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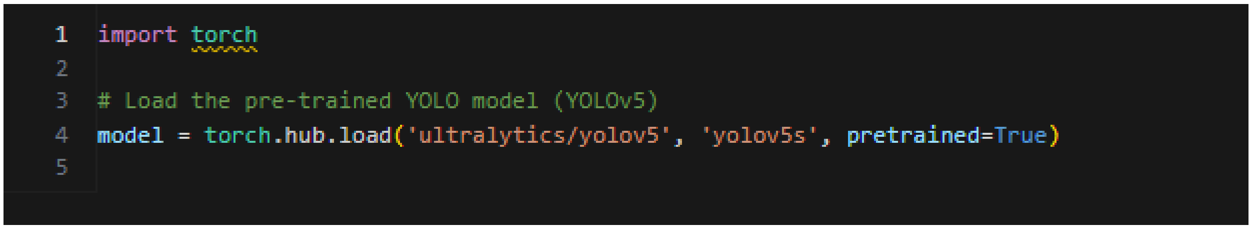
BSCS-IS-4B

Machine Problem 5

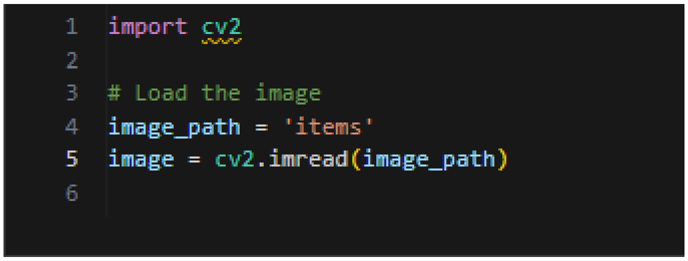
01: Model Loading



```python
import torch

# Load the pre-trained YOLO model (YOLOv5)
model = torch.hub.load('ultralytics/yolov5', 'yolov5s', pretrained=True)

```

The code initializes a pre-trained YOLOv5 model (yolov5s variant) that is ready for object detection tasks. The model variable will hold this model, which you can then use to detect objects in images or video frames.

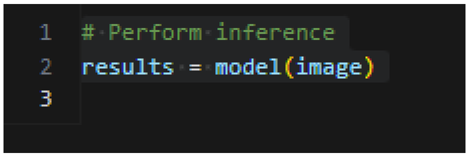
02: Load images



```python
import cv2

# Load the image
image_path = 'items'
image = cv2.imread(image_path)

```

This code attempts to load an image located at 'items' into the image variable using OpenCV's imread function.

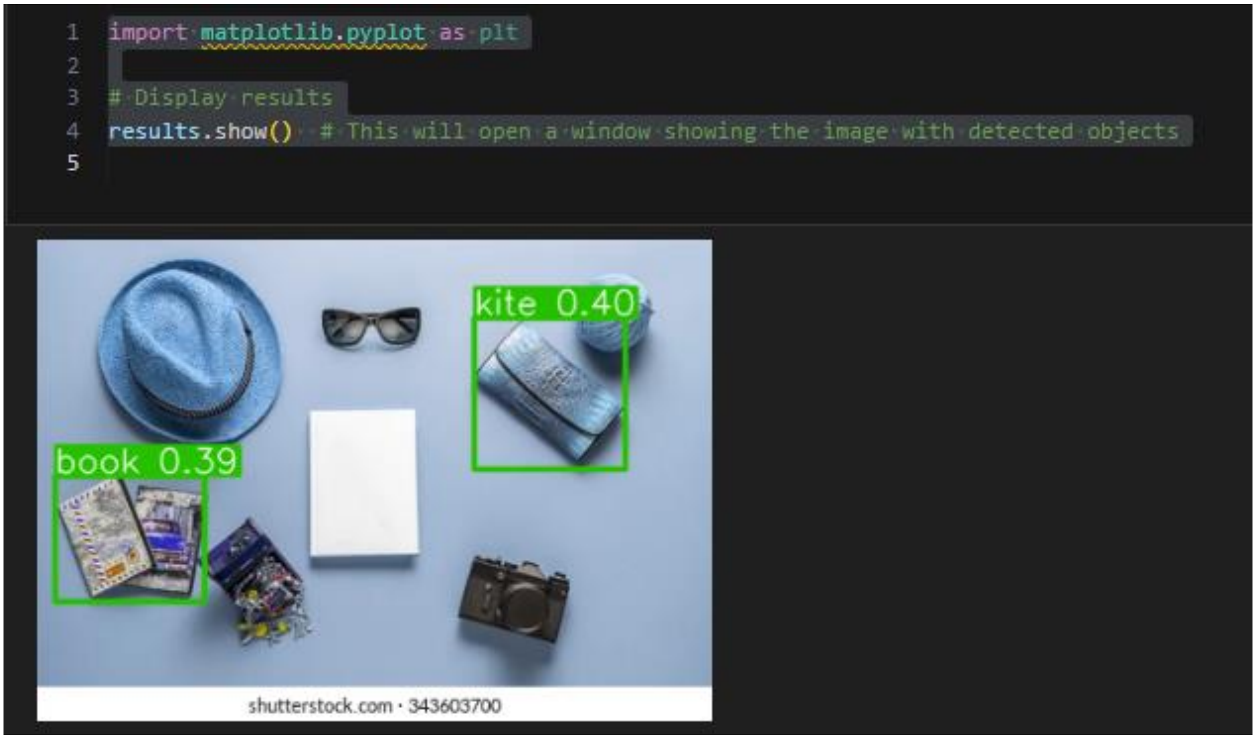
03: Object Detection



```python
# Perform inference
results = model(image)

```

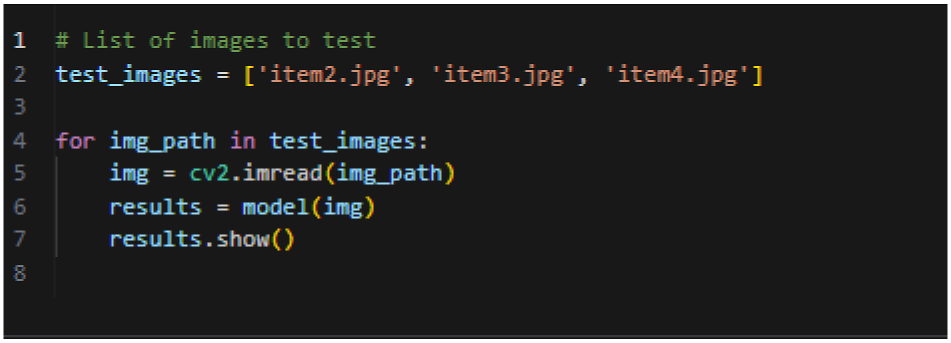
This line performs object detection on the `image` using the `model`, with `results` containing details about each detected object. You can use `results` to visualize detections, analyze object classes, and retrieve coordinates for bounding boxes.

04: Result



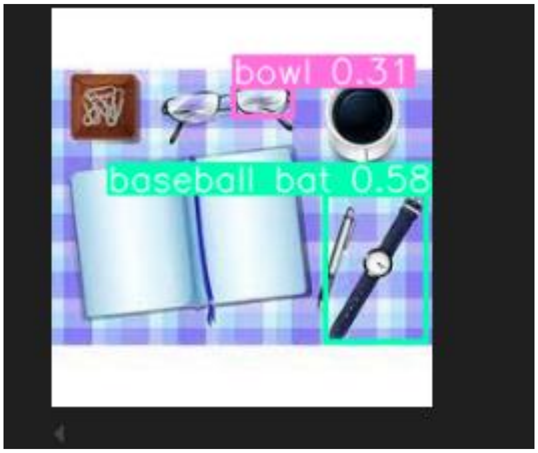
```python
import matplotlib.pyplot as plt

# Display results
results.show()  # This will open a window showing the image with detected objects

```

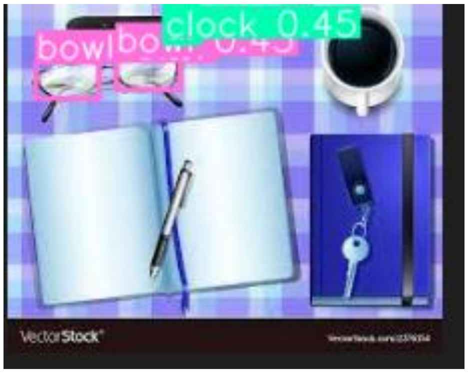
This line of code displays the results of the object detection process by opening a window with the image, now annotated with bounding boxes and labels for each detected object. It's a quick way to visually verify the model's detections.

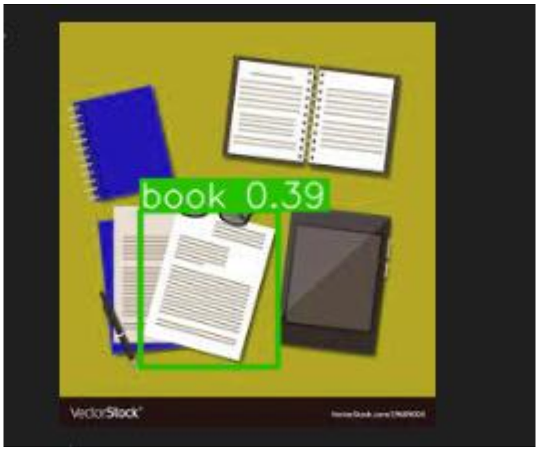


```python
# List of images to test
test_images = ['item2.jpg', 'item3.jpg', 'item4.jpg']

for img_path in test_images:
    img = cv2.imread(img_path)
    results = model(img)
    results.show()

```

In this code I used different images







Conclusion

The code loads a pre-trained YOLOv5 model to automatically detect objects within an image. It works by first recognizing various objects in the picture and marking them with boxes and labels. Then, by calling `results.show()`, the code displays the image with these highlighted detections so you can see exactly what the model identified—making it easy to check how well the model spots and labels items in the image. This setup is convenient for quickly testing object detection on any image.