EX NO: 4	Object Detection using YOLOv5 and PyTorch

Aim:

To perform real-time object detection on an image using the pre-trained YOLOv5s model from the Ultralytics PyTorch Hub.

Algorithm:

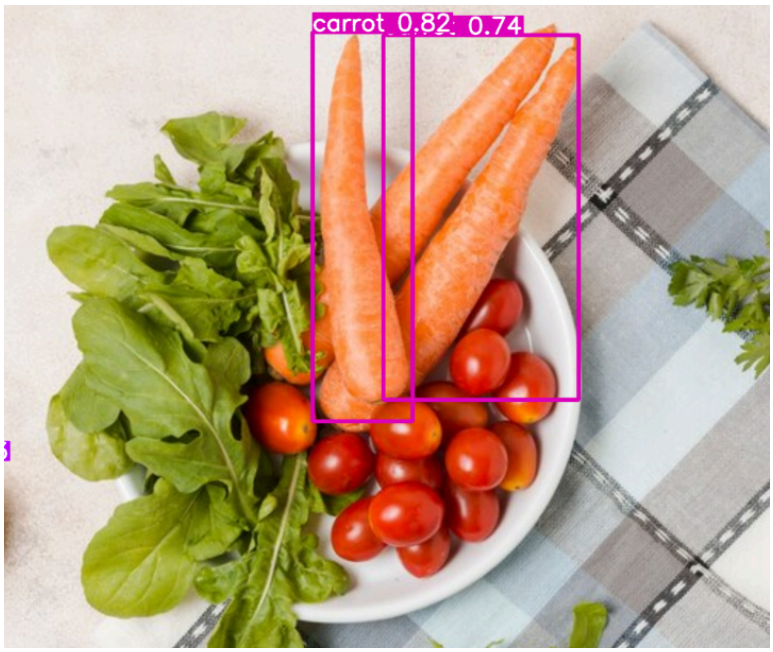
1. **Import Libraries:** Load required modules including `torch` and `cv2`.
2. **Load Pre-trained Model:** Use `torch.hub` to load the YOLOv5s model.
3. **Read and Resize Image:** Read an image using OpenCV and resize it to double its original dimensions.
4. **Convert Color Space:** Convert the image from BGR to RGB for YOLOv5 compatibility.
5. **Detect Objects:** Pass the image to the YOLOv5 model and get detection results.
6. **Display Results:** Use the model's `.show()` function to visualize detected objects.

Code:

```
import torch

import cv2

model = torch.hub.load('ultralytics/yolov5', 'yolov5s')

image_path = '/content/img.jfif'

img = cv2.imread(image_path)
```

```
height, width = img.shape[:2]

img_resized = cv2.resize(img, (width * 2, height * 2))

img_rgb = cv2.cvtColor(img_resized, cv2.COLOR_BGR2RGB)

results = model(img_rgb)

results.show()
```

Output:



Result:

The YOLOv5s model successfully detected and classified multiple objects in the given image. The output image displays bounding boxes and labels for each detected object, enabling effective object localization and recognition in real-time.