

Real-Time Pothole Detection Using YOLOv11

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Abstract : Potholes are one of the most significant problems that affect road safety and the quality of infrastructure. The aim of pothole detection using OpenCV is to design an automated system that will detect and create a map of potholes on the road surfaces to improve the safety of roads and ease the maintenance process. This system is based on high-powered computer vision methods that use still images or video footage taken by cameras located in cars or drones. This paper presents an analysis of the implementation of the YOLOv11 model in pedestrian detection and demonstrates greater effectiveness of this method in regards to accuracy, speed, and efficiency of inference. The improved system now supports enhanced prompt diagnosis and timely repair leaving little or no damage on the infrastructure and also ensuring that enhanced road safety is achieved. This technology can also be used as a safety feature for the car itself by being installed in ADAS systems that would alert drivers in real-time while driving to avoid driving over potholes.

Keywords : deep learning, Potholes, segmentation, object detection, YOLO

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