

# Detection of Potholes Using Street Images and Videos

**Prof. Manasi D. Deore<sup>1</sup>, Mahajan Rupesh Hitendra<sup>2</sup>, Sanap Kaustubh Balasaheb<sup>3</sup>,  
Chavan Kunal Sunil<sup>4</sup>, Tayade Yash Ravi<sup>5</sup>**

Assistant Professor, Department of Information Technology<sup>1</sup>

Students, Department of Information Technology<sup>2-5</sup>

SMES's Mahavir Polytechnic, Nashik, Maharashtra, India

**Abstract:** Road surface degradation is a major challenge faced by transportation authorities worldwide. Potholes are one of the most common road defects that lead to traffic accidents, vehicle damage, and increased maintenance costs. Conventional pothole detection methods rely on manual inspections, public complaints, or sensor-based approaches, which are often inefficient, time-consuming, and expensive. With the advancement of computer vision and deep learning technologies, automated pothole detection systems have become a promising solution for road infrastructure monitoring. This research proposes an intelligent pothole detection system using street images and video data captured by vehicle-mounted or roadside cameras. The system integrates image preprocessing techniques and Convolutional Neural Networks (CNN) to detect and classify potholes accurately. Image processing methods such as noise removal, contrast enhancement, and resizing are used to prepare the input data for the deep learning model. The CNN model analyzes road surface features and identifies pothole regions in real-time or offline images. The proposed system aims to reduce human effort in road inspection, improve detection accuracy, and assist government authorities in road maintenance planning. Experimental analysis demonstrates that the system provides reliable detection results under varying lighting and environmental conditions. The proposed approach can be integrated into smart city infrastructure for large-scale automated road monitoring.

**Keywords:** Pothole Detection, Computer Vision, Deep Learning, Convolutional Neural Network (CNN), Image Processing, Smart Transportation Systems

