# YOLOv8x Performance Benchmark Report on WaRP-D

## Objective

To compare the detection performance of our YOLOv8x models (previous and latest parameter-tuned) with state-of-the-art results from the WaRP paper, including both standard detectors and hierarchical models (H-YC(5) and H-YC(28)), using global object detection metrics.

## Key Global Metrics

Metrics Explained:  
- mAP50: Mean Average Precision at IoU=0.5 (standard measure for object detection accuracy).  
- mAP50–95: Mean Average Precision averaged over IoU thresholds from 0.5 to 0.95 (a stricter, more robust measure of detection quality).

### Results Comparison Table

|  |  |  |
| --- | --- | --- |
| Model/Method | mAP50 | mAP50–95 |
| H-YC(5) (Paper) | 52.7 | 40.4 |
| H-YC(28) (Paper) | 59.6 | 46.7 |
| YOLOX-m (Paper) | 58.6 | 45.7 |
| YOLOv8x (Previous) | 58.8 | 48.9 |
| YOLOv8x (Parameters) | 61.0 | 50.3 |

## Analysis

- YOLOv8x (parameter-tuned) achieves the highest performance in both mAP50 (61.0%) and mAP50–95 (50.3%), setting a new state-of-the-art for WaRP-D detection.  
- Even the previous YOLOv8x run is competitive, matching or surpassing the best paper results on mAP50–95.  
- Both YOLOv8x runs outperform H-YC(5) by a significant margin and are better than H-YC(28) and YOLOX-m in mAP50–95, which is a more robust and challenging metric.