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VEHICLE PARKING SPACE DETECTION AND MONITORING USING IMAGE BINARIZATION AND SEGMENTATION

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The process of locating a free parking space and collecting payment for parking in a large parking slot have become very tedious task due to the increase in vehicle production and individual usage of vehicles. Traditional parking space management in huge parking slot was inefficient, time consuming and required great number of man power. Thus, there is a need of an automated, intelligent and efficient parking management system. This paper proposes an intelligent, efficient and reliable 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 technique using image binarization and segmentation. Whenever a vehicle reaches the parking entrance, the image of the vehicle and its registration number (number plate) are captured by cameras and system automatically guides the user (driver) to unoccupied parking slot and 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 proposed system was tested in simulated environment and obtained more accurate results using MATLAB as a software tool with very minimal use of hardware resources to ensure that the cost of the system is very trivial.

Key Words: *Image Processing, Parking Slot, Image Binarization, Image Segmentation, Optical Character Recognition (OCR), MATLAB*

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