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REVIEW ARTICLE

DESIGN AND IMPLEMENTATION OF JUNSHAN INTELLIGENT TRAVEL SYSTEM BASED ON WECHAT MINI-PROGRAM

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ABSTRACT

With the progress of society and the continuous development of information technology, tourism has become an increasingly common and important form of entertainment, and it has become necessary to provide tourists with integrated services such as related tourism information and map guidance. This paper designs and develops the Junshan Zhixing system based on WeChat mini program, which is committed to satisfying tourists' tourism services and providing a comprehensive digital scheme for improving the platform construction of Junshan's tourism industry. The system integrates tour guide service, map guidance, reservation service, scenic spot introduction, transportation guide and other humanized functions, and combines Internet technology with the tourism industry to promote the digitalization and intelligent construction of the tourism industry. In order to provide tourists with convenient purchase of local specialties and characteristic services of community communication and interaction, the system has specially set up online peripheral purchase module and communication function module. The development and implementation of Junshan Zhixing system will inject new vitality and contribute more possibilities to Junshan tourism industry, and bring more benefits to the development of surrounding economy.

KEYWORDS

Tourism Platform; Guidance; Mini-program; Information; Digitalization; Services

1. INTRODUCTION

Junshan Scenic Spot in Yueyang City is a famous 5A scenic spot in China, located in Dongting Lake, 15 kilometers southwest of Yueyang City. With the rapid economic development and the improvement of people's entertainment needs, the demand for tourism platforms is also expanding day by day. Driven by the "Internet +" era, the integration of tourism market and the Internet is increasingly close. Many scenic spots have established their own travel service platforms. Through statistical analysis, data mining and associated recommendation integration of local tourism resources with the help of Internet big data, and supplemented by tools such as WeChat public account platform, they actively carry out positive publicity and standardized management of local tourism scenic spot resources, which promotes the prosperity and development of the local tourism industry. With the effective control and gradual mitigation of the epidemic in China, the development opportunities of Junshan tourism are gradually increasing. However, the development of Junshan tourism industry still faces the problems of inadequate publicity, depth and breadth of development. Compared with other 5A scenic spots in the province, there are still shortcomings and deficiencies.

In order to promote the development of Junshan scenic area, we investigated and analyzed the tourism platform construction of major tourist attractions inside and outside the province, and summarized the plan of building the Junshan Zhixing system based on WeChat mini program (Wang, 2023; Wu, 2023). This scheme uses the mode of smart travel and fully considers the resource integration and standardized management of the tourism platform. With this scheme, the management of Junshan scenic spot and the release of information can be completed through the Junshan Zhixing system, so that tourists can easily retrieve the relevant information of tourist attractions on the platform, so as to more effectively plan their travel itinerary and obtain a more comfortable travel experience. With the convenience and intelligence of WeChat mini programs, Junshan Zhixing system will become a necessary tool for tourists to travel, and the perfect intelligent service will attract more tourists to Yueyang Junshan scenic area, thus promoting the development of Yueyang tourism (Li, 2023). The convenient and open platform provided by WeChat mini program has brought many advantages and convenience to users and developers (Ding et al., 2018). It provides a fast and simple access method, helps users save the tedious downloading and installation process, greatly simplifies the user's operation process, and provides a more convenient and seamless user experience.

The front-end page is developed and displayed using WXML, WXSS and JavaScrip, and the front-end frame is designed by iView Weapp. iView Weapp is a Vue.js based applet UI component library that provides a range of components and styles to simplify the front-end page development process (Kong et al., 2021). The front desk of the system mainly pre-filled the peripheral module, map module, my wallet, my order, my footprint and other eight modules. The backend is developed using Java, and the Spring Boot framework and MySQL database are adopted (Yang and Xu., 2022). The system will manage user information, scenic spot management information and other data. The front-end is developed using Stable Build, a stable version of WeChat development tool, while the back-end is developed using Intellij IDEA 2021.1. Through this system, the user data and scenic spot management information can be effectively

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managed and maintained.

2. System Related Technology

Junshan Zhixing System is a travel app based on WeChat mini program, which aims to enhance the experience of visitors to Junshan Scenic area, promote scenic features and provide business opportunities. The implementation of Junshan Zhixing system needs to rely on relevant technical support. The following will show the main technical content and implementation form.

2.1 Junshan Zhixing system development framework

Junshan Zhixing system is an innovative mobile application based on the development of WeChat mini programs, and the system takes advantage of the unique characteristics of WeChat mini programs. In terms of module development, Junshan Zhixing system adopts the component development model of small programs, dividing the page into multiple independent modules, each module has a specific function and style, such as peripheral module, map module, my order module, my wallet module and so on. Modular development helps to organize and manage code more flexibly, thus improving development efficiency. In terms of rendering engine, Junshan Zhixing system uses the built-in rendering engine of WeChat mini program, which is different from traditional browsers, and only rendering visual areas will reduce page loading and rendering time. This will help the bear achieve faster navigation and information retrieval. In addition, the rich API and component library also provide a variety of functions and services for Junshan Zhixing system, greatly simplifying the difficulty of module development. The front-end framework of the system uses iView Weapp design, and the back-end framework is developed using MySQL database and SpringBoot.

2.2 System data storage and management

In Junshan Zhixing system, data storage and management play a crucial role. It is divided into local storage and network request two parts, that is, the operation of local storage and network request data. For local storage, the local cache function built into the small program is cleverly used on the Junshan Smart Line system to store important data securely on the user device by means of wx.getStorage and wx.setStorage methods. This storage method not only improves the response speed of the system, but also guarantees that users can access this data at any time without frequent network requests, thus providing a faster user experience. For the data operation of network request, Junshan Zhixing system uses the powerful network request API provided by small program, mainly relying on wx.request method. Through this API, the system can send requests to the server and receive data responses from the server. The data interaction between the Junshan Intelligent Action system and the background data provides a robust foundation. This mechanism ensures that the Junshan Zhixing system always has the latest data and provides the implementation experience that users expect.

2.3 Systematic geographic positioning and navigation

Junshan Zhixing system will be equipped with excellent geographical positioning and navigation functions, which not only provide users with location information acquisition and display, but also achieve efficient path planning and navigation services. Geolocation API via Junshan Zhixing system. Users can obtain information about their current location. When the user starts the map module of Junshan Zhixing system, the system will use the wx.getLocation method to obtain the user's latitude and longitude and other detailed location data, which will be cleverly presented on the map interface or other related interfaces, so that users can quickly know their position. In addition, the user can enter the starting point and destination information in the system, and by calling the built-in navigation API, the system will make intelligent path planning based on the information provided by the user.

3. Overall System Design

In order to meet the needs of tourists for intelligent tourism in Junshan, we fully consider the convenience and intelligence, and build the Junshan Zhixing System with the help of WeChat mini program platform. By analyzing the specific needs of users, various functions of the system are determined, the user interaction interface and service content of the system are designed according to the requirements, the user operation path is shortened to improve the interaction efficiency, the service scope is precise to optimize the service items, so as to provide users with a simple and convenient intelligent tourism platform and improve their satisfaction with Junshan travel (Wang, 2022). This system is presented in the form of WeChat mini program, with cross-platform, low cost, large traffic, convenient login and many other advantages. Part of the flow chart is shown in Figure 1, which will show the steps and methods of using Junshan Zhixing system.

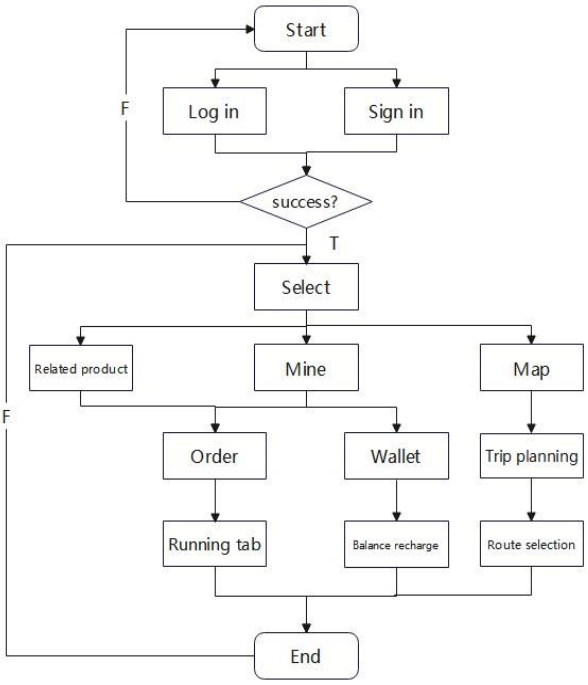

Figure 1: Process design diagram of Jushan Zhixing system

The overall use case diagram of the system is shown in Figure 2

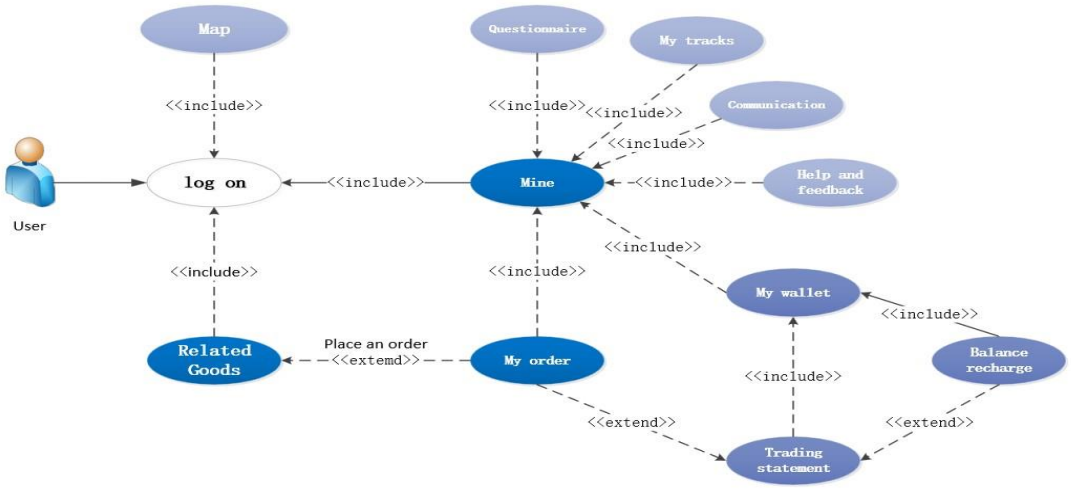

Figure 2: Use case design diagram of Junshan Zhixing system

The overall function diagram of the system is shown in Figure 3. According to function modules, the system functions can be divided into mobile Junshan Zhixing system and front-end management system.

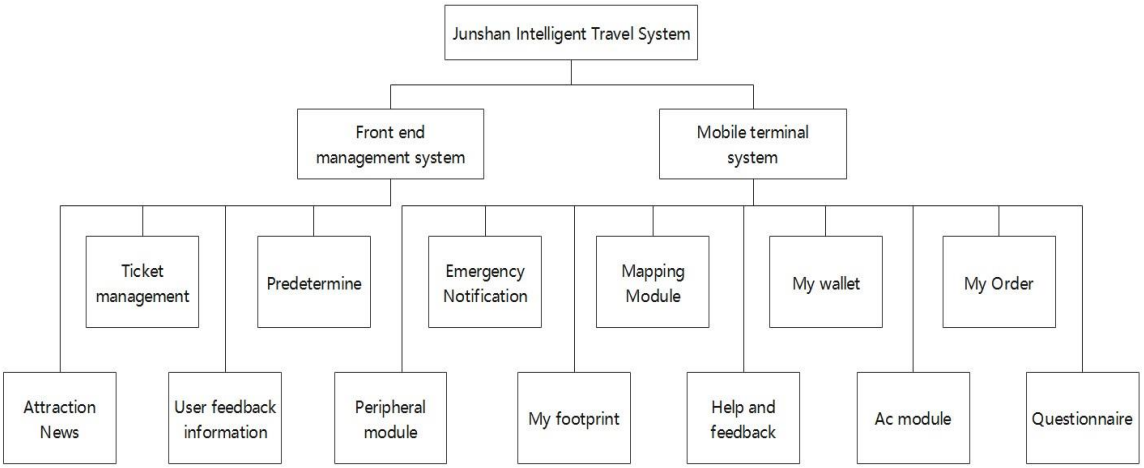

Figure 3: Overall function diagram of the system

The steps of the implementation of the Junshan Zhixing system platform can be divided into the following parts:

a. Requirement analysis: Before starting to design the user interface and database, it is necessary to conduct a requirement analysis to clarify the function and performance requirements of the system. This includes communicating with the head of the Junshan Scenic Area, gathering and collating their needs, and determining the scope of the project.

b. Design the user interface: Developers need to design the home page, create a navigation structure, and use appropriate colors, ICONS, and typography to create a user-friendly interface.

c. Database design: Developers need to design the database architecture, determine the main entities, such as basic user information, scenic spot management information, volunteer information and other data classification, and ensure the consistency and integrity of the data.

d. Security design: Consider the security of Junshan Zhixing system, including the design of data protection, user authentication and authorization mechanism to ensure that the system has sufficient protection measures against potential security threats.

e. System development: Develop and code according to user interface design and database design, and use relevant development tools and corresponding frameworks to realize various functional modules of the user interface, including map module, peripheral module and other related modules (Tang et al., 2021). Integrate necessary third-party services such as WeChat Pay to provide secure payment functions.

f. Testing and release: After the completion of development, developers need to test the system function, user interface, performance and other aspects to ensure the stability, reliability and compatibility of the system. Resolve identified issues and vulnerabilities and perform system tuning and optimization. After the test is completed, follow the WeChat mini program publishing specifications and requirements, submit the application for review and publish to the WeChat mini program platform.

g. Performance optimization: During the development process and after release, the performance testing and optimization of the Junshan Zhixing system is required to ensure that the system can operate normally under the expected load.

h. User feedback and improvement: After the release of Junshan Zhixing system, continuously collect user feedback, and improve and update according to the feedback information to meet the needs and expectations of users.

These steps can be adapted and expanded according to the needs of the Junshan Zhixing System to ensure the successful implementation and operation of the project. The management and development of the project may also have an impact on the sequence and execution of these steps.

To sum up, the realization of Junshan Zhixing system needs to fully consider many factors. On the technical side, choosing the right development tools and frameworks is crucial to ensure the performance and maintainability of the Junshan Zhixing system. At the same time, the scalability of the system needs to be considered in order to cope with more functions and user growth in the future.

4. System Implementation

The eight functions of this system are composed of map module, my footprint, questionnaire survey, my wallet, help and feedback, peripheral module, communication module, and my order. The design and implementation of the system aims to provide a comprehensive mobility solution that not only helps users plan and navigate their trips, but also provides them with a rich learning and interactive experience. It will become a useful tool for Junshan residents and tourists, making travel more convenient and safe.

(1) Peripheral module: This module provides a special shopping platform for peripheral products of Junshan Scenic spot.

(2) Map module: This module uses the API provided by Baidu Map to design a route guidance service, and ensures that users reach their destinations safely and timely with the help of background location information (Zhang and Shi, 2021).

(3) My wallet: This module includes balance recharge function and transaction details query function, users can bind Alipay and WeChat accounts on the platform. The transaction detail function provides complete recharge record and consumption flow record (Huang, 2021).

(4) My Orders: Users can easily browse the items they have previously placed orders for, including item name, quantity, price, and order status. This function provides users with convenient order management, so that they can know their shopping records anytime and anywhere, easy to query and check.

(5) My footprint: By obtaining the location information provided by the map module, the viewing roadmap of Junshan scenic area and Junshan Scenic area is displayed to the user (Wang et al., 2023).

(6) Communication function: This module will provide a platform for information sharing, interactive comments and guideline inquiry, and users can use this platform to communicate and inquire information with other tourists, improving the efficiency of users' travel.

(7) Help and feedback function: Receive feedback and help requests from users through this function. Customer service shall deal with requests and feedback information in a timely manner, and summarize feedback information for subsequent platform construction. Users are encouraged to actively participate and give feedback on their views, questions and suggestions.

(8) Questionnaire survey function: Issuing questionnaires to potential tourists to collect the needs of tourists, so as to improve the service level of the scenic spot and perfect the humanized service.

The home page of Junshan Zhixing System is shown in Figure 4:

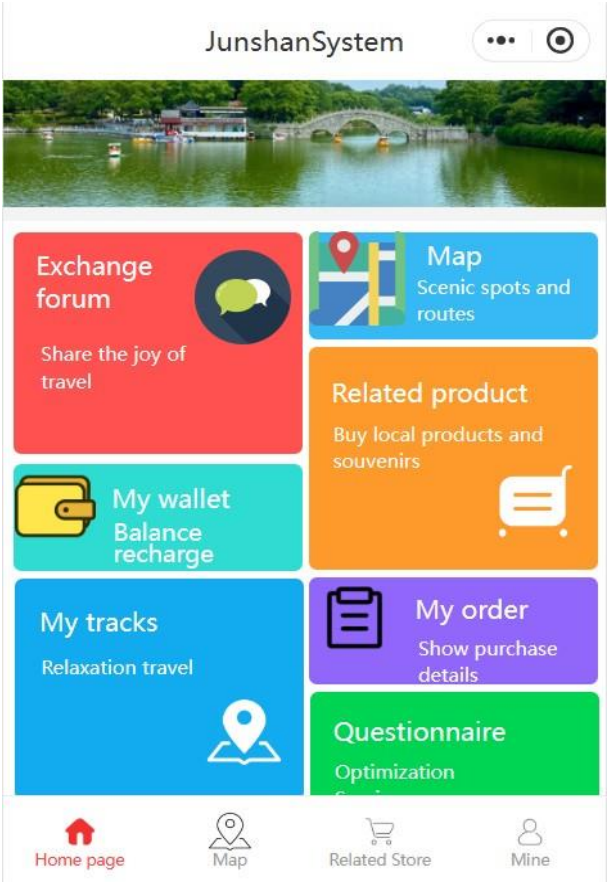

Figure 4: Home page of Junshan Zhixing System

Users can enjoy various services of the system by following the official WeChat public account of Yueyang Junshan Scenic Area, clicking the mini program to enter the Junshan Zhixing system, and completing the authorized login and other related operations. First, users can browse and participate in various discussion topics in the exchange forum on the home page, share experiences and suggestions with other visitors, and obtain practical information about Junshan Scenic area. Secondly, click on the map to view the location details of Junshan Scenic spot and its surrounding areas, which enables users to better understand the geographical layout of the scenic spot and the surrounding environment. In addition, users can also conduct navigation and route planning to help users more easily visit Junshan Scenic area. Users can enter destinations and the system will provide them with the best walking or transportation routes, saving time and effort. During navigation, users can also add markers and share the location of attractions, views or rest areas of interest to them. Not only that, users can also buy local specialties and souvenirs in the surrounding mall, and after successful payment, you can view the payment details and purchase details in my wallet and my order. Junshan Zhixing system will direct the user to the designated location to pick up the goods or mail the goods to the designated location.

5. Conclusions

The design and development of this system is to deal with the lack of depth and breadth as well as the lack of propaganda and service platform facing the tourism industry of Junshan Scenic Spot. WeChat mini program technology is adopted. iView Weapp framework is the front-end page, SpringBoot framework is the back-end, and MySQL is the data storage tool. Build an efficient, convenient, user-friendly and reliable Junshan Zhixing system. Through this system, users can easily obtain various characteristics of Junshan scenic area information, advantages of scenic spots, tourism activities and practical guides to help tourists plan their tour itinerary, save time and energy. Importantly, the system is not only a platform for information transmission, but also provides a powerful tool for the publicity and promotion of Junshan Scenic Spot. Through the WeChat mini program, Junshan Scenic Spot can be more widely contacted with potential tourists, attract more tourists to visit, promote the development of tourism industry and further expand the visibility and influence of the scenic spot. In general, the Junshan Zhixing system not only provides tourists with a convenient and pleasant tour experience, but also provides new opportunities and potential for the local tourism industry. This system reflects the positive role of technology in the tourism industry, helping Junshan Scenic area better meet the needs of tourists and promote the prosperity of regional tourism. Through continuous improvement and update, Junshan Zhixing System is expected to bring more success and sustainable development to Junshan Scenic Area.

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