

Automatic Number Plate Recognition (ANPR) Assisted Parking Lot Management System

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ABSTRACT

With the expanding number of vehicles in large cities, a smart parking management system is in high demand. When people make their destination, the seek for a parking spot causes major holdup within the parking lot/roads, wasting valuable time. As a result, a wise parking management system is needed to supply owner's with info about the provision of parking slots at the entries of places they regularly, such as malls, colleges, and organisations, in order to avoid congestion, dissatisfaction, and stress. The projected answer technique during this analysis seeks to unravel this by mistreatment IoT technologies to spot obtainable parking slots in the parking area and showing them on a webpage/display for the user's comfort. This method also allows customers to book a free parking spot shortly after entering the parking lot, reducing internal congestion, saving time, and stress relief. The proposed solution method in this research seeks to solve this by using

IoT technologies to identify available parking slots in the parking area and showing them on a webpage/display for the user's comfort. This methodology conjointly permits customers to book a free parking spot shortly once getting into the parking lot, reducing internal congestion, saving time, and stress relief.

I. INTRODUCTION

Historically, the parking systems demanded some force to cover the parking spaces; however, this was inefficient. The vehicle wastes a lot of fuel by driving all over the parking lot searching for an empty spot. The problem of inefficiency in parking systems will get worse as the world's population grows, leading in an increase in the number of automobiles. The greater the number of vehicles, the more precious fuel will be waste, raising the parking lot's carbon footprint.





II. LITERATURE REVIEW

Anisha Goyal, Rekha Bhatia, "Automatic car license plate detection system for remote license plate detection" (July-August 2016) IOSR Computer Engineering Journal (IOSRJCE) Description In this paper, an automatic car license plate recognition system is proposed. The system uses image processing techniques to spot the vehicle from a information hold on by the user within the laptop. this method works well for several completely different conditions and kinds of license plates. The system is up to date and running in Matlab and performance is tested on genuine images. In the current job, work is done on crooked license plates. This method has the problem of agitation and the image is taken from the cleavage. In the proposed works, a new system has been proposed for better license plate classification and character reorganization using standard neural network classifiers and for better body detection.

Mutua Simon Mandi, Bernard Shibwabo, Kaibiru Mutua Raphael, "Automatic license plate recognition system for parking lot management", (October 2017) International Computer Application Journal

The problems and challenges associated with vehicle identification details in parking lots formed the basis of this study. The main aim of this research is to establish an automatic license plate recognition system for parking lot management, using Optical Character Reader (OCR) on smart phones devices. Eliminate paper registers and the need to write in books, as all detailed vehicle records will be digitized. Accelerate the identification of parking vehicles, including the entry and exit process, thereby shortening the time. Mohammed Y Aalsalem, Wazir Zada Khan, Khalid Mohammed Dhabbah, "Automatic parking

monitoring and management system using ANPR camera (July 2015)

CACT2015 Description

The ANPR camera is integrated with a vehicle parking management trunk that records parking location and owner information as well as permitted vehicle entry / exit time information.

Puneeth G, Rohit Anand, Saurabh Jaiswal, ANPR Camera-based Smart Parking Management System (October 2017) International Journal of Engineering Research in Electronics and Communication Engineering Description This system uses application software to recognize the Car license plate. First, extract disk space using a morphology operation. After receiving the area where the license plate resides, the letters on the license plate are separated individually by segmentation. Finally, it employs low-level template matching that recognizes plate characters using correlation.

Asha Singh and S. Prasanth Vaidya, "Automatic Parking Management System for License Plate Recognition (January 2019) Indonesian Journal of Electrical Engineering and Computer Science The proposed system recognizes license plates and generates parking receipts and vehicle entry and exit times. License plate recognition systems have many applications. They can be used in parking lots where parking is done in no time and without the need for human intervention. This system can also be used at toll gates on highways and is also used to identify vehicles that do not comply with traffic rules, as well as find stolen vehicles by maintaining the system on the road. highway to locate vehicles. This manual labor usage can be reduced, which improves the efficiency of the parking system.

Theory of the project

The Problem Definition

People often move through parking areas trying to find a suitable place to park. To resolve this issue, an automatic parking system was established. Helpful technology is needed to be able to offer parking data to registered customers victimization their smartphones and apps. The owners' will get the service by registering, and within the case of a reservation, the destination and approx. time of arrival are determined, and therefore the details of the reservation are sent to the car owners'.

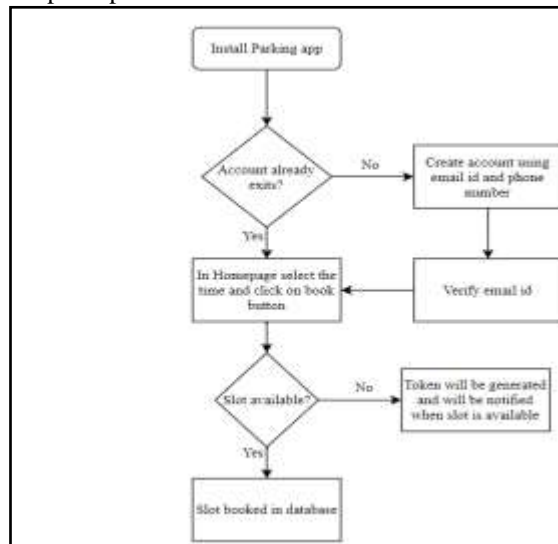
Aim of this project:

The clever vehicle parking machine is an incorporated machine to apprehend the closest to be had parking zone. So, the principle cause of

the machine is to offer a technique to the parking problem, to lessen the time to look for parking lots, and to put off useless journey for vehicles

How good parking works

Smart parking provides an IoT based mostly system to send information to vacant and occupied parking areas via internet/mobile app. The IoT network consists of sensors and microcontrollers, found in each automobile parking area. We've enforced a project of good controlled parking (SPMS), exploitation the web of Things and infrared sensors, wherever accessible parking areas are often displayed in an exceedingly internet application so users get a live update on the provision of all parking areas and opt for the simplest one



Parking App flowchart

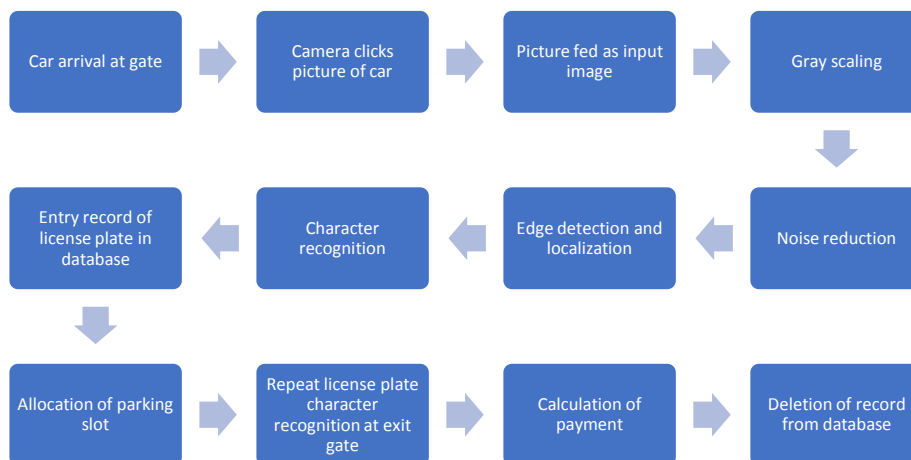
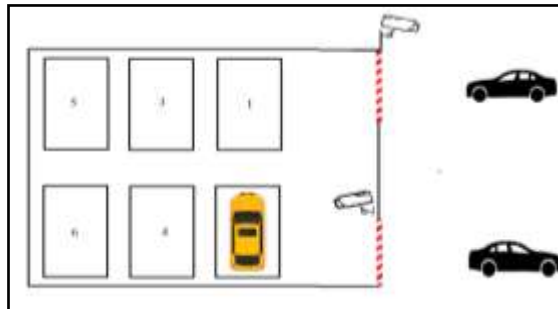
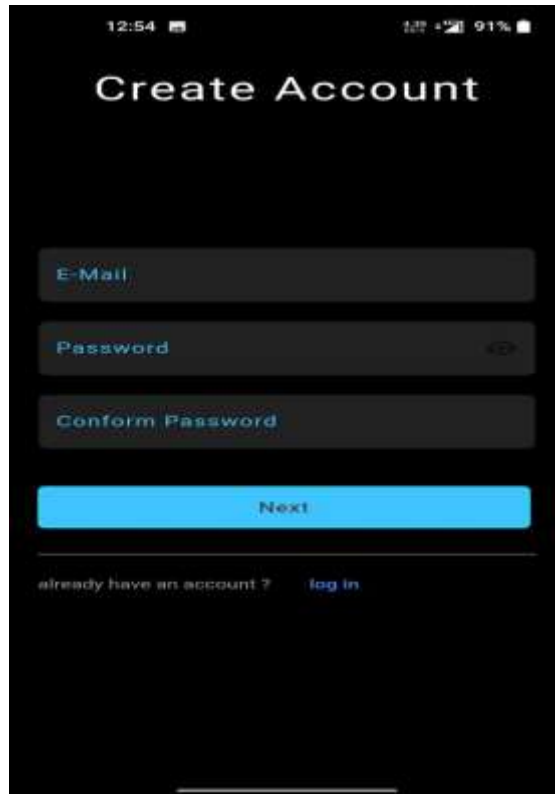


IMAGE PROCESSING FOR ANPR

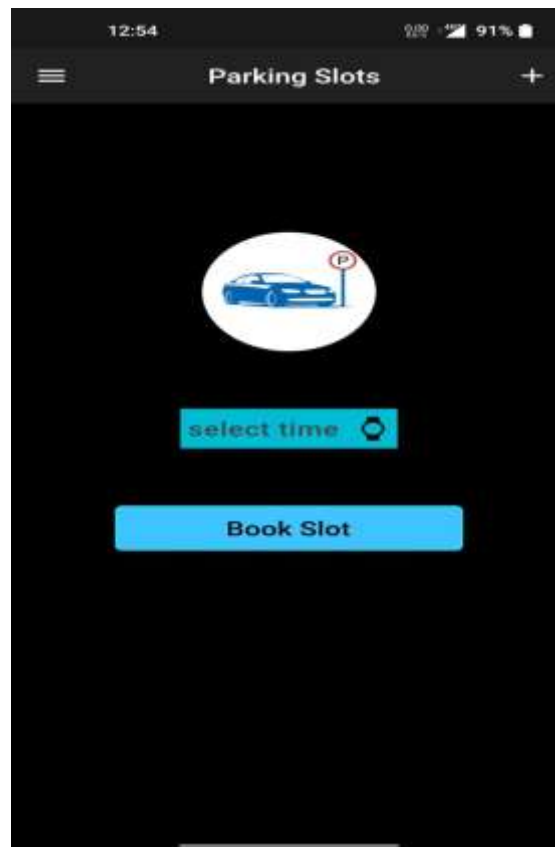


Parking lot sketch





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III. CONCLUSION

Smart parking's services have become critical to the development of smart cities. The aim of this research was to implement an integrated smart parking solution. The suggested system has different advantages, including leveraging the Internet of Things to capture parking spaces, calculating entry and out times, and estimating the estimated cost. For smart phones, an appealing and effective application was created. The system benefits from the reduction of pollutants and fuel consumption as well as the avoidance of wasted time. Users can book a parking spot for up to 1 day.

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