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A09 Reflection

For this assignment, we learned the in-depth principles of object detection, including the purpose of bounding boxes, which visually define the location of objects within an image, their different types; (Axis-Aligned Bounding Box or AABB) and Oriented Bounding Box (OBB), as well as their makeup; specifically, the coordinates, dimensions, class label, and confidence score. We learned about the ground truth bounding box, determined by humans and how it serves as a reference for evaluating model predictions and then the prediction bounding box, which is generated by the model. We covered the different algorithms available, which include two-stage detectors, which prioritize accuracy; R-CNN, Fast R-CNN, Faster R-CNN, and Mask R-CNN and one-stage detectors, which prioritize speed; YOLO (You Only Look Once) and SSD (Single Stage Detector). Next, we researched common evaluation metrics and the mathematics behind them such as IoU (Intersection over Union), Precision, Recall, F-1 Score, and Mean Average Precision (mAP). In our cheat sheet, we included definitions for common concepts, all steps in an object detection task, and popular tools and libraries like TensorFlow, Keras, and Open CV.

In the future, our cheat sheet will serve as a quick reference guide while completing our own object detection tasks, particularly in laying out the stages of the task and as a simple and handy reminder for which libraries, algorithms, and evaluation metrics to use.