Mean Average Precision (mAP)

Step 1: Compute Precision-Recall Curve For each class, vary confidence threshold from 1.0 → 0.0 Plot Precision vs Recall at each threshold

Step 2: Compute AP (Average Precision) AP = Area Under the PR Curve (Typically using 11-point or all-point interpolation)

Step 3: Average Across Classes mAP = (AP_dog + AP_cat + AP_car + ...) / N_classes

variants

mAP@0.5 IoU threshold = 0.5 (PASCAL VOC style)

mAP@0.5:0.95 Average over IoU = 0.5, 0.55, ..., 0.95 (COCO style - stricter)

Typical Scores (COCO mAP@0.5:0.95) • YOLOv5s: ~36 (fast, small) • YOLOv5x: ~50 (accurate, large) • YOLOv8x: ~53 (latest)