

Description

The AI Enabled Car Parking System is a sophisticated solution that utilizes artificial intelligence and image processing techniques to analyze parking spaces and determine their occupancy status. The system leverages computer vision algorithms to process video or image feeds from parking lot cameras, extract relevant features, and classify parking spaces as either vacant or occupied. This report provides an overview of the system, highlighting its functionality, key components, and benefits. The AI Enabled Car Parking System is designed to achieve several significant outcomes in the realm of parking space management. Firstly, the system aims to optimize space utilization by providing real-time information on parking space availability, ensuring efficient allocation and minimizing wastage of parking capacity. By automating the analysis of parking space occupancy, the system reduces the need for manual monitoring, leading to improved accuracy and reduced human error. Additionally, the system enhances convenience for drivers by offering real-time access to parking space availability, reducing the time and effort required to find a vacant spot. With its ability to continuously monitor parking space occupancy, the system enables prompt action and efficient management of parking lots. This system can be further enhanced by integrating it with parking management systems which will extend its capabilities, allowing for seamless data access, occupancy reporting, and informed decision-making. Ultimately, the AI Enabled Car Parking System enhances the overall parking experience, optimizing resource allocation, and streamlining parking operations. The proposed solution for the project involves utilizing computer vision techniques and OpenCV to analyze parking spaces from a video feed and determine their occupancy status. The solution begins by acquiring a video file of the parking area and applies preprocessing techniques such as grayscale conversion, Gaussian blur, adaptive thresholding, and dilation to enhance the detection of parking spaces. Each parking space is individually analyzed using the "CheckParkingSpace" function, which calculates the number of non-zero pixels to determine occupancy. Rectangles are overlaid on the video frames to visually represent the occupancy status, with green indicating vacant spaces and red indicating occupied spaces. A Flask web application is developed to provide a user interface and real-time streaming of the analyzed parking spaces. This proposed solution aims to improve parking space management, optimize resource allocation, and enhance the overall parking experience for users.