YOLOVv8-Based Real-Time Autonomous Road Object Detection System Using the Flask Web Framework

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Abstract

Managing traffic and ensuring road safety have become major problems due to the rising population of both vehicles and pedestrians on roads. This paper presents a system known as YOLOv8-Based Real-Time Autonomous Road Object Detection System Using the Flask Web Framework, which is designed to be used for intelligent traffic management purposes. In the suggested approach, the state-of-the-art YOLOv8 deep learning model is utilized to perform autonomous road object detection from images submitted by users, as well as those captured by the cameras of the system. Furthermore, the use of Flask framework ensures easy operation of the process since it is an intuitive tool which helps people upload pictures of traffic and visualize detection results immediately after the image preprocessing and object detection is completed. The Flask framework makes it easier for users to visualize results using a user-friendly interface because each road object recognized by the algorithm has a bounding box around it and its corresponding label. The proposed system is quite efficient, accurate and can be used in smart cities, traffic monitoring and road safety management, among other related fields.

Keywords

YOLOv8, Object Detection, Vehicle Detection, Flask Framework, Deep Learning, Computer Vision.