

Affordable Pothole Detection and Reporting System for Local Road Safety using Machine Learning and Android Integration : A Review

Miss. Vidya Ambi.¹, Prof. V. M. Chandode², Prof. S. V. Kulkarni³

PG Student, College of Engineering, Ambajogai, Beed, Maharashtra, India¹

Professor, College of Engineering, Ambajogai, Beed, Maharashtra, India^{2,3}

Abstract: Potholes are a significant cause of vehicle damage, accidents, and discomfort for drivers, particularly in developing countries where road maintenance is often inadequate. The need for an affordable, efficient, and automated system for detecting and reporting potholes is critical for enhancing road safety and maintenance. This paper presents a comprehensive review of existing pothole detection and reporting systems, focusing on the integration of machine learning techniques and Android-based platforms to develop cost-effective solutions. The review explores various methodologies, including image processing and sensor-based approaches, that leverage machine learning models like Convolutional Neural Networks (CNNs) for accurate pothole detection. Additionally, the paper discusses the implementation challenges, including hardware constraints, data processing requirements, and the usability of Android devices in real-world scenarios. By analyzing current systems and identifying their limitations, this review aims to provide insights into the development of a robust, portable, and user-friendly pothole detection system tailored for local road conditions in developing regions. The findings of this review highlight the potential for deploying a scalable solution that can significantly contribute to road safety and maintenance efforts

Keywords: Pothole Detection, Road Safety, Machine Learning, Convolutional Neural Networks (CNNs), Android Integration, Image Processing, Low-Cost Solutions, Smart Transportation etc