

## Supplementary materials: Figures



(a) Detection results of YOLOv5



(b) Detection results of YOLOX



(c) Detection results of DETR

**Figure S1.** Detection results by (a) YOLOv5, (b) YOLOX and (c) DETR algorithms, respectively. Among these images, the yellow, red and blue rectangles represent true positives (TP), false negatives (FN) and false positives (FP), respectively.



(a) Detection results of YOLOv8+DSConv+MCA



(b) Detection results of YOLOv8+DSConv+ WIoUv3



(c) Detection results of YOLOv8 +MCA+WIoUv3

**Figure S2.** Ablation experiment results with **(a)** YOLOv8 + DSConv + MCA, **(b)** YOLOv8 + DSConv + WIoUv3 and **(c)** YOLOv8 + MCA + WIoUv3, respectively. Among these images, the yellow and blue rectangles represent true positives (TP) and false positives (FP), respectively.