

Introduction to yolov5

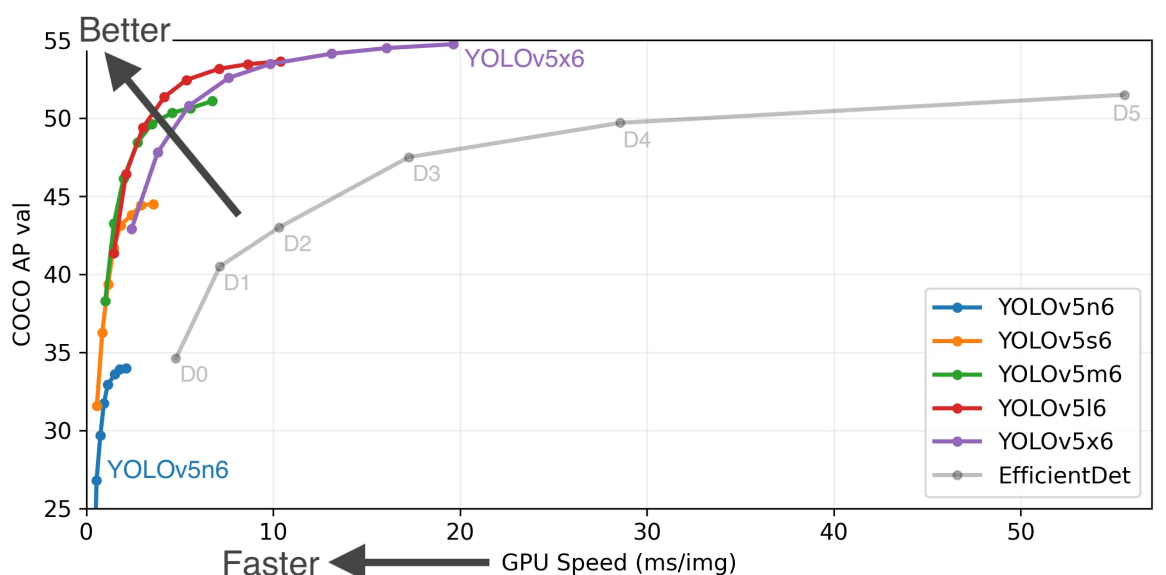
1.What is YOLO?

YOLO is the acronym for 'You only look once' and is an algorithm for object detection that divides images into grid systems. Each cell in the grid is responsible for detecting objects or objects whose physical center falls within the network itself. Due to its speed and accuracy, YOLO is one of the most famous object detection algorithms.

2.What is YOLO V5

YOLO V5 is an open-source version of YOLO from Ultralytics and is fully implemented based on PyTorch, bringing good news to a large number of AI personnel. While we were amazed by the various tricks and rich experimental comparisons of YOLOv4, YOLOv5 also brought stronger, real-time, and more accurate object detection technology.

1. Faster, more real-time According to the official number, the current version of YOLOv5 has a maximum inference time of 0.007 seconds per image, which is 140 frames per second (FPS)



On the CPU, the inference time for each image is as fast as 7ms, which means 140 frames per second (FPS)! Far greater than the human eye's requirement of 20 frames. In contrast, YOLOv4 can only reach up to 50 frames under the same conditions. On GPUs, FPS is higher, up to 400

2. Smaller (less memory) The weight file size of YOLOv5 is only 1/9 of YOLOv4.

Model	AP _{val}	AP _{test}	AP ₅₀	Latency _{GPU}	FPS _{GPU}	params	FLOPs
YOLOv5-s (ckpt)	35.5	35.5	55.0	2.5ms	400	7.1M	12.6B
YOLOv5-m (ckpt)	42.7	42.7	62.4	4.4ms	227	22.0M	39.0B
YOLOv5-l (ckpt)	45.7	45.9	65.1	6.8ms	147	50.3M	89.0B
YOLOv5-x (ckpt)	47.2	47.3	66.6	11.7ms	85	95.9M	170.3B
YOLOv3-SPP (ckpt)	45.6	45.5	65.2	7.9ms	127	63.0M	118.0B

3. Shorter training timeThe training time on the COCO 2017 dataset for YOLOv5 with a single V-100 GPU is:

YOLOv5 s	YOLOv5 m	YOLOv5 l	YOLOv5 x
2天	4天	6天	8天

Appendix:

Other reference tutorials

- <https://zhuanlan.zhihu.com/p/172121380>
- https://blog.csdn.net/qg_26420885/article/details/128658851