SMART CAR PARKING SYSTEM

PROJECT SYNOPSIS

OF MAJOR PROJECT

BACHELOR OF TECHNOLOGY

Computer Science and Engineering

SUBMITTED BY

Group-35

Rishabh   2000290100113

Vishal Panwar   2000290100191
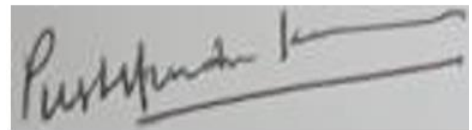
Vivek Kumar   2000290100193

October 2022

KIET Group of Institutions, Delhi-NCR,

Ghaziabad (UP)

Department of Computer Science and Engineering

Table of Contents

Certificate

This is to certify that project report entitled "**smart car parking system**" which is submitted by Rishabh, Vishal Panwar, Vivek Kumar in partial fulfilment of the requirement for the award of degree b. tech. in the department of computer science and engineering of Dr A.P.J. Abdul Kalam technical university, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

Supervisor's signature

<u>INTRODUCTION</u>

The first thing a vehicle does when approaching a parking lot is look for a sign that indicates whether the lot is completely full, somewhat full, or empty. Even when there is high overall occupancy, some parking divisions may still be empty. As a result, there is inefficient usage of parking spaces and congestion around the parking lot entrance. Therefore, providing drivers with pertinent information about the parking lot as they enter it becomes a crucial concern. Utilizing image processing, it is possible to count available parking spaces and provide a low-cost solution to the driver's issue.

The technology employs image processing to identify the car and delivers details like the number of parking spaces that are available. Using CCTV cameras, the system takes pictures that are then analysed to determine how many parking spaces are available. In each stage of the methodology, image processing techniques will be used in the construction of this system. This system provides data on the quantity of parking spaces that are readily available. When drivers enter the parking lot, it will benefit them all. For this system, an Arduino ESP8266 can be utilised for data processing, and Firebase is used as a server to store and transmit data to other platforms. The IR sensors and Arduino used to create the original model.

We take the reference of the problem statement from the Manipal Hackathon for social development problems for the parking system.

Rationale

It is hard to reach the campus on time due to the increase in traffic on the national highway, and it is tedious to find the nearest parking space for four-wheeler parking. Create an intelligent application that, as soon as a car enters the main gate, offers a real-time parking space on campus. Every time a person enters through the main entrance, the user's mobile should be notified of the empty parking space.

Objectives

Develop an intelligent application that provides a real-time parking slot within the campus as soon as the car enters the main gate. The empty parking space should be messaged to the user's mobile whenever a person enters through the main entrance.

LITERATURE REVIEW

Computerized systems being an integral part of the current era, an automated parking system is one of its most commonly used applications. This model aims to build and implement an automatic parking system that will detect the parking space with the help of the image processing technique of the parking lot as well as reduce human power. The smart parking system will have fewer human interactions. With the problems of ever-increasing urban traffic congestion and the ever-increasing shortage of space, 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.

FUTURE SCOPE

- It can be used in any type of organization where parking is used.
- Helps with waiting time of finding any parking slot in any organization.
- It will generate awareness among people about parking vehicles.
- This project led to the improvement of parking sectors and the security of vehicles in parking areas.

Methodology/ Planning of work

The main flow of the framework is shown in Fig-1. Videos are acquired from the top view of the parking arena with the help of a fixed camera. The video is segmented into frames. Then from each segment, a keyframe is extracted and further processing is applied to this keyframe, to reduce the computational complexity.
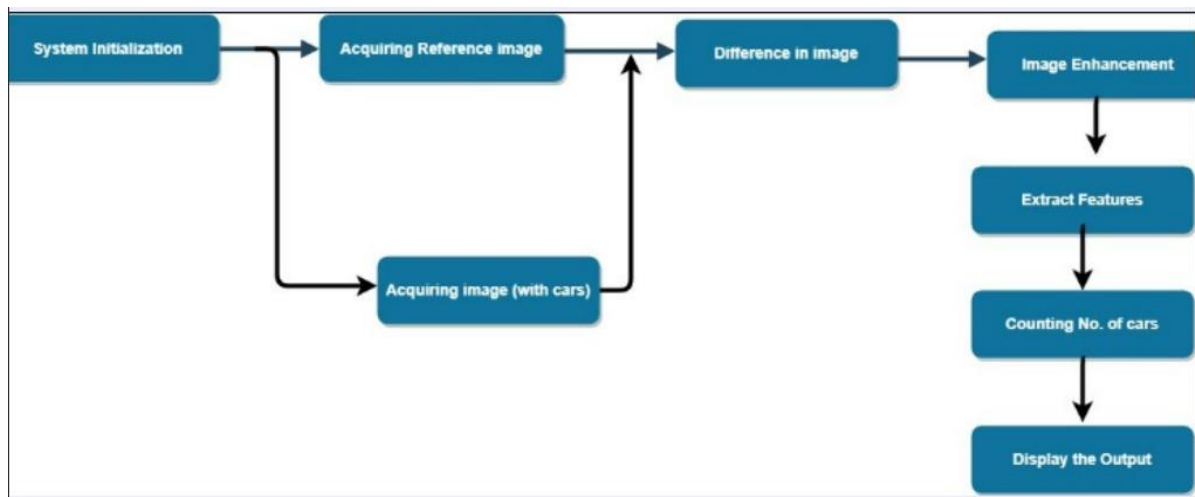
SYSTEM INITALIZATION

In the initial stage, an image captured by a steady CCTV camera at time of installation is the background reference image. This reference image does not contain any cars. The main purpose is to identify the parking slots in the image. The camera which is used to take the images is fixed at a certain position and it faces a fixed direction all the time.
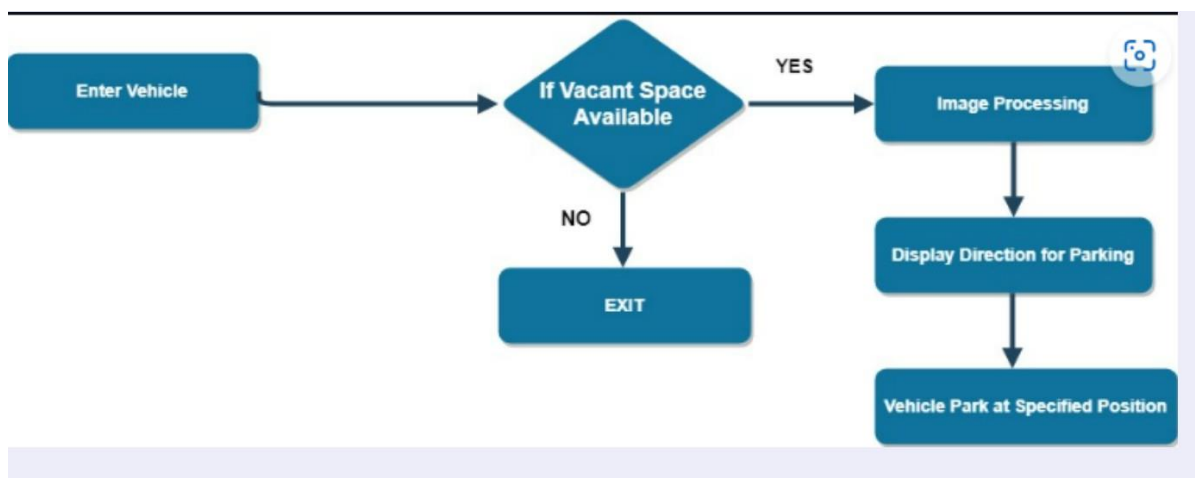
IMAGE ACQUISITION

In this step, the picture of a parking space containing cars is taken with the help of a high-definition camera. The image frame containing a six lane image is divided lane-wise.

IMAGE DETECTION

[FOREGROUND] , Total space available is 11
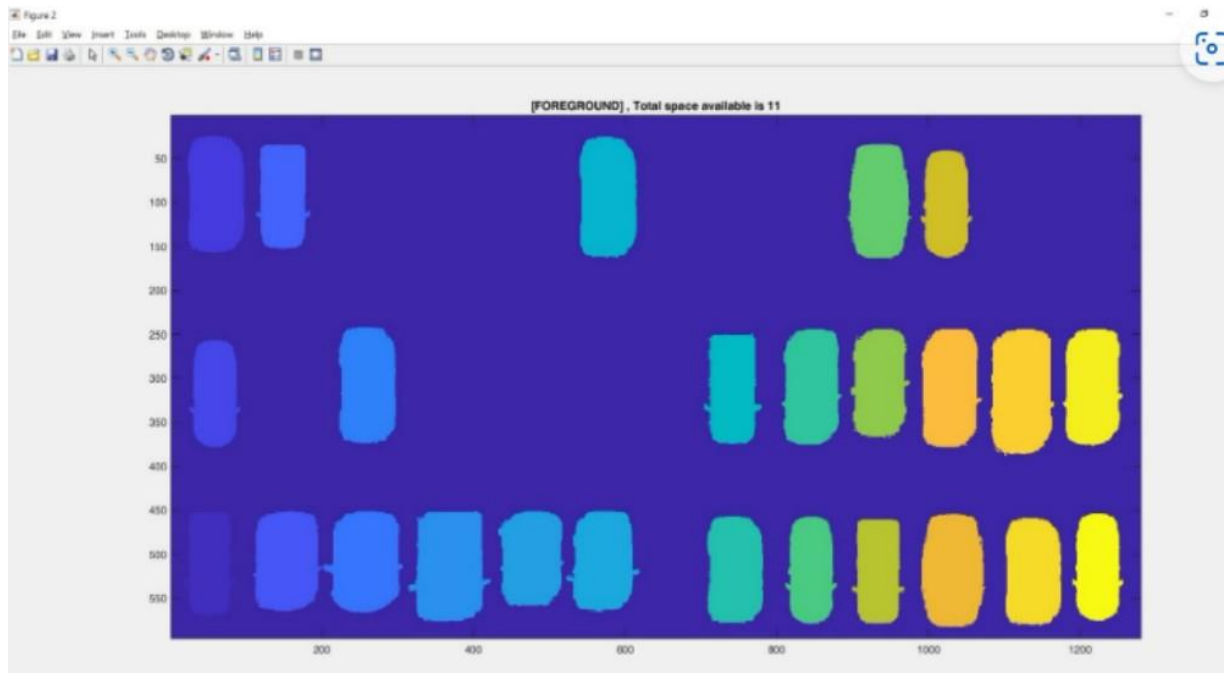
ALGORITHM FOR PORPOSED WORK

Facilities required for proposed work.

Technologies used in developing project are –

- In ml we used image detection.
- On the web we use React and Django.
- In android we use java and fire base.

The software required in android development: -

- Android Studio

The software required in web development: -

- Visual code

The software required in Machine Learning: -

- Visual code, anaconda, google Collab.

The hardware required in the proposed work: -

- Camera, mobile, Arduino, image detection sensors.

Outcomes

The outcomes of the proposed projects are: -

- The knowledge of each team member is increased in their particular field of specialization.
- This project helps us to know about android development, web development and machine learning.
- In android we know how to use firebase and by using java in android development.
- In machine learning we use Image detection, matplotlib, python.
- Integration of ml with web and android.
- In this our teamwork efficiency is increased.
- As a society this project will help people in saving their time as they don't have to spend time searching for a parking slot.