CSD TEAM-16

YOLO Real Time Object Detection

TEAM DETAILS

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Abstract

YOLO, the best approach to object detection. Real-time detection plays a significantrole in various domains like video surveillance, computer vision, autonomous driving and the operation of robots. YOLO algorithm has emerged as a well-liked and structured solution for real-time object detection due to its ability to detect items in one operation through the neural network. This research article seeks to lay out an extensive understanding of the defined Yolo algorithm, its architecture, and its impact on real-time object de tection. This detection will be identified as a regression problem by frame object detection to spatially separated bounding boxes. Tasks like recognition, detection, localization, or finding widespread applicability in the best real-world scenarios, make object detection a crucial subdivision of computer vision. This algorithm detects objects in real-time using convolutional neural networks (CNN). Overall this research paper

serves as a comprehensive guide to understanding the detection of objects in real-time using the You Only Look Once (YOLO) algorithm. By examining architecture, variations, and implementation details the reader can gain an understanding of YOLO’s capability.

Input:

Real-time video or image data.

Various objects in the scene that need to be detected.

Pre-trained YOLO model weights.

Process:

Convolutional Neural Networks (CNNs): YOLO processes each frame of the live camera feed using CNNs to detect features and classify objects in real time.

Real-time detection: YOLO performs object detection in one pass through the neural network, making it suitable for live video streams.

Bounding box regression: YOLO predicts bounding boxes around objects in each frame and assigns class labels to these objects, effectively localizing them in the scene.

Output:

Bounding boxes: Boxes around the detected objects in the live feed, highlighting their positions in the frame.

Class labels: Each detected object is assigned a label such as "car", "person", or "dog".

Confidence scores: A confidence score is provided for each detection, representing the likelihood that the object in the bounding box is correctly identified.

This enables real-time object detection for various applications like surveillance, autonomous driving, and robot navigation.