

Design and implement Multiple Object Tracking using OpenCV

1. Install Dependencies

Install required libraries including `opencv-contrib-python` and `ultralytics` for OpenCV functionalities and YOLOv8 model loading.

2. Extract Frames from Video

Load the input video and extract all frames using OpenCV. Save each frame as a separate image file.

3. Load YOLOv8 Model

Use the `ultralytics` library to load the pre-trained YOLOv8 model (e.g., `yolov8n.pt`) for object detection.

4. Detect Objects in Frames

For a selected frame, apply YOLOv8 to detect objects and extract their bounding box coordinates.

5. Annotate Detections

Draw bounding boxes around detected objects using OpenCV and label them (e.g., "Object 1", "Object 2").

6. Display with Interactive Frame Selector

Use `ipywidgets` to create a slider that allows you to choose any frame number and view its detections interactively.