TECHNO SLOT SEEKER

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ABSTRACT: Lack of parking places contributes to an increase in parking, and its major issue is leading to traffic congestion as drivers looking for available spaces. As drivers slow down or stop in search of parking, the problem of insufficient parking must be tackled in a comprehensive way involving city planning, technology integration as well as sustainable transport solutions. In our project, Web and mobile application that provides availability of parking lots in a real time. The web application enables pre-booking of parking spaces. The application allows the user to choose the parking lot according to their convenience. The payment of booking is done by either fast- tag or by QR code scanner. Once the payment is made, pre-booking of slots is confirmed by a message from the server side.

Keywords: parking, traffic congestion, pre-booking, payments

I. INTRODUCTION

In India, the quantity of automobiles is steadily rising, however owing mainly to the country's fast population growth, parking spaces in cities have not kept up with the state's growing car population. As a result, problems like traffic jams, streets that are too small because of on-street parking, an imbalance between the supply and demand for parking, and illegal parking are all too commonplace in Chinese cities. Parking has become a precious resource, thus it's important to use efficient technology-based solutions to maximize its utilization rather than just adding more spots to the lot. Smart parking systems that make use of sensors and software can give drivers and local officials up-to-date information about parking spots that are available. Moreover, utilizing cutting-edge technologies can enhance parking. Smart parking systems that make use of sensors and software can give drivers and local officials up-to-date information about parking spots that are available. Utilizing cutting-edge technologies can also aid in optimizing parking costs. In contrast too high parking costs may result in lower revenue and less efficient resource use. Low parking charges may encourage more cars to be on the road, which could exacerbate air and noise pollution. In addition to the operators' lost income, there are further negative economic effects on the surrounding businesses, jobs and government taxation. In order to balance optimal usage and revenue, parking space area and expenses are also related.

Lack of parking places contributes to an increase in street parking, leading to traffic congestion as drivers circle the streets looking for available spaces. As drivers slow down or stop in search of parking, traffic flow is interrupted and congestion builds up. Air pollution and increase in emissions: In addition to air pollution and degradation of the environment, a longer search for parking spaces leads to more fuel consumption and an increase in emissions. In order to improve mobility, reduce congestion and create more sustainable urban spaces, the problem of insufficient parking must be tackled in a comprehensive way involving city planning, technology integration as well as sustainable transport solutions.

Parking spaces were manually operated in the early days of urban development without the aid of technology. People were able to locate available parking spaces by looking at it visually. So in order to develop it. Continuous efforts to address the challenges of limited parking availability in urban areas are

highlighted by the origin and development of parking space detection and reporting technologies. It aims to make parking easier, reduce traffic congestion and improve sustainability in cities through the integration of intelligent technologies.

The motivation for the development of this app is a deep commitment to addressing parking challenges faced by urban dwellers. We recognize that searching for parking spaces may be time consuming, stressful and can even contribute to traffic congestion and environmental impacts. You don't have to drive around looking for a parking place anymore. Our app provides real time information on available parking spaces, which helps you save valuable time and eliminate the stress of searching for a place to park.

Finding a parking place should beat the bottom of your list for a fast paced world, where every moment counts. Introducing our ground breaking app, designed to revolutionize your parking experience, making it easy, stress free, and tailored to your needs.

II.   RELATEDWORKS

Demonstrating high effectiveness in detecting parking slots and possessing a certain level of resilience against unauthorized parking of vehicles passing through, the Intelligent Parking System (IPS) comprises an Internet of Things (IoT) framework that sends real-time data to the cloud. This enables us to monitor the availability of parking spaces in a specific area. The system assists users in reserving parking slots for vehicles during events like technical fests held in college campuses, across various parking locations and slots, based on real-time availability.

An essential aspect of improving urban logistics involves efficiently managing parking space, especially for loading and unloading activities. Utilizing information and communication technology, smart mobility systems facilitate continuous communication between system administrators, clients or users, transportation infrastructures and vehicles. These systems represent a new era in transportation, enhancing connectivity and efficiency.

Car sharing stands out as a prominent aspect of modern transportation solutions. It has the potential to reduce pollution and alleviate traffic congestion, earning recognition from policymakers worldwide as a crucial component of smart transportation initiatives. To further optimize parking management, a proposed application model can assist local governments in analytically selecting the most suitable subset of parking slots, contributing to better urban planning and resource allocation.

III.   LITERATURE SURVEY

The Q-learning algorithm implemented in the study, determines hourly prices for parking slots during peak and off peak hours. The major components of the Q-learning algorithm such as states, actions and reward function are designed in the proposed. In most major cities, it is now not only difficult but expensive to find a parking spot. Effective administration of parking lots is becoming more and more important due to the growing number of vehicles and the limited availability of resources like people and space. Negative effects of improper parking slot management might include air pollution, traffic jams, and wasted time looking for parking spots, and even a loss of income for the managers of the parking lots. Even with the many dynamic pricing systems already in use, it can be difficult to determine the appropriate charges because of a lack of understanding of drivers' behavior and a number of other factors[13]. The arrival process of the vehicles is considered to be following the Poisson distribution. Thesimulationisexecutedfor3hrs as the maximum limit is considered as the duration of a movie and also the shopping can be completed in maximum of 3 hrs, other than in exceptional cases. In movie theaters, theinter-arrival time will be less than 5 min. smart parking system can be used to reserve parking spaces. The strategy presented in this work separates the parking lot into three sections, in contrast to the approaches suggested in previous research.

There are three parking zones: one for regular parking, one for vehicles with reservations, and a third for both types of vehicles. The suggested method calculates the fraction of the parking space allotted for traditional parking using learning automata. In general, the proportionate of the slots for reserved parking, conventional parking and common slots need to be assumed.[11].Several proportions of non-SAVs are replaced in the system assuming drivers choose to replace their conventional vehicles with AVs. The simulation is initially run without the SAVsin the system to serve as the control result which is compared with a 10%, 20%, 30%,40%, replacement and so on. The aim leads to as certain the behavior of each car park as SAV remove more cars from remove more This will further inform the potentials for mSAVs to further remove more cars from car parks. The foundation of this work's methodology is to as accurate as possible represent the parking environment, parking slots, routes, and the physical infrastructure of the study area. And with the data gathered, demonstrate the performance of each car park with and without

SAV implementation. It finally describes the DES model implementationasitintegratesa2Dgraphicalrepresentation of UWE environment with parking inventory data. This is to examine how single occupancy SAVs will influence car.[14]

Smart Parking System adds value to users by saving a lot of time and adds value to the environment by reducing the human generating traffic which in turn reduces the pollution and profits the community by utilizing all the available and existing parking spaces more effectively. Further enhancements are to integrate the existing system with AI. It deals with development of mobile applications, useful for user to access detailed information about parking space and managing .Using Image Processing technique to identify registration plate of a vehicle and also provides autonomous door opening and closing operation whenever it detects a vehicle at entrance of a parking lot. LCD-liquid crystal display: displays current parking space availability.IR- Infrared proximity sensors: to identify the existence of a vehicle at the entry gate of parking lot[15]A mechanism design based approach for public parkings lot assignment in an environment empowered by recent advances in parking sensing ,infrastructure-to-vehicle, and vehicle-to-infrastructure communications. An important part of the parkings lot deals with eliciting truthful private information from drivers while maximizing social welfare

An intelligent-sharing urban parking framework In order to better systematically optimize the allocation efficiency of urban shared parking resources, a dynamic and intelligent- optimize adjustment strategy is proposed for the sharing periods, shared pricing and penalties for prolonged parking in buildings with various properties based on the utilization rate of parking slots in shared areas and the occurrence rate of prolonged parking and emergencies. Modern information technologies are being developed and applied, and intelligent optimization is being used to enable shared urban parking. A framework for intelligent sharing of urban parking is constructed, and a method for matching intelligent optimization to meet the need for urban shared parking is suggested. A dynamic and intelligently optimized adjustment strategy is proposed for the sharing periods, shared pricing, and penalties for prolonged parking in buildings with different properties based on the usage rate of parking slots in shared areas and the occurrence rate of prolonged parking.[10]

Characterized the optimization problem of a local government that wants to analytically choose the best subset of parking slots to rent to car sharing companies, with the aim of reducing cruising for finding parking and improving urban mobility. The spread of car sharing may bring significant benefits to (smart) cities, its penetration can be obstructed by non-up-to-date regulations, which can be still tied to a non-smart vision of mobility. The optimization problem of a local government that wants to analytically choose the best subset of parking slots to rent to car sharing companies, in order to improve urban mobility. A new Binary Linear Programming problem and genetic-based mat heuristic.[5]

Provide an overview of relevant regulations for car sharing, highlighting in particular the importance of parking policies. Test the model on realistic data of the city of Rome, showing that we can obtain a fair territorial Distribution of the parking slots that satisfies population needs. With the help of information and communications technology, smart mobility systems, enable constant contact between system administrators, clients or users, transportation infrastructures, and vehicles, represent a new generation of transportation systems. Car sharing is one of the most prominent .Moreover, it has the potential to decrease pollution and traffic jams, and policymakers globally acknowledge it as an essential element of smart .Propose a mathematical optimization model that can be used by a local government to analytically choose the best subset of parking slots.[6]

IV. PROPOSED METHOD

Some technologies are available that allow users to gain access to the full information on parking places and their management. When it detects a vehicle at the entrance of the parking lot ,it uses an image processing technique to identify the vehicle's registration plate and also to open and close the door independently. LCD liquid crystal display: Displays the current availability of parking spaces. Infrared proximity sensors: to determine whether a vehicle is present at the parking lot's entry gate. The proposed application keeps track of available parking space in a timely manner. Pre booking of parking spaces is possible through the mobile application. Users utilize a mobile application to communicate with the parking system. Real-time information regarding parking spots that are available, where they are and other pertinent details maybe seen on the app.

Additionally, parking spots can be pre-booked or reserved using the app.GPS and Location Services: Mobile applications use GPS top in point the user's location and give directions to parking spots that are close by. This aids in directing drivers to the closest parking space. Data analytics and machine learning: These techniques allow computers to forecast parking availability in particular locations at certain times by examining past parking data and patterns. Accurate availability estimates and optimal parking space distribution can be achieved with machine learning techniques. Payment Gateways and Integration: In order to enable users to pay for parking reservations straight through the mobile app, payment gateways are frequently integrated.

\Then application enables the user to select a parking spot that is convenient for them. Fast Tag or QR code scanners are used to pay for booking. Once the payment is made, pre- booking of slots is confirmed by a message from the server side. It also has the facility to book more than 1 day if needed. This can include safe ways to pay, such as digital payment systems, mobile wallets, and credit/debit cards. Cloud Computing: Cloud-based solutions are usually used to analyse and store parking data that is gathered from sensors and user interactions. This makes it possible to manage parking data and user reservations in a scalable and effective manner. Near Field Communication (NFC) tags or QR codes: Some parking reservation systems utilize NFC tags or QR codes to control access to reserved spots. To enter their assigned location, users can use their mobile device to scan a code or tag. Alerts & Notifications: Prior to a reservation expiring, the mobile app has the ability to notify users about parking availability, reservation confirmations, and other pertinent information.

The motivation for the development of this app is a deep commitment to addressing parking challenges faced by urban dwellers. We recognise that searching for parking spaces may be time consuming, stressful and can even contribute to traffic congestion and environmental impacts. You don't have to drive around looking for a parking place anymore. Our app provides real time information on available parking spaces, which helps you save valuable time and eliminate the stress of searching for a place to park. Finding a parking place should be at the bottom of your list for a fast paced world, where every moment counts. Introducing our ground breaking app, designed to revolutionize your parking experience, making it easy, stress free, and tailored to your needs.

Figure 2 Fish-bone diagram

The ultimate benefit of the project is the seamless convenience it provides to users by offering real-time tracking of available parking spaces. Through the mobile application, users can pre-book parking spots at their convenience. The utilization of Fast Tag or QR code scanners for payment streamlines the process, ensuring efficiency. Once payment is completed, users receive confirmation of their pre-booked slots via server-side messages. Additionally, the flexibility to book parking for multiple days further enhances the user experience, catering to diverse needs and schedules.

V. CONCLUSION:

In this work we have presented the Parking Slot Assignment Problem (PAP), a novel problem motivated by the need of providing parking space to carriers for their loading/unloading operations. The PAP is to find assignments of carriers to parking places that satisfy their time window requests. We have studied modeling alternatives for the PAP, including a feasibility formulation, which looks for an assignment satisfying all the carriers' time window requests, and several other models. For instance, some utilize QR codes to distinguish accessible parkings paces, while others use sensors to recognize when a vehicle leaves a parking space. This system can be implemented in crowded places so the user can easily locate the parking slots with the help of IoT. This can also reduce pollution as the user can directly reach their parking location. The automatic billing system attached to the parking slot makes it more convenient for the user [14]. Using these technologies can be implemented in large cities and can be monitored from a single source and they can be implemented by governments in main crowded areas.

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