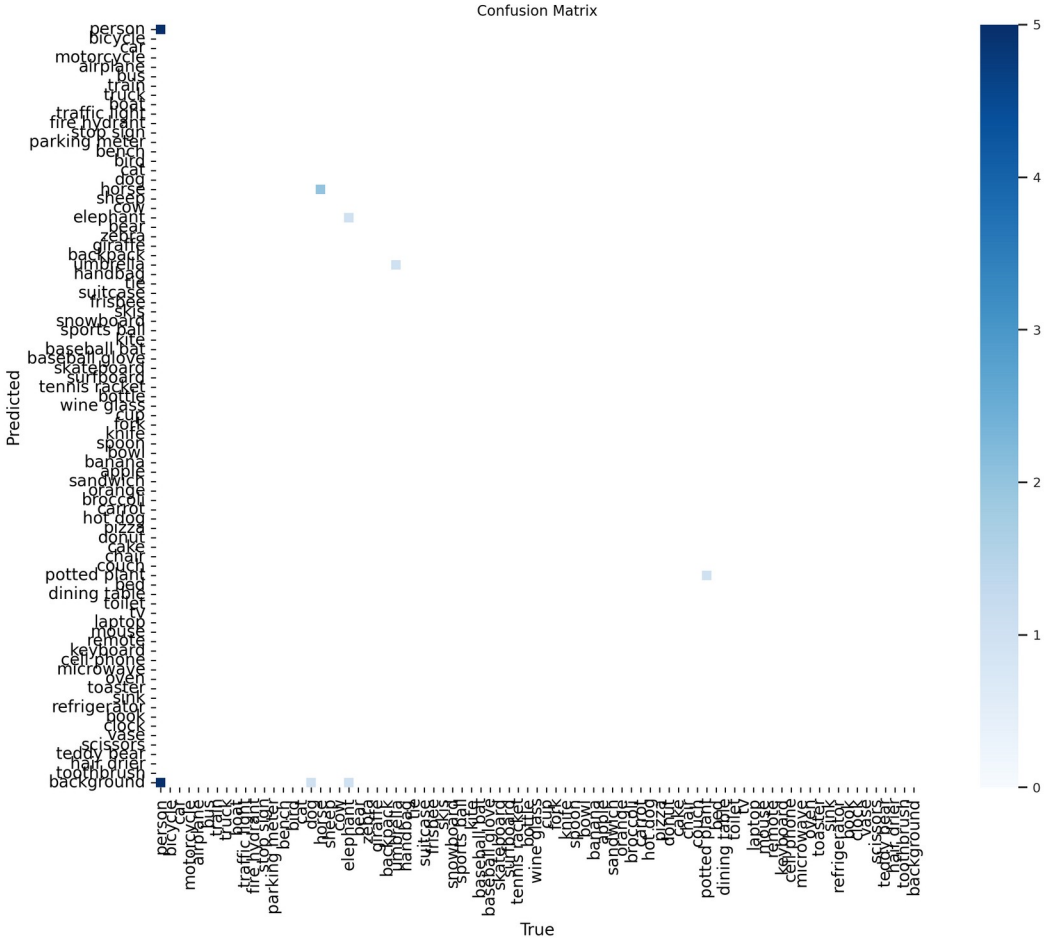
README for Quantum YOLO.

This is a new version of the YOLO version 10 model, and it can be used for object tracking. This one has been trained using the COCO8 dataset, it's very easy to use and it works extremely fast even on old hardware (it was tested on an Intel Broadwell CPU with only 12 CPU cores).

The reason that this was developed was in part submission towards a MSc degree course at the university of St Andrews, namely an MSc in data science.

It can be used in almost exactly the same way as the original YOLO, and it is governed by the same License as YOLO is, except that you need to install Numpy, Pennylane, Joblib, Pytorch and you need to use pip install . To install the package as it is now instead of using the original ultralytics one, which is NOT the same as this one.

Below are some results from training the smallest model with this architecture of neural network, using the COCO8 dataset for that.



Confusion matrix for different classes figure 1.

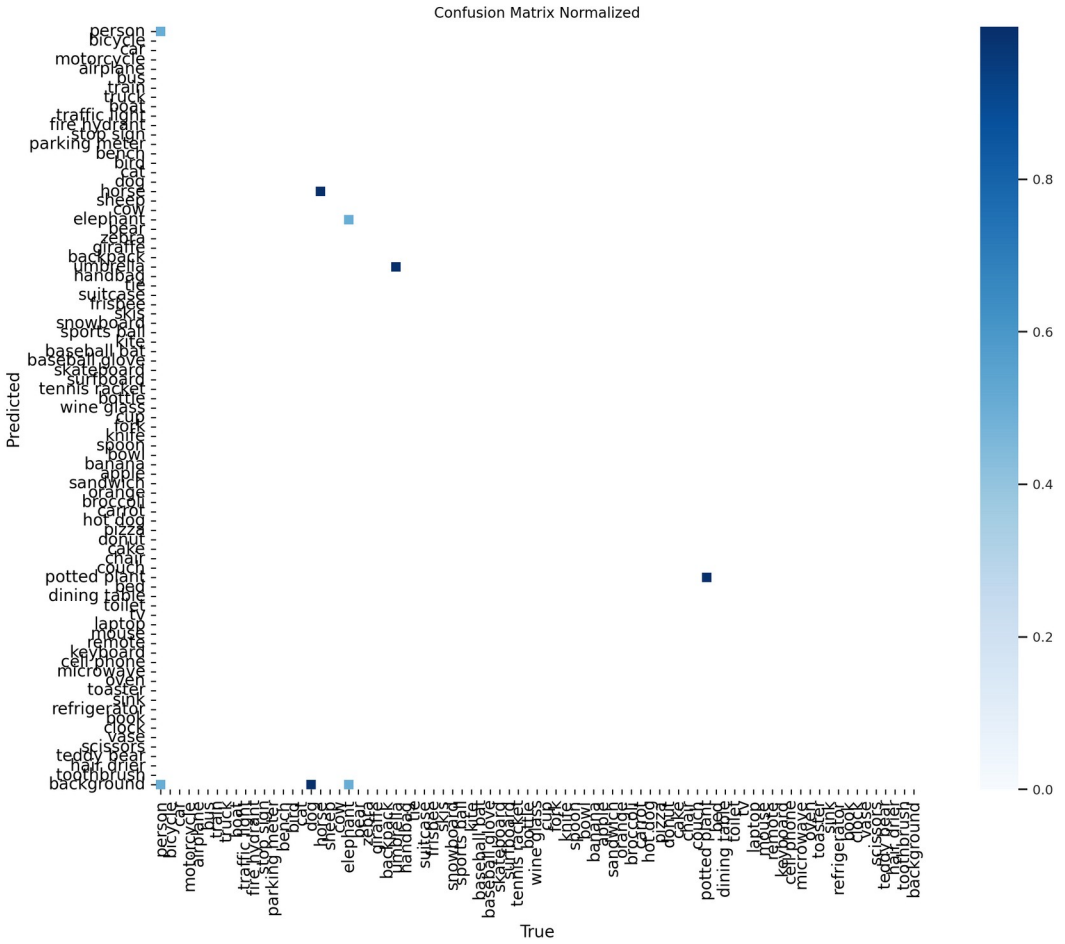
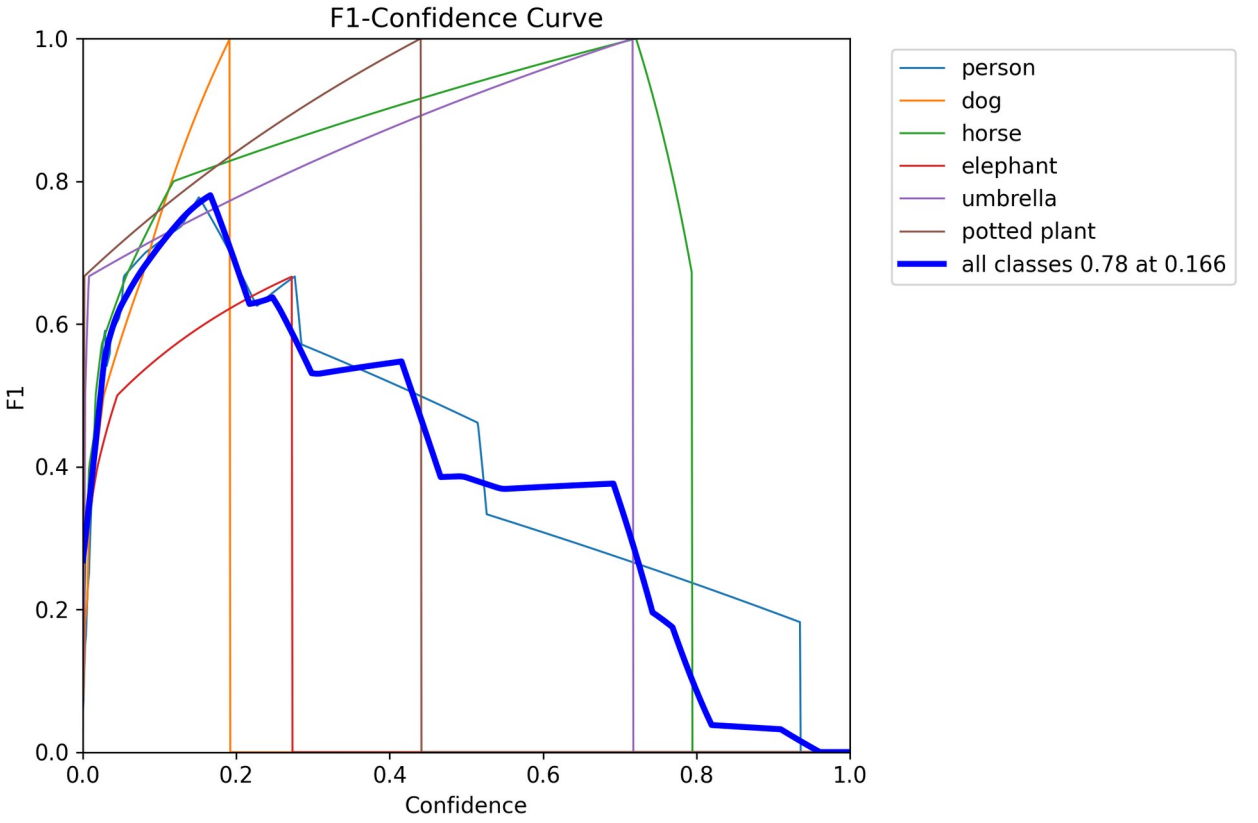


Figure 2, normalized confusion matrix.

Figure 4: F1 confidence curve for different classes.



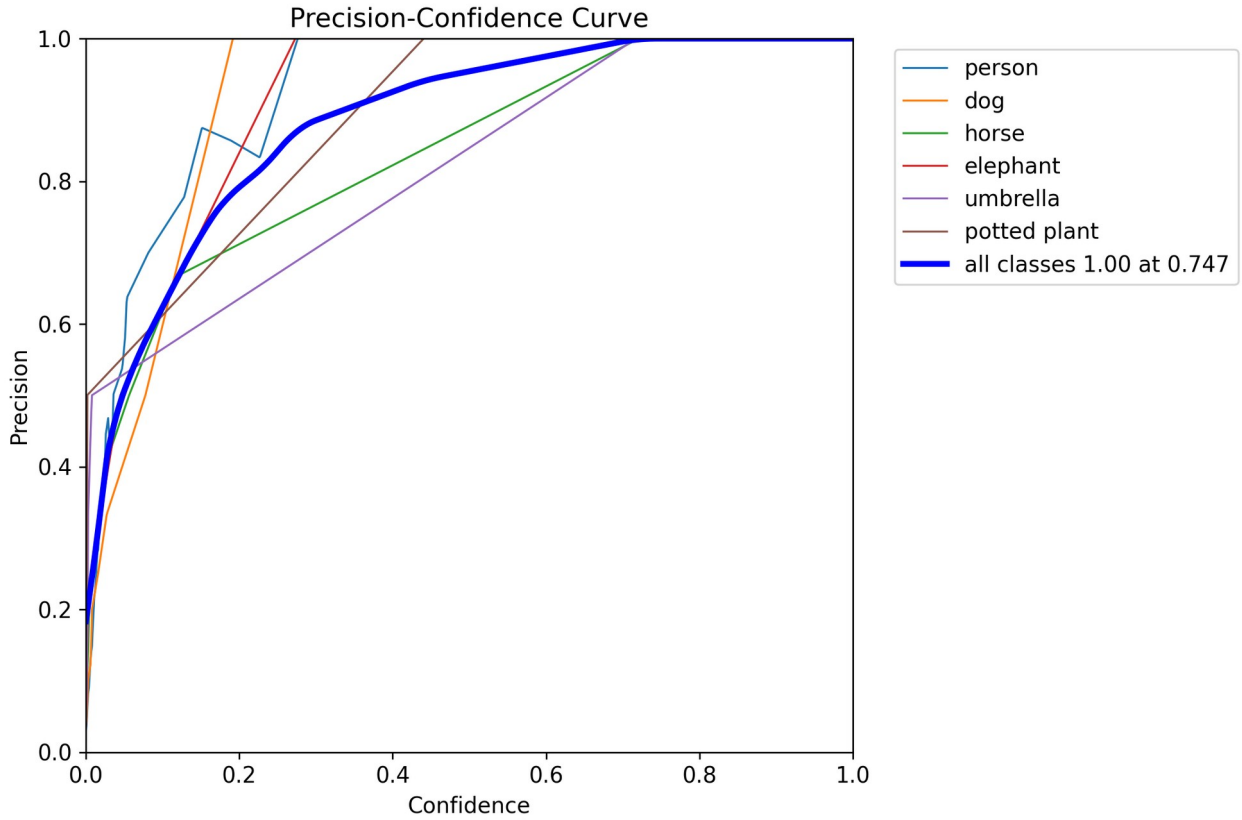
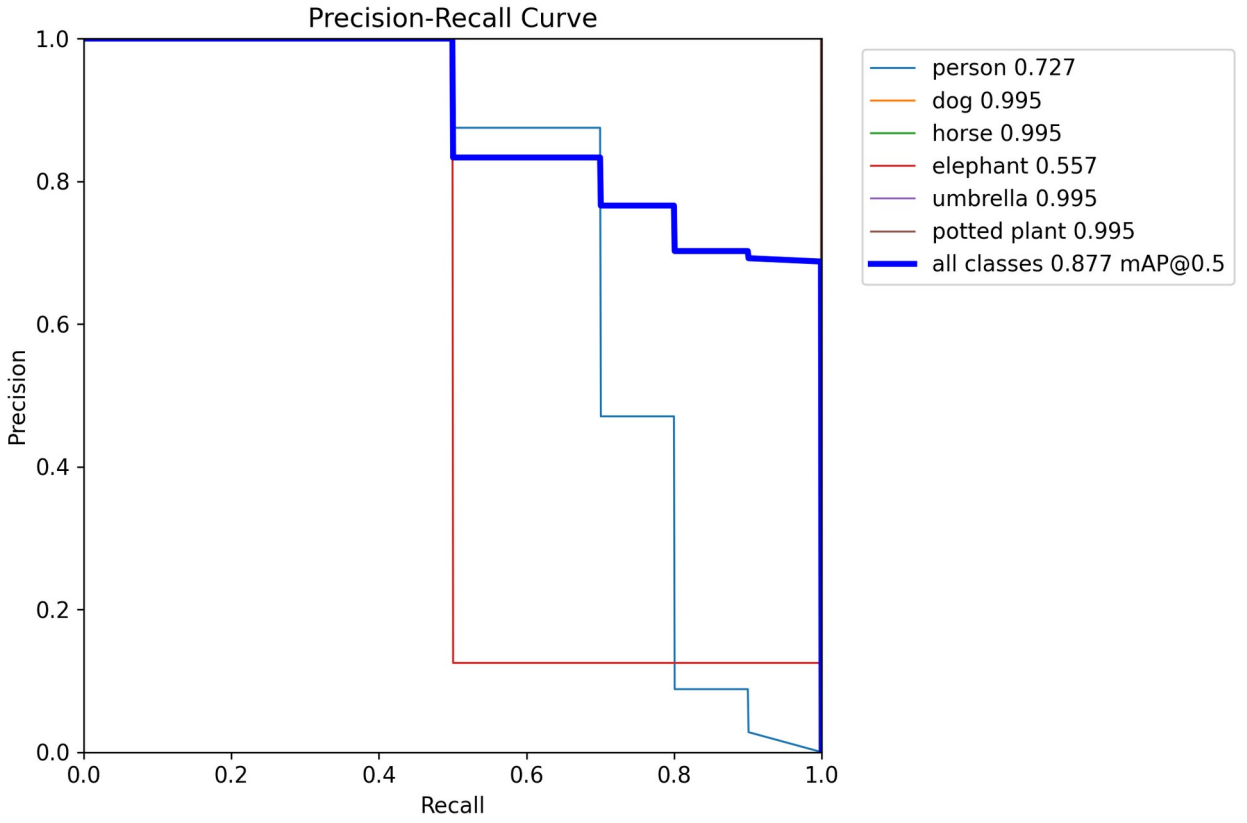


Figure 5: Precision confidence curve.

Figure 6: Precision Recall curve.



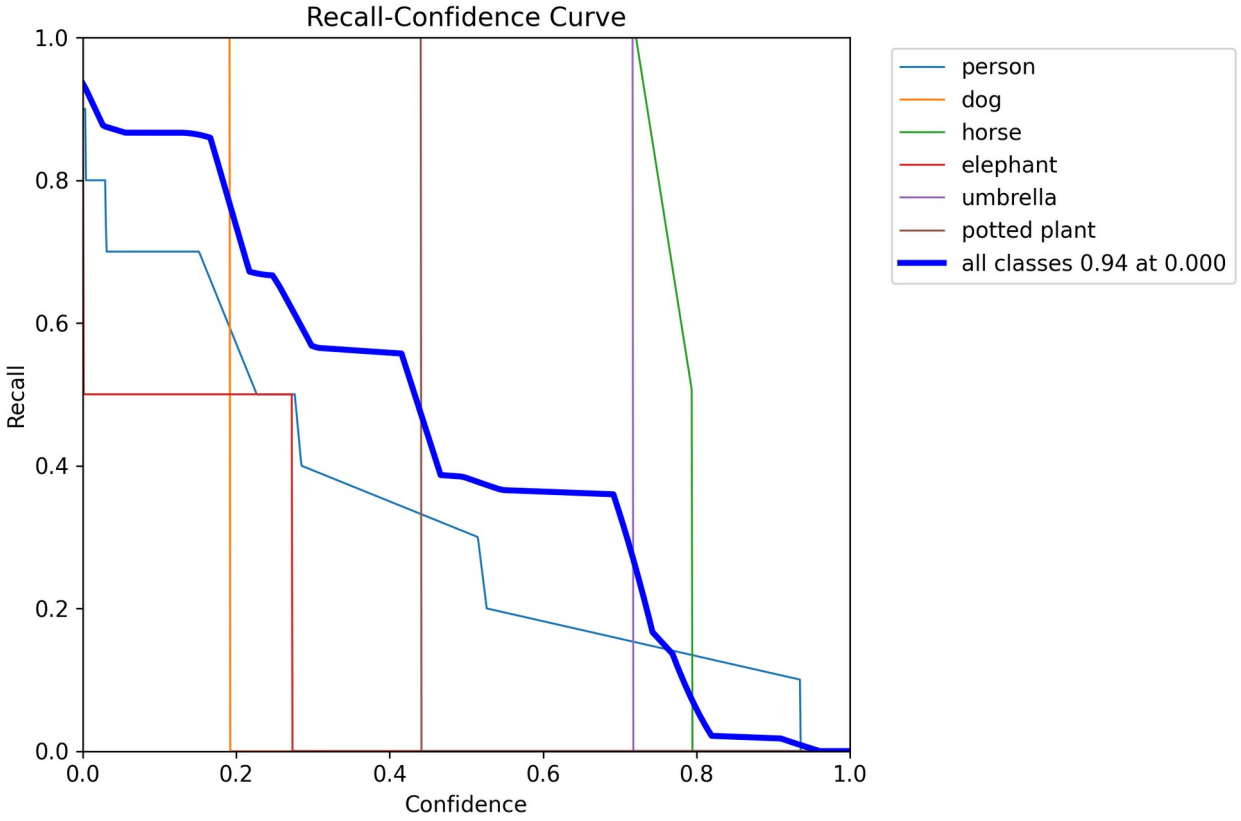


Figure 7: Recall confidence curve.

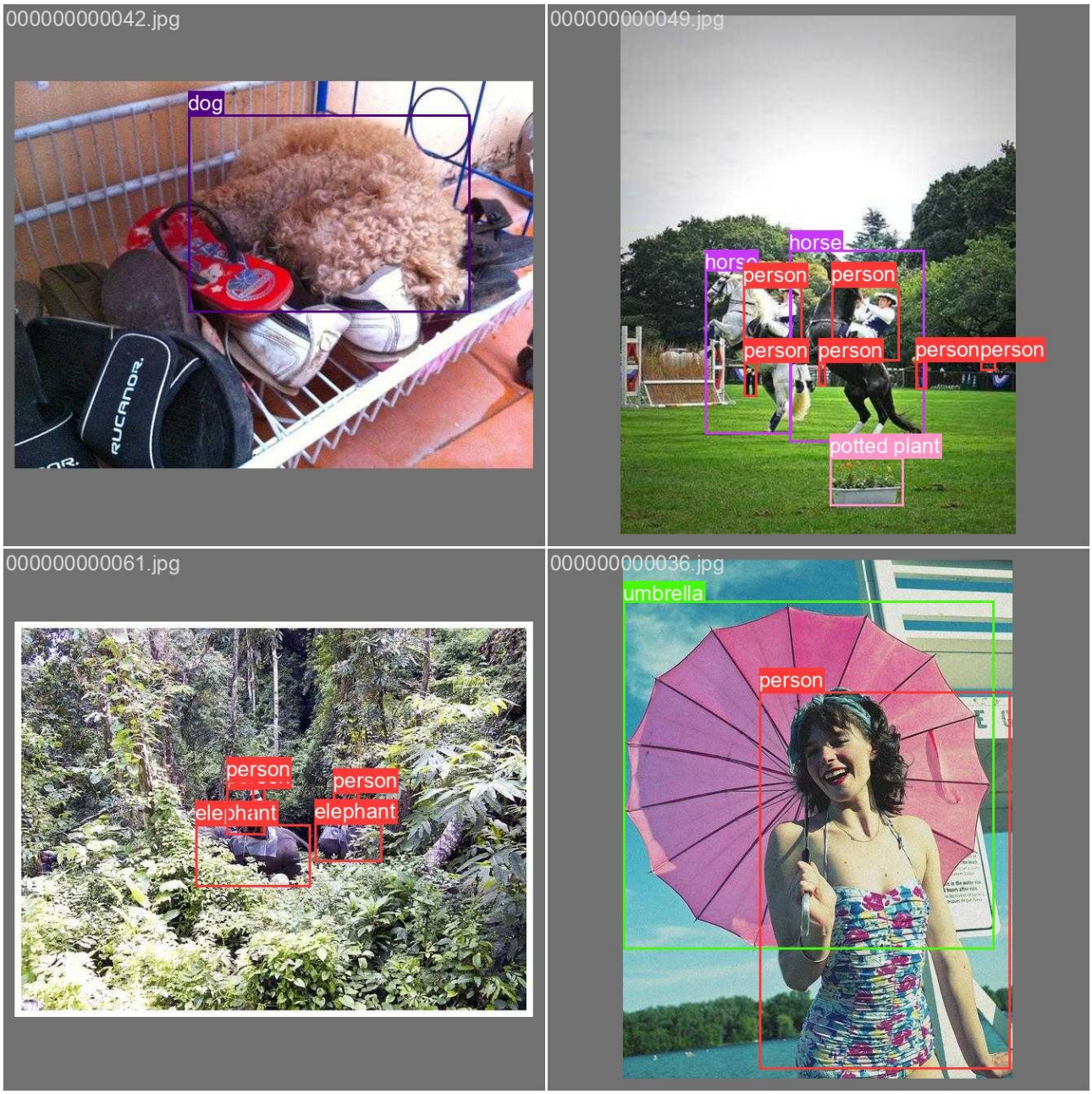


Figure 8: sample detection labels from the COCO8 dataset.

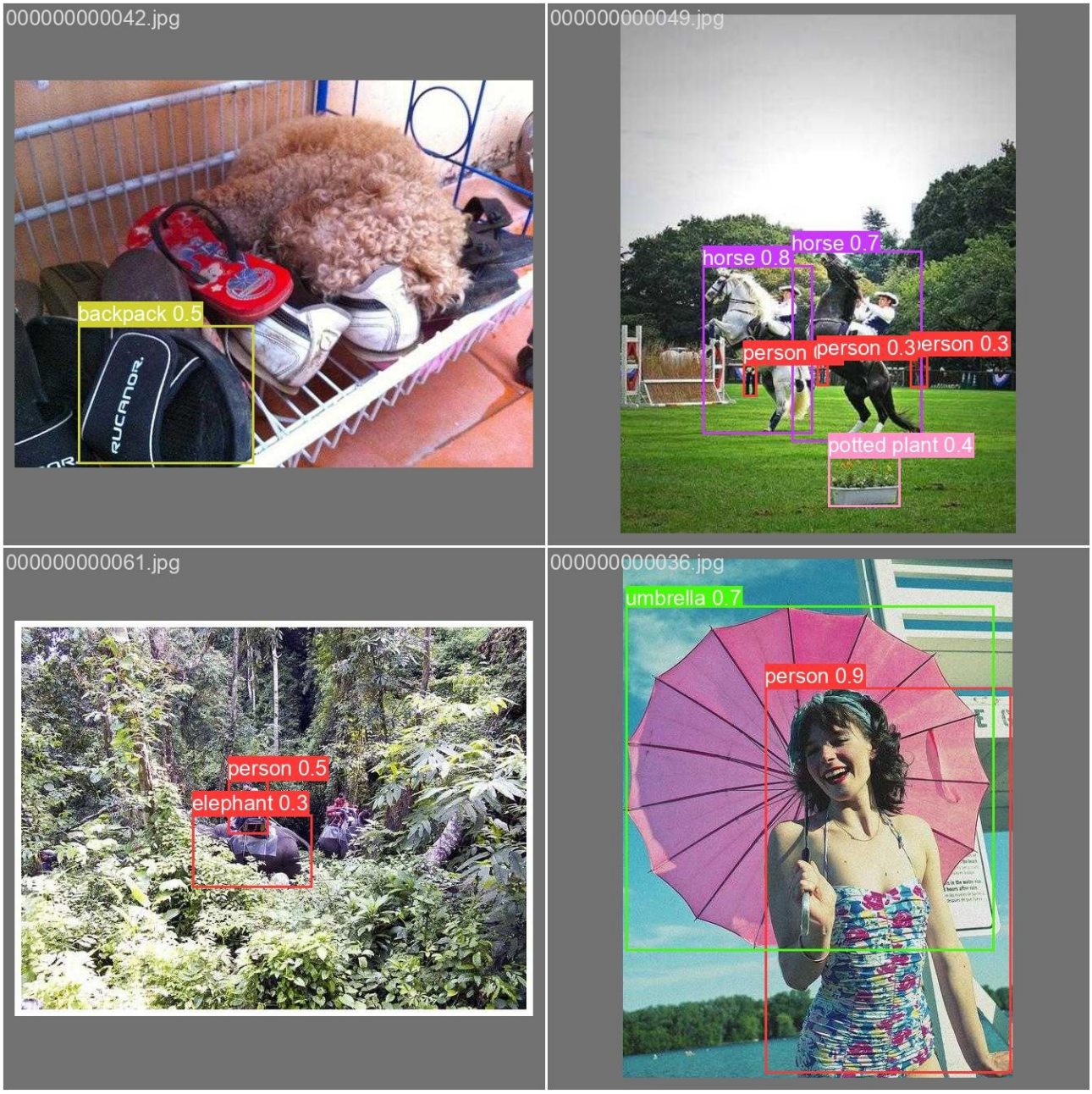


Figure 9: Sample training validation metrics.

Note that this has not yet been tested using different validation data, however these results are all obtained from the same dataset.