrite data.yaml in place
with open(DATA_YAML, "w") as f:
    yaml.dump(config, f, sort_keys=False)

print(f"\nModified YAML saved directly to '{DATA_YAML}'")
```

```
Original paths:
{'test': '../test/images', 'train': '../train/images', 'val': '../valid/imag
es'}

Updated paths:
{'test': 'C:/Users/herma/dev/IS/yolo/datasets/Vehicle-License-Plate-Detectio
n/test/images',
 'train': 'C:/Users/herma/dev/IS/yolo/datasets/Vehicle-License-Plate-Detecti
on/train/images',
 'val': 'C:/Users/herma/dev/IS/yolo/datasets/Vehicle-License-Plate-Detectio
n/valid/images'}

Modified YAML saved directly to 'datasets/Vehicle-License-Plate-Detection\da
ta.yaml'
```

Hyperparameter Tuning

In [4]:
```python
NUMBER_OF_EPOCHS = 300
IMAGE_SIZE = 640
BATCH_SIZE = 16
PATIENCE = 50
NUM_OF_WORKERS = 8
```

In [5]:
```python
HYPERPARAMS = {
    "project": PROJECT_NAME,  # Name of the project
    "name": os.path.join(DATASET_VERSION, EXPERIMENT_NAME),  # Name of the t
    "data": DATA_YAML, # Path to the dataset configuration file
    "epochs": NUMBER_OF_EPOCHS, # Number of epochs to train for
    "imgsz": IMAGE_SIZE, # Image size for training (640x640 pixels)
    "batch": BATCH_SIZE,  # Batch size
    "device": DEVICE,  # Use GPU if available, otherwise set to -1 for CPU,
    "patience": PATIENCE,  # Number of epochs with no improvement after whic
    "cache": "disk",  # Cache images for faster training
    "workers": NUM_OF_WORKERS,    # Number of data loading workers
}
```

Model Training

```python
if __name__ == "__main__":
    # Initialize YOLOv8n model using the pre-trained weights
    model = YOLO("yolo_pretrained/yolov8n.pt")  # Load a pretrained YOLOv8 m

    # Start training with the pre-trained weights as the initialization
    results = model.train(
        **HYPERPARAMS,  # Unpack hyperparameters
    )

    # Export the trained weights to ONNX format once training completes:
    model.export(format='onnx')
```

New https://pypi.org/project/ultralytics/8.3.133 available Update with 'pip install -U ultralytics'
Ultralytics 8.3.131 Python-3.13.3 torch-2.7.0+cu128 CUDA:0 (NVIDIA GeForce RTX 5070 Ti, 16303MiB)
engine\trainer: agnostic_nms=False, amp=True, augment=False, auto_augment=randaugment, batch=16, bgr=0.0, box=7.5, cache=disk, cfg=None, classes=None, close_mosaic=10, cls=0.5, conf=None, copy_paste=0.0, copy_paste_mode=flip, cos_lr=False, cutmix=0.0, data=datasets/Vehicle-License-Plate-Detection\data.yaml, degrees=0.0, deterministic=True, device=0, dfl=1.5, dnn=False, dropout=0.0, dynamic=False, embed=None, epochs=300, erasing=0.4, exist_ok=False, fliplr=0.5, flipud=0.0, format=torchscript, fraction=1.0, freeze=None, half=False, hsv_h=0.015, hsv_s=0.7, hsv_v=0.4, imgsz=640, int8=False, iou=0.7, keras=False, kobj=1.0, line_width=None, lr0=0.01, lrf=0.01, mask_ratio=4, max_det=300, mixup=0.0, mode=train, model=yolo_pretrained/yolov8n.pt, momentum=0.937, mosaic=1.0, multi_scale=False, name=imgsz640, nbs=64, nms=False, opset=None, optimize=False, optimizer=auto, overlap_mask=True, patience=50, perspective=0.0, plots=True, pose=12.0, pretrained=True, profile=False, project=vehicle-license-plate-detection, rect=False, resume=False, retina_masks=False, save=True, save_conf=False, save_crop=False, save_dir=vehicle-license-plate-detection\near-complete\imgsz640, save_frames=False, save_json=False, save_period=-1, save_txt=False, scale=0.5, seed=0, shear=0.0, show=False, show_boxes=True, show_conf=True, show_labels=True, simplify=True, single_cls=False, source=None, split=val, stream_buffer=False, task=detect, time=None, tracker=botsort.yaml, translate=0.1, val=True, verbose=True, vid_stride=1, visualize=False, warmup_bias_lr=0.1, warmup_epochs=3.0, warmup_momentum=0.8, weight_decay=0.0005, workers=8, workspace=None
Overriding model.yaml nc=80 with nc=2

```
                    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   751702  ultralytics.nn.modules.head.Detect
[2, [64, 128, 256]]
Model summary: 129 layers, 3,011,238 parameters, 3,011,222 gradients, 8.2 GF
LOPs

Transferred 319/355 items from pretrained weights
Freezing layer 'model.22.dfl.conv.weight'
AMP: running Automatic Mixed Precision (AMP) checks...
AMP: checks passed
train: Fast image access  (ping: 0.10.1 ms, read: 72.9105.7 MB/s, size: 297.
7 KB)
train: Scanning C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-Plate-De
tection\train\labels.cache... 1279 images, 0 backgrounds, 0 corrupt: 100%|█
███████| 1279/1279 [00:00<?, ?it/s]
train: Caching images (22.0GB Disk): 100%|█████████| 1279/1279 [00:00<00:0
0, 68127.74it/s]
val: Fast image access  (ping: 0.10.0 ms, read: 59.369.8 MB/s, size: 561.1 K
B)
val: Scanning C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-Plate-Dete
ction\valid\labels.cache... 182 images, 0 backgrounds, 0 corrupt: 100%|█████
█████| 182/182 [00:00<?, ?it/s]
val: Caching images (3.2GB Disk): 100%|█████████| 182/182 [00:00<00:00, 123
922.62it/s]
Plotting labels to vehicle-license-plate-detection\near-complete\imgsz640\la
bels.jpg...
optimizer: 'optimizer=auto' found, ignoring 'lr0=0.01' and 'momentum=0.937'
and determining best 'optimizer', 'lr0' and 'momentum' automatically...
optimizer: AdamW(lr=0.001667, momentum=0.9) with parameter groups 57 weight
(decay=0.0), 64 weight(decay=0.0005), 63 bias(decay=0.0)
Image sizes 640 train, 640 val
Using 8 dataloader workers
Logging results to vehicle-license-plate-detection\near-complete\imgsz640
Starting training for 300 epochs...

      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances       Siz
e
```

```
      1/300        2.23G        1.023        1.634        1.184          156          64
0: 100%|████████| 80/80 [00:08<00:00,  9.07it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:01<00:00,  5.95it/s]
                   all          182          715        0.811        0.331        0.63
6       0.408
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      2/300        2.79G        1.069        1.119        1.196          164          64
0: 100%|████████| 80/80 [00:05<00:00, 13.58it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.18it/s]
                   all          182          715        0.711        0.669        0.70
5       0.443
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      3/300         2.8G        1.099        1.094        1.224          130          64
0: 100%|████████| 80/80 [00:05<00:00, 14.05it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.42it/s]
                   all          182          715        0.679        0.694        0.70
5       0.418
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      4/300        2.81G        1.102         1.02        1.211          133          64
0: 100%|████████| 80/80 [00:05<00:00, 13.81it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.80it/s]
                   all          182          715        0.765        0.673        0.71
6       0.433
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      5/300        2.81G        1.056       0.9436        1.193          151          64
0: 100%|████████| 80/80 [00:05<00:00, 13.90it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  7.93it/s]
                   all          182          715        0.786        0.691        0.73
2       0.464
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      6/300        2.81G        1.081       0.9244        1.209          110          64
0: 100%|████████| 80/80 [00:05<00:00, 13.65it/s]
                 Class       Images    Instances       Box(P            R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.04it/s]
                   all          182          715        0.867        0.719        0.78
8       0.509
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
```

```
       7/300      2.81G       1.021      0.8484        1.17         127          64
0: 100%|██████| 80/80 [00:05<00:00, 13.45it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.11it/s]
                  all         182         715       0.852       0.723        0.78
5      0.501
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
       8/300      2.81G       1.017      0.8374       1.168         103          64
0: 100%|██████| 80/80 [00:05<00:00, 13.83it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.23it/s]
                  all         182         715        0.86       0.739        0.81
5      0.518

       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
       9/300      2.81G      0.9939      0.8002       1.153         104          64
0: 100%|██████| 80/80 [00:05<00:00, 13.98it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.35it/s]
                  all         182         715       0.827       0.705        0.78
6      0.523

       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      10/300      2.83G       1.002      0.7918       1.148         139          64
0: 100%|██████| 80/80 [00:05<00:00, 13.72it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.39it/s]
                  all         182         715       0.885       0.764        0.82
3      0.535
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      11/300      2.83G      0.9794      0.7734       1.141         108          64
0: 100%|██████| 80/80 [00:05<00:00, 14.26it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.34it/s]
                  all         182         715       0.862       0.737        0.80
4      0.547
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      12/300      2.83G      0.9714      0.7585       1.141         153          64
0: 100%|██████| 80/80 [00:05<00:00, 13.89it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.60it/s]
                  all         182         715       0.862       0.736        0.80
3      0.519
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
```

```
      13/300       2.83G      0.9475      0.7352       1.126         146          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.12it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.51it/s]
                   all        182        715       0.888       0.742        0.81
3      0.547

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      14/300       2.83G      0.9466      0.7198       1.123         156          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.13it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.22it/s]
                   all        182        715         0.9       0.752        0.82
8      0.557

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      15/300       2.83G      0.9533      0.7199       1.131         102          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.23it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.70it/s]
                   all        182        715       0.888       0.766        0.82
5      0.554

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      16/300       2.83G      0.9305      0.7089       1.126         113          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.40it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.67it/s]
                   all        182        715       0.894       0.766        0.83
8      0.578

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      17/300       2.83G      0.9323      0.7084        1.12         139          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.31it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.40it/s]
                   all        182        715       0.877       0.763        0.83
5      0.568

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      18/300       2.83G       0.926      0.6899       1.109         136          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.81it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.99it/s]
                   all        182        715       0.893        0.78        0.83
5      0.586

      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
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```
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        19/300        2.83G           0.9        0.6711           1.1            123             64
0: 100%|██████| 80/80 [00:05<00:00, 14.11it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.96it/s]
                       all           182           715         0.874          0.791           0.83
5       0.581

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        20/300        2.83G        0.9084        0.6699         1.106            149             64
0: 100%|██████| 80/80 [00:05<00:00, 13.96it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.69it/s]
                       all           182           715         0.913          0.743           0.83
3       0.568

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        21/300        2.83G        0.9018        0.6767         1.108            106             64
0: 100%|██████| 80/80 [00:05<00:00, 13.95it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.61it/s]
                       all           182           715         0.901          0.766           0.82
1       0.563

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        22/300        2.85G        0.8956        0.6508         1.097            129             64
0: 100%|██████| 80/80 [00:05<00:00, 14.10it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.40it/s]
                       all           182           715         0.908          0.766            0.8
4       0.583

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        23/300        2.85G        0.8976        0.6535           1.1            105             64
0: 100%|██████| 80/80 [00:05<00:00, 14.21it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.94it/s]
                       all           182           715         0.918          0.776            0.8
5       0.596

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
        24/300        2.86G        0.8891        0.6489         1.089            112             64
0: 100%|██████| 80/80 [00:05<00:00, 13.92it/s]
                     Class        Images      Instances         Box(P              R           mAP5
0   mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.86it/s]
                       all           182           715         0.909          0.778           0.84
7       0.584

        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
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```
     25/300      2.86G      0.8849      0.6504       1.091         157          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.91it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.56it/s]
                  all         182         715        0.88       0.785        0.83
5      0.582
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     26/300      2.86G      0.8794      0.6373       1.089         125          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.97it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.20it/s]
                  all         182         715       0.898         0.8         0.8
5      0.595
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     27/300      2.86G      0.8714      0.6326        1.09         101          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.04it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.80it/s]
                  all         182         715       0.897       0.804        0.85
8      0.597
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     28/300      2.86G      0.8722      0.6272       1.077         115          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.07it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.99it/s]
                  all         182         715       0.865       0.798        0.84
3        0.6
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     29/300      2.86G      0.8535      0.6073       1.068         118          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.24it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.12it/s]
                  all         182         715       0.906       0.787        0.85
1      0.596
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     30/300      2.86G      0.8582      0.6117       1.078         145          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.93it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.21it/s]
                  all         182         715       0.907       0.777        0.85
4      0.596
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     31/300      2.86G      0.8649      0.6202       1.078         120          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.93it/s]
                Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.66it/s]
```

```
                              all        182        715      0.855       0.78       0.84
6       0.594
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       32/300      2.86G      0.839     0.5931      1.068        100         64
0: 100%|███████| 80/80 [00:05<00:00, 14.13it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.18it/s]
                              all        182        715      0.917      0.768       0.85
2       0.603
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       33/300      2.86G     0.8516     0.5989      1.069         89         64
0: 100%|███████| 80/80 [00:05<00:00, 14.19it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.48it/s]
                              all        182        715      0.905      0.781       0.85
5       0.616
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       34/300      2.87G     0.8463     0.6111      1.075        139         64
0: 100%|███████| 80/80 [00:05<00:00, 13.89it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.47it/s]
                              all        182        715      0.895      0.766       0.84
2       0.601
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       35/300      2.87G     0.8343     0.5922       1.06        127         64
0: 100%|███████| 80/80 [00:05<00:00, 13.52it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.03it/s]
                              all        182        715      0.933      0.792       0.86
9       0.614
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       36/300      2.88G     0.8439     0.5934      1.067        107         64
0: 100%|███████| 80/80 [00:05<00:00, 13.88it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.65it/s]
                              all        182        715      0.885      0.788       0.84
8       0.596
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       37/300      2.88G     0.8248     0.5756      1.053        139         64
0: 100%|███████| 80/80 [00:05<00:00, 14.18it/s]
                    Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.87it/s]
                              all        182        715      0.919      0.765       0.85
4       0.61
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
```

```
      38/300      2.88G      0.8151      0.5762      1.048          96          64
0: 100%|██████|  80/80 [00:05<00:00, 13.78it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.55it/s]
                   all         182         715       0.933       0.789        0.86
5       0.619
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      39/300       2.9G      0.8148      0.5715      1.048         119          64
0: 100%|██████|  80/80 [00:05<00:00, 14.09it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.44it/s]
                   all         182         715       0.899       0.787        0.85
6       0.614
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      40/300       2.9G      0.8123      0.5751      1.056         123          64
0: 100%|██████|  80/80 [00:05<00:00, 14.14it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.18it/s]
                   all         182         715       0.902       0.804        0.86
3       0.618
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      41/300      2.91G      0.8207       0.567      1.047         131          64
0: 100%|██████|  80/80 [00:05<00:00, 14.27it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.14it/s]
                   all         182         715       0.901        0.79        0.85
8       0.614
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      42/300      2.91G      0.8147      0.5659      1.045         129          64
0: 100%|██████|  80/80 [00:05<00:00, 14.12it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.34it/s]
                   all         182         715       0.928       0.784         0.8
6        0.62
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      43/300      2.91G      0.8092      0.5698      1.047         123          64
0: 100%|██████|  80/80 [00:05<00:00, 14.13it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.35it/s]
                   all         182         715       0.923       0.788        0.85
5       0.616
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
      44/300      2.91G      0.8128      0.5629      1.055         128          64
0: 100%|██████|  80/80 [00:05<00:00, 14.16it/s]
                 Class      Images  Instances      Box(P           R        mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.43it/s]
```

```
                           all        182        715      0.903      0.793       0.85
6      0.616
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      45/300      2.91G     0.8013     0.5701      1.044        140         64
0: 100%|███████| 80/80 [00:05<00:00, 13.74it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.75it/s]
                           all        182        715      0.918      0.792       0.86
3      0.621
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      46/300      2.91G     0.7994     0.5479       1.04        117         64
0: 100%|███████| 80/80 [00:05<00:00, 14.15it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.50it/s]
                           all        182        715      0.891      0.807       0.86
1      0.616
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      47/300      2.91G     0.7923     0.5513      1.041        124         64
0: 100%|███████| 80/80 [00:05<00:00, 13.89it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.65it/s]
                           all        182        715      0.917      0.799       0.86
8       0.62
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      48/300      2.91G     0.7953     0.5572      1.041        147         64
0: 100%|███████| 80/80 [00:05<00:00, 13.51it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.23it/s]
                           all        182        715      0.913       0.79        0.8
6      0.615
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      49/300      2.91G      0.794     0.5466      1.035         91         64
0: 100%|███████| 80/80 [00:05<00:00, 13.83it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.89it/s]
                           all        182        715      0.924      0.783       0.86
8      0.624
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      50/300      2.91G     0.7756     0.5391      1.032        112         64
0: 100%|███████| 80/80 [00:05<00:00, 13.78it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.47it/s]
                           all        182        715      0.901      0.798       0.85
7       0.62
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
```

```
      51/300        2.91G       0.7779         0.545        1.034           166           64
0: 100%|██████| 80/80 [00:05<00:00, 13.81it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.75it/s]
                   all          182          715        0.914         0.79          0.8
6      0.624
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      52/300        2.91G       0.7871        0.5422        1.031           138           64
0: 100%|██████| 80/80 [00:06<00:00, 12.54it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.94it/s]
                   all          182          715        0.912         0.79         0.85
7      0.616
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      53/300        2.91G       0.7904        0.5417        1.036           121           64
0: 100%|██████| 80/80 [00:05<00:00, 13.75it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.25it/s]
                   all          182          715        0.923        0.787         0.86
4      0.631
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      54/300        2.91G       0.7914        0.5425        1.038           111           64
0: 100%|██████| 80/80 [00:05<00:00, 13.69it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.80it/s]
                   all          182          715        0.884        0.806         0.86
1      0.623
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      55/300        2.91G       0.7871        0.5378        1.031           119           64
0: 100%|██████| 80/80 [00:05<00:00, 13.46it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.41it/s]
                   all          182          715        0.902        0.803         0.87
2      0.628
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      56/300        2.91G       0.7777        0.5268        1.025           104           64
0: 100%|██████| 80/80 [00:05<00:00, 13.84it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.39it/s]
                   all          182          715        0.925        0.794         0.87
2      0.64
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      57/300        2.91G        0.759        0.5249        1.025           109           64
0: 100%|██████| 80/80 [00:05<00:00, 14.49it/s]
                 Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.59it/s]
```

```
                              all          182          715        0.899          0.8         0.86
2        0.621
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         58/300        2.91G       0.7792         0.53        1.025          141           64
0: 100%|███████| 80/80 [00:05<00:00, 14.15it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.53it/s]
                              all          182          715        0.927        0.789         0.86
4        0.615
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         59/300        2.91G       0.7742       0.5272        1.027          127           64
0: 100%|███████| 80/80 [00:05<00:00, 13.90it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.90it/s]
                              all          182          715        0.912        0.801         0.86
9        0.629
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         60/300        2.91G       0.7544        0.513        1.022          141           64
0: 100%|███████| 80/80 [00:05<00:00, 13.84it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.71it/s]
                              all          182          715        0.919        0.803          0.8
7        0.634
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         61/300        2.91G       0.7562       0.5121        1.014          101           64
0: 100%|███████| 80/80 [00:05<00:00, 13.91it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.32it/s]
                              all          182          715        0.926        0.791         0.85
8        0.624
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         62/300        2.91G       0.7567       0.5135        1.016          137           64
0: 100%|███████| 80/80 [00:05<00:00, 14.13it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.66it/s]
                              all          182          715        0.931        0.802         0.87
3        0.644
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
         63/300        2.91G       0.7537       0.5089        1.008          112           64
0: 100%|███████| 80/80 [00:05<00:00, 14.38it/s]
                    Class       Images    Instances         Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.72it/s]
                              all          182          715         0.92        0.802         0.87
3        0.631
         Epoch      GPU_mem      box_loss     cls_loss     dfl_loss    Instances          Siz
e
```

```
      64/300        2.91G       0.7402       0.5003       1.011          119          64
0: 100%|███████| 80/80 [00:05<00:00, 14.03it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.17it/s]
                   all         182         715        0.922        0.792        0.86
7     0.607

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
      65/300        2.91G       0.7613       0.5096       1.009          128          64
0: 100%|███████| 80/80 [00:05<00:00, 13.95it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.12it/s]
                   all         182         715        0.903        0.808        0.86
7     0.635

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
      66/300        2.91G       0.7552        0.503       1.012          142          64
0: 100%|███████| 80/80 [00:05<00:00, 14.01it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.55it/s]
                   all         182         715        0.919        0.811        0.87
3     0.627

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
      67/300        2.91G       0.7498       0.5061       1.006          104          64
0: 100%|███████| 80/80 [00:05<00:00, 14.09it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.58it/s]
                   all         182         715          0.9        0.798        0.86
4      0.62

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
      68/300        2.91G       0.7358       0.5043       1.011          113          64
0: 100%|███████| 80/80 [00:05<00:00, 13.94it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.21it/s]
                   all         182         715        0.932        0.804        0.87
5     0.641

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
      69/300        2.91G        0.741       0.5069        1.01           83          64
0: 100%|███████| 80/80 [00:05<00:00, 14.12it/s]
                 Class      Images   Instances      Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.31it/s]
                   all         182         715        0.942        0.783        0.87
1     0.634

      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances        Siz
e
```

```
      70/300        2.91G       0.7369       0.504        1.001          82          64
0: 100%|████████| 80/80 [00:05<00:00, 13.81it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.97it/s]
                     all         182         715       0.919       0.798         0.8
7      0.644
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
      71/300        2.91G       0.7319      0.4948        1.002         111          64
0: 100%|████████| 80/80 [00:05<00:00, 13.77it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.79it/s]
                     all         182         715       0.908       0.801        0.86
7      0.635
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
      72/300        2.91G       0.7391      0.4976        1.01          159          64
0: 100%|████████| 80/80 [00:05<00:00, 13.84it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.86it/s]
                     all         182         715       0.937        0.79        0.87
2      0.641
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
      73/300        2.91G        0.738      0.4975        1.005         132          64
0: 100%|████████| 80/80 [00:06<00:00, 12.87it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.38it/s]
                     all         182         715       0.928       0.788        0.86
6      0.634
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
      74/300        2.91G       0.7243      0.4855        0.998         101          64
0: 100%|████████| 80/80 [00:05<00:00, 13.70it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.80it/s]
                     all         182         715       0.911       0.801        0.87
8      0.643
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
      75/300        2.91G       0.7347      0.4912        1.009         109          64
0: 100%|████████| 80/80 [00:05<00:00, 14.10it/s]
                   Class       Images   Instances      Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.03it/s]
                     all         182         715       0.916         0.8         0.8
7      0.635
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
```

```
        76/300        2.91G        0.7364        0.4843        1.003            157            64
0: 100%|██████| 80/80 [00:05<00:00, 14.29it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.71it/s]
                    all          182          715        0.931        0.796        0.86
8       0.634
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        77/300        2.91G        0.7226        0.4869        1.003            112            64
0: 100%|██████| 80/80 [00:06<00:00, 13.09it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.28it/s]
                    all          182          715          0.9        0.813        0.86
9       0.633
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        78/300        2.91G         0.729        0.4882        0.9984           116            64
0: 100%|██████| 80/80 [00:07<00:00, 11.41it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.94it/s]
                    all          182          715        0.941        0.802        0.87
7       0.64
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        79/300        2.91G        0.7303        0.4843        0.9992            99            64
0: 100%|██████| 80/80 [00:06<00:00, 13.30it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.29it/s]
                    all          182          715        0.935        0.794        0.86
9       0.644
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        80/300        2.91G        0.7258        0.4852        0.9952           150            64
0: 100%|██████| 80/80 [00:06<00:00, 13.19it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  8.54it/s]
                    all          182          715        0.933        0.795        0.87
5       0.644
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        81/300        2.91G        0.7212        0.4764         0.99            134            64
0: 100%|██████| 80/80 [00:05<00:00, 13.35it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████| 6/6 [00:00<00:00,  9.09it/s]
                    all          182          715        0.922        0.789        0.86
8       0.641
        Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
```

```
     82/300        2.91G      0.7258       0.4781       0.9972           134           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.05it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.89it/s]
                  all         182          715         0.92        0.791          0.8
6       0.625
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
     83/300        2.91G      0.7085       0.4786        0.992           169           64
0: 100%|██████████| 80/80 [00:05<00:00, 13.78it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.72it/s]
                  all         182          715        0.923        0.799         0.87
2       0.644
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
     84/300        2.91G       0.718       0.4789        1.001           147           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.17it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.01it/s]
                  all         182          715        0.925        0.793         0.87
3       0.631
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
     85/300        2.91G      0.7114       0.4785       0.9916           137           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.32it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.64it/s]
                  all         182          715         0.93        0.793         0.87
7       0.644
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
     86/300        2.91G      0.7052       0.4705       0.9892           123           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.48it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.38it/s]
                  all         182          715        0.929         0.81         0.87
7       0.648

       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
     87/300        2.91G      0.7157       0.4728       0.9922           146           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.59it/s]
                Class      Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.05it/s]
                  all         182          715        0.915        0.818         0.87
8       0.651
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
```

```
      88/300       2.91G       0.7043       0.4652       0.9893            136            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.29it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.84it/s]
                    all         182          715        0.931        0.801         0.87
4       0.649
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      89/300       2.91G       0.7007       0.4718       0.9856            155            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.69it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.03it/s]
                    all         182          715        0.911        0.804         0.87
4       0.655
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      90/300       2.91G       0.7007       0.4654       0.9872            123            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.26it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.39it/s]
                    all         182          715        0.913        0.805         0.87
5       0.641
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      91/300       2.91G       0.7143         0.48       0.9937            134            64
0: 100%|██████████| 80/80 [00:05<00:00, 13.47it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.64it/s]
                    all         182          715        0.926        0.801         0.87
6       0.645
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      92/300       2.91G       0.6972       0.4622       0.9867            112            64
0: 100%|██████████| 80/80 [00:05<00:00, 13.53it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.16it/s]
                    all         182          715        0.924        0.803         0.87
5       0.652
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      93/300       2.91G       0.6981        0.462       0.9875            126            64
0: 100%|██████████| 80/80 [00:05<00:00, 13.69it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.03it/s]
                    all         182          715        0.922        0.813          0.8
8       0.656
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      94/300       2.91G       0.7032       0.4655       0.9845            102            64
0: 100%|██████████| 80/80 [00:05<00:00, 13.83it/s]
                  Class       Images    Instances       Box(P            R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.43it/s]
```

```
                            all           182           715         0.943         0.803         0.87
4        0.645
         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
        95/300        2.91G       0.6987       0.4581        0.982          149           64
0: 100%|███████| 80/80 [00:05<00:00, 14.30it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.28it/s]
                            all           182           715         0.928          0.81         0.88
1        0.651

         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
        96/300        2.91G       0.6965       0.4568       0.9833          105           64
0: 100%|███████| 80/80 [00:05<00:00, 14.08it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  6.10it/s]
                            all           182           715          0.93        0.788          0.8
6        0.635
         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
        97/300        2.91G       0.6929       0.4616       0.9823          151           64
0: 100%|███████| 80/80 [00:06<00:00, 12.84it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  6.80it/s]
                            all           182           715         0.934        0.809         0.88
1        0.649
         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
        98/300        2.91G       0.6891       0.4559       0.9828          113           64
0: 100%|███████| 80/80 [00:06<00:00, 12.33it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  7.88it/s]
                            all           182           715         0.911          0.8         0.86
3        0.647
         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
        99/300        2.91G        0.695       0.4627       0.9844          128           64
0: 100%|███████| 80/80 [00:06<00:00, 12.43it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.39it/s]
                            all           182           715         0.925        0.802         0.87
3        0.654
         Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
       100/300        2.91G       0.6948       0.4564       0.9827          173           64
0: 100%|███████| 80/80 [00:06<00:00, 13.19it/s]
                          Class       Images    Instances        Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  6.62it/s]
                            all           182           715         0.934        0.795          0.8
8        0.647
```

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
101/300	2.91G	0.6956	0.4566	0.9852	154	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 13.46it/s]
```

	Class	Images	Instances	Box(P	R	mAP50

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  7.61it/s]
```

| | all | 182 | 715 | 0.915 | 0.806 | 0.878 |
| | | | | | | 0.647 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
102/300	2.91G	0.701	0.4559	0.9806	87	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 13.86it/s]
```

	Class	Images	Instances	Box(P	R	mAP5

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.34it/s]
```

| | all | 182 | 715 | 0.929 | 0.807 | 0.874 |
| | | | | | | 0.646 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
103/300	2.91G	0.6747	0.4434	0.9755	147	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 14.57it/s]
```

	Class	Images	Instances	Box(P	R	mAP5

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.70it/s]
```

| | all | 182 | 715 | 0.92 | 0.814 | 0.873 |
| | | | | | | 0.645 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
104/300	2.91G	0.676	0.4468	0.9797	167	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 14.48it/s]
```

	Class	Images	Instances	Box(P	R	mAP5

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.36it/s]
```

| | all | 182 | 715 | 0.903 | 0.819 | 0.879 |
| | | | | | | 0.652 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
105/300	2.91G	0.6782	0.4428	0.9776	111	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 14.31it/s]
```

	Class	Images	Instances	Box(P	R	mAP5

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.96it/s]
```

| | all | 182 | 715 | 0.933 | 0.82 | 0.884 |
| | | | | | | 0.653 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
106/300	2.91G	0.6763	0.4396	0.9758	125	64

```
0: 100%|██████████| 80/80 [00:05<00:00, 14.26it/s]
```

	Class	Images	Instances	Box(P	R	mAP5

```
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.37it/s]
```

| | all | 182 | 715 | 0.933 | 0.798 | 0.8 |
| | | | | | | 0.649 |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size

```
      107/300        2.91G        0.6742        0.4437        0.9757          135           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.13it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.86it/s]
                   all          182          715        0.918        0.816        0.87
4       0.648
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      108/300        2.91G        0.6644         0.433        0.9726          163           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.20it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.98it/s]
                   all          182          715         0.92        0.818        0.87
6       0.652
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      109/300        2.91G        0.6663        0.4446        0.9691          124           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.25it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.19it/s]
                   all          182          715        0.932          0.8        0.87
6       0.646
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      110/300        2.91G        0.6671         0.442        0.9695          167           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.18it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.33it/s]
                   all          182          715        0.908        0.812        0.88
1       0.656
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      111/300        2.91G        0.6675        0.4381        0.9646          127           64
0: 100%|██████████| 80/80 [00:05<00:00, 14.36it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.97it/s]
                   all          182          715         0.95        0.781        0.87
4       0.649

      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
      112/300        2.91G        0.6716        0.4435        0.9702          158           64
0: 100%|██████████| 80/80 [00:05<00:00, 13.74it/s]
                 Class       Images   Instances        Box(P            R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.85it/s]
                   all          182          715        0.929          0.8        0.88
1       0.65
      Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances          Siz
e
```

```
       113/300        2.91G        0.6644        0.4379        0.9738          106          64
0: 100%|███████| 80/80 [00:05<00:00, 13.87it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.01it/s]
                   all          182          715        0.931        0.805         0.88
2      0.647
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
       114/300        2.91G        0.6629        0.4347         0.973          102          64
0: 100%|███████| 80/80 [00:05<00:00, 14.34it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.23it/s]
                   all          182          715        0.935        0.808         0.88
3      0.654
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
       115/300        2.91G        0.6648        0.4355        0.9683          153          64
0: 100%|███████| 80/80 [00:05<00:00, 13.98it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  7.81it/s]
                   all          182          715         0.93         0.82         0.88
8      0.654
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
       116/300        2.91G        0.6552        0.4353        0.9666          127          64
0: 100%|███████| 80/80 [00:05<00:00, 13.45it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.52it/s]
                   all          182          715        0.891        0.829         0.88
6      0.662
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
       117/300        2.91G        0.6513        0.4253         0.958          132          64
0: 100%|███████| 80/80 [00:05<00:00, 13.35it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.23it/s]
                   all          182          715        0.888        0.825         0.87
7      0.648
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
       118/300        2.91G        0.6554        0.4244        0.9607          113          64
0: 100%|███████| 80/80 [00:05<00:00, 13.95it/s]
                 Class       Images   Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  7.79it/s]
                   all          182          715        0.912        0.824         0.87
7      0.647
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances         Siz
e
```

```
      119/300      2.91G      0.6534      0.4276      0.9681         100         64
0: 100%|████████| 80/80 [00:05<00:00, 13.90it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.58it/s]
                   all         182         715       0.922       0.818        0.88
6      0.655
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      120/300      2.91G      0.6561      0.4289      0.9662         131         64
0: 100%|████████| 80/80 [00:05<00:00, 13.94it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.66it/s]
                   all         182         715       0.923       0.791        0.87
1      0.644
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      121/300      2.91G      0.6462      0.4268      0.9621         112         64
0: 100%|████████| 80/80 [00:05<00:00, 13.53it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.85it/s]
                   all         182         715       0.925       0.819        0.88
5      0.661
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      122/300      2.91G      0.6495      0.4211      0.9621         116         64
0: 100%|████████| 80/80 [00:05<00:00, 14.24it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.27it/s]
                   all         182         715       0.931       0.809        0.88
2      0.65
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      123/300      2.91G      0.6455      0.4193      0.9609         116         64
0: 100%|████████| 80/80 [00:05<00:00, 13.37it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.87it/s]
                   all         182         715       0.918       0.828         0.8
8      0.648
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      124/300      2.91G      0.6541      0.4229      0.9612         106         64
0: 100%|████████| 80/80 [00:05<00:00, 14.71it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00, 10.27it/s]
                   all         182         715       0.939        0.82        0.88
9      0.654
      Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      125/300      2.91G      0.6528      0.4234      0.9611         180         64
0: 100%|████████| 80/80 [00:05<00:00, 14.38it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.48it/s]
```

```
                               all          182         715        0.924        0.801        0.87
9      0.645
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     126/300       2.91G      0.6443      0.4241      0.9684         114          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.84it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.53it/s]
                               all          182         715        0.928        0.804        0.87
6      0.644
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     127/300       2.91G       0.663      0.4303      0.9652         147          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.27it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.78it/s]
                               all          182         715        0.946        0.794        0.87
8      0.647
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     128/300       2.91G      0.6398      0.4161        0.96         221          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.72it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.22it/s]
                               all          182         715        0.928        0.805        0.87
9      0.655
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     129/300       2.91G      0.6522      0.4268       0.962         149          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.06it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.70it/s]
                               all          182         715        0.909         0.81        0.87
7      0.652
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     130/300       2.91G      0.6431      0.4215      0.9611          99          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.53it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.61it/s]
                               all          182         715        0.918        0.821        0.88
3      0.657
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     131/300       2.91G      0.6371      0.4186      0.9585         109          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.78it/s]
                 Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.49it/s]
                               all          182         715        0.901        0.819        0.88
2      0.646
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
```

```
        132/300      2.91G       0.644      0.4202      0.9591         114         64
0: 100%|██████| 80/80 [00:05<00:00, 14.25it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.38it/s]
                   all        182        715       0.933       0.816        0.88
4       0.644
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        133/300      2.91G      0.6336      0.4136       0.951         131         64
0: 100%|██████| 80/80 [00:05<00:00, 14.50it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.03it/s]
                   all        182        715       0.931       0.809        0.88
9       0.658
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        134/300      2.91G      0.6245      0.4059      0.9502         104         64
0: 100%|██████| 80/80 [00:05<00:00, 14.59it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.17it/s]
                   all        182        715       0.912       0.823        0.88
6        0.66
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        135/300      2.91G      0.6415      0.4163      0.9588         114         64
0: 100%|██████| 80/80 [00:05<00:00, 14.18it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.70it/s]
                   all        182        715       0.924       0.823        0.88
5       0.658
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        136/300      2.91G      0.6395      0.4148      0.9559         152         64
0: 100%|██████| 80/80 [00:05<00:00, 14.32it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.94it/s]
                   all        182        715        0.92        0.81        0.88
3       0.656
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        137/300      2.91G      0.6331      0.4084      0.9519         149         64
0: 100%|██████| 80/80 [00:05<00:00, 14.76it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.05it/s]
                   all        182        715       0.911       0.816        0.88
2       0.656
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances       Siz
e
        138/300      2.91G       0.633      0.4116      0.9572         109         64
0: 100%|██████| 80/80 [00:05<00:00, 13.92it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.88it/s]
```

```
                          all           182           715         0.937         0.817          0.88
8        0.657
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       139/300      2.91G      0.6355      0.4092      0.9573          96            64
0: 100%|███████████| 80/80 [00:05<00:00, 14.06it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.80it/s]
                          all           182           715         0.938         0.811          0.88
6         0.66
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       140/300      2.91G      0.6424      0.4158      0.9581          96            64
0: 100%|███████████| 80/80 [00:05<00:00, 13.77it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.34it/s]
                          all           182           715         0.944         0.803          0.88
8        0.663
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       141/300      2.91G      0.6275      0.4021      0.9502         110            64
0: 100%|███████████| 80/80 [00:05<00:00, 14.00it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.40it/s]
                          all           182           715         0.933         0.818          0.88
6        0.659
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       142/300      2.91G      0.6297      0.4098      0.9462         114            64
0: 100%|███████████| 80/80 [00:05<00:00, 14.25it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.06it/s]
                          all           182           715         0.915         0.838          0.88
7         0.66
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       143/300      2.91G      0.6318      0.4085      0.9532         139            64
0: 100%|███████████| 80/80 [00:05<00:00, 14.48it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.01it/s]
                          all           182           715         0.912         0.823          0.88
7        0.663
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
       144/300      2.91G      0.6236       0.401      0.9451          96            64
0: 100%|███████████| 80/80 [00:05<00:00, 13.69it/s]
                 Class      Images   Instances        Box(P           R          mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.34it/s]
                          all           182           715         0.929         0.825          0.88
5        0.656
         Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances           Siz
e
```

```
     145/300        2.91G       0.6204       0.4053       0.9488            125          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.44it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.96it/s]
                   all         182        715       0.944      0.822        0.88
6      0.665
     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     146/300        2.91G       0.6227        0.404       0.9495            149          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.96it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.26it/s]
                   all         182        715       0.919       0.82        0.88
7      0.658
     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     147/300        2.91G       0.6293       0.4079       0.9485             86          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.48it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.26it/s]
                   all         182        715       0.933      0.817        0.88
6      0.662
     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     148/300        2.91G       0.6114       0.3986       0.9457             93          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.07it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.94it/s]
                   all         182        715       0.903      0.832        0.88
7      0.66

     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     149/300        2.91G       0.6125        0.395       0.9426            110          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.35it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.98it/s]
                   all         182        715       0.926      0.815        0.88
1      0.655
     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     150/300        2.91G       0.6246       0.4017        0.941            166          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.86it/s]
                 Class      Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.49it/s]
                   all         182        715       0.939       0.81        0.88
6      0.656

     Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
```

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        151/300        2.91G        0.6177        0.4003        0.9442           129           64
0: 100%|███████| 80/80 [00:05<00:00, 13.80it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.89it/s]
                      all           182           715         0.948         0.806          0.88
3       0.656

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
        152/300        2.91G        0.6083        0.3944        0.9408           109           64
0: 100%|███████| 80/80 [00:05<00:00, 14.65it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.20it/s]
                      all           182           715         0.925          0.81          0.88
4       0.658

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
        153/300        2.91G        0.6145        0.3965        0.9467           162           64
0: 100%|███████| 80/80 [00:05<00:00, 14.45it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.09it/s]
                      all           182           715          0.92         0.809          0.87
5       0.656

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
        154/300        2.91G        0.6264        0.3988        0.9461           132           64
0: 100%|███████| 80/80 [00:05<00:00, 14.68it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.25it/s]
                      all           182           715         0.926           0.8          0.87
8       0.652

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
        155/300        2.91G        0.6184        0.3998        0.9421           150           64
0: 100%|███████| 80/80 [00:05<00:00, 13.99it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.40it/s]
                      all           182           715         0.913         0.819           0.8
8        0.66

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
        156/300        2.91G        0.6029        0.3895        0.9381            99           64
0: 100%|███████| 80/80 [00:05<00:00, 14.32it/s]
                    Class        Images    Instances        Box(P            R          mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.87it/s]
                      all           182           715         0.912         0.827          0.88
2       0.651

      Epoch      GPU_mem      box_loss      cls_loss      dfl_loss    Instances          Siz
e
```

```
       157/300       2.91G      0.6126       0.393      0.9398         145         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.15it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.19it/s]
                   all        182        715      0.954      0.794       0.88
2       0.666
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       158/300       2.91G      0.6135      0.3964      0.9463         153         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.82it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.61it/s]
                   all        182        715      0.918      0.811       0.88
3       0.663
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       159/300       2.91G      0.6083      0.3972      0.9366         120         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.21it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.99it/s]
                   all        182        715      0.913      0.819       0.88
4       0.663
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       160/300       2.91G      0.5967      0.3882      0.9383          87         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.42it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.88it/s]
                   all        182        715      0.924      0.824       0.88
6       0.658
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       161/300       2.91G       0.612      0.3913      0.9406         123         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.15it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.02it/s]
                   all        182        715      0.917      0.826        0.8
9       0.662
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       162/300       2.91G      0.5987      0.3815      0.9374         111         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.03it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.10it/s]
                   all        182        715      0.935      0.808       0.88
5       0.665
       Epoch    GPU_mem    box_loss    cls_loss    dfl_loss  Instances        Siz
e
       163/300       2.91G      0.6119      0.3939      0.9426         110         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.19it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.54it/s]
```

```
                        all          182          715          0.91        0.825         0.88
2       0.655
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      164/300       2.91G      0.5994      0.3874      0.9355          98          64
0: 100%|███████| 80/80 [00:05<00:00, 14.62it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.95it/s]
                        all          182          715         0.912         0.83         0.88
6       0.661
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      165/300       2.91G      0.5996      0.3837      0.9354         131          64
0: 100%|███████| 80/80 [00:05<00:00, 14.12it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.32it/s]
                        all          182          715         0.928        0.835         0.88
9       0.661
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      166/300       2.91G       0.598      0.3874      0.9346         182          64
0: 100%|███████| 80/80 [00:05<00:00, 14.49it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.53it/s]
                        all          182          715         0.928        0.815          0.8
8       0.652
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      167/300       2.91G       0.597      0.3834      0.9329         142          64
0: 100%|███████| 80/80 [00:05<00:00, 14.09it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.03it/s]
                        all          182          715         0.923        0.826         0.88
1       0.647
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      168/300       2.91G      0.5888      0.3763      0.9293          96          64
0: 100%|███████| 80/80 [00:05<00:00, 14.70it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.24it/s]
                        all          182          715          0.93        0.828         0.89
1       0.669
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      169/300       2.91G      0.5986      0.3847      0.9403         125          64
0: 100%|███████| 80/80 [00:05<00:00, 14.04it/s]
                 Class      Images   Instances        Box(P           R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  7.39it/s]
                        all          182          715         0.951        0.796         0.88
6       0.662
        Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
```

```
      170/300        2.91G       0.5971       0.3819       0.9331              87             64
0: 100%|████████| 80/80 [00:05<00:00, 14.40it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00, 10.75it/s]
                   all         182         715        0.914       0.819          0.8
8      0.662
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      171/300        2.91G       0.5944       0.3842       0.9371             112             64
0: 100%|████████| 80/80 [00:05<00:00, 13.94it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.47it/s]
                   all         182         715        0.929       0.813         0.87
7      0.663
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      172/300        2.91G        0.588       0.3785       0.9326             128             64
0: 100%|████████| 80/80 [00:05<00:00, 14.76it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.69it/s]
                   all         182         715        0.908        0.82         0.88
2      0.661
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      173/300        2.91G       0.5852       0.3754       0.9297             153             64
0: 100%|████████| 80/80 [00:05<00:00, 14.69it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.09it/s]
                   all         182         715        0.916       0.819         0.88
4      0.659
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      174/300        2.91G       0.5915       0.3805       0.9364              93             64
0: 100%|████████| 80/80 [00:05<00:00, 14.42it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.33it/s]
                   all         182         715        0.927       0.805         0.88
1       0.66
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      175/300        2.91G       0.5868       0.3786       0.9349             113             64
0: 100%|████████| 80/80 [00:05<00:00, 14.45it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.18it/s]
                   all         182         715         0.92       0.821         0.88
2      0.656
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      176/300        2.91G       0.5964       0.3766       0.9326             113             64
0: 100%|████████| 80/80 [00:05<00:00, 14.02it/s]
                 Class      Images   Instances      Box(P           R         mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.59it/s]
```

```
                              all        182        715      0.911      0.829       0.88
2        0.658
         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       177/300      2.91G     0.5809     0.3727     0.9293        121         64
0: 100%|█████████| 80/80 [00:05<00:00, 14.72it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.85it/s]
                              all        182        715      0.911      0.836       0.88
4        0.655

         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       178/300      2.91G     0.5866     0.3721     0.9289        122         64
0: 100%|█████████| 80/80 [00:05<00:00, 14.55it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.30it/s]
                              all        182        715      0.927      0.823       0.88
7        0.662
         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       179/300      2.91G     0.5807     0.3769     0.9317        129         64
0: 100%|█████████| 80/80 [00:05<00:00, 14.40it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.99it/s]
                              all        182        715      0.934       0.82       0.89
1        0.661
         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       180/300      2.91G     0.5834     0.3707     0.9324        178         64
0: 100%|█████████| 80/80 [00:05<00:00, 14.69it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.78it/s]
                              all        182        715      0.928      0.828       0.89
3        0.667
         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       181/300      2.91G     0.5788     0.3735     0.9317        146         64
0: 100%|█████████| 80/80 [00:05<00:00, 13.80it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.70it/s]
                              all        182        715      0.928      0.819       0.89
1        0.661
         Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
       182/300      2.91G     0.5772      0.376     0.9325         82         64
0: 100%|█████████| 80/80 [00:05<00:00, 14.48it/s]
                 Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.45it/s]
                              all        182        715      0.935      0.823       0.89
3        0.674
```

```
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     183/300      2.91G       0.573       0.368       0.925         127         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.37it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.38it/s]
                   all         182         715       0.926       0.835       0.89
1      0.669
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     184/300      2.91G      0.5835      0.3706      0.9287         129         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.38it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.91it/s]
                   all         182         715       0.936       0.825       0.88
9      0.663
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     185/300      2.91G      0.5777      0.3674      0.9329         108         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.31it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.34it/s]
                   all         182         715       0.923       0.825       0.89
3      0.665
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     186/300      2.91G      0.5684      0.3663      0.9292         133         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.07it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.41it/s]
                   all         182         715       0.922       0.827       0.88
8      0.67
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     187/300      2.91G      0.5812       0.378      0.9285         129         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.44it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.01it/s]
                   all         182         715        0.92       0.833        0.8
9      0.672
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
     188/300      2.91G      0.5672      0.3694      0.9274         109         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.50it/s]
                 Class      Images   Instances       Box(P           R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.27it/s]
                   all         182         715       0.918        0.84       0.89
2      0.669
      Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
```

```
      189/300        2.91G       0.5708       0.3693       0.9275          89          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.27it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.28it/s]
                   all        182         715       0.934       0.828         0.8
9       0.663
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      190/300        2.91G        0.562       0.3649        0.922         142          64
0: 100%|█████████| 80/80 [00:05<00:00, 13.77it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.19it/s]
                   all        182         715       0.936       0.826        0.88
9       0.665
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      191/300        2.91G       0.5736       0.3673       0.9276         114          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.13it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.36it/s]
                   all        182         715       0.926        0.83        0.89
1       0.668
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      192/300        2.91G       0.5622       0.3625       0.9229          99          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.53it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.92it/s]
                   all        182         715       0.939       0.818        0.88
9       0.666
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      193/300        2.91G       0.5747       0.3658       0.9231         158          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.04it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.92it/s]
                   all        182         715       0.941       0.811        0.88
9       0.671
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      194/300        2.91G       0.5675       0.3652       0.9242          92          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.55it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.42it/s]
                   all        182         715       0.942       0.817        0.89
1       0.665
      Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances         Siz
e
      195/300        2.91G       0.5623       0.3631       0.9228         121          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.71it/s]
                 Class      Images   Instances      Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.98it/s]
```

```
                        all       182       715      0.924      0.819       0.88
7       0.663

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    196/300     2.91G     0.5635     0.3578     0.9209        113         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.70it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.67it/s]
                        all       182       715      0.901      0.845       0.88
9       0.667

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    197/300     2.91G     0.5715     0.3631     0.9255        105         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.19it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.06it/s]
                        all       182       715      0.939       0.81       0.88
8       0.665

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    198/300     2.91G      0.571     0.3628     0.9259        148         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.78it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.63it/s]
                        all       182       715      0.945      0.803       0.88
8       0.667

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    199/300     2.91G      0.554     0.3564     0.9228        118         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.58it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.69it/s]
                        all       182       715      0.943      0.807       0.88
5       0.662

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    200/300     2.91G     0.5558     0.3535      0.918        144         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.39it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.03it/s]
                        all       182       715      0.929      0.814       0.88
9       0.664

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
    201/300     2.91G     0.5613     0.3622     0.9216         85         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.88it/s]
                Class      Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.74it/s]
                        all       182       715      0.946      0.815       0.89
1       0.671

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
```

```
        202/300        2.91G       0.5553       0.3612       0.9191          155          64
0: 100%|███████| 80/80 [00:05<00:00, 14.60it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.03it/s]
                   all          182          715        0.945        0.793          0.8
9      0.666
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        203/300        2.91G       0.5617       0.3583       0.9266          122          64
0: 100%|███████| 80/80 [00:05<00:00, 14.58it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.77it/s]
                   all          182          715        0.946        0.807         0.88
9      0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        204/300        2.91G       0.5584       0.3533       0.9234          143          64
0: 100%|███████| 80/80 [00:05<00:00, 14.63it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.48it/s]
                   all          182          715        0.924        0.805         0.87
9      0.668
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        205/300        2.91G       0.5557       0.3533       0.9208          157          64
0: 100%|███████| 80/80 [00:05<00:00, 14.32it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.06it/s]
                   all          182          715        0.936        0.809         0.88
8      0.671
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        206/300        2.91G       0.5458       0.3515       0.9235          111          64
0: 100%|███████| 80/80 [00:05<00:00, 14.54it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.62it/s]
                   all          182          715        0.939        0.804         0.88
5      0.665
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        207/300        2.91G       0.5652       0.3642       0.9261          121          64
0: 100%|███████| 80/80 [00:05<00:00, 14.75it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.89it/s]
                   all          182          715        0.918        0.818         0.87
7      0.665
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
        208/300        2.91G       0.5529       0.3537        0.912          110          64
0: 100%|███████| 80/80 [00:05<00:00, 14.64it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.28it/s]
```

| | all | 182 | 715 | 0.933 | 0.821 | 0.88 |
| 6 | 0.669 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
209/300	2.91G	0.5531	0.3519	0.9157	150	64

0: 100%|██████| 80/80 [00:05<00:00, 14.62it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.15it/s]

| | all | 182 | 715 | 0.934 | 0.818 | 0.88 |
| 8 | 0.669 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
210/300	2.91G	0.5495	0.3551	0.9166	125	64

0: 100%|██████| 80/80 [00:05<00:00, 14.29it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.83it/s]

| | all | 182 | 715 | 0.936 | 0.815 | 0.89 |
| 2 | 0.671 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
211/300	2.91G	0.5483	0.3499	0.9159	125	64

0: 100%|██████| 80/80 [00:05<00:00, 14.45it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.34it/s]

| | all | 182 | 715 | 0.948 | 0.817 | 0.8 |
| 9 | 0.673 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
212/300	2.91G	0.5464	0.3565	0.9141	128	64

0: 100%|██████| 80/80 [00:05<00:00, 14.64it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.00it/s]

| | all | 182 | 715 | 0.931 | 0.831 | 0.88 |
| 9 | 0.672 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
213/300	2.91G	0.5412	0.3495	0.9189	134	64

0: 100%|██████| 80/80 [00:05<00:00, 14.47it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 8.60it/s]

| | all | 182 | 715 | 0.941 | 0.816 | 0.8 |
| 9 | 0.669 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
214/300	2.91G	0.5478	0.3475	0.9137	131	64

0: 100%|██████| 80/80 [00:05<00:00, 14.04it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.00it/s]

| | all | 182 | 715 | 0.923 | 0.831 | 0.88 |
| 9 | 0.67 | | | | | |

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size

```
        215/300         2.91G        0.5469        0.3543        0.9176            144            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.62it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.62it/s]
                    all         182         715         0.918        0.836         0.88
7       0.668
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        216/300         2.91G        0.5497        0.3513        0.9202            117            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.14it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.52it/s]
                    all         182         715         0.932        0.808         0.88
5       0.669
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        217/300         2.91G        0.5444        0.3441        0.9115            108            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.61it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.76it/s]
                    all         182         715         0.923        0.822         0.88
5       0.668
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        218/300         2.91G        0.5392        0.3479        0.9112            152            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.43it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.72it/s]
                    all         182         715          0.93        0.814         0.88
8       0.676
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        219/300         2.91G        0.5389        0.3449        0.9141            128            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.55it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.46it/s]
                    all         182         715         0.939        0.802          0.8
9       0.672
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        220/300         2.91G        0.5487        0.3517        0.9142            147            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.85it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.80it/s]
                    all         182         715         0.937        0.808         0.88
7       0.67
        Epoch     GPU_mem      box_loss     cls_loss     dfl_loss    Instances         Siz
e
        221/300         2.91G        0.5385        0.3465        0.9107            173            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.30it/s]
                  Class      Images   Instances       Box(P           R         mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.56it/s]
```

| | all | 182 | 715 | 0.914 | 0.826 | 0.88 |
| 7 | 0.673 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 222/300 | 2.91G | 0.5414 | 0.3464 | 0.9118 | 103 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.38it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 9.80it/s]

| | all | 182 | 715 | 0.937 | 0.817 | 0.88 |
| 7 | 0.669 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 223/300 | 2.91G | 0.5358 | 0.3427 | 0.9155 | 119 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.50it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 9.83it/s]

| | all | 182 | 715 | 0.916 | 0.82 | 0.89 |
| 2 | 0.67 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 224/300 | 2.91G | 0.5234 | 0.336 | 0.9063 | 143 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.62it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 9.26it/s]

| | all | 182 | 715 | 0.93 | 0.814 | 0.89 |
| 2 | 0.674 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 225/300 | 2.91G | 0.5292 | 0.3389 | 0.9077 | 131 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.16it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.15it/s]

| | all | 182 | 715 | 0.926 | 0.824 | 0.89 |
| 3 | 0.676 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 226/300 | 2.91G | 0.5342 | 0.3381 | 0.9117 | 146 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.47it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 9.21it/s]

| | all | 182 | 715 | 0.925 | 0.814 | 0.8 |
| 9 | 0.666 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

| | 227/300 | 2.91G | 0.5394 | 0.3434 | 0.9157 | 92 | 64 |

0: 100%|██████████| 80/80 [00:05<00:00, 14.07it/s]

| | Class | Images | Instances | Box(P | R | mAP5 |

0 mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 9.49it/s]

| | all | 182 | 715 | 0.944 | 0.808 | 0.8 |
| 9 | 0.669 |

| Epoch | GPU_mem | box_loss | cls_loss | dfl_loss | Instances | Siz |
| e |

```
      228/300      2.91G     0.5315     0.3446     0.9106         94         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.29it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.06it/s]
                   all        182        715       0.94      0.807       0.88
9       0.662
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      229/300      2.91G     0.5357     0.3413     0.9081        164         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.28it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.82it/s]
                   all        182        715      0.939      0.815       0.89
5       0.672
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      230/300      2.91G     0.5262     0.3329     0.9078        124         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.27it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.79it/s]
                   all        182        715      0.939      0.816       0.89
2       0.673
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      231/300      2.91G      0.536     0.3431     0.9133        107         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.33it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.23it/s]
                   all        182        715      0.935      0.821       0.89
5       0.674
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      232/300      2.91G     0.5282     0.3382     0.9077        132         64
0: 100%|██████████| 80/80 [00:05<00:00, 13.98it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.51it/s]
                   all        182        715      0.925      0.823       0.89
4       0.67
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      233/300      2.91G     0.5332     0.3391     0.9107        124         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.10it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.14it/s]
                   all        182        715      0.932       0.82        0.8
9       0.668
       Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Siz
e
      234/300      2.91G     0.5274     0.3347     0.9042        123         64
0: 100%|██████████| 80/80 [00:05<00:00, 14.55it/s]
                 Class     Images  Instances      Box(P          R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.63it/s]
```

```
                         all        182        715        0.942        0.814        0.8
9       0.665
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     235/300        2.91G        0.534        0.3441        0.9124          124            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.31it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.04it/s]
                         all        182        715        0.928        0.823        0.88
6       0.671
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     236/300        2.91G        0.5338       0.3409        0.9099          133            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.07it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.55it/s]
                         all        182        715        0.924        0.821        0.89
1       0.675
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     237/300        2.91G        0.5171       0.3301        0.9097          159            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.35it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.30it/s]
                         all        182        715        0.923        0.837        0.89
3       0.67
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     238/300        2.91G        0.5241       0.3368        0.9077          155            64
0: 100%|██████████| 80/80 [00:05<00:00, 13.89it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.73it/s]
                         all        182        715        0.948        0.81         0.89
2       0.668
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     239/300        2.91G        0.5191        0.333        0.9106          168            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.49it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.25it/s]
                         all        182        715        0.941        0.811        0.88
6       0.671
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
     240/300        2.91G        0.5274       0.3388        0.9092          137            64
0: 100%|██████████| 80/80 [00:05<00:00, 14.11it/s]
                       Class       Images     Instances        Box(P             R          mAP5
0   mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.44it/s]
                         all        182        715        0.935        0.816        0.88
7       0.67
        Epoch      GPU_mem      box_loss      cls_loss      dfl_loss      Instances          Siz
e
```

```
      241/300      2.91G       0.5103       0.3257        0.904            143           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.81it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.44it/s]
                   all          182          715        0.922        0.823         0.88
5       0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      242/300      2.91G        0.528       0.3399        0.911             73           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.14it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.25it/s]
                   all          182          715        0.925        0.825         0.88
7       0.667
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      243/300      2.91G        0.521       0.3317       0.9064             79           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.28it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00, 10.17it/s]
                   all          182          715        0.924        0.824          0.8
9       0.669
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      244/300      2.91G       0.5165       0.3261       0.9038            119           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.39it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00, 10.08it/s]
                   all          182          715        0.915        0.826         0.88
3       0.667
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      245/300      2.91G       0.5159       0.3308       0.9045            120           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.75it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.76it/s]
                   all          182          715         0.92        0.831         0.88
8       0.67
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      246/300      2.91G       0.5114       0.3277       0.9021            126           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.19it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.72it/s]
                   all          182          715        0.927        0.819         0.88
8       0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
      247/300      2.91G       0.5171       0.3322       0.9043            125           64
0: 100%|█████████| 80/80 [00:05<00:00, 14.54it/s]
                 Class       Images    Instances       Box(P            R         mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.83it/s]
```

```
                              all        182        715      0.929      0.825       0.88
7       0.671
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      248/300      2.91G     0.5131     0.3296     0.9072        111         64
0: 100%|████████| 80/80 [00:05<00:00, 14.73it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.62it/s]
                              all        182        715      0.923      0.835       0.88
9       0.674
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      249/300      2.91G     0.5211     0.3328     0.9048        128         64
0: 100%|████████| 80/80 [00:05<00:00, 14.42it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00, 10.07it/s]
                              all        182        715      0.923      0.826       0.88
8       0.67
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      250/300      2.91G     0.5087     0.3286     0.9043         84         64
0: 100%|████████| 80/80 [00:05<00:00, 14.09it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.40it/s]
                              all        182        715      0.926      0.826       0.88
7       0.676
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      251/300      2.91G     0.5153     0.3272     0.8989        108         64
0: 100%|████████| 80/80 [00:05<00:00, 14.25it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.97it/s]
                              all        182        715      0.923      0.824       0.88
7       0.676
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      252/300      2.91G     0.5095     0.3276      0.904        111         64
0: 100%|████████| 80/80 [00:05<00:00, 14.15it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  9.27it/s]
                              all        182        715      0.959      0.797       0.88
2       0.672
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
      253/300      2.91G     0.5095     0.3248     0.9028        118         64
0: 100%|████████| 80/80 [00:05<00:00, 14.31it/s]
                  Class     Images  Instances      Box(P          R       mAP5
0  mAP50-95): 100%|████████| 6/6 [00:00<00:00,  8.88it/s]
                              all        182        715      0.926      0.827       0.88
8       0.672
        Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances        Siz
e
```

```
        254/300        2.92G        0.5123        0.3316        0.9043         102          64
0: 100%|          | 80/80 [00:05<00:00, 14.09it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  8.81it/s]
                    all          182         715         0.934        0.818        0.88
8      0.669
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        255/300        2.92G        0.5074        0.3265        0.9042         134          64
0: 100%|          | 80/80 [00:05<00:00, 14.27it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.01it/s]
                    all          182         715         0.927        0.822        0.88
9      0.669
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        256/300        2.92G        0.5054         0.323        0.9024         139          64
0: 100%|          | 80/80 [00:05<00:00, 14.15it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.31it/s]
                    all          182         715         0.952        0.802        0.88
9      0.673
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        257/300        2.92G        0.5057        0.3246        0.8965         127          64
0: 100%|          | 80/80 [00:05<00:00, 14.37it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.53it/s]
                    all          182         715         0.941        0.806        0.89
1      0.671
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        258/300        2.92G        0.5075        0.3195        0.9018         149          64
0: 100%|          | 80/80 [00:05<00:00, 14.11it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.29it/s]
                    all          182         715         0.949        0.805        0.89
1      0.671
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        259/300        2.92G        0.5038        0.3228        0.8971         112          64
0: 100%|          | 80/80 [00:05<00:00, 14.42it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.52it/s]
                    all          182         715         0.922        0.828        0.89
1      0.672
       Epoch      GPU_mem      box_loss      cls_loss      dfl_loss   Instances        Siz
e
        260/300        2.92G        0.4987        0.3229        0.8962         139          64
0: 100%|          | 80/80 [00:05<00:00, 14.00it/s]
                  Class       Images  Instances        Box(P           R         mAP5
0  mAP50-95): 100%|          | 6/6 [00:00<00:00,  9.17it/s]
```

```
                             all         182        715       0.927       0.822        0.89
1       0.671

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      261/300      2.92G      0.5006      0.3218      0.9012         126          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.17it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.92it/s]
                             all         182        715        0.93       0.822        0.88
9       0.67

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      262/300      2.92G      0.5088      0.3293      0.9062         136          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.55it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.59it/s]
                             all         182        715        0.94       0.819        0.89
1       0.67

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      263/300      2.92G      0.4944      0.3158      0.8986         136          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.87it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00, 10.35it/s]
                             all         182        715       0.933       0.826        0.89
4       0.671

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      264/300      2.92G      0.4994      0.3224      0.9011         117          64
0: 100%|██████████| 80/80 [00:05<00:00, 13.97it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  8.93it/s]
                             all         182        715       0.936       0.815        0.89
4       0.669

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      265/300      2.92G      0.4938      0.3181      0.9014         121          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.24it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.28it/s]
                             all         182        715       0.932       0.817         0.8
9       0.668

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
      266/300      2.92G      0.4982      0.3227      0.8983         120          64
0: 100%|██████████| 80/80 [00:05<00:00, 14.67it/s]
                   Class      Images   Instances       Box(P           R        mAP5
0  mAP50-95): 100%|██████████| 6/6 [00:00<00:00,  9.52it/s]
                             all         182        715       0.928       0.823        0.89
1       0.672

        Epoch    GPU_mem    box_loss    cls_loss    dfl_loss   Instances         Siz
e
```

```
        267/300        2.92G       0.4969      0.3184      0.8984          127          64
0: 100%|███████| 80/80 [00:05<00:00, 14.71it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.50it/s]
                      all        182        715       0.925       0.825        0.89
1       0.674
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        268/300        2.92G       0.4874      0.3126      0.8978          178          64
0: 100%|███████| 80/80 [00:05<00:00, 14.46it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.38it/s]
                      all        182        715       0.932       0.821        0.89
1       0.673
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        269/300        2.92G       0.4953      0.3162      0.8988          128          64
0: 100%|███████| 80/80 [00:05<00:00, 14.43it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.61it/s]
                      all        182        715       0.929       0.825        0.89
2       0.676
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        270/300        2.92G       0.4926      0.3127      0.8949          143          64
0: 100%|███████| 80/80 [00:05<00:00, 14.44it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.94it/s]
                      all        182        715       0.925       0.826        0.89
1       0.677
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        271/300        2.92G       0.4913      0.3181      0.8967          107          64
0: 100%|███████| 80/80 [00:05<00:00, 14.48it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.27it/s]
                      all        182        715       0.923       0.823        0.89
3       0.674
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        272/300        2.92G       0.4915      0.3164       0.897          102          64
0: 100%|███████| 80/80 [00:05<00:00, 14.17it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.40it/s]
                      all        182        715       0.923       0.821        0.89
2       0.677
       Epoch     GPU_mem    box_loss    cls_loss    dfl_loss   Instances        Siz
e
        273/300        2.92G       0.4947      0.3123      0.8987          105          64
0: 100%|███████| 80/80 [00:05<00:00, 14.09it/s]
                    Class     Images  Instances      Box(P          R        mAP5
0   mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.41it/s]
```

```
                          all          182          715        0.955        0.798         0.89
4       0.677
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     274/300       2.92G       0.4929       0.3147       0.8969          126          64
0: 100%|███████| 80/80 [00:05<00:00, 13.99it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.27it/s]
                          all          182          715        0.938        0.811         0.89
1       0.675
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     275/300       2.92G       0.4901       0.3122       0.8969          113          64
0: 100%|███████| 80/80 [00:05<00:00, 14.29it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.68it/s]
                          all          182          715        0.913        0.831         0.88
9       0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     276/300       2.92G       0.4899        0.318       0.8976           96          64
0: 100%|███████| 80/80 [00:05<00:00, 14.48it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.08it/s]
                          all          182          715        0.907        0.826          0.8
9       0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     277/300       2.92G       0.4915       0.3172       0.8983          140          64
0: 100%|███████| 80/80 [00:05<00:00, 13.84it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.52it/s]
                          all          182          715        0.917         0.82         0.88
9       0.672
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     278/300       2.92G       0.4928       0.3161       0.8972          123          64
0: 100%|███████| 80/80 [00:05<00:00, 14.72it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  8.95it/s]
                          all          182          715        0.932        0.808         0.88
8       0.675
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
     279/300       2.92G        0.483       0.3104       0.8933          102          64
0: 100%|███████| 80/80 [00:05<00:00, 14.35it/s]
             Class      Images   Instances       Box(P            R        mAP5
0  mAP50-95): 100%|███████| 6/6 [00:00<00:00,  9.04it/s]
                          all          182          715        0.924        0.816          0.8
9       0.674
       Epoch     GPU_mem     box_loss     cls_loss     dfl_loss   Instances        Siz
e
```

```
       280/300        2.92G        0.4844        0.312        0.8959          107          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.20it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.99it/s]
                   all          182          715        0.937        0.806         0.8
9      0.672
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       281/300        2.92G        0.4878       0.3133        0.8997          141          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.67it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.15it/s]
                   all          182          715         0.92        0.823        0.89
1      0.674
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       282/300        2.92G        0.472       0.3054        0.8905          144          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.25it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.92it/s]
                   all          182          715        0.924         0.82        0.89
4      0.673
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       283/300        2.92G        0.4869       0.3118        0.8948          111          64
0: 100%|█████████| 80/80 [00:05<00:00, 14.25it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.94it/s]
                   all          182          715        0.927        0.821        0.89
2      0.672
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       284/300        2.92G        0.4817       0.3077        0.8946          113          64
0: 100%|█████████| 80/80 [00:06<00:00, 12.80it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  8.52it/s]
                   all          182          715        0.926        0.821         0.8
9      0.673
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       285/300        2.92G        0.4881       0.3117        0.8943          119          64
0: 100%|█████████| 80/80 [00:07<00:00, 10.45it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.48it/s]
                   all          182          715        0.929        0.821        0.88
9      0.674
       Epoch      GPU_mem     box_loss     cls_loss     dfl_loss    Instances         Siz
e
       286/300        2.92G        0.4806       0.3093        0.8938          114          64
0: 100%|█████████| 80/80 [00:05<00:00, 13.87it/s]
                 Class       Images    Instances        Box(P          R        mAP5
0  mAP50-95): 100%|█████████| 6/6 [00:00<00:00,  9.73it/s]
```

	Class	Images	Instances	Box(P	R	mAP5
	all	182	715	0.927	0.819	0.88
9	0.672					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
287/300	2.92G	0.4877	0.312	0.8969	145	64

0: 100%|███████| 80/80 [00:05<00:00, 14.33it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.15it/s]				
	all	182	715	0.932	0.813	0.8
9	0.677					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
288/300	2.92G	0.4808	0.3064	0.8971	90	64

0: 100%|███████| 80/80 [00:05<00:00, 14.19it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.02it/s]				
	all	182	715	0.919	0.826	0.89
2	0.676					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
289/300	2.92G	0.4851	0.3108	0.8939	124	64

0: 100%|███████| 80/80 [00:05<00:00, 13.89it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 8.76it/s]				
	all	182	715	0.917	0.832	0.8
9	0.674					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
290/300	2.92G	0.4778	0.3096	0.8939	125	64

0: 100%|███████| 80/80 [00:05<00:00, 14.04it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 10.00it/s]				
	all	182	715	0.916	0.832	0.88
8	0.672					

Closing dataloader mosaic

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
291/300	2.92G	0.4845	0.2939	0.8567	58	64

0: 100%|███████| 80/80 [00:05<00:00, 13.81it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 9.86it/s]				
	all	182	715	0.921	0.819	0.88
6	0.668					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz
e						
292/300	2.92G	0.4724	0.2858	0.8495	64	64

0: 100%|███████| 80/80 [00:05<00:00, 14.22it/s]

	Class	Images	Instances	Box(P	R	mAP5
0	mAP50-95): 100%|██████| 6/6 [00:00<00:00, 8.48it/s]				
	all	182	715	0.93	0.805	0.88
6	0.661					

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
293/300	2.92G	0.4626	0.2797	0.8497	50	64

0: 100%|██████| 80/80 [00:05<00:00, 14.34it/s]

	Class	Images	Instances	Box(P	R	mAP50

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 8.69it/s]

	all	182	715	0.93	0.808	0.888

0.662

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
294/300	2.92G	0.4598	0.2786	0.8521	65	64

0: 100%|██████| 80/80 [00:05<00:00, 14.43it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 10.09it/s]

	all	182	715	0.924	0.814	0.888

0.663

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
295/300	2.92G	0.4592	0.2767	0.8508	60	64

0: 100%|██████| 80/80 [00:05<00:00, 14.79it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 9.30it/s]

	all	182	715	0.92	0.822	0.886

0.666

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
296/300	2.92G	0.4572	0.2764	0.846	64	64

0: 100%|██████| 80/80 [00:05<00:00, 14.31it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 9.72it/s]

	all	182	715	0.923	0.822	0.886

0.666

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
297/300	2.92G	0.4547	0.2714	0.8432	62	64

0: 100%|██████| 80/80 [00:05<00:00, 14.14it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 9.14it/s]

	all	182	715	0.924	0.822	0.885

0.664

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
298/300	2.92G	0.4612	0.2766	0.8467	61	64

0: 100%|██████| 80/80 [00:05<00:00, 14.42it/s]

	Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 8.64it/s]

	all	182	715	0.925	0.821	0.886

0.665

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Size
299/300	2.92G	0.45	0.2704	0.8476	75	64

0: 100%|███████| 80/80 [00:05<00:00, 14.10it/s]

Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 9.60it/s]

	Class	Images	Instances	Box(P	R	mAP5
all	182	715	0.925	0.822	0.88

6   0.664

Epoch	GPU_mem	box_loss	cls_loss	dfl_loss	Instances	Siz e
300/300	2.92G	0.4466	0.2728	0.851	72	64

0: 100%|███████| 80/80 [00:05<00:00, 14.83it/s]

Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 8.88it/s]

| all | 182 | 715 | 0.923 | 0.82 | 0.88 |

7   0.667

300 epochs completed in 0.550 hours.
Optimizer stripped from vehicle-license-plate-detection\near-complete\imgsz6
40\weights\last.pt, 6.3MB
Optimizer stripped from vehicle-license-plate-detection\near-complete\imgsz6
40\weights\best.pt, 6.3MB

Validating vehicle-license-plate-detection\near-complete\imgsz640\weights\be
st.pt...
Ultralytics 8.3.131 Python-3.13.3 torch-2.7.0+cu128 CUDA:0 (NVIDIA GeForce
RTX 5070 Ti, 16303MiB)
Model summary (fused): 72 layers, 3,006,038 parameters, 0 gradients, 8.1 GFL
OPs

Class	Images	Instances	Box(P	R	mAP5

0 mAP50-95): 100%|███████| 6/6 [00:00<00:00, 6.77it/s]

Class	Images	Instances	Box(P	R	mAP50	mAP50-95
all	182	715	0.955	0.798	0.894	0.677
carplate	181	259	0.975	0.784	0.886	0.568
vehicle	182	456	0.934	0.813	0.902	0.787

Speed: 0.1ms preprocess, 0.6ms inference, 0.0ms loss, 0.9ms postprocess per image
Results saved to **vehicle-license-plate-detection\near-complete\imgsz640**
Ultralytics 8.3.131 Python-3.13.3 torch-2.7.0+cu128 CPU (AMD Ryzen 7 9700X 8-Core Processor)
Model summary (fused): 72 layers, 3,006,038 parameters, 0 gradients, 8.1 GFLOPs

PyTorch: starting from 'vehicle-license-plate-detection\near-complete\imgsz640\weights\best.pt' with input shape (1, 3, 640, 640) BCHW and output shape(s) (1, 6, 8400) (6.0 MB)

ONNX: starting export with onnx 1.18.0 opset 19...
ONNX: slimming with onnxslim 0.1.52...
ONNX: export success 0.8s, saved as 'vehicle-license-plate-detection\near-complete\imgsz640\weights\best.onnx' (11.7 MB)

Export complete (0.9s)
Results saved to **C:\Users\herma\dev\IS\yolo\vehicle-license-plate-detection\near-complete\imgsz640\weights**
Predict: yolo predict task=detect model=vehicle-license-plate-detection\near-complete\imgsz640\weights\best.onnx imgsz=640
Validate: yolo val task=detect model=vehicle-license-plate-detection\near-complete\imgsz640\weights\best.onnx imgsz=640 data=datasets/Vehicle-License-Plate-Detection\data.yaml
Visualize: https://netron.app

Save Model Architecture & Hyperparamaters used

```
In [7]: os.makedirs(ARCHITECTURE_DIR, exist_ok=True)

        # 1 Save hyperparameters as JSON
        hyp_path = os.path.join(ARCHITECTURE_DIR, "hyperparameters.json")
        with open(hyp_path, "w") as f:
            json.dump(HYPERPARAMS, f, indent=2)
        print(f"→ Hyperparameters written to {hyp_path}")

        # 2 Save the model architecture (as text)
        arch_path = os.path.join(ARCHITECTURE_DIR, "model_architecture.txt")
        with open(arch_path, "w") as f:
            f.write(str(model.model))
        print(f"→ Model architecture written to {arch_path}")

        # 3 (Optional) Copy the best weights over
        best_weights = os.path.join(ARCHITECTURE_DIR, "weights", "best.onnx")
        if os.path.isfile(best_weights):
```

```
        os.replace(best_weights, os.path.join(ARCHITECTURE_DIR, "best_{EXPERIMEN
        print("→ Copied best.onnx with custom name")
```

→ Hyperparameters written to vehicle-license-plate-detection\near-complete\i
mgsz640\architecture\hyperparameters.json
→ Model architecture written to vehicle-license-plate-detection\near-complet
e\imgsz640\architecture\model_architecture.txt

Testing Dataset Evaluation

In [8]:
```python
if __name__ == "__main__":
    # 1 Load the model once, with task pre-declared
    model = YOLO(TRAINED_MODEL_WEIGHTS, task="detect")

    # 2 Evaluate at several confidence thresholds
    for conf in (0.25, 0.50, 0.75):
        model.val(
            data=DATA_YAML,
            split="test",
            project=EVALUATION_DIR,          # root evaluation folder
            name=f"{conf:.2f}",              # e.g. "0.25", "0.50", "0.75"
            exist_ok=True,
            workers=NUM_OF_WORKERS,
            conf=conf,                       # ← varying threshold
            device=DEVICE,
            save_json=True,
            half=False
        )
        print(f"Finished evaluation at conf={conf:.2f}")
```

Ultralytics 8.3.131 Python-3.13.3 torch-2.7.0+cu128 CUDA:0 (NVIDIA GeForce
RTX 5070 Ti, 16303MiB)
Loading vehicle-license-plate-detection\near-complete\imgsz640\weights\best.
onnx for ONNX Runtime inference...
Using ONNX Runtime CUDAExecutionProvider
Setting batch=1 input of shape (1, 3, 640, 640)
val: Fast image access (ping: 0.00.0 ms, read: 126.7140.8 MB/s, size: 563.3
KB)

val: Scanning C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-Plate-Dete
ction\test\labels... 253 images, 0 backgrounds, 0 corrupt: 100%|███████████|
253/253 [00:00<00:00, 1039.78it/s]
val: New cache created: C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-
Plate-Detection\test\labels.cache

                 Class   Images Instances   Box(P   R   mAP5
0 mAP50-95): 100%|███████████| 253/253 [00:02<00:00, 124.10it/s]
```

| Class | Images | Instances | Box(P | R | mAP50 | mAP50-95 |
|---|---|---|---|---|---|---|
| all | 253 | 1494 | 0.926 | 0.692 | 0.83 | 0.633 |
| carplate | 251 | 512 | 0.954 | 0.645 | 0.811 | 0.555 |
| vehicle | 253 | 982 | 0.898 | 0.739 | 0.849 | 0.712 |

Speed: 0.2ms preprocess, 4.1ms inference, 0.0ms loss, 1.0ms postprocess per image
Saving vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.25\predictions.json...
Results saved to **vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.25**
Finished evaluation at conf=0.25
Ultralytics 8.3.131  Python-3.13.3 torch-2.7.0+cu128 CUDA:0 (NVIDIA GeForce RTX 5070 Ti, 16303MiB)
Loading vehicle-license-plate-detection\near-complete\imgsz640\weights\best.onnx for ONNX Runtime inference...
Using ONNX Runtime CUDAExecutionProvider
Setting batch=1 input of shape (1, 3, 640, 640)
**val:** Fast image access  (ping: 0.00.0 ms, read: 2310.41553.9 MB/s, size: 502.5 KB)

**val:** Scanning C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-Plate-Detection\test\labels.cache... 253 images, 0 backgrounds, 0 corrupt: 100%|██████████| 253/253 [00:00<?, ?it/s]
               Class    Images  Instances     Box(P         R     mAP50  mAP50-95): 100%|██████████| 253/253 [00:02<00:00, 121.28it/s]

| Class | Images | Instances | Box(P | R | mAP50 | mAP50-95 |
|---|---|---|---|---|---|---|
| all | 253 | 1494 | 0.946 | 0.672 | 0.819 | 0.637 |
| carplate | 251 | 512 | 0.964 | 0.623 | 0.795 | 0.553 |
| vehicle | 253 | 982 | 0.928 | 0.72 | 0.843 | 0.722 |

Speed: 0.3ms preprocess, 4.3ms inference, 0.0ms loss, 1.0ms postprocess per image
Saving vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.50\predictions.json...
Results saved to **vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.50**
Finished evaluation at conf=0.50
Ultralytics 8.3.131  Python-3.13.3 torch-2.7.0+cu128 CUDA:0 (NVIDIA GeForce RTX 5070 Ti, 16303MiB)
Loading vehicle-license-plate-detection\near-complete\imgsz640\weights\best.onnx for ONNX Runtime inference...
Using ONNX Runtime CUDAExecutionProvider
Setting batch=1 input of shape (1, 3, 640, 640)
**val:** Fast image access  (ping: 0.00.0 ms, read: 2049.11555.8 MB/s, size: 369.1 KB)

**val:** Scanning C:\Users\herma\dev\IS\yolo\datasets\Vehicle-License-Plate-Detection\test\labels.cache... 253 images, 0 backgrounds, 0 corrupt: 100%|██████████| 253/253 [00:00<?, ?it/s]
               Class    Images  Instances     Box(P         R     mAP50  mAP50-95): 100%|██████████| 253/253 [00:02<00:00, 117.29it/s]

| | | | | | |
|---|---|---|---|---|---|
| all | 253 | 1494 | 0.975 | 0.584 | 0.781 0.628 |
| carplate | 251 | 512 | 0.975 | 0.537 | 0.755 0.538 |
| vehicle | 253 | 982 | 0.975 | 0.63 | 0.807 0.718 |

Speed: 0.3ms preprocess, 4.2ms inference, 0.0ms loss, 1.0ms postprocess per image
Saving vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.75\predictions.json...
Results saved to **vehicle-license-plate-detection\near-complete\imgsz640\evaluation\0.75**
Finished evaluation at conf=0.75