IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 4, June 2025
Impact Factor: 7.67

Real Time Object Detection using OpenCV and Yolo-4

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Abstract: *Real-time object detection is a critical component in various applications such as surveillance, autonomous vehicles, and augmented reality. This paper presents an implementation of real-time object detection using OpenCV and the YOLO (You Only Look Once) framework. YOLO is a stateof-the-art, single-stage detection algorithm known for its speed and accuracy, making it suitable for real-time applications. We discuss the architecture of YOLO, its training process, and the integration of OpenCV for video processing and visualization. Our implementation demonstrates the capability of YOLO to detect multiple objects in real time, achieving high frame rates while maintaining precision. Performance metrics such as mean Average Precision (mAP) and inference time are evaluated, and results are compared against other object detection methods. The findings indicate that our approach effectively balances speed and accuracy, providing a robust solution for real-time object detection in diverse environments. This research contributes to advancing the field of computer vision and enhances the practical applications of object detection technologies.*

Keywords: Real-time object detection- OpenCV- YOLO(You Only Look Once)- Computer vision- Video processing- Autonomous systems- Object classification and localization

DOI: 10.48175/568