

Before Pruning YOLOv5

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[9] # validating the model performance before pruning
!python val.py --weights /content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt --data /content/drive/MyDrive/FaceDetectionDataset/data.

val: data=/content/drive/MyDrive/FaceDetectionDataset/data.yaml, weights=['/content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt'], batch
YOLOv5 🚀 v7.0-117-g85f6019 Python-3.8.10 torch-1.13.1+cu116 CUDA:0 (Tesla T4, 15102MiB)

Fusing layers...
Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs
WARNING ⚠️ --img-size 720 must be multiple of max stride 32, updating to 736
val: Scanning /content/drive/MyDrive/FaceDetectionDataset/valid/labels.cache... 336 images, 0 backgrounds, 0 corrupt: 100% 336/336 [00:00<?, ?it/s]

```

Class	Images	Instances	P	R	mAP50	mAP50-95: 100% 11/11 [00:10<00:00, 1.08it/s]
all	336	361	0.931	0.947	0.981	0.772
device	336	105	0.897	0.981	0.992	0.826
live	336	80	0.913	0.95	0.973	0.65
mask	336	79	0.981	0.987	0.993	0.836
photo	336	97	0.934	0.869	0.967	0.775

```
Speed: 0.6ms pre-process, 8.4ms inference, 2.6ms NMS per image at shape (32, 3, 736, 736)
Results saved to /content/drive/MyDrive/your_results_folder_name/my_yolo/exp2
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Pruning 10% of weights of the trained model on our custom dataset

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[12] ## Pruning 10%
!python val.py --weights /content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt --data /content/drive/MyDrive/FaceDetectionDataset/data.

val: data=/content/drive/MyDrive/FaceDetectionDataset/data.yaml, weights=['/content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt'], batch
YOLOv5 🚀 v7.0-117-g85f6019 Python-3.8.10 torch-1.13.1+cu116 CUDA:0 (Tesla T4, 15102MiB)

Fusing layers...
Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs
WARNING ⚠️ --img-size 720 must be multiple of max stride 32, updating to 736
Model pruned to 0.0999 global sparsity
val: Scanning /content/drive/MyDrive/FaceDetectionDataset/valid/labels.cache... 336 images, 0 backgrounds, 0 corrupt: 100% 336/336 [00:00<?, ?it/s]

```

Class	Images	Instances	P	R	mAP50	mAP50-95: 100% 11/11 [00:11<00:00, 1.01s/it]
all	336	361	0.919	0.961	0.981	0.762
device	336	105	0.882	0.981	0.991	0.824
live	336	80	0.878	0.963	0.972	0.63
mask	336	79	0.98	0.987	0.993	0.823
photo	336	97	0.937	0.913	0.968	0.77

```
Speed: 4.3ms pre-process, 8.4ms inference, 2.4ms NMS per image at shape (32, 3, 736, 736)
Results saved to /content/drive/MyDrive/your_results_folder_name/my_yolo/exp3
```

Pruning 20% of weights of the trained model on our custom dataset

```
[13] ## pruning 20%
!python val.py --weights /content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt --data /content/drive/MyDrive/FaceDetectionDataset/data.

val: data=/content/drive/MyDrive/FaceDetectionDataset/data.yaml, weights=['/content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt'], batch
YOLOv5 🚀 v7.0-117-g85f6019 Python-3.8.10 torch-1.13.1+cu116 CUDA:0 (Tesla T4, 15102MiB)

Fusing layers...
Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs
WARNING ⚠️ --img-size 720 must be multiple of max stride 32, updating to 736
Model pruned to 0.2 global sparsity
val: Scanning /content/drive/MyDrive/FaceDetectionDataset/valid/labels.cache... 336 images, 0 backgrounds, 0 corrupt: 100% 336/336 [00:00<?, ?it/s]

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Class	Images	Instances	P	R	mAP50	mAP50-95: 100% 11/11 [00:11<00:00, 1.01s/it]
all	336	361	0.938	0.945	0.975	0.741
device	336	105	0.893	0.981	0.989	0.799
live	336	80	0.95	0.912	0.952	0.596
mask	336	79	0.985	0.987	0.994	0.81
photo	336	97	0.926	0.898	0.965	0.76

```
Speed: 0.7ms pre-process, 8.1ms inference, 2.9ms NMS per image at shape (32, 3, 736, 736)
Results saved to /content/drive/MyDrive/your_results_folder_name/my_yolo/exp4
```

Pruning 30% of weights of the trained model on our custom dataset

```
[14] ## pruning 30%
!python val.py --weights /content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt --data /content/drive/MyDrive/FaceDetectionDataset/data.

val: data=/content/drive/MyDrive/FaceDetectionDataset/data.yaml, weights=['/content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt'], batch
YOLOv5 🚀 v7.0-117-g85f6019 Python-3.8.10 torch-1.13.1+cu116 CUDA:0 (Tesla T4, 15102MiB)

Fusing layers...
Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs
WARNING ⚠️ --img-size 720 must be multiple of max stride 32, updating to 736
Model pruned to 0.3 global sparsity
val: Scanning /content/drive/MyDrive/FaceDetectionDataset/valid/labels.cache... 336 images, 0 backgrounds, 0 corrupt: 100% 336/336 [00:00<?, ?it/s]

```

Class	Images	Instances	P	R	mAP50	mAP50-95: 100% 11/11 [00:11<00:00, 1.04s/it]
all	336	361	0.917	0.917	0.958	0.678
device	336	105	0.88	0.971	0.989	0.748
live	336	80	0.929	0.823	0.901	0.509
mask	336	79	1	0.946	0.994	0.776
photo	336	97	0.861	0.928	0.95	0.682

```
Speed: 1.3ms pre-process, 8.6ms inference, 2.6ms NMS per image at shape (32, 3, 736, 736)
Results saved to /content/drive/MyDrive/your_results_folder_name/my_yolo/exp5
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Pruning 40% of weights of the trained model on our custom dataset

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[15] ## pruning 40%
!python val.py --weights /content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt --data /content/drive/MyDrive/FaceDetectionDataset/data.

val: data=/content/drive/MyDrive/FaceDetectionDataset/data.yaml, weights=['/content/drive/MyDrive/your_results_folder_name/my_yolo/weights/best.pt'], batch
YOLOv5 v7.0-117-g85f6019 Python-3.8.10 torch-1.13.1+cu116 CUDA:0 (Tesla T4, 15102MiB)

Fusing layers...
Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs
WARNING ⚠️ --img-size 720 must be multiple of max stride 32, updating to 736
Model pruned to 0.399 global sparsity
val: Scanning /content/drive/MyDrive/FaceDetectionDataset/valid/labels.cache... 336 images, 0 backgrounds, 0 corrupt: 100% 336/336 [00:00<, ?it/s]

```

Class	Images	Instances	P	R	mAP50	mAP50-95: 100% 11/11 [00:09<00:00, 1.17it/s]
all	336	361	0.851	0.778	0.876	0.526
device	336	105	0.947	0.81	0.943	0.616
live	336	80	0.768	0.664	0.773	0.343
mask	336	79	0.989	0.823	0.982	0.693
photo	336	97	0.7	0.814	0.807	0.453

```
Speed: 1.5ms pre-process, 9.3ms inference, 2.0ms NMS per image at shape (32, 3, 736, 736)
Results saved to /content/drive/MyDrive/your_results_folder_name/my_yolo/exp6
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