Title: Real-Time Object Detection

Introduction: This project focuses on real-time object detection using a pre-trained SSD MobileNet model integrated with OpenCV. The objective is to detect and identify common objects in live video feeds captured through a webcam. The system leverages deep learning models and OpenCV's image processing capabilities to achieve accurate and efficient object detection.

Working of the Project:

1. **Camera Access:**

   - The program accesses the default webcam to capture live video frames.
   - Frame resolution is set to 640x480 pixels for better performance.

2. **Model Loading:**

   - The **pre-trained SSD MobileNet** model (frozen_inference_graph.pb) is loaded.
   - Configuration details are read from ssd_mobilenet_v3_large_coco_2020_01_14. pbtxt.

3. **Object Class Names:**

   - A list of detectable object names is loaded from coco.names.
   - These names are used to label detected objects (e.g., person).

4. **Object Detection Process:**

   - Each frame from the webcam is processed using the loaded model.
   - Detected objects are highlighted with bounding boxes.
   - Labels and confidence scores are displayed on the screen.

5. **Display Results:**

   o The detected objects are shown in real-time on a window

   Technical Details:

Programming Language: Python

Library Used: OpenCV

Files Used:

   - frozen_inference_graph.pb: Pre-trained model weights.
   - ssd_mobilenet_v3_large_coco_2020_01_14. pbtxt: Model configuration.
   - coco.names: Object class labels.

Conclusion: This project shows how we can use a pre-trained SSD MobileNet model with OpenCV to detect objects in real-time from a webcam feed. It accurately identifies and labels objects, displaying them with confidence scores. The system is simple, efficient, and useful for tasks like surveillance, automation, and object tracking.