

Automatic Indicator System for Car Parking

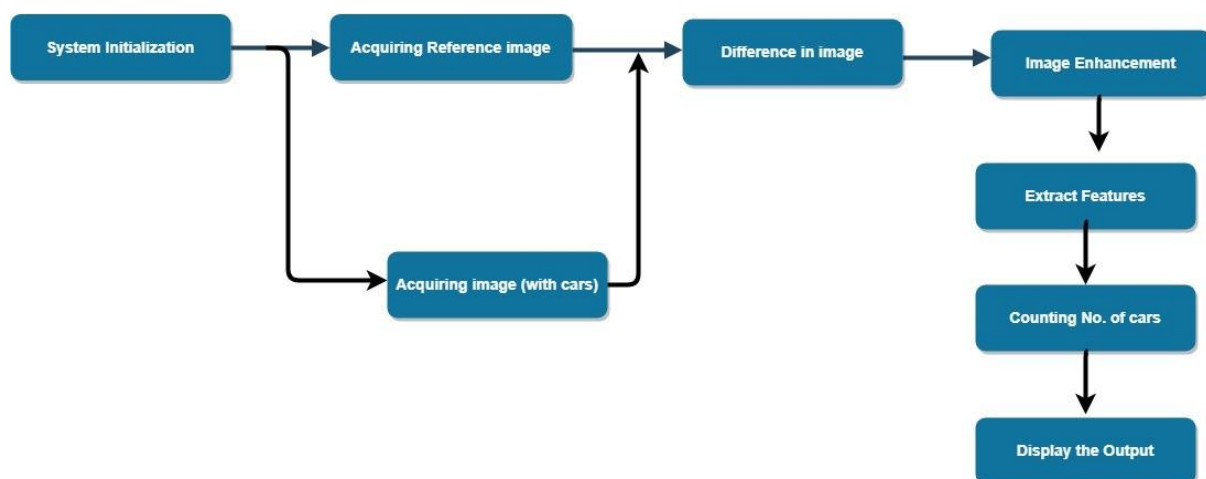
BRIEF

This project is designed with DSP(Digital Signal Processing) & Image processing for discovering a parking area for car efficiently in huge parking spots.

Computerized systems being an integral part of the current era, an automated parking system is one of its most commonly used applications. The aim of this model is to build up and implement an automatic parking system that will detect the parking space with the help of image processing technique of the parking lot as well as reduce the human power. In additions to that, it has parking guidance system that can demonstrate and guide user towards a parking space. With the problems of ever increasing urban traffic congestion and the ever increasing shortage of space, the parking lots need to be well-equipped with parking space detection. The proposed system helps in counting the number of parked vehicles and, identifying the number of spots available. The system detects cars through images instead of electronic sensors embedded on the floors. A camera is installed at a high and fixed position in the parking lot. An image of empty parking lot is taken as reference and then image of parking lot with cars is taken. Both the images are subtracted to find the numbers of parking slots available.

METHODOLOGY

The development of this system will use techniques of image processing that will be implemented in each phase of the methodology. This system gives information about the number of available parking space. It will provide benefit to all the drivers when they enter the parking lot. The system uses image processing, since the whole area in the parking lot can be observed with relatively few cameras and the Image of a parking lot is taken by a surveillance camera set at some height in the parking lot. (MATLAB is used as software platform in this project)



Main flow of the framework

Videos will be acquired from the top view of the parking arena with the help of a fixed camera. Video will be segmented into frames. Then from each segment a key frame will be extracted

and further processing will be applied on the key frame, to reduce the computational complexity.

ALGORITHM

The main steps of the proposed algorithm for parking space detection are:

1. The system will get live stream video of the parking lot from camera.
2. Images are captured when a car enters the parking lot.
3. RGB Images are converted to binary images.
4. The frame is cropped lane wise and considered sequentially and individually in a loop.
5. Vacant slots with their respective lane is known by calculating the number of cars.
6. And then it provide proper navigation to the vehicle.

