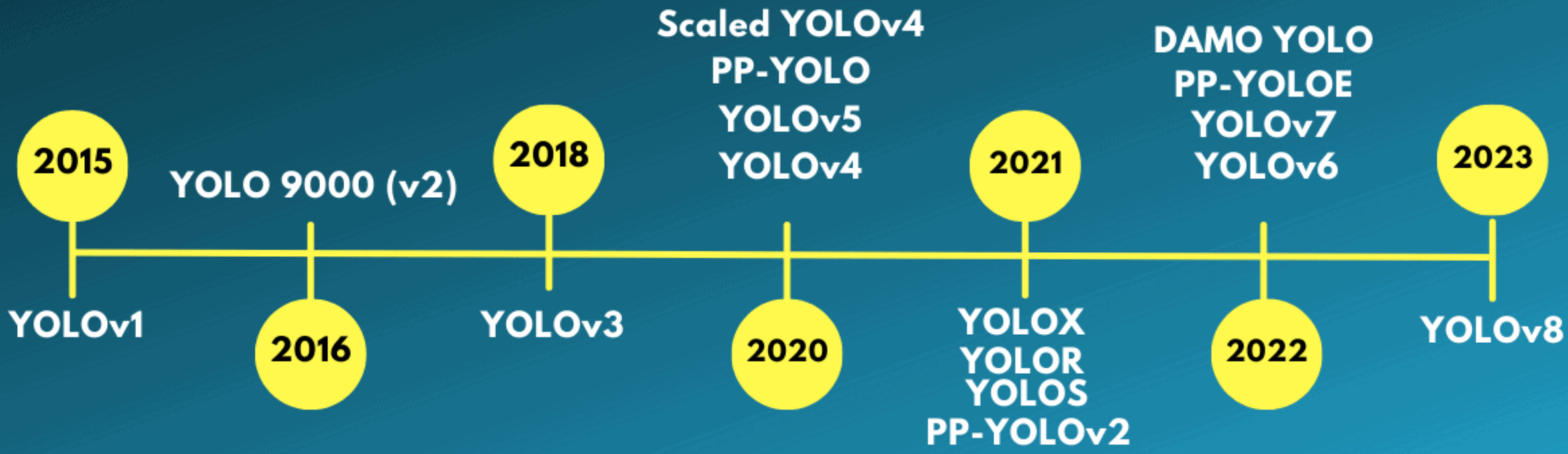
YOLOV8

Mì AI

YOLO Object Detection Models Timeline

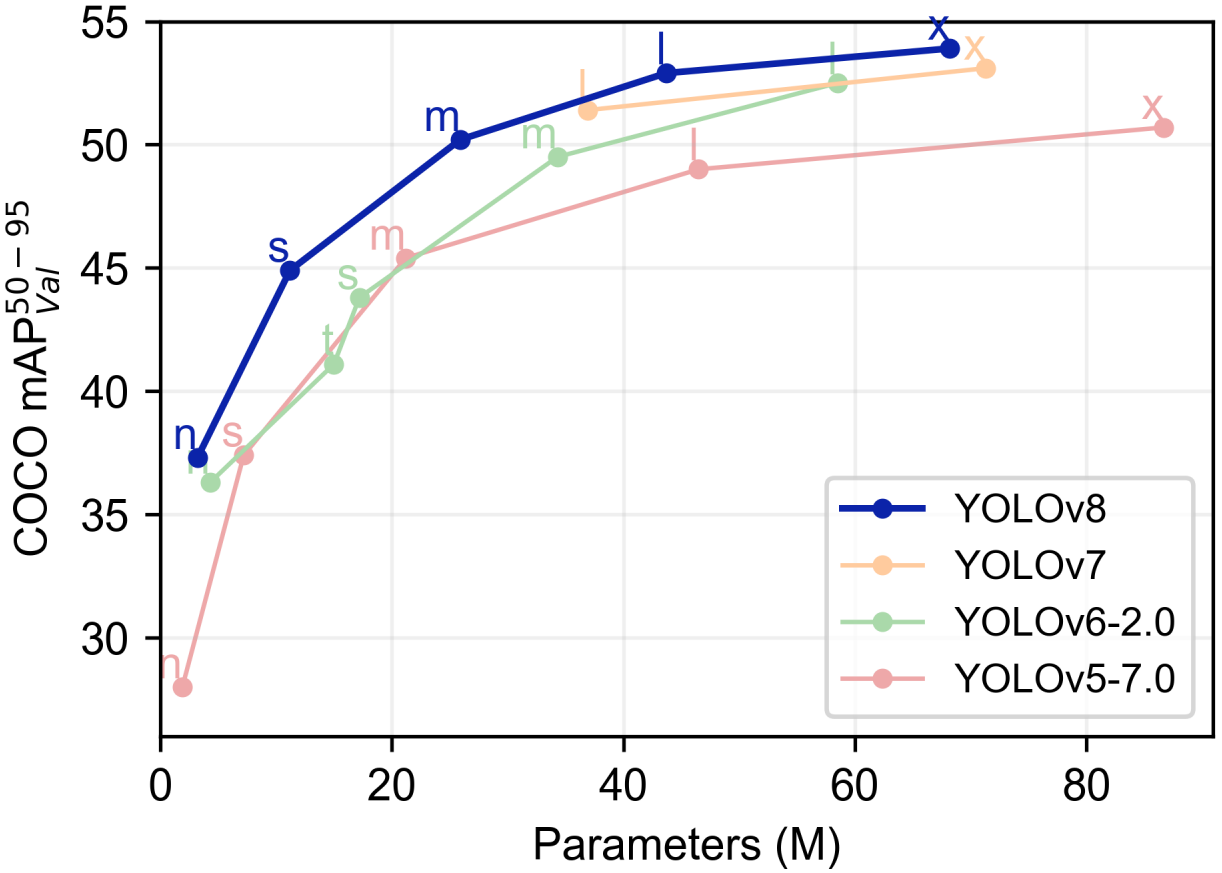


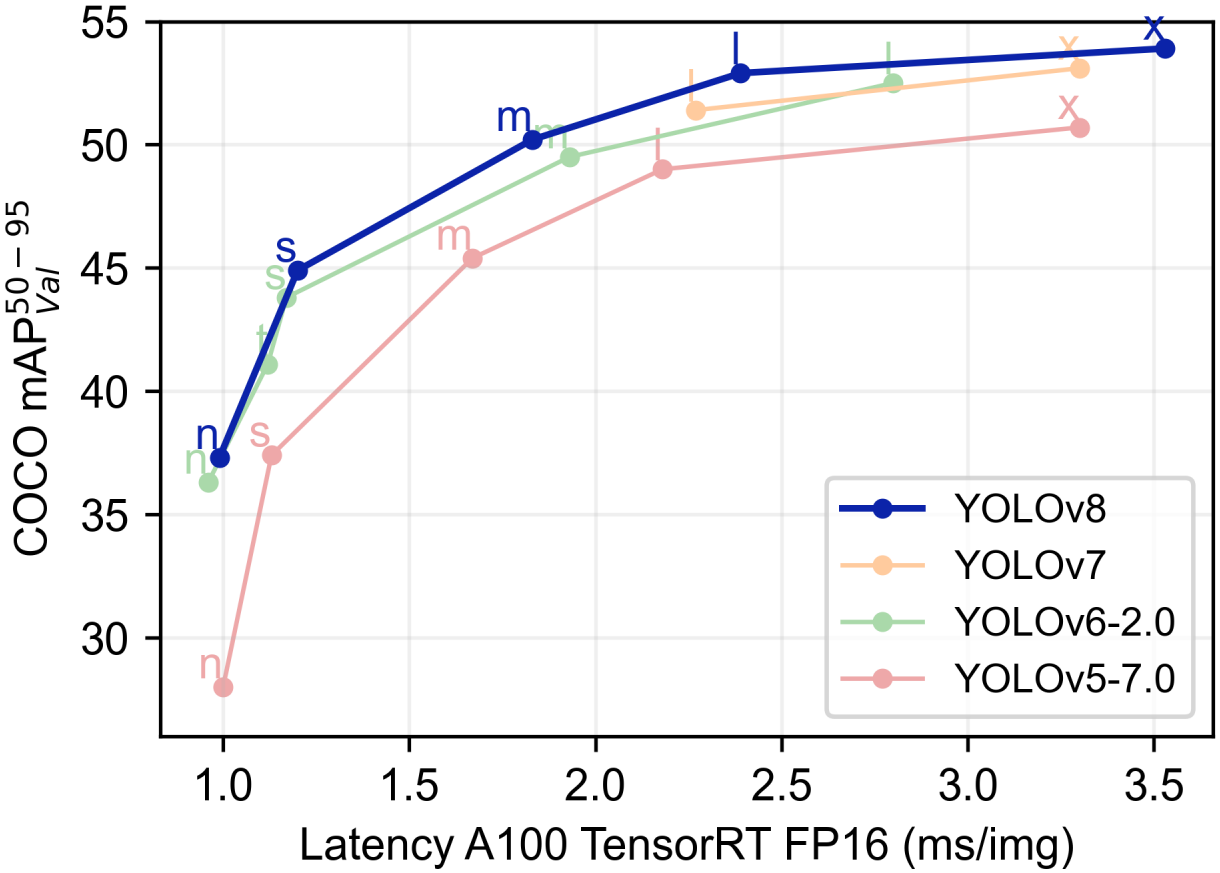
Ultralytics have released a completely new repository for YOLO Models.
It is built as a unified framework for training Object Detection, Instance Segmentation, and Image Classification models.

Github link: https://github.com/ultralytics/ultralytics

Key features

- **User-friendly API (Command Line + Python).**
- **Faster and More Accurate.**
- **Supports**
  - **Object Detection,**
  - **Instance Segmentation,**
  - **Image Classification.**
- **New Backbone network.**
- **New Anchor-Free head.**
- **New Loss Function.**
- **Flexible supporting numerous export formats (can run on CPUs & GPUs).**


COCO mAP$^{50-95}_{val}$
55
50
45
40
35
30
0
20
40
60
80
Parameters (M)
n
s
m
l
x
YOLOv8
YOLOv7
YOLOv6-2.0
YOLOv5-7.0


COCO mAP$^{50-95}_{val}$
55
50
45
40
35
30
1.0
1.5
2.0
2.5
3.0
3.5
Latency A100 TensorRT FP16 (ms/img)
n
s
m
l
x
YOLOv8
YOLOv7
YOLOv6-2.0
YOLOv5-7.0

Performance Comparison of YOLOv8 vs YOLOv5

Model Size	Detection#	Segmentation#	Classification*
Nano	+33.21%	+32.97%	+3.10%
Small	+20.05%	+18.62%	+1.12%
Medium	+10.57%	+10.89%	+0.66%
Large	+7.96%	+6.73%	0.00%
Xtra Large	+6.31%	+5.33%	-0.76%

#Image Size = 640 *Image Size = 224

YOLOV8

IS FASTER IN SPEED AND BETTER IN ACCURACY THAN

YOLOV7

Model	size (pixels)	mAP^{val} 50-95	Speed CPU (ms)	Speed T4 GPU (ms)	params (M)	FLOPs (B)
YOLOv7-X	640	52.9	-	-	71.3	189.9
YOLOv8x	640	53.7	-	-	68.2	258.5

ultralytics YOLOv8

TO DATE, HIGHEST MAP IN YOLO HISTORY EVER

RELEASED DATE: 10TH, JANUARY 2023

person 0.92
person 0.86
person 0.38
sports ball 0.84
person 0.92
person 0.83
person 0.32
sports ball 0.83

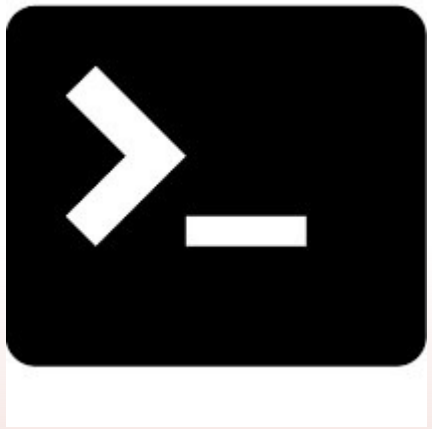
Install

▼ Install

Pip install the ultralytics package including all requirements.txt in a 3.10>=Python>=3.7 environment, including PyTorch>=1.7.

```
pip install ultralytics
```

Usage methods



CLI

Python API

Pretrain models

Model	size (pixels)	mAP^{val} 50-95	Speed CPU ONNX (ms)	Speed A100 TensorRT (ms)	params (M)	FLOPs (B)
YOLOv8n	640	37.3	80.4	0.99	3.2	8.7
YOLOv8s	640	44.9	128.4	1.20	11.2	28.6
YOLOv8m	640	50.2	234.7	1.83	25.9	78.9
YOLOv8l	640	52.9	375.2	2.39	43.7	165.2
YOLOv8x	640	53.9	479.1	3.53	68.2	257.8

There are five models in each category of YOLOv8 models for detection, segmentation, and classification. YOLOv8 Nano is the fastest and smallest, while YOLOv8 Extra Large (YOLOv8x) is the most accurate yet the slowest among them.

Hands on

- **Predict with pretrain model by CLI and Python API**
- **Train on Custom Data**
- **Predict with new models**