YOLOX Object Detection
NVIDIA JETSON

Content

- About Dataset and its Annotation
- Brief about YOLOX
- Perform Object Detection using YOLOX

Dataset (Number Plate)

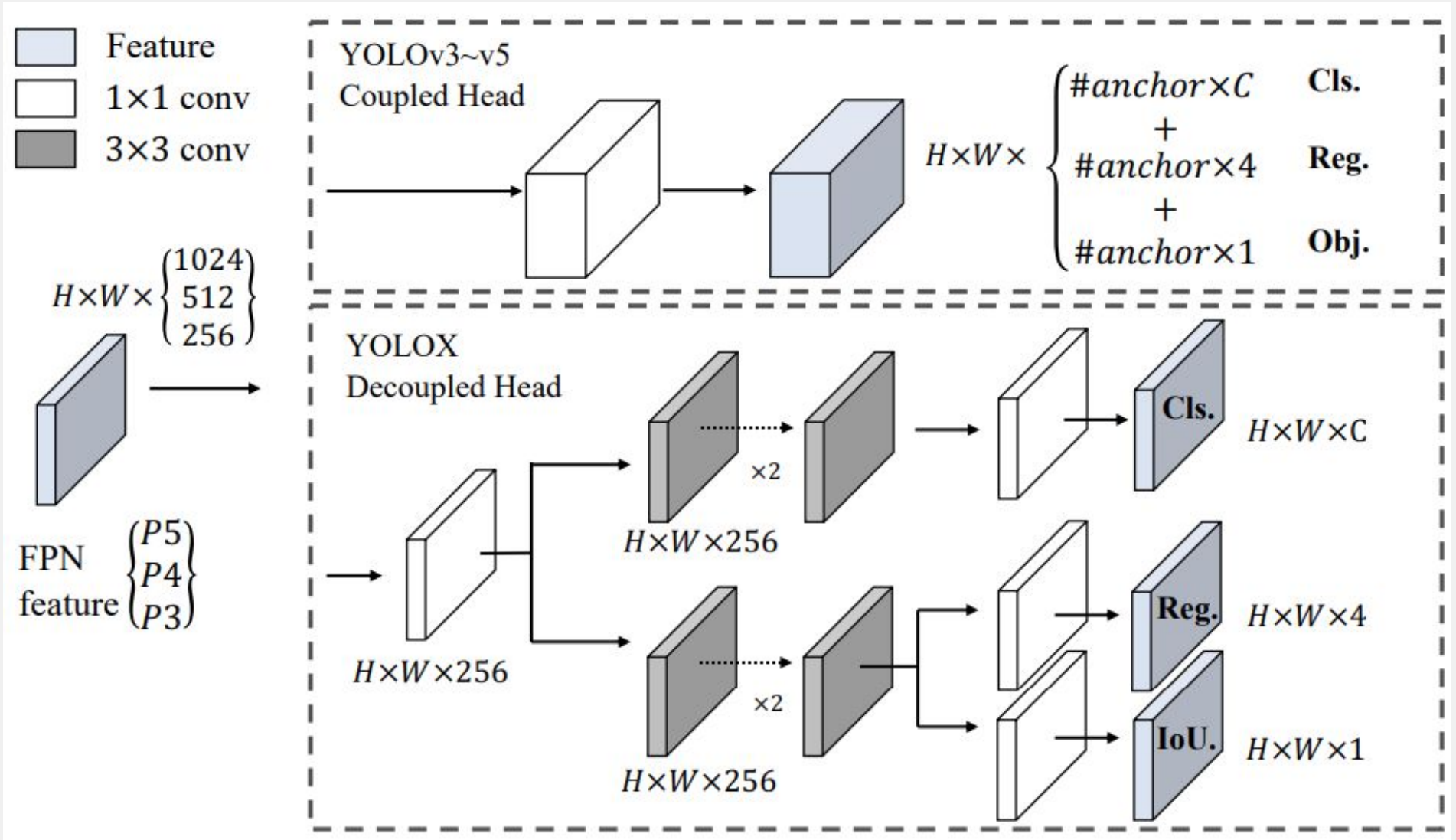
Annotation or Labeling

- Create Bounding Boxes Manually
- Save the bbox information in VOC format
- VOC format is in XML file

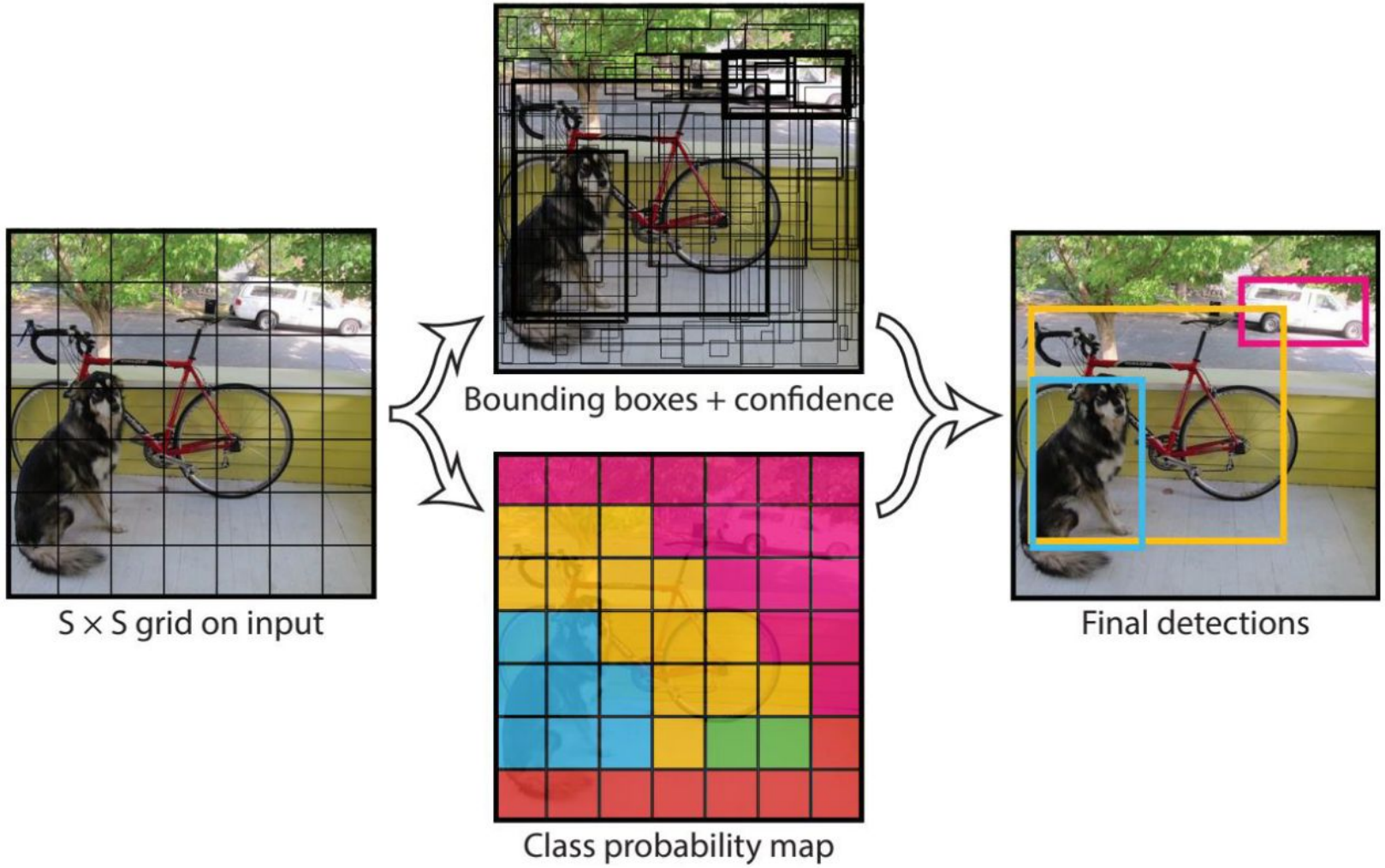
Why YOLOX

- Decoupled Head
- Anchor Free mechanism
- Advance Data Augmentation
- Most accurate among existing YOLO versions

Decoupled Head



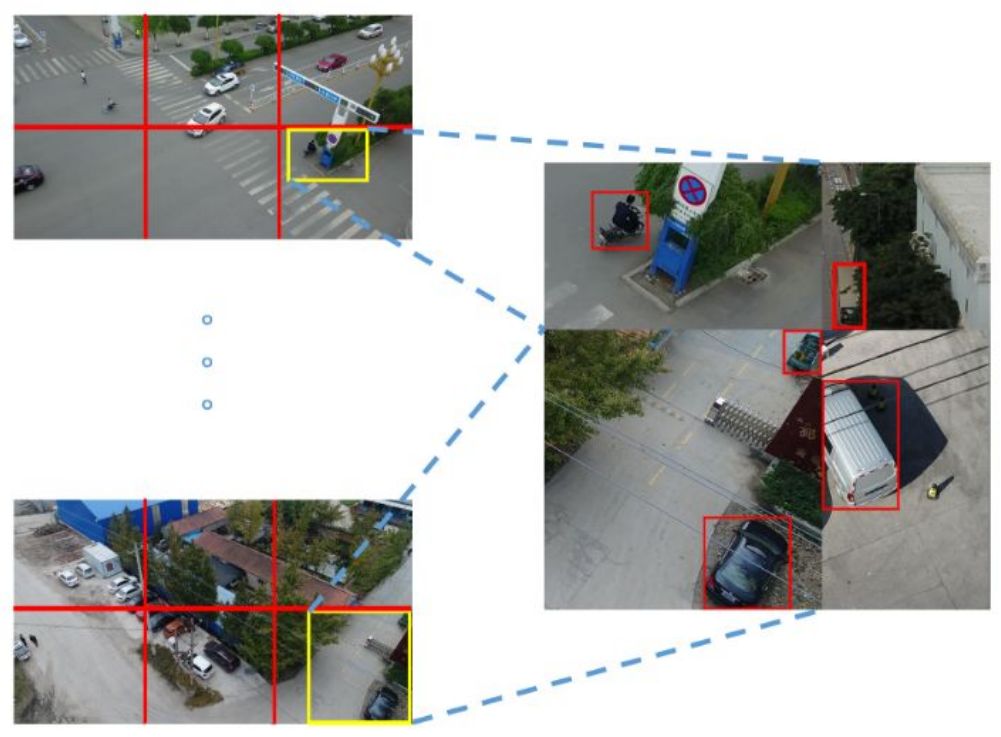
Anchor Free Mechanism



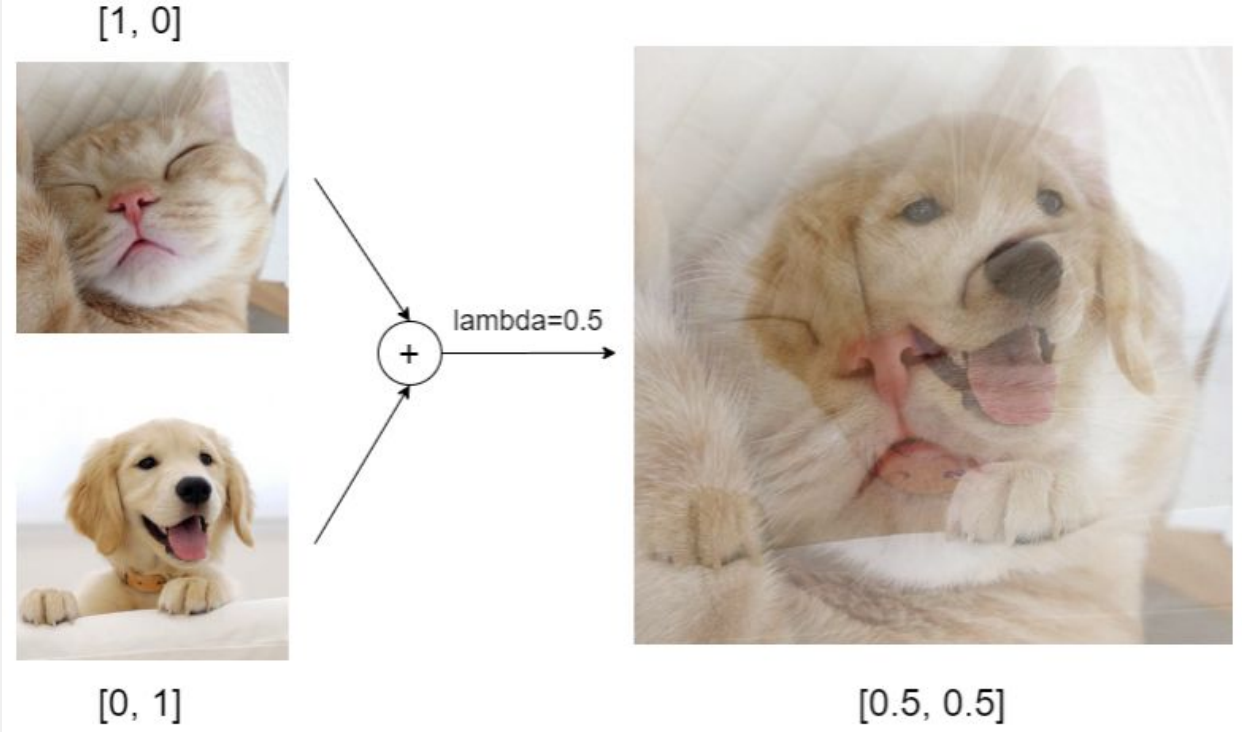
Advance Data Augmentation

AUGMENTED STARTUPS
Computer Vision | AI | Robotics

Mosaic Augmentation



Mixup Augmentation



Accuracy

Method	Backbone	Size	FPS (V100)	AP (%)	AP_{50}	AP_{75}	AP_S	AP_M	AP_L
YOLOv3 + ASFF* [18]	Darknet-53	608	45.5	42.4	63.0	47.4	25.5	45.7	52.3
YOLOv3 + ASFF* [18]	Darknet-53	800	29.4	43.9	64.1	49.2	27.0	46.6	53.4
EfficientDet-D0 [28]	Efficient-B0	512	98.0	33.8	52.2	35.8	12.0	38.3	51.2
EfficientDet-D1 [28]	Efficient-B1	640	74.1	39.6	58.6	42.3	17.9	44.3	56.0
EfficientDet-D2 [28]	Efficient-B2	768	56.5	43.0	62.3	46.2	22.5	47.0	58.4
EfficientDet-D3 [28]	Efficient-B3	896	34.5	45.8	65.0	49.3	26.6	49.4	59.8
PP-YOLOv2 [11]	ResNet50-vd-dcn	640	68.9	49.5	68.2	54.4	30.7	52.9	61.2
PP-YOLOv2 [11]	ResNet101-vd-dcn	640	50.3	50.3	69.0	55.3	31.6	53.9	62.4
YOLOv4 [1]	CSPDarknet-53	608	62.0	43.5	65.7	47.3	26.7	46.7	53.3
YOLOv4-CSP [30]	Modified CSP	640	73.0	47.5	66.2	51.7	28.2	51.2	59.8
YOLOv3-ultralytics[2]	Darknet-53	640	95.2	44.3	64.6	-	-	-	-
YOLOv5-M [7]	Modified CSP v5	640	90.1	44.5	63.1	-	-	-	-
YOLOv5-L [7]	Modified CSP v5	640	73.0	48.2	66.9	-	-	-	-
YOLOv5-X [7]	Modified CSP v5	640	62.5	50.4	68.8	-	-	-	-
YOLOX-DarkNet53	Darknet-53	640	90.1	47.4	67.3	52.1	27.5	51.5	60.9
YOLOX-M	Modified CSP v5	640	81.3	46.4	65.4	50.6	26.3	51.0	59.9
YOLOX-L	Modified CSP v5	640	69.0	50.0	68.5	54.5	29.8	54.5	64.4
YOLOX-X	Modified CSP v5	640	57.8	**51.2**	69.6	55.7	31.2	56.1	66.1

Move to Jetson