

YOLOv5 🚀 in PyTorch > ONNX > CoreML > TFLite

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YOLOv8.1 is out!

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YOLOv5 🚀 is the world's most loved vision AI, representing [Ultralytics](#) open-source research into future vision AI methods, incorporating lessons learned and best practices evolved over thousands of hours of research and development.

We hope that the resources here will help you get the most out of YOLOv5. Please browse the YOLOv5 [Docs](#) for details, raise an issue on [GitHub](#) for support, and join our [Discord](#) community for questions and discussions!

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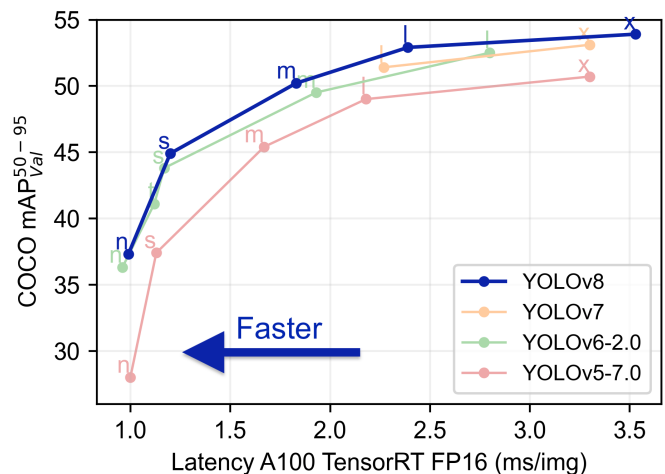
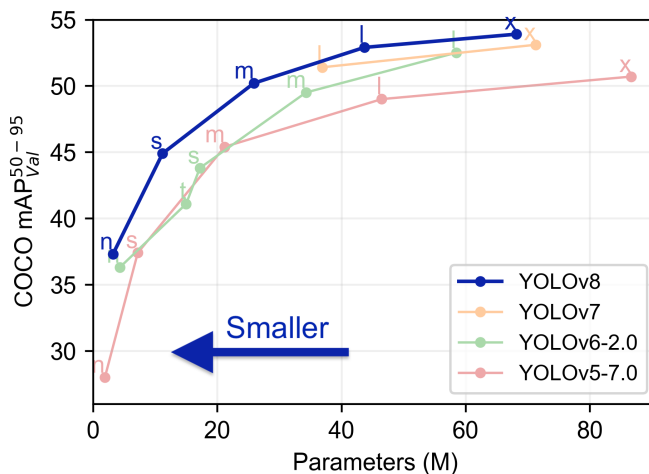
YOLOv8 🚀 NEW

We are thrilled to announce the launch of Ultralytics YOLOv8 🚀, our NEW cutting-edge, state-of-the-art (SOTA) model released at <https://github.com/ultralytics/ultralytics>. YOLOv8 is designed to be fast, accurate, and easy to use, making it an excellent choice for a wide range of object detection, image segmentation and image classification tasks.

See the [YOLOv8 Docs](#) for details and get started with:

pyPI package [8.1.18](#) downloads [27M](#)

```
pip install ultralytics
```



Documentation

See the [YOLOv5 Docs](#) for full documentation on training, testing and deployment. See below for quickstart examples.

▼ Install

Clone repo and install [requirements.txt](#) in a [Python>=3.8.0](#) environment, including [PyTorch>=1.8](#).

```
git clone https://github.com/ultralytics/yolov5 # clone
cd yolov5
pip install -r requirements.txt # install
```

► Inference

► Inference with detect.py

► Training

▼ Tutorials

- [Train Custom Data](#) 🚀 RECOMMENDED
- [Tips for Best Training Results](#) 🍀
- [Multi-GPU Training](#)
- [PyTorch Hub](#) ⭐ NEW
- [TFLite, ONNX, CoreML, TensorRT Export](#) 🚀
- [NVIDIA Jetson platform Deployment](#) ⭐ NEW
- [Test-Time Augmentation \(TTA\)](#)
- [Model Ensembling](#)
- [Model Pruning/Sparsity](#)
- [Hyperparameter Evolution](#)
- [Transfer Learning with Frozen Layers](#)
- [Architecture Summary](#) ⭐ NEW
- [Roboflow for Datasets, Labeling, and Active Learning](#)
- [ClearML Logging](#) ⭐ NEW
- [YOLOv5 with Neural Magic's DeepSparse](#) ⭐ NEW
- [Comet Logging](#) ⭐ NEW

Integrations



Roboflow	ClearML ★ NEW	Comet ★ NEW	Neural Magic ★ NEW
Label and export your custom datasets directly to YOLOv5 for training with Roboflow	Automatically track, visualize and even remotely train YOLOv5 using ClearML (open-source!)	Free forever, Comet lets you save YOLOv5 models, resume training, and interactively visualise and debug predictions	Run YOLOv5 inference up to 6x faster with Neural Magic DeepSparse



Ultralytics HUB

Experience seamless AI with [Ultralytics HUB](#) ★, the all-in-one solution for data visualization, YOLOv5 and YOLOv8 🚀 model training and deployment, without any coding. Transform images into actionable insights and bring your AI visions to life with ease using our cutting-edge platform and user-friendly [Ultralytics App](#). Start your journey for **Free** now!

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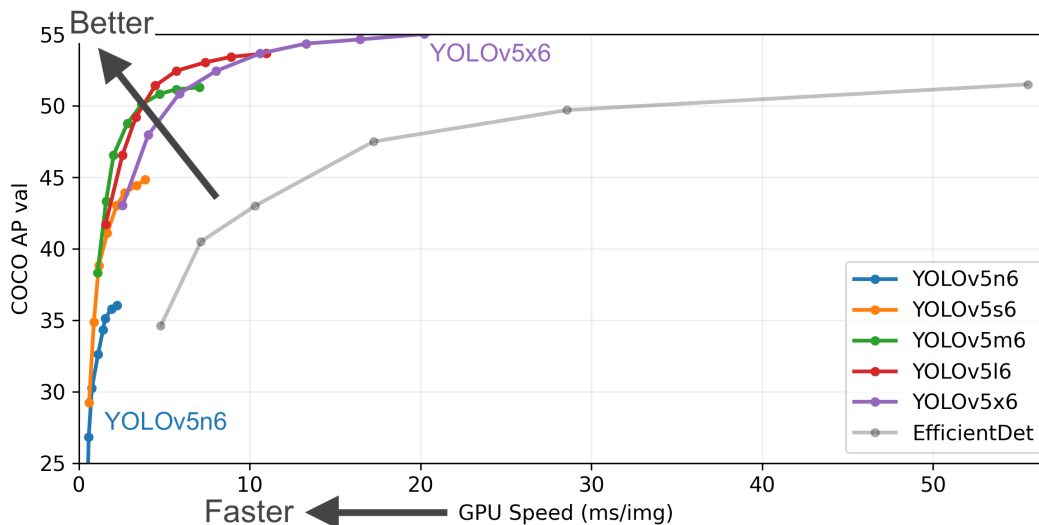
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Why YOLOv5

YOLOv5 has been designed to be super easy to get started and simple to learn. We prioritize real-world results.



► YOLOv5-P5 640 Figure

► Figure Notes



Pretrained Checkpoints

Model	size (pixels)	mAP ^{val} 50-95	mAP ^{val} 50	Speed CPU b1 (ms)	Speed V100 b1 (ms)	Speed V100 b32 (ms)	params (M)	FLOPs @640 (B)
YOLOv5n	640	28.0	45.7	45	6.3	0.6	1.9	4.5
YOLOv5s	640	37.4	56.8	98	6.4	0.9	7.2	16.5

Model	size (pixels)	mAP ^{val} 50-95	mAP ^{val} 50	Speed CPU b1 (ms)	Speed V100 b1 (ms)	Speed V100 b32 (ms)	params (M)	FLOPs @640 (B)
YOLOv5m	640	45.4	64.1	224	8.2	1.7	21.2	49.0
YOLOv5l	640	49.0	67.3	430	10.1	2.7	46.5	109.1
YOLOv5x	640	50.7	68.9	766	12.1	4.8	86.7	205.7
YOLOv5n6	1280	36.0	54.4	153	8.1	2.1	3.2	4.6
YOLOv5s6	1280	44.8	63.7	385	8.2	3.6	12.6	16.8
YOLOv5m6	1280	51.3	69.3	887	11.1	6.8	35.7	50.0
YOLOv5l6	1280	53.7	71.3	1784	15.8	10.5	76.8	111.4
YOLOv5x6	1280	55.0	72.7	3136	26.2	19.4	140.7	209.8
+ TTA	1536	55.8	72.7	-	-	-	-	-

► Table Notes



Segmentation

Our new YOLOv5 [release v7.0](#) instance segmentation models are the fastest and most accurate in the world, beating all current [SOTA benchmarks](#). We've made them super simple to train, validate and deploy. See full details in our [Release Notes](#) and visit our [YOLOv5 Segmentation Colab Notebook](#) for quickstart tutorials.

► Segmentation Checkpoints

► Segmentation Usage Examples [Open in Colab](#)



Classification

YOLOv5 [release v6.2](#) brings support for classification model training, validation and deployment! See full details in our [Release Notes](#) and visit our [YOLOv5 Classification Colab Notebook](#) for quickstart tutorials.

► Classification Checkpoints

► Classification Usage Examples [Open in Colab](#)



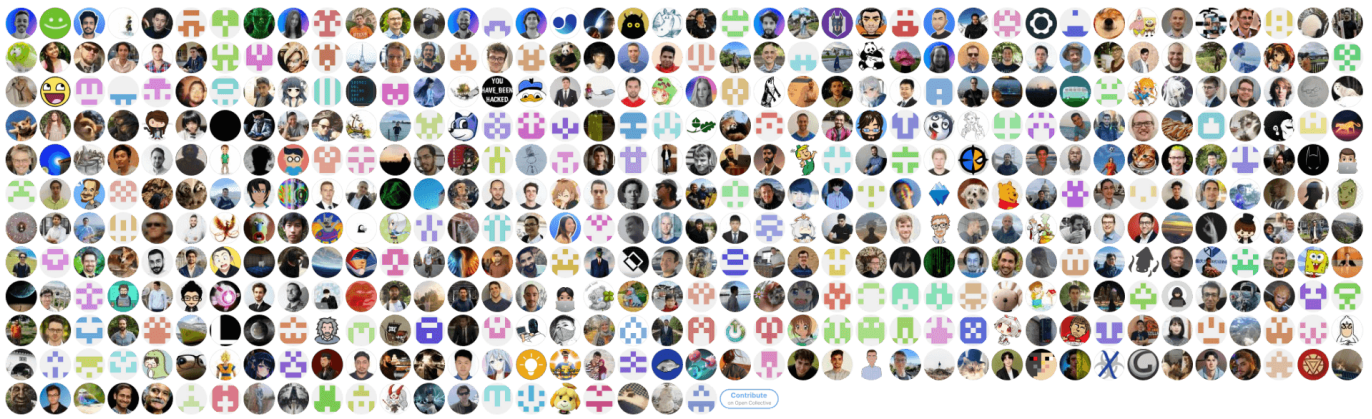
Environments

Get started in seconds with our verified environments. Click each icon below for details.




Contribute

We love your input! We want to make contributing to YOLOv5 as easy and transparent as possible. Please see our [Contributing Guide](#) to get started, and fill out the [YOLOv5 Survey](#) to send us feedback on your experiences. Thank you to all our contributors!



License


Releases 10

 **v7.0 - YOLOv5 SOTA Realtime Instance Segmentation** Latest
on Nov 22, 2022

[+ 9 releases](#)

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Languages

 Python 98.2%  Shell 1.3%  Dockerfile 0.5%