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|  | **PES UNIVERSITY**  **(Established under Karnataka Act No. 16 of 2013)**  **100 Ft. Road, BSK III Stage, Bengaluru – 560 085**  **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING** |

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| **Course Title: Image Processing and Data Visualization Using MATLAB** | | |
| **Course code: -UE19CS257B** | | |
| **Semester : 4th sem** | **Branch: CSE** | **Team Id:** |
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**PROJECT REPORT**

**Problem Statement:**

To detect number of free parking spaces in a parking lot using image processing, by comparing images of an empty parking lot as reference against the image of a parking lot with cars.

**Objectives:**

To obtain the correct number of free parking spaces and thus help decrease traffic congestion in a parking lot.

**Description:**

We aim to build a system for the detection of parking space with the help of image processing technique. The system will detect cars through images instead of electronic sensors. A camera is installed at a high and fixed position in the parking lot. An image of empty parking lot will be taken as reference and then an image of parking lot with cars will be taken. Both the images will be subtracted to find the numbers of parking slots available. Therefore, the system will help in counting the number of parked vehicles and, identifying the number of spots available.

**New Concept Learnt(Explanation):**

**Imfill** a function that performs flood fill operation on the background pixels of the input binary image bw. Imfill(BW,”holes”) has been used in this project implementation, which fills holes in the binary image BW, wherein a hole is a set pf background pixels that cannot be reached by filling in the background from the edge of the image.

**Blob Analysis**

The method of analyzing an image that has undergone binarization processing is called "blob analysis". A blob refers to a lump. Blob analysis is image processing's most basic method for analyzing the shape features of an object, such as the presence, number, area, position, length, and direction of lumps. It calculates statistics for labelled regions in a binary image. The block returns quantities such as the centroid, bounding box, label matrix, and blob count.

**Learning Outcome:**

**Code:**

**Output Screenshots**

**Name and Signature of the Faculty**