

Parking is A-parking Space Temporary Rental Platform Small Program Design

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Abstract

As for the problem that parking is difficult to find a parking space, even though every city has built many large underground parking lots, it still cannot meet the parking needs due to the complex layout structure and low parking efficiency. Therefore, a small parking program was established, using the Internet of Things, artificial intelligence, parking design, big data, shared parking space and other new technologies, to analyze the intelligent parking system based on wechat small program in view of the traditional parking lot information and data isolation and low parking efficiency. The small program realizes the parking query and navigation, parking reservation, parking recommendation, online payment, efficient parking and other functions.

Keywords

WeChat Applet; Parking System; Query and Navigation; Parking Space Recommendation.

1. Introduction

In recent years, the contradiction between the growth of the number of motor vehicles and the shortage of supporting parking Spaces has gradually become prominent. The number of motor vehicles in China has increased rapidly, and the difficulty of parking has become a big problem plaguing the major cities. At present, the total number of motor vehicles in China is about 320 million, 510 million car drivers, more than 34 million newly registered vehicles every year, more than new licensed drivers 29 million, the total and increment of the first in the world [1]. Compared with the parking space is relatively less, the parking space gap is very large [2][3]. The emergence of shared parking space provides us with a new solution. The shared parking space is shared at different times, so that the idle parking Spaces are fully used and save the trouble of parking difficult for car owners. Shanghai, Beijing, Guangzhou, and many other cities have introduced policies to encourage paid and shared parking at different times. Combined with parking equipment resources, artificial intelligence [4], Internet of Things [5], big data and other cutting-edge technologies, in this context, this small program proposes a basic Android shared parking space management system, to provide technical solutions for the time-sharing of community parking Spaces.

1.1 Requirement Analysis

In terms of parking demand, various factors should be considered to meet the needs of car owners, parking space owners, urban development and parking management subjects.

1.2 The Needs of Car Owners

A parking system should first provide the car owners with information query parking space, parking space navigation, reservation and other intelligent auxiliary parking services, from the source is to deal with the problem of difficult parking. Then is the parking information query and reservation, so that the owner through the parking a small program, understand the parking lot around the situation,

vacant parking space, charging standards and other information, can be through the small program parking reservation and fee payment.

In terms of parking navigation, baidu and AutoNavi map functions are combined to provide navigation services. Combined with real-time road conditions, car owners can indicate the optimal arrival route of the target parking lot to improve the parking efficiency and realize the function of optimizing parking resources.

1.3 The Needs of the Parking Space Owners

When your parking space is idle and does not need to be used, it can also play its value, can be used, can profit is better.

1.4 The Needs of Urban Development

For the scattered parking management subjects, different management and operation modes, many temporary parking and other problems, it is urgent for a unified platform to plan and manage the parking, and everyone needs to work together, so that the temporary cars have a place to stop, and the parking space is fully used. Avoid an empty parking space and other cars parked randomly.

1.5 Demand for the Parking Management Theme

At present, we set up the property management of the community. We need to build the management service information system [6] according to the imbalance between supply and demand of parking space, to integrate and share the known Libra resources, unified management, so as to realize the maximum utilization of parking resources.

Parking resource information is shared and released in real time. The parking management subject needs to release the parking information in real time, so that car owners can inquire and make an appointment.

Scan the code to pay, can reduce the cost, directly scan the code, the system will calculate the time and amount to complete the payment.

Parking management, realize less humanization management, know the parking situation in the parking lot in real time, timely intervene and notify the vehicles that do not meet the requirements, and timely deal with various problems [7].

2. Research Ideas and Research Methods

2.1 Research Thought

The research ideas of this paper are mainly divided into four parts, respectively:

The first is to consult the domestic and foreign literature on the development process of parking software [8], combined with the domestic and foreign literature research direction [9][10], to understand the needs.

Secondly, learn about parking, software front end, back end knowledge [11].

The third step is to find breakthrough points, new ideas, new methods.

The last step is to combine technology and innovation to develop this software, and then initially test the software function.

2.2 Research Technique

Observation method: data collection statistics the advantages of other parking software, the reasons for existence, the scenarios of use, the frequency of use.

Investigation method: to investigate the parking scale of the surrounding communities.

Literature method: by consulting the literature to obtain the data, comprehensively and correctly grasp the development history, research progress and future trend of the research problem.

3. Supporting Technology

Intelligent parking space guidance, positioning, fast access, parking and other systems have been developed by the market, providing a technical basis for the project research. Now the mature navigation system, such as: Autonavi, Baidu Map and so on will also be the basic system of research to expand the service scope of software. The application software similar to this software gradually appeared, providing experience for the development and application of parking software.

3.1 Function and Construction

A small parking program is the parking software for positioning the mobile terminal and car navigation. Through a certain Internet, the user specifies the instructions to obtain the current location, and query the information of the nearby parking lot. Then, the system will automatically provide users with the parking solution with the fastest time, the lowest charge, good road conditions and close distance according to the instructions. The software sets up registration, dynamic search, static search, community management, user management, vehicle management and other functions. Users can check whether the local parking lot and parking space are busy through the mobile phone client.

3.2 Server

Server is used to store and manage the relevant information data and business data, for parking a small program to provide accurate data support, parking a small program broke the isolation of the parking information, the parking area data uploaded to the data center server, these data including the parking lot location, vacant parking number and parking capacity, the vehicle information, charging standards, etc. The car owner can obtain the information of the nearby parking lot through a small parking program. Accordingly, the property management can also carry out real-time management and inspection of the parking lot through the management end.

3.3 Client

1) Client system architecture

The main service object of a small parking program is the owner, through the development of WeChat small program to meet the owner's fast and flexible parking needs in a more convenient way. Car owners through the small program to achieve online search for parking space, booking parking space, payment, etc.

2) Client function module

Wechat mini program can provide users with a comprehensive and friendly parking experience, help users realize easy parking and quick payment, including personal center, payment function and parking reservation module.

① Personal center: it is convenient for the follow-up payment management. The personal center provides the real-name registration function. In the function module of the personal center, there are order management and personal information management parts, as well as the setting of the system authority. Personal information management includes the modification of personal information and vehicle information. Order management is the management and inquiry of the ongoing orders and historical orders. The order information includes the parking lot information, fee standard, license plate number and parking start and stop time, etc.

② Payment: When the vehicle leaves the parking lot, the system calculates the fee payable and wants the owner to issue the bill. The owner can process the order from the parking system in the payment interface, and can pay the payment directly with WeChat. The payment system can restrict the owner according to the personal reputation of the real-name authentication, and charge the extension fee and reduce the credit rating.

③ Find the reserved parking space: search the parking space in the destination attachment with keywords. The owner can reserve the parking space according to his personal needs, and then navigate to the vicinity of the parking lot. When there is a small program for parking, the owner can contact

the parking lot management personnel to solve the relevant problems through the consultation function.

3.4 Value Added Service

The user automatically obtains the current location through various function instructions, and queries the nearby parking lot information, and the system will automatically choose the best parking solution for the user intelligently. Later provided value-added characteristic services have more functions. With the promotion and application of the software, the functions of the software will be upgraded and improved in the later stage, and the parking function will be further upgraded and optimized to integrate more functions and value-added services.

3.5 Technology Roadmap

Based on the demand background and practical application scenarios of this project, the technical route of the appropriate system is proposed, and the system is designed based on the intelligent hardware.

The front end of the system interacts with the back end through the wechat mini program, and users can book the parking space and use time through the wechat mini program. After placing an order, the user can find the location and park their car.

The Web side background server is written by Java, mainly using Spring Boot and Spring MVC framework, and the database part is developed by MySQL framework.

4. Innovation Features

This project uses the intelligent WeChat small program to realize the recycling of the parking space value:

- 1) Let the temporary car have a place to park, and the parking space is fully used. Avoid an empty parking space and other cars parked randomly.
- 2) High efficiency, time and effort saving, 24 hours available.

4.1 Combined with the Cloud Platform

The underlying data collection and the upper layer terminal application are connected through the cloud platform, and the data of the underlying collection parking space is analyzed and stored in the cloud platform database. When the upper layer terminal sends the request, the cloud server processes the data and returns the results to the request end. In addition, some data are also analyzed in real time, and the cloud platform message push mechanism is pushed to the terminal.

4.2 Break up with the Traditional Parking Mess

Combine "parking" with Internet big data to attract car owners to enter the platform. Simplify the parking space application process, intelligent parking space application, intelligent background management, etc. Establish intelligent parking responsibility system, parking management system, so that the management department convenient management. Let the car owners through the Internet way to interpret the local free parking space. Do stop without chaos, tube but not die, put freely, the maximum release of community parking space.

4.3 Characteristic

- 1) Convenience: solve the temporary parking problem, avoid random parking, reduce contradictions.
- 2) To contribute to the full management and utilization of community parking Spaces.
- 3) Efficiency: stop and time, go and pay. Solve the problem of trouble change problems.
- 4) Rapidity: It displays the free parking space information in the parking lot through the mobile terminal software. Through the software, drivers can query the available parking space information in the connected area of the parking lot, and choose the parking space nearby.
- 5) Adequacy: let all the renters and users get their own needs.

5. Epilogue

Attention about parking problem in China, because more people need car, parking, parking problems has involved in all aspects of our, travel, life, work and consumption, more intelligent parking software system began to appear, but there are some deficiencies, we need to work harder to promote the development of intelligent parking.

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