Automated Car Parking System

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Abstract:

The rapid increase in the number of vehicles in the urban areas has increased parking challenges leading to severe congestion, inefficient utilization of available parking spaces and unnecessary fuel consumption. Traditional parking systems largely depend on manual operations making them more prone to human errors, delays and mismanagement. To address these issues, this paper presents an Automated Car Parking System that uses computer vision and deep learning techniques for smart parking space management. OpenCV is used for real-time detection of parking spaces, YOLOv3 for accurate vehicle detection and tracking and EasyOCR is integrated for license plate detection and recognition. The system also explicitly displays the availability of parking slots reserved for disabled individuals, promoting accessibility and inclusivity. The proposed system aims to improve traditional parking systems, optimize space usage, improve operational efficiency, minimize delays and contribute to the development of smarter and more sustainable urban infrastructure.

Keywords:

automated parking system, EasyOCR, license plate recognition, object detection, OpenCV, parking management, YOLOv3.