SMART CAR PARKING SYSTEM

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Abstract - In the past, there are several works done on sensible parking system approaching an excellent smarter system in wherever researches are done and still being done to form a system that isn't technologically savvy however conjointly relaxed. This report proposes a style of sensible parking system wherever it helps the users to visualize the on the market areas in parking slots exploitation humanoid application. This project is aimed to form a system that helps folks with their cars to search out for parking simply at chosen areas. package platform has been developed during this system. this technique is needed for malls, multi-storyed parking structures, IT hubs and parking facilities.

*Key Words***:** Android App Development

1. INTRODUCTION

In this current era of recent world, nearly everybody owns a private automobile and it's become a basic want for the humans. Hence, it's been established statistically that the usage of cars is increasing quickly yearly. thanks to the expansion, it's terribly tough to search out parking slots in cities, particularly throughout the height time. A present downside round the world is finding an automobile parking space to park your vehicle. This task appearance easy on aspect roads and interior lanes however the particular downside arises once parking in malls, multistoried parking structures, IT hubs and parking facilities wherever many hundred cars square measures put and it becomes arduous to search out a spot. the overall approach to finding a house parking lot parking zone automobile parking space car parking zone} is to travel around and drive without aim till a free space is found. Finding a house parking lot parking zone automobile parking space car parking zone} may be the best task or may be the foremost tedious one once it involves wide acres of distributed space across one level or multiple levels. The time and fuel square measure consumed unnecessarily as a result of the destination is unknown. the best manner of approach is to supply a destination specific driving among the parking structure.

This creates a necessity to introduce an automatic system that permits users to sees vacant places simply by creating many clicks through a custom Application. This serves to trouble free scenario for every and each user. the most motivation behind the good automobile Parking System is to assist the drivers to search out spaces wherever parking is offered in this area. before his expected arrival, drivers notice the full out there slots within the space if it's out there. Drivers will search the parking slot through the mobile application put in and notice the out there slot. Besides that, user can even read the live parking condition through the digital camera. Not solely this, user will choose to extend their period by merely requesting on the applying by few clicks. All you would like could be an operating web. The system works totally on the detection of parking slots that square measure mounted on each parking slot that facilitates the data. the ultimate stage would be once user uses their good phones to retrieve the slot occupancy in chosen areas. style a sensible parking system wherever it helps the users to check out there or vacant areas in parking slots victimization robot application. This project is aimed to make a system that helps individuals with their cars to search out for parking simply at chosen areas. The user is able to access completely different parking space parking lot car parking slot associated in every parking area there'll be a choice of total parking space parking lot parking zone automobile automobile parking space car parking zone and out there parking space. This project is aimed to make a system that helps individuals with their cars to search out for parking simply at chosen areas. This report proposes a style of good parking system wherever it helps the users to check the out their areas in parking slots victimization robot application. This project is aimed to make a system that helps individuals with their

cars to search out for parking simply at chosen areas. software system platform has been developed during this system.

2. RELATED WORK

The smart parking system is designed by using application android studio IDE. here we are focusing on less time consumption and more performance device so android app is more suitable for our implementation. The key identification of the threat is to find out the issues and problem before developing the entire system. For such prevention, project builders must have to stick to the project. most important is given to the performance and indicators of the admins and users that are facing issues while finding availability of vacant spaces in parking area.

Car's production has grown considerably in the last 30 years as pointed out in. Having more cars around the streets implies more fuel and time consumption and a growing demand for parking spaces. These problems can be addressed by smart parking solutions. They are one of the most popular use cases within the concept of smart city and seek to improve the quality life cycle of a city.

The architecture of smart parking solutions in previous reports are mainly represented by three elements: sensors, networking protocols, and software solutions. Sensors are the most important element as they collect information and feed the whole system. Networking protocols are governed by a gateway that implements wireless IoT protocols and connect sensors to the software systems. Finally, software solutions ensure that information is available for everyone through some sort of three service. For instance, people can use this information to view heat maps of zones with the highest parking slots occupancy.

To implement a smart parking solution, several technological components are involved, such as sensors, networking infrastructure, and software solutions, among others. Regarding smart parking architectures, there are several works that have been presented by industry and the scientific community. Some of them focus on the solution, others on the algorithms, software, or systems, whereas others briefly state the technology of the sensors. For instance, the authors of propose an approach based on artificial intelligence (agents) to find available spots. In, the authors discuss different approaches to implement Smart Parking solutions; it considers the whole ecosystem of such type of solutions which basically involves sensors, gateway selection, edge processing, and data center analysis. For its part, the authors of depict an architecture totally based on ZigBee technology. Moreover, the authors of suggest artificial intelligence for optimizing park search, but barely specify the technical details of

implementation, such as specific protocols or sensor types. Likewise, the work proposed in, shows the use of Bluetooth Low Energy (BLE) as a protocol for connecting sensors and gateways. Bluetooth is a wireless protocol that supports connection between end-devices. The BLE version consumes very few energies and is part of the wireless IoT stack protocol. Other solutions, like those in, suggest the use of IR sensors for its architecture. Smartphones are also considered in these solutions particularly to find available spaces. Considering the aforementioned, it can be seen that there are no international standards or base architectures defined for implementing smart parking systems. Therefore, it is necessary to analyses how different components are being used as well as identify tendencies in regards to their use in order to implement a smart parking solution.

Smart parking solutions were developed with many technologies and approaches; therefore, a classification will be performed considering the established points. In this case, different perspectives were selected: sensors, network infrastructure, and service provided to users. The aforementioned perspectives were selected based on the importance given in.

In previous papers, the smart car parking system were developed by using IOT. In this project, we are developing the smart parking system with the help of android device and also the use of WEBCAMS that are used in parking areas. Through that the system will fetch live video or situation of the parking areas.

3. LITRATURE REVIEW
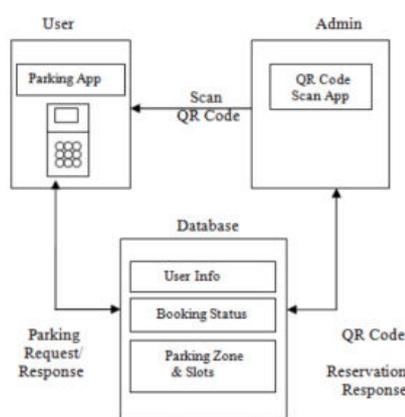
According to previous related works, there are several methods used to develop the system. It is highly crucial to have knowledge on the systems that have been developed in order to ensure a better enhancement of the proposed system in this project. In some studies, image processing is given more importance instead of sensor-based system. Driver's number plate is captured by Image processing is used to capture the number plate of the drivers and the information is stored in database.

This is to avoid theft and illegal car entry. The users must register first before using the Android application. This application consists of basic information of the drivers which will be stored for future references.

After registration, the driving force is needed to pick out the parking location and also the server can like a shot method the information received and sends back the data required to the user. Next, Associate in Nursing innovative approach came as an answer for the reservation traffic in wherever QR code is taken into consideration for reservation confirmation. In analysis paper "Smart Parking System supported Reservation", states that the growth of financial conduct for everyday comfort has chop-chop will increase the quantitative relation of individuals World Health Organization owns vehicles giving boost to busy cities traffic. this can be ordinarily why hold up and pollution occur. The management can system can broadcast the small print on the offered parking slots to drivers. Then, the drivers can choose a specific parking slot to book. As before long because the driver reserves the slot, the server generates a singular QR code and quickly sends it to the drivers. when inserting the reservation, the host can demand for the QR code sent to the user to verify details sent before and let the user to use the reserved place. This code stores in info like parking charge and also the convenience of the slot for each user and supplier for reference. The hardware a part of this method is split into 3 main parts; QR scanner, server and portable.

In previous papers, the sensible automotive parking system were developed by victimization IOT. during this project, we have a tendency to square measure developing the sensible parking system with the assistance of mechanical man device and conjointly the utilization of WEBCAMS that square measure employed in parking areas. Through that the system can fetch live video or state of affairs of the parking areas.

Parking tons became inessential and needs heap of manual work to handle and maintain it. These varieties of automobile parking space don't give knowledge relating to convenience of free areas. several researchers have contributed to the current issue and gave form with varied strategies to raised optimize the automobile parking space to fulfil the necessity. The project projected sensible automotive parking system victimization mobile application. The system provides direction towards the allotted slots, so creating it straightforward to use. this method is employed to designate automobile parking space. The system checks

the distinctive number hold on within the info to visualize if the new vehicle must be position. this method may be a perpendicular parking positioning for the vehicles. The user will notice varied parking places offered at sole spot, notice the acceptable in line with them.

Parking Management: - Searching for comparison between totally different transport parking steering policy. several parking steering systems has been developed within the last decade. This sub-section we've got studied the strategies of steering for several of the prevailing parking and make a case for their limitations. Moreover, we have a tendency to simulate realistic traffic and parking in varied parking management policy or state of affairs. transport parking steering policy. several parking steering systems has been developed within the last decade. This sub-section we've got studied the strategies of steering for several of the prevailing parking and make a case for their limitations. Moreover, we have a tendency to simulate realistic traffic and parking in varied parking management policy or state of affairs. Traffic volume: In our projected model, the traffic volume is outlined because the quantity of traffic generated particularly for parking. This part isn't negligible and hold up and connected pollution.

Traffic volume: - In our proposed model, the traffic volume is defined as the amount of traffic generated especially for parking. This component is not negligible and traffic congestion and related pollution.

4.SOFTWARE AND HARDWARE

Programming language used in the project is JAVA, XML language with the Android studio IDE. Hardware used: Mobile devices, Internet services and CCTV camera. In this project, we are developing the smart parking system with the help of android device and also the use of WEBCAMS that are used in parking areas. Through that the system will fetch live video or situation of the parking areas.

5.DESIGN AND METHODOLOGY

Methodology is a model to explain the methods or techniques used to design, develop or plan a project. This chapter explains about the software and hardware that will be used for developing this project further. The results are going to be analysed to achieve the objective of this project.
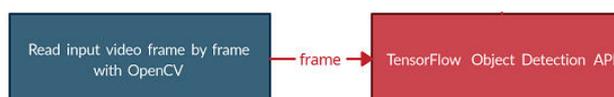
TensorFlow: In this project we use TensorFlow Object API for the detection, and count vehicles. It conjointly has further options like classification of vehicles varieties. whereas the TensorFlow Object Detection API is employed for detection and classification.

Source video is scan frame by frame with OpenCV. every frame is processed by "SSD with mobile-net" is developed on TensorFlow. this is often a loop that continue operating until reaching finish of the video.

TensorFlow is associate degree ASCII text file machine learning framework for all developers. it's used for implementing machine learning and deep learning applications. To develop and analysis on fascinating concepts on computer science, Google team created TensorFlow. TensorFlow is intended in Python artificial language, thus it's thought-about associate degree easy-to-understand framework. Object detection may be a method of discovering real-world object detail in pictures or videos like cars or bikes, TVs, flowers, and humans. It permits identification, localization, and identification of multiple objects inside a picture, giving North American nation a stronger understanding of a picture. it's employed in applications like image retrieval, security, police investigation, and also the Advanced Driver help System (ADAS). Every object Detection rule is functioning in several teaching, however all of them work on an equivalent principle. Feature Extraction: They extract the options from the input pictures at hand and use these options to deciding the category of the image. Be it through Mat laboratory, Open CV, Viola-Jones, or Deep learning used for detection and classification.

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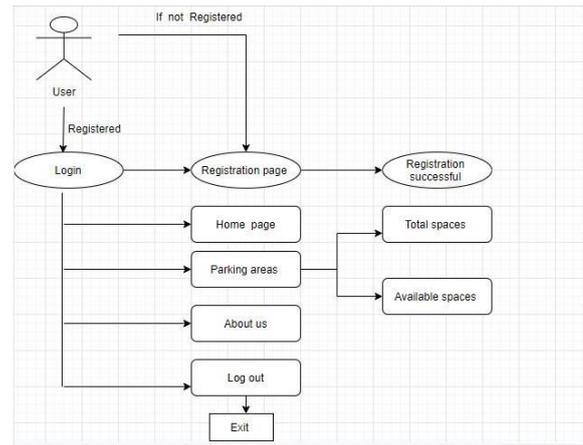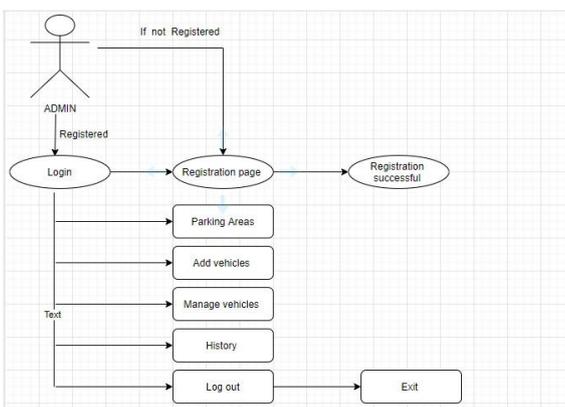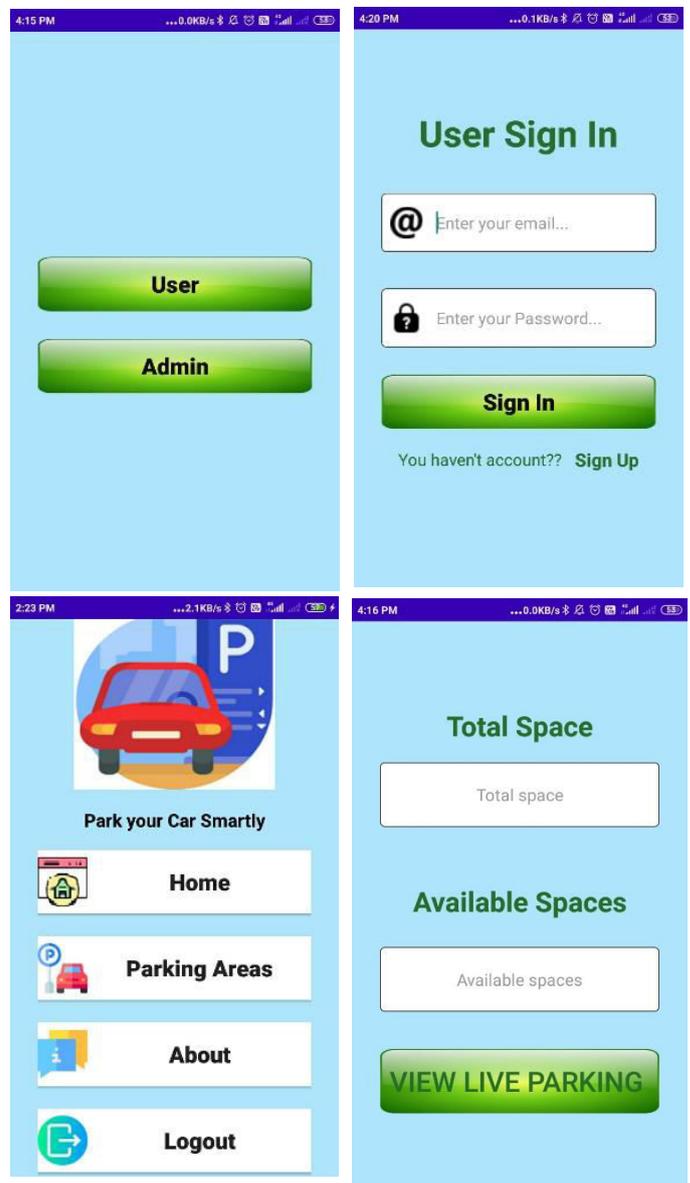

Fig1: flow of admin subsystem

Fig2: flow of user subsystem

6. RESULTS
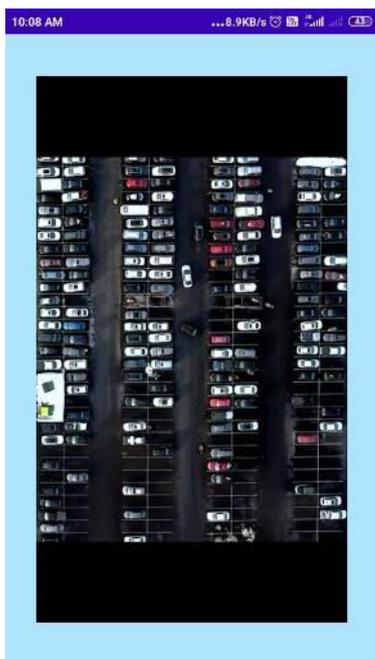
6.
CONCLUSIONS

Based on the reviewed literature, there are few solutions for smart car parking system. There are several types of techniques and methods deploy for smart parking system solution. In this system we used TensorFlow technique to recognize or detect car and then calculate the number of cars and vacant spaces of parking slots. Our project will provide the different features for user and ease of installation.

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