

Lab 05: Object Detection

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Dataset

The balloon dataset from the mask rcnn example is used, but for our use case had to be converted. We decided to use ultralytics' YOLO for object detection and this requires us to provide the model in a specific format. This was done using roboflow.com[roboflow.com], which allowed us to load the dataset with YOLO. After converting the dataset to a YOLO compatible format we were able to load it.

The Model

The exercise description said to use pretrained models for object detection, so we used YOLOs pretrained model `yolo8n.pt`. YOLOs API turned out to be very simple and easy to use. Essentially three steps are needed in the beginning to start and train a model. In its most basic form training a model with YOLO requires only three lines of code.

This workflow simplified training the model for balloons and helped us finish this exercise with good results. We trained the model for 100 epochs on the default dataset and got some promising results.

With the model being trained we decided to try it ourselves with some test images. The figure below on the left shows how YOLO performs on the validation dataset. It shows that the resulting model is good at predicting balloons that are in the dataset itself. We added some random images from a Google search to check how the model performs on them.

Table 1. Validation Dataset and Predictions

