Real-time Object Detection with YOLO and Webcam: Enhancing Your Computer Vision Skills

Learn How to Build Your Own Object Detection System with YOLO and Webcam Integration for Real-time Monitoring and Analysis.

Object detention with Opencv, YOLO

Object detection has become an increasingly popular field in computer vision, with YOLO (You Only Look Once) being one of the most widely used algorithms. In this blog post, we will explore how to use YOLO and a webcam to get started with a real-time object detection system.

> YOLO was developed by Joseph Redmon and his team at the University of Washington and has become one of the most popular object detection algorithms used in computer vision applications

> *Joseph Redmon, Santosh Divvala, Ross Girshick, and Ali Farhadi. "You Only Look Once: Unified, Real-Time Object Detection." Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2016. https://arxiv.org/abs/1506.02640*
>
> *Darknet website: https://github.com/pjreddie/darknet*
>
> *TensorFlow implementation of YOLO: https://github.com/hizhangp/yolo_tensorflow*
>
> *PyTorch implementation of YOLO: https://github.com/marvis/pytorch-yolo2*

🌎 Set up the environment

```
import cv2

cap = cv2.VideoCapture(0)
cap.set(3, 640)
cap.set(4, 480)

while True:
    ret, img= cap.read()
    cv2.imshow('Webcam', img)

    if cv2.waitKey(1) == ord('q'):
        break

cap.release()
cv2.destroyAllWindows()
```

```
from ultralytics import YOLO
model = YOLO("yolo-Weights/yolov8n.pt")
```

3. We instantiate a classNames variable containing a list of object classes that the YOLO model is trained to detect.

```
classNames = ["person", "bicycle", "car", "motorbike", "aeroplane", "bus", "trai
              "traffic light", "fire hydrant", "stop sign", "parking meter", "be
              "dog", "horse", "sheep", "cow", "elephant", "bear", "zebra", "gira
              "handbag", "tie", "suitcase", "frisbee", "skis", "snowboard", "spo
```

```
    if cv2.waitKey(1) == ord('q'):
        break

cap.release()
cv2.destroyAllWindows()
```

5. For each result, the code extracts the bounding box coordinates of the detected object and draws a rectangle around it using `cv2.rectangle()`. It also prints the confidence score and class name of the detected object on the console.

📄 Complete code — object detection with YOLO and webcam

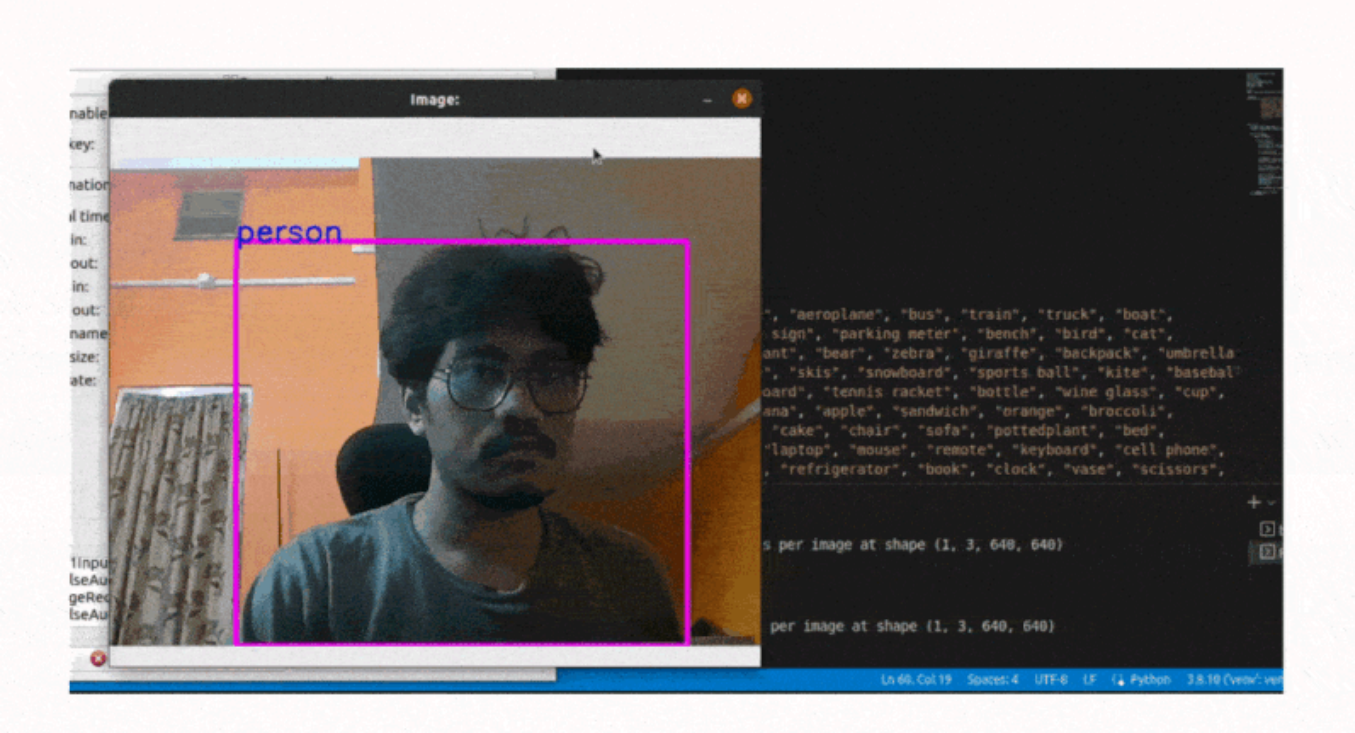
```
    results = model(img, stream=True)

    # coordinates
    for r in results:
        boxes = r.boxes

        for box in boxes:
            # bounding box
            x1, y1, x2, y2 = box.xyxy[0]
            x1, y1, x2, y2 = int(x1), int(y1), int(x2), int(y2) # convert to int

            # put box in cam
            cv2.rectangle(img, (x1, y1), (x2, y2), (255, 0, 255), 3)

            # confidence
            confidence = math.ceil((box.conf[0]*100))/100
            print("Confidence --->",confidence)
```



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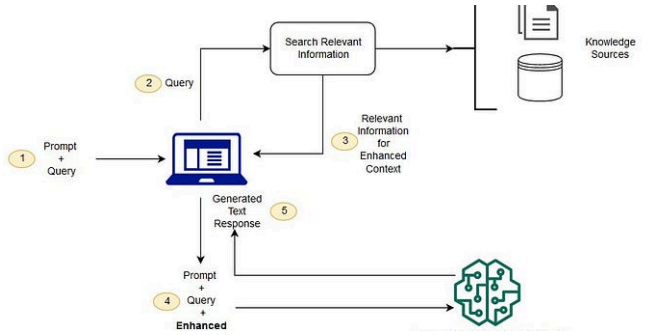

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