

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 12, December 2019

Android Based Smart Parking System

Prof. G.R.Chillarge¹, Pradnya Bankar², Chaitrali Khanvilkar³, Tanmayi Khedekar⁴, Kiran Landge⁵

Assistant Professor, Department of Information Technology, Marathwada Mitra Mandal College of Engineering, Karve Nagar, Pune, Maharashtra, India¹

U.G. Student Department of Computer Engineering, Marathwada Mitra Mandal College of Engineering, Karve Nagar, Pune, Maharashtra, India^{2,3,4,5}

ABSTRACT: Smart parking helps one of the biggest problems on driving in urban areas; car congestion in a big city causes undesirable problems such as environmental issues, energy consumption, parking space shortage, traffic jams, noise, air pollution, and even minor psychological damage to some people finding empty parking spaces and controlling illegal parking. Parking problem becomes one of major issues in the city transportation management since the spatial resource of a city is limited and the parking cost is expensive. Lots of cars on the road should spend unnecessary time and consume energy during searching for parking due to limited parking space. To cope with these limitations and give more intelligent solutions to drivers in the selection of parking facility, this study proposes a smart parking system. To suggest the most suitable parking facility, several factors such as parking facility, distance, expected parking cost, etc. Users can view the pricing details of both their two and four, wheeler vehicles. Smart parking is a solution to metropolitan cities to reduce congestion, cut vehicle emission totals and save persons' time by helping them in finding a spot to park. There are many security problems for parking system so we develop system using QR-Code.

General Terms

QR Code:

QR Code is Quick Response Code. QR Code may be a two-dimensional barcode that's legible by smartphones.

It permits to code over 4000 characters during a two-dimensional barcode. QR Codes could also be accustomed show text to the user, to open a universal resource locator, save a contact to the address book or to compose text messages. "QR Code" may be a registered trademark of Denso Wave Incorporated. To browse QR Codes together with the smartphone, we would like to associate applicable code put in on the phone, with your smartphone, you For Android-based devices, Barcode Scanner by ZXing is used. On iOS-Devices like iPhones there also are QR Code readers accessible on the AppStore.

KEYWORDS: Cloud Server, QR code, Smart Phone, Smart Parking.

I. INTRODUCTION

India is getting motorized i.e. the rate of private vehicles is more as compared to public transports. As the rate of people owning their vehicles increases, the need of parking slots to park vehicles also increases. But currently the scenario is that there are not sufficient parking slots available or there is also possibility that people are not now aware about the legal parking slots available in their locality. This situation leads to the unnecessary crowding of vehicles on the road and also results in inconviency of people walking on the road.

In today's technological world the concept of smart city has become an area of interest. Concern to parking became impending in an urban area. The parking space problem can be turn into a new opportunity brought by the recent trends to meet the world's connected continuum. This system makes easy for the user to find automatically a free space at the low cost and without consuming time and fuel. The android application in mobile is also provided to the

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 12, December 2019

user to check the availability of free space for parking and book that slot accordingly if user not come in time duration then fine charges are apply to that user.

To overcome above problems, we are proposing the solution in the form of an android application which will be helpful for the people to find their parking slots digitally. By digitally we mean that this particular system will assign the parking slot based on the current location of the user and the parking slot which the user wants according to his/her ease. Ease in terms of finding the exact slot. The payments can be done digitally or through vending machines. The end user can register and login with his/her account which will help the system to find the location and displaying the nearest parking area and nearest parking slot whether it is available or not. If not then it will direct user to the next nearest slot and so on.

II. LITERATURE SURVEY

[1] N.Kalekar et al., "Smart Parking using IOT Technology", in Dept. of Computer Engineering, SSIERAS, Volume 4, Issue 4, April 2019.

In this proposed system, it simply scans QR Code at the entrance of the Parking with Secret code entered into that system that will show the location where your car is parked.

[2] J.Patil et al., "Smart Car Parking using IoT", in International Journal for Scientific Research & Development (IJSRD), Vol. 7, Issue 01, 2019.

The proposed system uses sensors or cameras to detect free and occupied spots in the covered as well as open parking areas respectively. QR Code is used as a security purpose.

[3] S.S.Bhagat et al., "Perceptive Car Parking Booking System with IoT Technology", in International Research Journal of Engineering and Technology (IRJET), Vol.05, 02 February, 2018.

The proposed system is for car parking reservation application and security, maintenance in a parking field. The system allocates the parking space to the user by observing the distance between the user and the parking space and calculates the average time for the user entering the parking space.

[4] Changmu Seo¹ et al., "Vision based Approach in finding multitype parking stall entrance", in Department of Electronics and Computer Engineering, Hanyang University. Proceedings of IC-NIDC 2018.

In this implemented system, the method of finding the entrance of the parking stalls while driving in the parking aisle.

[5] K.Shah et al., "Arduino Based Smart Parking System", in International Research Journal of Engineering and Technology (IRJET), Vol.04, 01 January, 2017.

The purpose of the implemented system is to produce a real life solution to the car parking problem. The system is implemented using open source hardware, programmable sensors and use of computers to provide an interface to understand the digital output produced.

[6] S.Chouhan, "Internet of Things Based Car Parking System", in Asian journal of pharmaceutical and clinical research, 03 March, 2017.

In this proposed system, the parking lots are monitored using RFID. The system gives information of the car parking lot that is nearest to the user and if the parking is full then the system guides the user to the next nearest parking.

[7] Monika M. et al., "IOT Based Vehicle Parking Place Detection using Arduino", International Journal of Engineering Sciences and Research Technology (IJESRT), Vol.06, May, 2017.

The purpose of this system is getting a free parking slot at a particular parking area. The system contains two modules: Parking availability prediction and Automatic parking of the vehicle.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 12, December 2019

III. OBJECTIVE(S):

The objectives of the proposed system are as follows:

- The objective is to accurately state the availability of vehicle parking slot in real-time.
- The objective is to reduce extra time consumption and headache of vehicle owners for parking.
- The objective is to control the limitations of parking slots allocation.
- The objective is to implement a user-friendly system.

IV. NEED OF THE PROJECT

The objective of the proposed system is to provide secure parking system. To develop such system is to providing smart parking in city area where many cars or vehicles are searching parking simultaneously its necessary to suggest each car to most appropriate parking facility in efficient way. Now days so many people use smart phones an effective parking planning strategy makes the better use of parking resources possible.

V. PROPOSED SYSTEM

The proposed system architecture will help the drivers who are seeking for parking space. In this, drivers can check the availability of parking spaces. The access to the parking information becomes easier and convenient due to smart phone applications. There is still the lack of supporting drivers in the choice of the best parking. The system is developed to monitors the occupancy status of parking slots. The parking is suggested to drivers considering proximity to destination and parking cost, and overall parking capacity. Users can view the pricing details of the vehicle for various parking slots and can also book their slot by seeing availability on the mobile application. The user authorization is done by the admin at the parking slot. When user books for a particular parking slot, a unique QR Code is generated for each user. In actual when user goes to park his/her vehicle, admin scans it for security purpose. To collect the data, store it and transfer it between the admin application and the user application, a common database solution is proposed.

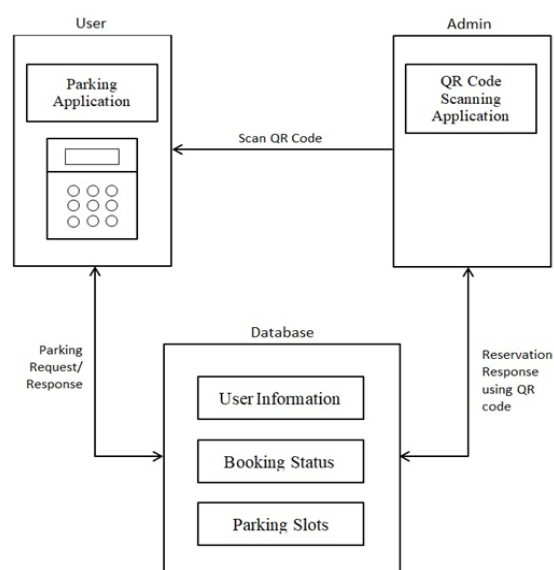


Fig.4.1 System Architecture

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 12, December 2019

Characteristics of Admin

- Login with authentication
- Add Parking Info
- View All user Info
- Scan QR Code of User for Authentication
- Recommendation of Parking according Rating.

Characteristics of User

- Registration and login with authentication
- View User Profile
- Show Available Parking
- Book Parking Slot
- Show QR Code
- Gives Rating

Verification:

Verification is a process of evaluating the intermediary work products of a software development lifecycle to check if we are in the right track of creating the final product. Now the question here is: What are the intermediary products? Well, These can include the documents which are produced during the development phases like, requirements specification, design documents, data base table design, ER diagrams, test cases, traceability matrix etc. We sometimes tend to neglect the importance of reviewing these documents but we should understand that reviewing itself can find out many hidden anomalies when if found or fixed in the later phase of development cycle, can be very costly.

In other words, we can also state that verification is a process to evaluate the mediator products of software to check whether the products satisfy the conditions imposed during the beginning of the phase.

Validation:

Validation is the process of evaluating the final product to check whether the software meets the business needs. In simple words the test execution which we do in our day to day life are actually the validation activity which includes smoke_testing, functional testing, regression testing, systems testing etc.

Maintenance:

According to software's new version and there use them need to update. Maintenance is required for system. Because of some unexpected input values into the system the, changes in the system occurred.

VI. METHODOLOGY USED IN PROPOSED SYSTEM

When Costumer first time login to System that time all details like car no., name, etc. details registered in system. Next time when user wants to login in the system that time if the current details matched with the details mentioned above access is granted.

QR Code:

It is the QR code (curtailed from Quick Response code) is the trademark for a kind of framework scanner tag (or two-dimensional standardized tag) first structured in 1994 for the car business in Japan. A scanner tag is a machine-discernible optical name that contains data about the thing to which it is connected. Practically speaking, QR codes

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 12, December 2019

regularly contain information for a locator, identifier, or tracker that focuses to a site or application. A QR code utilizes four institutionalized encoding modes (numeric, alphanumeric, byte/double, and kanji) to store information productively; expansions may likewise be utilized.

VII. CONCLUSION

Thus, this system concludes is to allow the user to view the status of any parking lots and based on the users need and requirements she/he could book parking spot. Generally, the customers tend to go to the parking lots and then see if there is vacancy then they park their car or else they find some other location. So instead if the users already knew that the parking lot where the user is going to visit has vacancy or not and if not than from the app user could find another parking spot. So, our goal is to aid the users in finding and booking a parking spot saving their time and fuel and also relieving traffic on roads.

In future provide more parking lots services thereby reducing the traffic problems. Also, we could include the pass system for the customers that very often use the parking spaces by studying the data collected through the app.

VIII. ACKNOWLEDGMENTS

This work is supported in an Android based Smart Parking System of any state in India. Authors are thankful to Faculty of Engineering and Technology (FET), Savitribai Phule Pune University, Pune for providing the facility to carry out the research work.

REFERENCES

- [1] N.Kalekar, R.Wani, S.Tanpure, "Smart Parking using IOT Technology", in Dept. of Computer Engineering, SSIERAS, Volume 4, Issue 4, April 2019.
- [2] J.Patil et al., "Smart Car Parking using IoT", in International Journal for Scientific Research & Development (IJSRD), Vol. 7, Issue 01, 2019.
- [3] S.S.Bhagat et al., "Perceptive Car Parking Booking System with IoT Technology", in International Research Journal of Engineering and Technology (IRJET), Vol.05, 02 February, 2018.
- [4] P.Chaudhari, K.Shaha., "Arduino based Smart Parking System", International Research Journal of Engineering and Technology (IRJET), Vol.04, 01 January, 2017.
- [5] Sandhya.P, S.Chouhan, "Internet of things based car parking system", asian journal of pharmaceutical and clinical research, 03 March, 2017.
- [6] Changmu Seol et al., "Vision based Approach in finding multitype parking stall entrance", in Department of Electronics and Computer Engineering, Hanyang University. Proceedings of IC-NIDC 2018.
- [7] Monika M. et al., "IOT Based Vehicle Parking Place Detection using Arduino", International Journal of Engineering Sciences and Research Technology (IJESRT), Vol.06, May, 2017.
- [8] T.Sivasakhti, J.Keerthika, "Parking availability prediction and automatic parking system, In International Journal of Computing Communication and Information System (IJCCIS), Vol.08, 2016.
- [9]<http://www.scmp.com/news/china/society/article/2118751/beijing-looksmart-solutions-solve-citys-parking-problems>.
- [10]<http://www.globaltimes.cn/content/963391.shtml>.