

```
python val.py --weights runs/train/exp8/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp8/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			82/82	[00:03			
	all	325	200	0.356	0.305	0.273	0.105
	D00	325	109	0.467	0.44	0.362	0.136
	D10	325	53	0.51	0.377	0.307	0.0909
	D20	325	17	0.343	0.353	0.381	0.179
	D40	325	21	0.104	0.0476	0.0432	0.0158

Speed: 0.4ms pre-process, 5.7ms inference, 1.0ms NMS per image at shape (4, 3, 640, 640)

```
python val.py --weights runs/train/exp9/weights/best.pt --batch-size 8
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp9/weights/best.pt'], batch_size=8,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			41/41	[00:03			
	all	325	200	0.291	0.338	0.248	0.0845
	D00	325	109	0.354	0.437	0.315	0.111
	D10	325	53	0.329	0.396	0.25	0.0607
	D20	325	17	0.434	0.471	0.411	0.16
	D40	325	21	0.0444	0.0476	0.0154	0.00667

Speed: 0.3ms pre-process, 5.4ms inference, 1.1ms NMS per image at shape (8, 3, 640, 640)

```
python val.py --weights runs/train/exp10/weights/best.pt --batch-size 2
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp10/weights/best.pt'], batch_size=2,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			163/163	[00:			
	all	325	200	0.343	0.323	0.26	0.0903
	D00	325	109	0.38	0.44	0.341	0.134
	D10	325	53	0.377	0.226	0.253	0.0658
	D20	325	17	0.499	0.529	0.411	0.148
	D40	325	21	0.114	0.0952	0.0356	0.0138

Speed: 0.3ms pre-process, 6.2ms inference, 1.3ms NMS per image at shape (2, 3, 640, 640)

```
python val.py --weights runs/train/exp11/weights/best.pt --batch-size 16
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp11/weights/best.pt'], batch_size=16,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			21/21	[00:03			
	all	325	200	0.392	0.334	0.285	0.088
	D00	325	109	0.439	0.422	0.37	0.115
	D10	325	53	0.532	0.453	0.319	0.0827
	D20	325	17	0.521	0.412	0.387	0.118
	D40	325	21	0.0774	0.0476	0.0631	0.0362

Speed: 0.4ms pre-process, 5.3ms inference, 1.1ms NMS per image at shape (16, 3, 640, 640)

```
python val.py --weights runs/train/exp12/weights/best.pt --batch-size 1
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp12/weights/best.pt'], batch_size=1,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			325/325	[00:			
	all	325	200	0.379	0.274	0.276	0.106
	D00	325	109	0.482	0.384	0.375	0.16
	D10	325	53	0.501	0.321	0.312	0.0856
	D20	325	17	0.415	0.294	0.317	0.137
	D40	325	21	0.117	0.0952	0.0977	0.0425

Speed: 0.4ms pre-process, 8.4ms inference, 1.1ms NMS per image at shape (1, 3, 640, 640)

```
python val.py --weights runs/train/exp13/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp13/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

Model summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances		P	R	mAP50	mAP50-95:
100%			82/82	[00:03				
	all	325	200	0.36	0.389	0.3	0.113	
	D00	325	109	0.373	0.459	0.342	0.127	
	D10	325	53	0.309	0.396	0.31	0.0849	
	D20	325	17	0.54	0.529	0.432	0.195	
	D40	325	21	0.217	0.173	0.115	0.0452	

Speed: 0.3ms pre-process, 6.0ms inference, 0.9ms NMS per image at shape (4, 3, 640, 640)

```
python val.py --weights runs/train/exp14/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp14/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

mobilenetv2 summary: 276 layers, 761745 parameters, 0 gradients, 2.1 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			82/82	[00:02			
	all	325	200	0.229	0.322	0.215	0.0708
	D00	325	109	0.308	0.523	0.37	0.115
	D10	325	53	0.309	0.245	0.174	0.0476
	D20	325	17	0.257	0.471	0.298	0.114
	D40	325	21	0.041	0.0476	0.0192	0.00667

Speed: 0.3ms pre-process, 5.1ms inference, 1.0ms NMS per image at shape (4, 3, 640, 640)

```
python val.py --weights runs/train/exp15/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp15/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

YOLOv5s summary: 157 layers, 7020913 parameters, 0 gradients, 15.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			82/82	[00:03			
	all	325	200	0.211	0.313	0.242	0.0823
	D00	325	109	0.335	0.578	0.403	0.134
	D10	325	53	0.248	0.226	0.183	0.0416
	D20	325	17	0.199	0.351	0.345	0.142
	D40	325	21	0.0625	0.0952	0.0363	0.0117

Speed: 0.3ms pre-process, 5.8ms inference, 1.1ms NMS per image at shape (4, 3, 640, 640)



```
python val.py --weights runs/train/exp22/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp22/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

resnet18 summary: 124 layers, 10711825 parameters, 0 gradients, 112.8 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances		P	R	mAP50	mAP50-95:
100%			82/82	[00:09				
	all	325	200	0.2	0.296	0.202	0.0619	
	D00	325	109	0.268	0.569	0.318	0.102	
	D10	325	53	0.283	0.179	0.173	0.0412	
	D20	325	17	0.18	0.294	0.293	0.097	
	D40	325	21	0.0696	0.143	0.0236	0.00699	

Speed: 0.2ms pre-process, 26.8ms inference, 1.2ms NMS per image at shape (4, 3, 640, 640)

```
python val.py --weights runs/train/exp23/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp23/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

YOLOv5n summary: 157 layers, 1764577 parameters, 0 gradients, 4.1 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances	P	R	mAP50	mAP50-95:
100%			82/82	[00:02			
	all	325	200	0.275	0.389	0.257	0.0892
	D00	325	109	0.329	0.532	0.386	0.135
	D10	325	53	0.377	0.245	0.187	0.0507
	D20	325	17	0.233	0.588	0.344	0.145
	D40	325	21	0.161	0.19	0.111	0.0257

Speed: 0.3ms pre-process, 3.5ms inference, 1.1ms NMS per image at shape (4, 3, 640, 640)

```
python val.py --weights runs/train/exp24/weights/best.pt --batch-size 4
```


```
val: data=data\RDD.yaml, weights=['runs/train/exp24/weights/best.pt'], batch_size=4,
imgsz=640, conf_thres=0.001, iou_thres=0.6, max_det=300, task=val, device=,
workers=8, single_cls=False, augment=False, verbose=False, save_txt=False,
save_hybrid=False, save_conf=False, save_json=False, project=runs\val, name=exp,
exist_ok=False, half=False, dnn=False
```

YOLOv5 v7.0-32-g357cde9 Python-3.8.15 torch-1.13.0 CUDA:0 (NVIDIA GeForce RTX 3060 Laptop GPU, 6144MiB)

Fusing layers...

YOLOv5m summary: 212 layers, 20865057 parameters, 0 gradients, 47.9 GFLOPs

val: Scanning C:\Users\luoch\Desktop\yolotest\data\labels\val.cache... 325 images, 200 backgrounds, 0 corrupt: 100%

	Class	Images	Instances		P	R	mAP50	mAP50-95:
100%			82/82	[00:05				
	all	325	200	0.36	0.322	0.278	0.092	
	D00	325	109	0.412	0.56	0.419	0.137	
	D10	325	53	0.383	0.281	0.236	0.0627	
	D20	325	17	0.55	0.353	0.411	0.147	
	D40	325	21	0.0925	0.0952	0.0464	0.0211	

Speed: 0.7ms pre-process, 12.1ms inference, 1.1ms NMS per image at shape (4, 3, 640, 640)