OBJECT DETECTION
using
YOLOv8

YOLOv8: https://github.com/ultralytics/ultralytics

Detection: https://docs.ultralytics.com/tasks/detect/

Object Detection:

- Finding the position and type of objects in an image or video stream.
- An object detector produces a collection of bounding boxes that contain the items in the image, along with class labels and confidence scores for each box.

Example:

Image Source: https://user-images.githubusercontent.com/26833433/243418624-5785cb93-74c9-4541-9179-d5c6782d491a.png from https://docs.ultralytics.com/tasks/detect/

Procedure to Detect and Predict Objects:

From Video Stream:

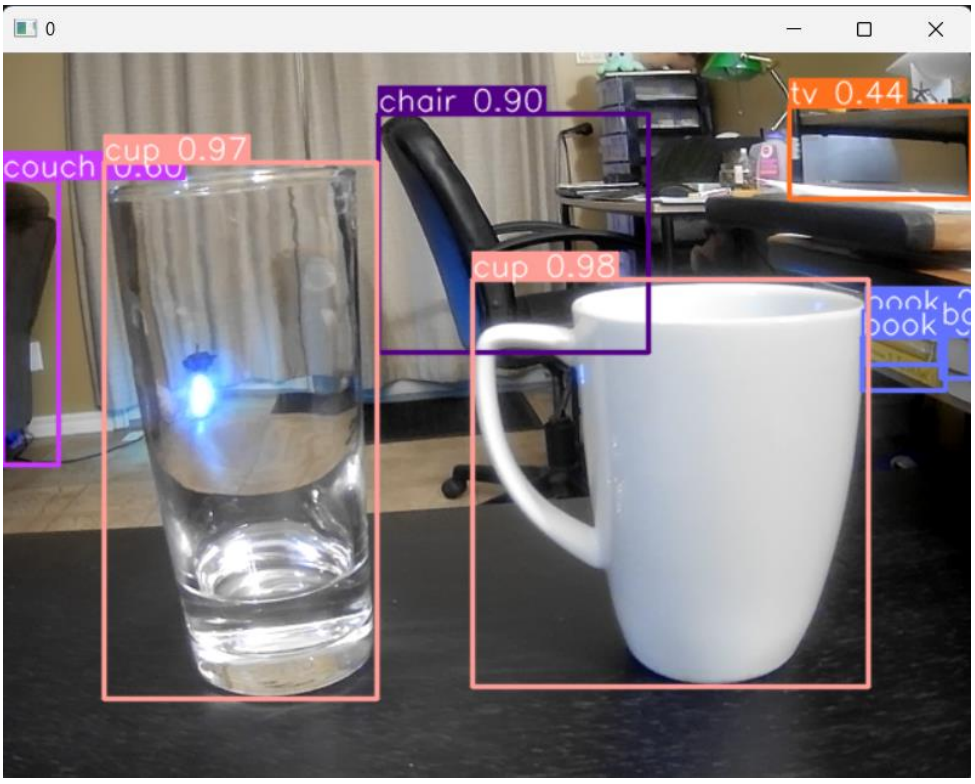
1. All necessary installations (https://docs.ultralytics.com/quickstart/)
2. Run python script to detect and predict.

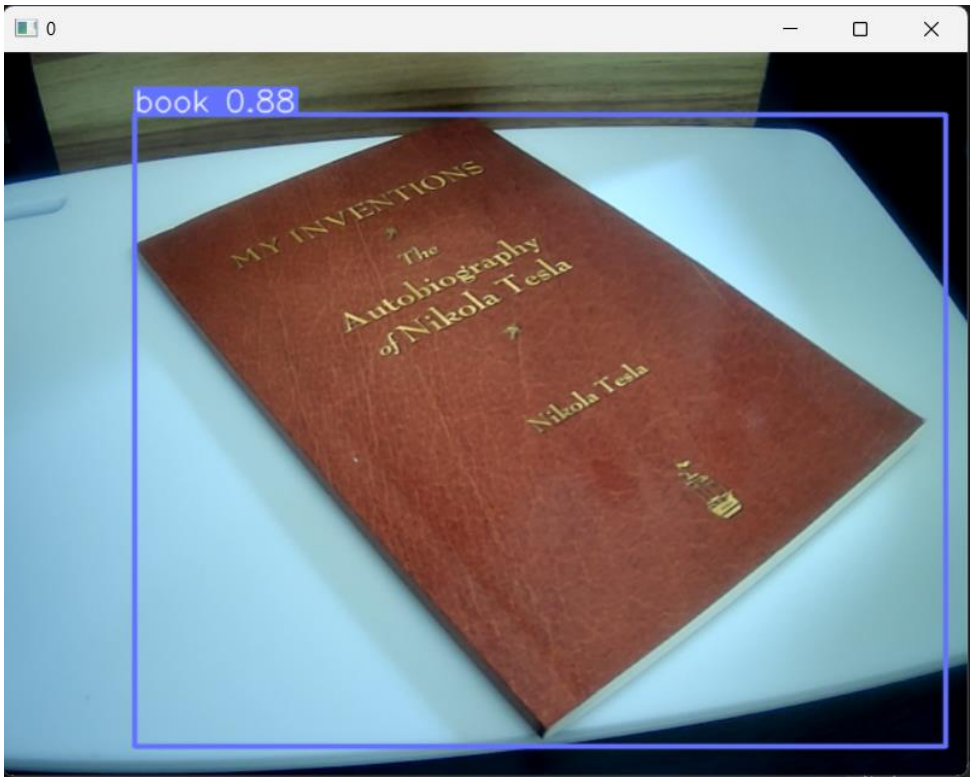
```
from ultralytics import YOLO

# YOLOv8 Detect models are the default YOLOv8 models, i.e. yolov8n.pt and are pretrained on COCO.
model = YOLO("yolov8x.pt")

# source = "0" referes to Webcam (Video Source)
results = model(source = "0", show = True)

print(results)

```

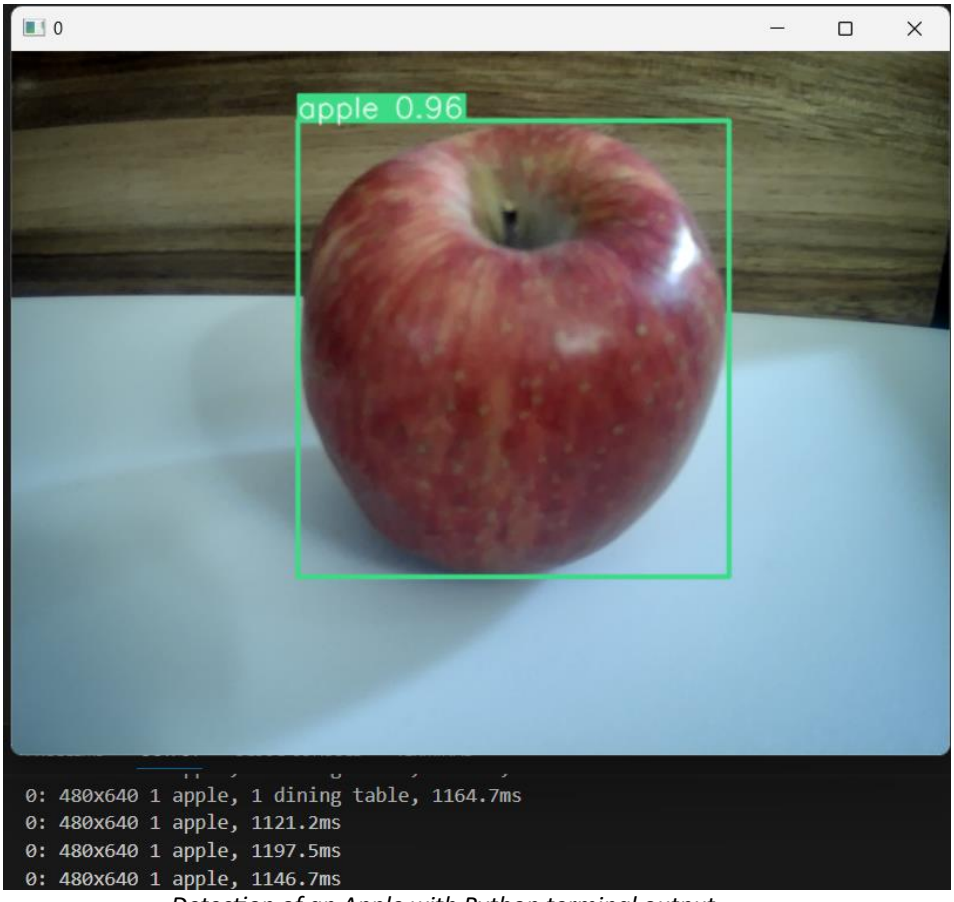
3. In script Source is selected as “0” referring to webcam.
4. Results (*next page*)

Results: Prediction from video scream through webcam

Detection of various objects with their confidence scores.







Detection of an Apple with Python terminal output.

All supported arguments:

Example:

```
results = model.predict(source, save = True, imgsz = 320)
```

Please refer to link for all possible arguments: https://docs.ultralytics.com/modes/predict/#inference-arguments

Object Detection from Image:

1. Keep images for detection/prediction in the current directory or mention its path correctly of anywhere else.
   For Example: A cup for demonstration

2. Run python script to detect and predict.

```python
from ultralytics import YOLO

# Load a pretrained YOLOv8n model
model = YOLO('yolov8n.pt')

# Define path to the image file
source = 'cup.jpg'

# Run inference on the source
results = model.predict(source, save = True)

```

3. Results will be saved in an automatically created new directory. (\runs\detect\predict)
4. Output image stored in new directory. (\runs\detect\predict)

All supported arguments:

Example:

```
results = model.predict(source, save = True, imgsz = 320)
```

Please refer to link for all possible arguments: https://docs.ultralytics.com/modes/predict/#inference-arguments