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Smart online Parking and Reservation System

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ABSTRACT

The Smartonlineparkingandreservationsystemisaninnovative webapplication designed to optimize parking management for both users and lenders. Utilizing a user-friendly interface, the system allows users to view maps, search for available parking spaces, and book them seamlessly. Users must log in to create an account, add their vehicle details, and reserve a parking spot. Additionally, the application provides functionalities for users to update their status upon leaving the parking area and give feedback through ratings, enhancing user experience and accountability. On the lender side, the system enables individuals with vacant parking spaces to sign up, add their locations, and manage bookings effectively. Lenders can view all parking reservations and ratings received, fostering a transparent and trustworthy environment. Developed with a robust backend in Spring Boot and a dynamic frontendinReact, pairedwitha MySQLdatabase, thissystemaimstoalleviate parking woes, improve accessibility, and encourage efficient use of available resources, thus contributing to smarter urban mobility solutions. Keywords: parking, vehicles, places.

Keywords: Discrete crack formation, service loads, flexural cracks, Epoxy resins, retrofitting techniques

I.INTRODUCTION

Thesmartonlineparkingandreservationsystemisacutting-edge solution designed to tackle the prevalent issues of parking scarcity and nefficiencyinurbanenvironments.Byleveragingmodernwebtechnologies,this platformconnectsusersseekingparkingwithlenderswhohaveavailablespaces.

The system facilitates seamless searching, booking, and managing of parking spots, enhancing convenience for users while allowing property owners to ptimizetheirunusedspaces.Ultimately,thisprojectaimstorevolutionizeurban parking dynamics and promote smarter, more sustainable cityliving.

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II. LITERATURESURVEY

YEAR	AUTHOR(S)	TITLE	OUTCOMES
2023	Zhangetal.	"IntelligentParking Management System Using IoT and Machine Learning"	This study presents an IoT-based parking management system that utilizesmachinelearningalgorithmsfor real-time parking space detection and prediction. The outcomes demonstratedasignificantreductionin parking search time and increased user satisfaction. The system was found to effectively manage parking resources and reduce congestion in urban areas.By integrating data analytics, the proposed solution showed potential forscalabilityandadaptabilityto various urban environments
2022	Pateland Singh	"Smart Parking Systems:AReview of Current Trends and Future Directions"	This review article discusses the evolution of smart parking systems, focusing on technologies such as IoT, mobileapplications,anddataanalytics. The authors highlighted the effectiveness of real-time data in enhancing user experience and optimizing space utilization. Key outcomes include identifying challenges in system integration and suggesting future research directionsto improve the accuracy and reliability of parking solutions. The review emphasizestheneedforuser-centric designs to increase adoption rates.

III. EXISTINGSYSTEM AND PROPOSED SYSTEM

The existing parking management systems are often fragmented and inefficient, relyingheavilyontraditionalmethodssuchassignageandmanualenforcement. Many cities lack real-time data on parking availability, leading to unnecessary searching and increased congestion. Furthermore, these systems do not provide a centralized platform for users to reserve spaces in advance or for property owners to list their available parking areas. This results in underutilization of parking resources and a frustrating experience for both drivers and property owners, highlighting the need for a more integrated solution.

ADVANTAGESOFEXISTINGSYSTEM

1.Real-timeAvailabilit:Userscanviewandbookavailableparkingspaces instantly, reducing time spent searching for parking.

2.EnhancedUserExperience:Theplatformoffersaseamlessbooking rocess, enablinguserstom anagere servationsandprovid efeedback easily.

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3.MonetizationforPropertyOwners:Lenderscangenerateincomeby listing their unused parking spaces, maximizing resource utilization.

DISADVANTAGE

1.Lack ofreal-timeavailability updates,leadingtoinefficientuseofparking spaces.

2.Ineffectivemanagementofparkingresources,resultinginincreased congestion and frustration for users.

3.Limitedaccessibilityforpropertyownerstomonetizeunusedparkingareas effectively.

PROPOSEDSYSTEM

The proposed method for the SMART ONLINE PARKING AND RESERVATION SYSTEM involves developing a web application that integrates user-friendly features for seamless interaction between users and lenders. Utilizing Spring Boot for the backend and React for the frontend, the system will enable users to view maps, search for parking spaces, and make reservationsinrealtime.Lenderswillbeabletolistavailableparkingareasand manage bookings. Additionally, the application will incorporate user feedback mechanisms to enhance service quality and user satisfaction.

ADVANTAGESOFPROPOSEDSYSTEM

1.Real-timeAvailability: Userscanviewandbookavailableparkingspaces instantly, reducing time spent searching for parking.

2.EnhancedUserExperience: Theplatformoffersaseamlessbooking process, enabling users to manage reservations and provide feedback easily.

3.MonetizationforPropertyOwners: Lenderscangenerateincomebylisting their unused parking spaces, maximizing resource utilization.

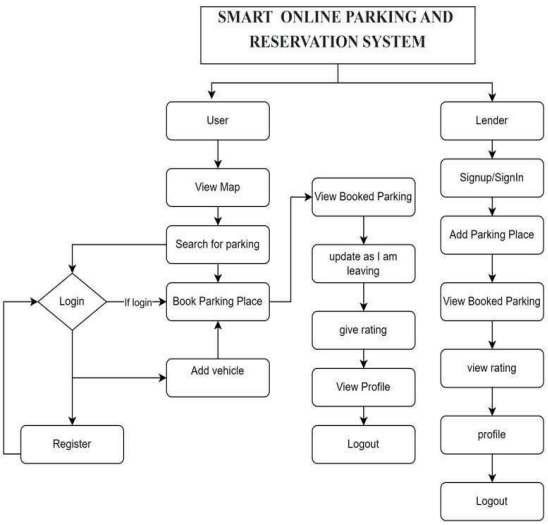

Figure 1 : Shows the Data flow of the Proposed System

IV. CONCLUSION

The Smart Online Parking and Reservation System revolutionizes parking management by bridging the gap between parking space lenders and customers through a seamless web-based platform. By offering real-time availability, interactive mapping, and user-friendly booking features, the system enhances convenience and efficiency. The ability forcustomers to update their status and provide feedback fosters continuous improvement, while lenders gain valuable insights to optimize their services. With its dual-module structure ensuring smooth functionality,thesystemeffectivelyaddressesurbanparkingchallenges while promoting community engagement. Ultimately, this innovative solution contributes to a smarter, more organized, and user-centric parking experience.

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