



IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 Issue: V Month of publication: May 2024 DOI: https://doi.org/10.22214/ijraset.2024.60504

www.ijraset.com

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



Park Easy: Cloud-Based Smart Parking System

Asst. Prof. Dipali Mane¹, Ashish Bhusagare², Hariom Kaname³, Deep Balaji Dhende⁴, Kunal Gavhane⁵ ¹Asst.Prof, ^{2, 3, 4, 5} BE Student, Dept. of Computer Engg. Alard College Of Engineering and Management, Pune Maharashtra

Abstract: A modernized parking management system revolutionizes the way people locate and utilize parking spaces. Leveraging advanced technology, it continuously monitors and administers parking spots in real-time. Through our software accessible on various devices, drivers are effortlessly directed to available parking spaces. Moreover, the system efficiently tracks the duration of parked cars and facilitates cashless payment methods. In essence, it simplifies, expedites, and organizes the parking process for all users. In today's era, effective vehicle management is crucial for streamlining operations and maximizing resource efficiency. This comprehensive system aims to elevate control and oversight of vehicular assets, ensuring optimal utilization and reducing operational intricacies.

Index Term: Vehicle parking, parking management, Parking reservation system, Application on vehicle parking

I. INTRODUCTION

A smart parking management system utilizes advanced technology to simplify and organize parking. Picture a crowded parking lot where finding a spot is challenging. This system guides drivers to vacant spots, speeding up the parking process. Additionally, it streamlines payment procedures, ensuring a hassle-free experience. It's a contemporary solution to the enduring issue of parking space scarcity.

This system merges technology with common urban challenges, tackling the ongoing struggle of finding parking in busy areas. Consequently, drivers are efficiently directed to available spots, reducing the time spent searching.

Cloud-based smart parking not only streamlines parking but also offers numerous advantages. It cuts down on parking time and frustration, alleviates traffic congestion, reduces emissions, and enhances urban mobility. For parking providers and city authorities, it boosts revenue, improves resource management, and provides valuable insights through data analysis.

II. RELATED WORK

Hardik Tanti [3] has implemented a computerized system aimed at delivering efficient parking services to citizens across different organizations. This system utilizes Internet of Things (IoT) technology, leveraging sensors to connect physical parking space infrastructures with information and communication technology. Additionally, cloud services are utilized to enhance the functionality and accessibility of the system.

Mohd Yamini Idna Idris [4] has used to overcome the Obstacle of Payment which are conventional method that causes delay and inconvenience for the sponsors as they must deal with cash problems.

Dániel Kondor [5] must capture the overall vehicular mobility demand in certain cities. It provides a precise and comprehensive simulator for urban mobility which maps the details movements of the city corresponding to peoples. Their methodology is used to scale easily and applied to cause and other assumptions to travel demands. They use a methodology based on bipartite matching of cars and other vehicles for parking spaces.

Can Biyik [6] It is used to overcome the challenges of private parking which is used by people daily in large quantities. That is why parking spots in big cities and places are a problem. The smart parking system comprises a sophisticated architectural framework housing diverse applications and components seamlessly integrated within the system. This Reserved Parking lets users request the application layers to request and be processed through a network layer.

Anusha, Arshitha M S, and Anushri [7] The Internet of Things (IoT) enables remote control of objects over established network infrastructure, opening avenues for seamless integration of the physical environment into computer-based systems. It provides the efficiency, accuracy, and economic benefits. Everything is uniquely identified at its level and worked across the state of the levels so every part can be interpreted to other levels and states.

Thanh Nam Pham [8] It is used to forego problems and take advantage of the significant development in the various technologies of the Internet Of Things (IoT) which has created a significant transformation has taken place in many aspects of life, including the development of smart parking systems. Our system constructs every car park as an IoT network.



International Journal for Research in Applied Science & Engineering Technology (IJRASET)

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 12 Issue V May 2024- Available at www.ijraset.com

III. PROPOSED SYSTEM

The vehicle Parking Management system is a web-based technology that will manage the records of the incoming and outgoing vehicles in a parking house. It is an easy for Admin to retrieve the data if the vehicle has been visited through number he can get that data. Vehicle parking management system is an automatic system that delivers data processing in very high speed in a systematic manner.

VPMS has two modules i.e. Admin, User.

- A. Admin
- 1) Dashboard: In this section, admins can quickly see the number of vehicle entries within a specific time frame.
- 2) Category: Here, admins can handle categories by adding, updating, or deleting them.
- 3) Add Vehicle: In this section, admin add a vehicle which is going to park.
- 4) Manage Vehicle: In this section, admins can oversee incoming and outgoing vehicles, set parking charges, and add their comments or remarks.
- 5) Reports: Here, admins can generate reports of vehicle entries within a specified date range.
- 6) Search: In this section, admin can search a particular vehicle by parking number.

Admin can also update his profile, change the password, and recover the password.

B. Users

- 1) Dashboard: It is welcome page for a user.
- 2) View Vehicle: In this section, users can access details of the vehicles they have parked.

IV. SYSTEM ARCHITECTURE:

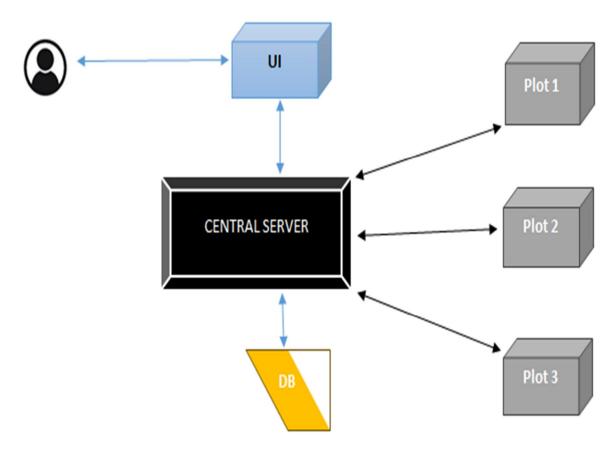


FIGURE 1. SYSTEM ARCHITECTURE

International Journal for Research in Applied Science & Engineering Technology (IJRASET)



ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 12 Issue V May 2024- Available at www.ijraset.com

	Press F11 to exit full screen	
REGISTERED EMAIL OR CONTAGT NUMBER Registered Email or Gontact Number PASSWORD Enter password Forgotten Password? Signup[Register yourself]	USER NAME USername PASSWORD Password C Romombor mo Forgotton Password? SIGN IN	
Enter password Forgotten Password? SIGN IN Signup(Register yourself)	REGISTERED EMAIL OR CONTACT NUMBER Registered Email or Contact Number	
	Enter password Forgotten Password? Signup(Register yourself)	



Volume 12 Issue V May 2024- Available at www.ijraset.com

		PAI	IK EASY		
		FIRST NAME			
		Your First Name		J	
		LAST NAME			
		Your Last Name			
		MOBILE NUMBER			
		Mobile Number]	
		EMAIL ADDRESS Email address			
				J	
		PASSWORD Enter password		1	
		REPEAT PASSWORD			
		Enter repeat password		1	
		Signin	Forgotten Password?		
			REGISTER		
USER					8
USER Dashhoard					0.
	Welco	me II Anui Ku	nor		0
 Dashboard View Vehicle 	Welco	ome !! Anuj Kul	nar		9.
n Dashboard 2 View Vehicle	Welco	ome !! Anuj Ku	nar		0
 Dashboard View Vehicle 	Welco	ome !! Anuj Ku	nar		9.
 Dashboard View Vehicle 	Welco	ome !! Anuj Kul	nar		0
 Dashboard View Vehicle 	Welco	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Welco	ome !! Anuj Kul	nar		9.
 Dashboard View Vehicle 	Welco	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Welco	o <mark>me !! Anuj Ku</mark>	nar		9.
 Dashboard View Vehicle 	Welco	ome !! Anuj Ku	nar		
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Welco	ome !! Anuj Ku	nar		
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		9
 Dashboard View Vehicle 	Weico	ome !! Anuj Ku	nar		e

International Journal for Research in Applied Science & Engineering Technology (IJRASET)



ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 12 Issue V May 2024- Available at www.ijraset.com

AD	MIN		≡					6
<u>_</u>	Dashboard							
▦	Vehicle Category	>	÷	0	<u>_</u>	0	÷	3
	Add Vehicle			Todays Vehicle Entries		Yesterdays Vehicle Entries		Last 7 days Vehicle Entries
===	Manage Vehicle	>						
	Reports	>	÷	9	(Ω)	2	B	3
Q	Search Vehicle			Total Vehicle Entries		Total Registered Users		Listed Categories
2	Reg Users							
4	Slots							

V. ADVANTAGES

- 1) Efficient Use of Space: Easy Park optimally assigns parking spots based on real-time availability, easing congestion, and ensuring parking facilities are utilized to their maximum potential.
- 2) Improved User Convenience: Integration with mobile apps and digital platforms ensures a smooth user experience, offering features such as parking reservations and cashless transactions.
- *3)* Eco-Friendly Practices: Easy Park encourages the use of electric vehicle (EV) charging stations and prioritizes parking for lowemission vehicles, contributing to reduced carbon emissions and supporting sustainable urban development initiatives.
- 4) Reduced Traffic Congestion: By guiding drivers to available parking spaces efficiently, Easy Park helps alleviate traffic congestion and promotes smoother traffic flow in urban areas.
- 5) Scalability and Adaptability: Easy Park solutions are designed to grow and evolve with urban environments, offering flexibility to meet changing needs and support future expansion plans.

VI. APPLICATION

- 1) Urban Parking Management: Easy Park can be deployed in city centers to manage on-street parking spaces efficiently.
- 2) Shopping malls and Commercial Complexes: shopping malls and commercial complexes can utilize Easy Park to offer visitors a hassle-free parking experience.
- 3) Airport Parking: Airports can implement Easy Park to optimize parking space utilization and improve the overall parking experience for travelers.
- 4) Corporate Parking Facilities: Easy Park can be deployed in corporate campuses to manage employee parking efficiently.
- 5) Hospital and Healthcare Facilities: Easy Park can be utilized in hospital and healthcare facility parking lots to improve accessibility for patients, visitors, and staff.

VII. CONCLUSION

Easy Park's cloud-based smart parking system offers a comprehensive solution to alleviate the challenges associated with parking management in urban areas.



International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 12 Issue V May 2024- Available at www.ijraset.com

By leveraging cloud technology, Easy Park provides a seamless experience for both parking operators and users alike. The system enhances operational efficiency by streamlining parking space allocation, reducing congestion, and minimizing manual interventions. Through real-time data collection and analysis, Easy Park enables parking operators to optimize their resources effectively, resulting in improved revenue generation and cost savings.

REFERENCES

- [1] Abhirup Khanna, Rishi Anand; "IoT-based smart parking system". International Conference on Internet of Things and Application (IOTA).2016.
- [2] Georgios Tsaramirsis, Ioannis Karamitsos, Charalampos Apostolotpoulos; "Smart parking-an IoT"; IJERT .2020
- [3] Hardik Tanti, Pratik Kasodariya, Shikha Patel, and Dhaval H. Rangrej authored "Smart Parking System based on IoT," published in IJERT in 2020.
- [4] Mohd Yamani Idna Idris, Zaidi Razak, and Noor N.M authored "Car Park System: A Review of Smart Parking System and its Technology," published in the Information Technology Journal with ISSN 1812-5638 in 2009.
- [5] Dániel Kondor, Paolo Santi, Diem-Trinh Le, Xiaohu Zhang, Adam Millard-Ball, and Carlo Ratti authored "Addressing the 'Minimum Parking' Problem for On-Demand Mobility," published by Nature Research in 2020.
- [6] Can Biyik, Zaheer Allam, Gabriele Pieri, Davide Moroni, Muftah O'Fraifer, Eoin O'Connell, Stephan Olariu and Muhammad Khalid. The paper titled "Smart Parking Systems: Reviewing the Literature, Architecture, and Ways Forward" was published by MDPI in 2021.
- [7] Anusha, Arshitha M S, Anushri, Geetanjali Bishtannavar; "Review Paper on Smart Parking System"; IJERT ; 2019
- [8] Thanh Nam Pham, Ming-Fong Tsai, Duc Binh Nguyen, Chyi-Ren Dow, and Der-Jiunn Deng authored "A Cloud-Based Smart-Parking System Based on Internet-of-Things Technologies," published by IEEE in 2015.
- [9] Md. Rokibul Alam, Sowmitra Saha, Md. Bayejed Bostami, and Md. Saiful Islam contributed to a work published by IEEE in 2023.
- [10] Amir O. Kotb, Yao-Chun Shen, Xu Zhu (Senior Member, IEEE), and Yi Huang (Senior Member, IEEE) authored "iParker—A New Smart Car-Parking System Based on Dynamic Resource Allocation and Pricing," published by IEEE in 2016.
- [11] Mahmoud M. Badr, Wesam Al Amiri, Mostafa M. Fouda, Mohamed M. E. A. Mahmoud, Abdulah Jeza Aljohani, and Waleed Alasmary contributed to "Smart Parking System WithPrivacy Preservation and Reputation Management Using Blockchain," publishedby IEEE in 2020.











45.98



IMPACT FACTOR: 7.129







INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 🕓 (24*7 Support on Whatsapp)