iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.51594

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

Smart Parking System

Suraj Kumar[1], Sunny Kumar Singh[2], Utkarsh Kumar[3], Vijendra Raj[4], Mr. Suman Jha[5]
[1, 2, 3, 4]*Student,* [5]*Guide, Computer Science and Engineering, IIMT College of Engineering, Greater Noida, UttarPradesh, India*

Abstract: ***In recent days, Parking allocation has become a major problem in modern cities for which numerous smart parking systems have been developed. This paper aims to provide comprehensive study, comparison and extensive analysis of Smart Parking Systems in terms of technological approach, user interface, computational approaches, and service provided.***
Moreover, the paper fills up the research gap by providing a clear insight into the suitability of SPSs in various environmental conditions and highlights their advantages/disadvantages. The extensive comparison among multiple aspects of SPSs would enable researchers, designers, and policymakers to identify the best suited Smart Parking System and understand the current trends in this sector.
In order to overcome difficulties such as waiting in long queue and circling around the blocks to find a vacant parking space, in this paper we are proposing a unique system wherein people living in the vicinity of crowded streets can rent their unused parking space. Using this approach, especially malls can productively manage the parking problem effectively during rush hours.
This system also provides convenience to customers by reducing the amount of time spent to find a vacant parking slot by allowing them to reserve a vacant slot through pre-book.

I. INTRODUCTION

The Advanced Parking System is an advanced solution that makes use of a controlled application to simplify the parking process. Customers now get real-time access to information on nearby parking spots that are available, as well as related pricing and other important details. Users can quickly reserve their parking space online and enter and depart the parking station with ease, saving time and improving their parking experience overall. Additionally, businesses can join the application and build their own parking systems, enabling centralized management of parking lots and optimizing revenue generation. This research paper examines the design, implementation, and evaluation of the Advanced Parking System in order to shine light on its advantages and disadvantages for users and organizations.
The Advanced Parking System's technological needs, usability, and user happiness will all be covered in this essay, along with any potential effects it might have on the parking business. The paper will also offer suggestions for organizations and parking authorities to successfully adopt and operate the Advanced Parking System.

A. Existing System

The traditional parking system uses paper-based ticketing systems, requiring customers to receive a ticket when they enter the parking area and pay a price when they leave. Users may not be satisfied with this method, and parking facilities may lose money as a result. It can be time-consuming, inconvenient, and prone to errors. Organizations may also struggle to optimize their resources and improve their services because they lack visibility into their parking occupancy rates and income generating.

B. Proposed System

The Advanced Parking System is a technologically advanced solution that allows customers to find and reserve parking spaces nearby using a manageable application. The system simplifies the parking procedure and improves the user experience by using real-time data and analytics to give users the most recent information on available parking spaces, costs, and other relevant information. Organizations can also connect to the programmed and build their own parking systems, which enables centralized control of parking spaces, real-time visibility into parking occupancy rates, and optimized income generation.

C. Unique Features Of The System

The Advanced Parking System differs from conventional parking systems in a number of unique ways. First, customers may find and reserve available parking spaces in real-time using the controlled application, which eliminates the need for traditional ticketing systems and shortens wait times.

© IJRASET: All Rights are Reserved |

The technology also provides immediate information on parking occupancy rates and income production, allowing businesses to better use their resources and provide better services. Thirdly, the Advanced Parking System gives businesses a foundation on which to build their own parking systems, enabling centralised management and monitoring of parking lots. The system's user-friendly interface also improves user pleasure and experience, which raises the overall efficacy and efficiency of parking management.

II. LITERATURE SURVEY

Intelligent parking systems have been an area of great interest in recent times. Researchers have explored various methods to improve the functioning of these systems, which have been found to require varying degrees of human intervention. For instance, the authors propose an Intelligent Systems for Car Parking with Image Processing, which involves capturing images of the parking slots with brown rounded images and using them to detect free parking slots. The currently available parking spaces are then displayed on a seven-segment display. To accomplish this, binary images are created from the brown rounded images, which requires noise removal and identification of object boundaries. The image detection module then determines which objects are round by measuring their area and perimeter, allowing for the allocation of free parking slots. A Comprehensive Review of Parking Management Systems" by A. K. M. Mominul Haque and Abu Zaher Md. Faridee: This paper provides a comprehensive review of different parking management systems and technologies. The authors discuss the advantages and limitations of each system, including sensor-based systems, RFID-based systems, and camera-based systems.

III. MOTIVATION FOR WORK

Due to the growing number of vehicles on the road and the scarcity of parking places, parking in urban areas has become a more difficult challenge. Finding a parking space takes time and is frequently irritating for drivers, which causes traffic jams, air pollution, and fuel waste. In this situation, a cutting-edge parking system that enables users to find available parking spaces and reserve them online can greatly enhance the parking experience and lessen parking's detrimental effects on the environment and society. Additionally, the application's ability to connect and help businesses build their parking system can open up new business opportunities and bring in new sources of income. In order to address the current parking issues and improve the parking experience for both users and organizations, this research paper introduces an advanced parking system.

IV. SIGNIFICANCE OF STUDY/ FUTURE SCOPE

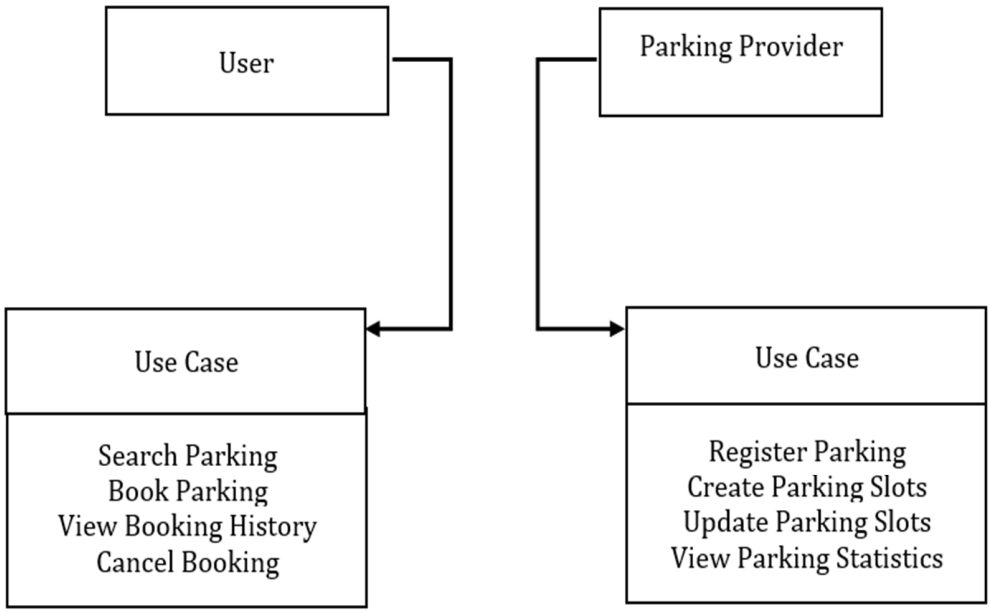
Currently, some nations have websites where users can access information about parking lots online. This system can provide users with parking information; however, it is unable to indicate which parking spaces are available and occupied. As a result, the system is unable to tackle the problem intelligently. When a car arrives on a platform, an automated robotic system and car lifts take it automatically to a specific parking space. Medium-sized shopping centers and movie theatres are unable to deploy this technology due to the high cost. In many public locations, the system only displays the availability and is unable to display the precise slot and route to the slot that is open. So it's important to find the way to the open space in a clever way.

V. METHODOLOGY

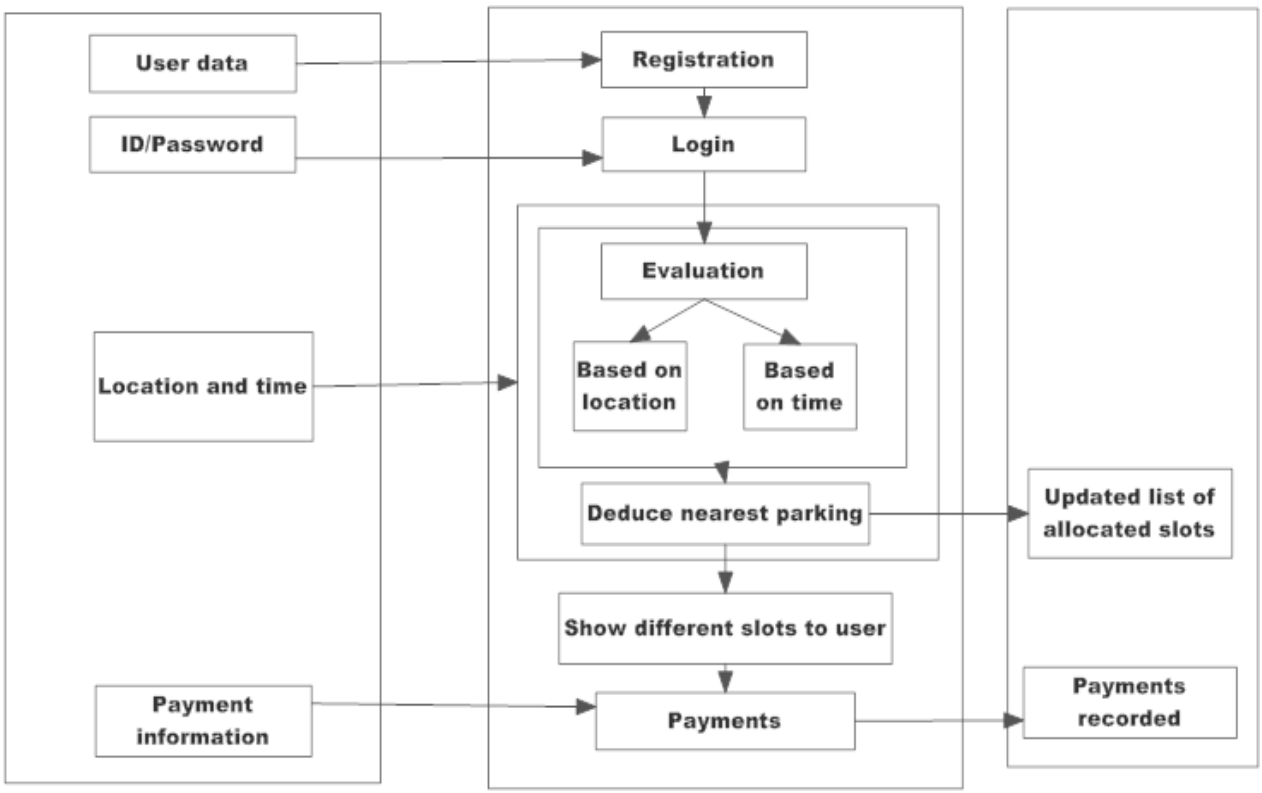
1) *Requirement Analysis:* In this phase, we will gather and analyze the requirements of the advanced parking system, including the user and admin features, database design, and system performance.
2) *Design:* In this phase, we will design the system architecture, user interface, and database schema. We will use the Java MVC framework for the application development and the MySQL database for data storage.
3) *Implementation:* In this phase, we will implement the system based on the design specifications. We will use Java programming language, HTML/CSS for the front-end, and SQL for database operations. We will also integrate third-party APIs for location-based services and payment processing.
4) *Testing:* In this phase, we will test the system for functionality, usability, and performance. We will use automated testing tools to validate the system behavior and conduct user acceptance testing to evaluate the user experience.
5) *Deployment:* In this phase, we will deploy the system on a web server and make it available for users and organizations. We will ensure the system's security, scalability, and reliability.
6) *Maintenance:* In this phase, we will provide ongoing maintenance and support for the system, including bug fixes, updates, and enhancements. We will also monitor the system performance and user feedback to improve the system's quality and user satisfaction.

© IJRASET: All Rights are Reserved |

VI. USE CASE DIAGRAM

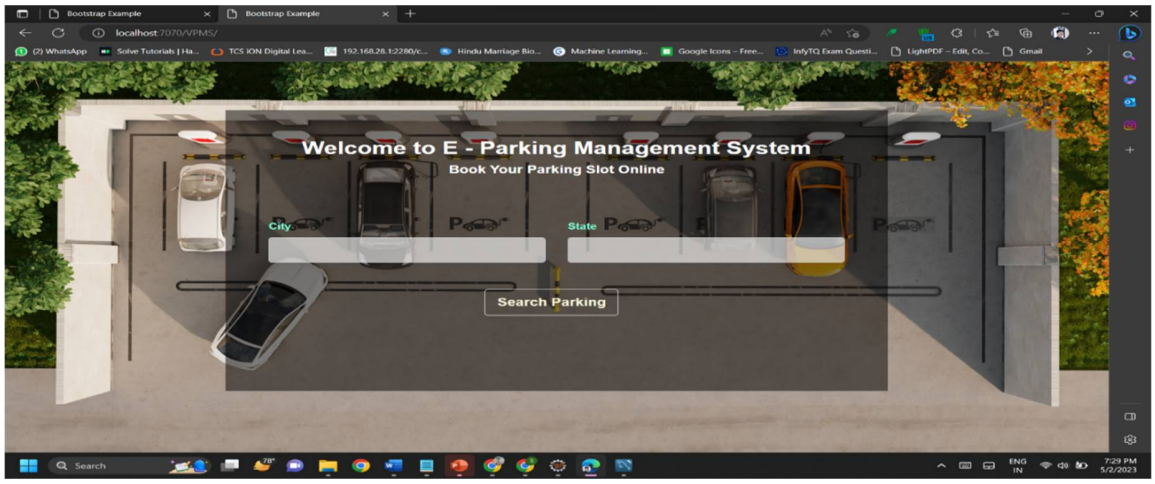


VII. ACTIVITY DIAGRAM

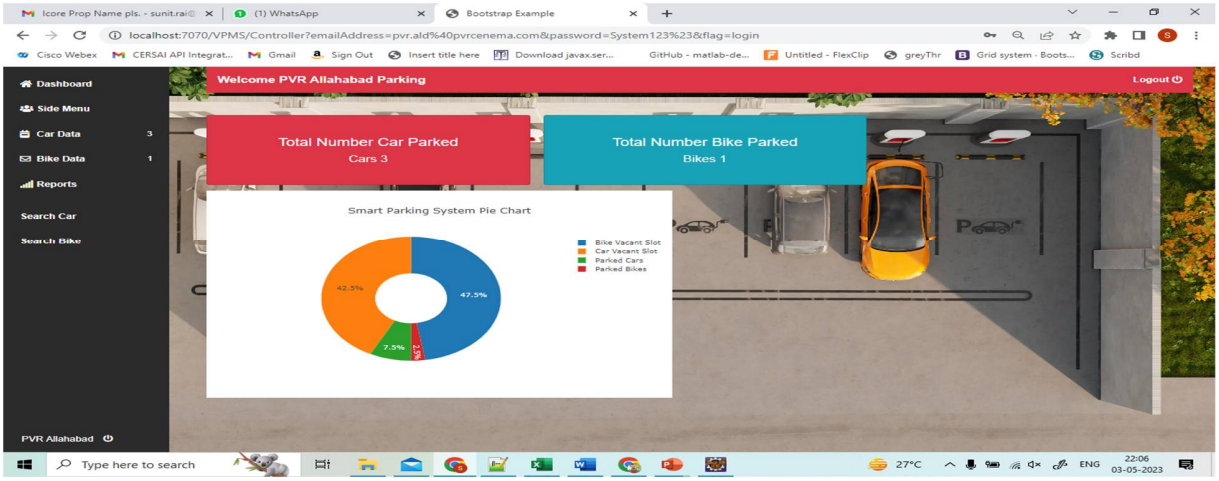


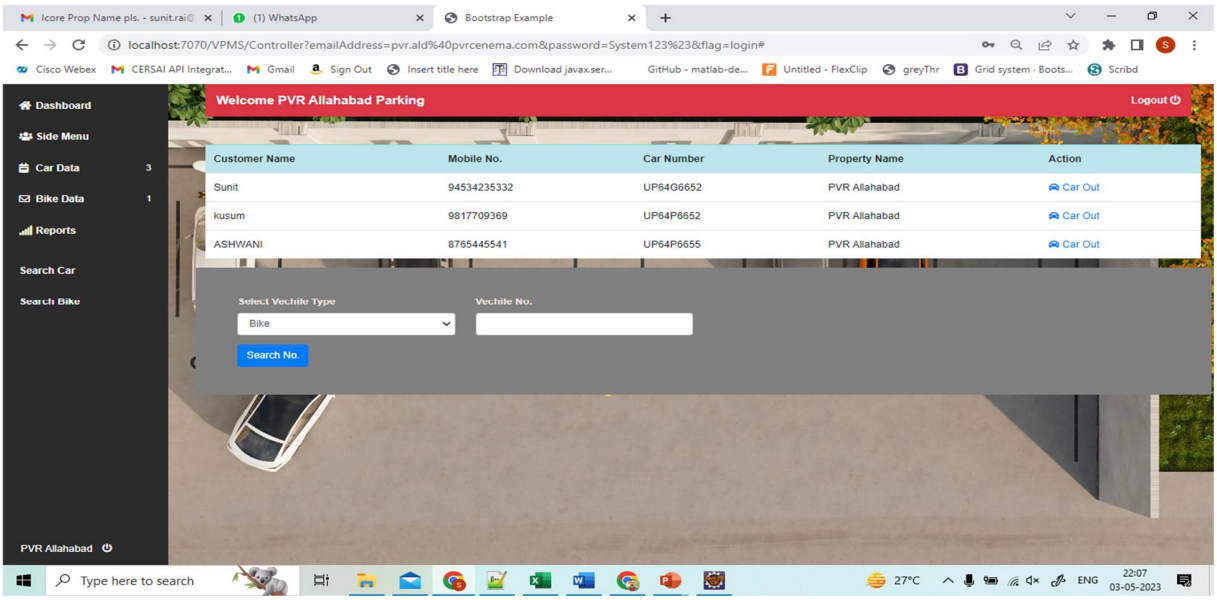
© IJRASET: All Rights are Reserved |

A. User Interface



B. Dashboard





© IJRASET: All Rights are Reserved |

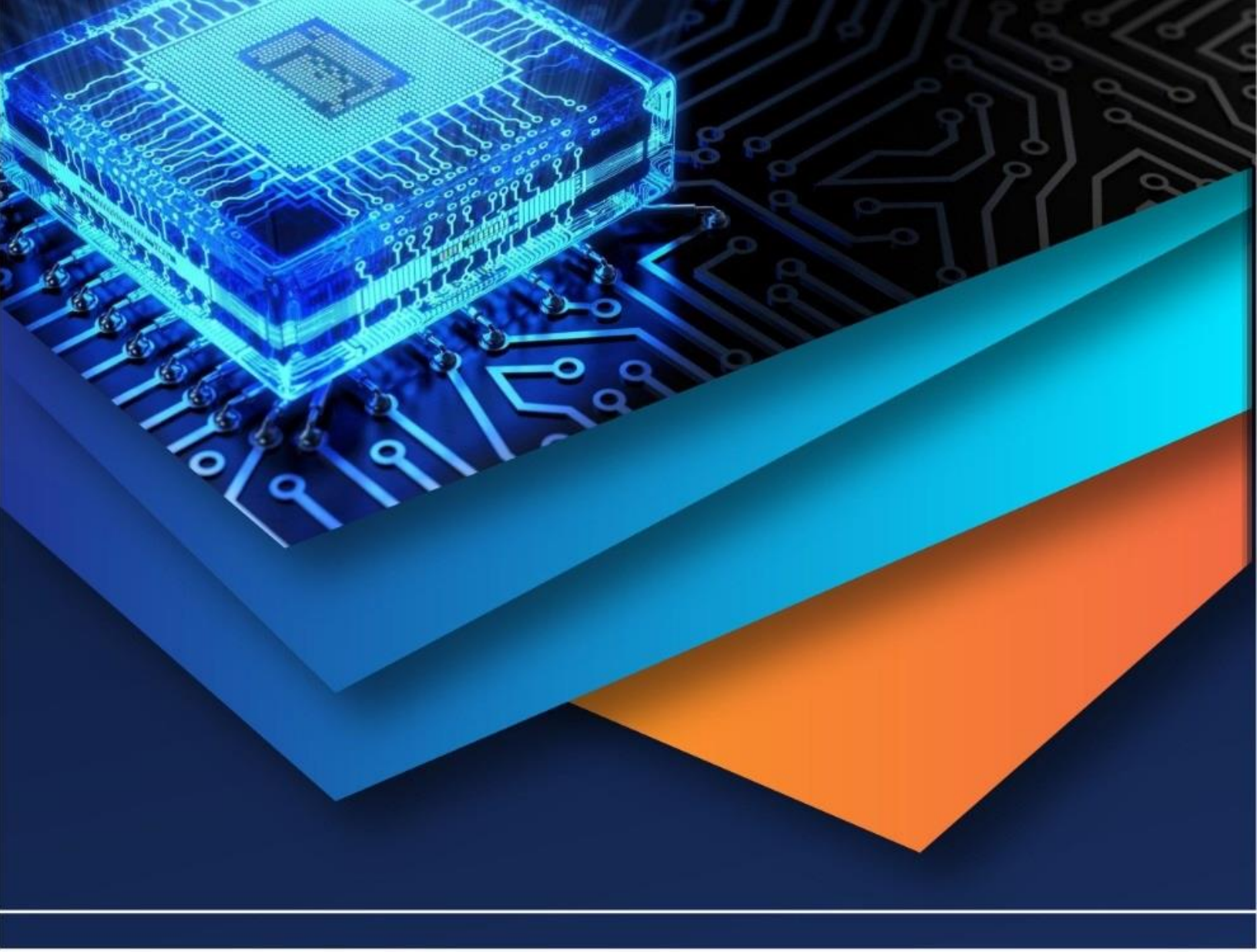
VIII. CONCLUSION

In comparison to more conventional approaches like token systems and notebooks, the advanced parking system suggested in this research article offers an effective solution to the parking problem. In addition to easing traffic congestion, this technology offers automated billing, which is more convenient for users. To better optimize parking capacity, this technology can be upgraded to a multilayer parking technique in the future. By giving real-time information on available car and bike slots, smart parking systems like this one make it simpler for users to discover authorized parking spots and decrease the number of vehicles driving around looking for a spot.

REFERENCES

[1] R. Yusnita, Fariza Norbaya, and Norazwinawati Basharuddin "Intelligent Systems for Car Parking with Image Processing".
[2] L. Mainetti, L. Palano, L. Patrono, M. L. Stefanizzi, and R. Vergallo, Integration of RFID and WSN technologies in a smart parking system," in Proc. 22nd Int. Conf. Softw., Telecommun. Comput. Netw. (SoftCOM), 2014, pp. 104110.
[3] Hamada R. H.Al-Absi, Justin Dinesh Daniel Devaraj, Patrick Sebastian, Yap Vooi Voon "A vision based car parking system"
[4] Parkmobile (2013) http://parkmobile.com.au/ParkNOW! (2013) http://www.nowinnovations.com/solutions/onstreet-parking
[5] Hanif NHHM, Badiozaman MH, Daud H (2010) Smart parking reservation system using Short Message Services (SMS). In: International Conference on Intelligent and Advanced Systems (ICIAS), pp 1–5
[6] Sabnam, Masiha, Mousumi Das, and Parismita A. Kashyap. "Automatic Car Parking System." ADBU Journal of Engineering Technology 4 (2016)
[7] M.O. Reze M.F. Ismail A.A. Rokoni M.A.R. Sarkar. “Smart parking system with image processing facility”. I.J. Intelligent Systems and Applications, 3:41-47, 2012.
[8] M.M. Rashid A.Musa M.Ataur Rehman N.Farhana A.Farhana. “Automatic parking management system and parking fee collection based on number plate recognition.” International Journal of Machine Learning and Computing, 2:93- 98, 201

© IJRASET: All Rights are Reserved |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)