

IMAGE BASED AUTOMATIC VEHICLE NUMBER PLATE AND PARKING SLOT RECOGNITION AND MONITORING SYSTEM

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In the modern era, the process of detecting an unoccupied parking slot and payment collection for parking in a huge parking space have become very monotonous task due to the growth of individual usage of vehicles. Traditional and manual parking slots management in huge parking slot was inefficient which required great number of human resources. Thus, there is a necessity of an automated, intelligent and efficient parking system to overcome these issues. This study proposes an intelligent parking space detection and monitoring system which can be used for searching the unoccupied parking space, guidance towards the parking space, negotiation of the parking fee and keeping the track of vehicles using number plate recognition. The proposed system is based on image processing and optical character recognition techniques. Once a vehicle reaches the parking entrance, the image of the vehicle and its registration number (number plate) are captured by cameras and processed for automatically guiding the user (driver) to an unoccupied parking slot and the system counts the number of vehicles parked and displays the parking status. Also the system can be used for electronics parking fee collection based on number plate information. The system provides facilities to categories vehicles as registered customer and new customer. For the registered customers, the door will be opened without any delay in the entrance while a ticket will be issued for new customers before opening the door. The proposed system was tested in a simulated environment and obtained 96.15% accuracy using MATLAB as a software tool with very minimal use of hardware resources to ensure that the cost of the system is very small. The performance of the system is considerably outperformed the state of art system in terms of accuracy and time efficiency.

Keywords: parking slot, image processing, optical character recognition (OCR), number plate