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Research Article

# Construction of Precise Resource Push Service for Internet Hospital Platform Based on User Portraits

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## Abstract

*Objective:* To introduce the concept of user portrait for the construction of Internet hospital platform, and analyze the current situation of resource push of medical resource platform. *Methods:* The user portrait technology was used to build the framework through data collection, data analysis and modeling, combined with the accurate push of Internet hospital platform resources. *Results:* In this paper, a set of patient user portrait collection process, a user portrait construction process and a set of Internet hospital platform resource accurate push process are constructed. *Conclusion:* In this paper, a process plan is designed for user portrait models to establish a framework for accurate push of Internet platform resources. Use user portraits to help transform relevant data of the Internet hospital platform into effective recommendation information and provide patients with more accurate services.

## Keywords

User Portrait, Internet Hospital, Precise Push

## 1. Introduction

With the improvement of residents' living standards and the intensification of population aging, the demand for health and medical services among residents is increasing day by day. At present, China still faces a shortage of health resources and is unable to provide personalized and precise services for patients [1]. The Internet medical platform refers to an online platform that uses the Internet and information technology to provide users with medical services and health management. Due to the low entry threshold of the platform, some users do not have the ability to accurately describe the patient's condition, and the vague description of the patient's condition brings trouble to the work of medical staff in remote medical treatment [2, 3]. In the era of big data, user portraits, as an important user analysis tool, can effectively use massive data to mine user characteristics, clarify the user's demand structure, and then provide patients with intelligent and personalized accurate services [4, 5]. Based on the in-depth mining of the information generated by the interaction between patients and Internet hospital resources, the user

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portrait method is used to predict patients' interest preferences in medical resources, and the mined data is analyzed and pushed, which can realize more accurate resource recommendation of Internet hospital platform.

## 2. Methods

### 2.1. Literature Research Method

By reviewing and sorting out a large number of related literatures on the service satisfaction of Internet medical platform users, the specific research direction of this paper is determined. Research and sort out the relevant theoretical literature, and finally build the construction process of accurate push service of Internet hospital platform resources from the perspective of user portraits.

### 2.2. Comparative Analysis Method

Select a typical case: taking "user service-oriented university library user service model" as a reference and "research on accurate recommendation service for elderly users in online health community based on user portrait" as a basis, compare and integrate the two construction elements, summarize the core elements, and summarize the construction elements of accurate push service for Internet hospital platform resources from the perspective of user portrait for subsequent process construction and process application.

### 2.3. User Portrait Technology

In this paper, user portrait technology is used to obtain personal information, browsing data and medical data of users of Internet hospital platform. Combined with existing research literature, four dimensions that will affect user service are summarized, which provides a basis for the construction of accurate push service of Internet hospital platform resources.

## 3. Results

### 3.1. Data Acquisition

The continuous development of "Internet + Medical" has promoted the application of user portrait technology in the research of Internet medical platform [6, 7]. Portrait technology plays an important role in predicting user behavior and discovering users' potential needs, and has always been an effective basis for management decision-making. The user portrait of a patient includes both static data and dynamic data. Static data is mainly the basic information of the user collected, such as name, age, gender, such data is fixed and will not change at any time. Static data is obtained from the patient registration information in the Internet applet system. Dynamic data is mainly the user's behavior information, such as browsing records, consultation records, medical records, access times, and such data will change with each behavior of the patient. The data source of user portrait is shown in Figure 1. The collection methods of patients' user portraits is shown in Table 1.

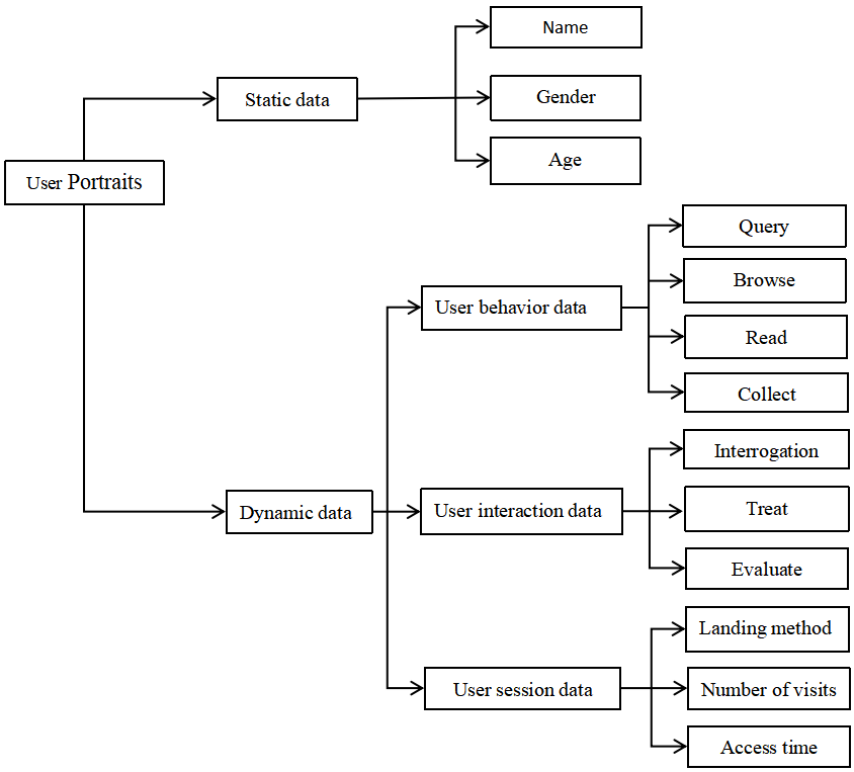


***Figure 1.*** *The data source of user portrait.*

*Table 1. The collection methods of patients' user portraits.*

| System name | Collect content | Collect method |
|---|---|---|
| Wechat official account Platform | User basic data, User behavior data, User interaction data, User session data | WeChat official account Platform backstage |
| WeChat mini program | User basic data, User behavior data, User interaction data, User session data | WeChat mini program backstage |

## 3.2. User Portrait Design and Model Construction

The construction of user portrait model is mainly based on platform-related systems and the underlying data of the platform, and the data is integrated and analyzed [8]. Users' information is obtained from various systems and platforms of the Internet hospital platform, and data mining and preprocessing such as classification, association, clustering, integration and transformation are carried out, and repeated information is filtered to screen out the best quality data information, and then it is effectively integrated to form a high-precision user portrait modeling. Establish a label model for the processed data according to the type preference to form a standard label system [9]. After constructing a single user portrait, according to the similarity, the single user portrait is grouped into a group user portrait. According to the output result of user portrait, the potential demand of users is analyzed and pushed. The construction process of user portrait model is shown in Figure 2.

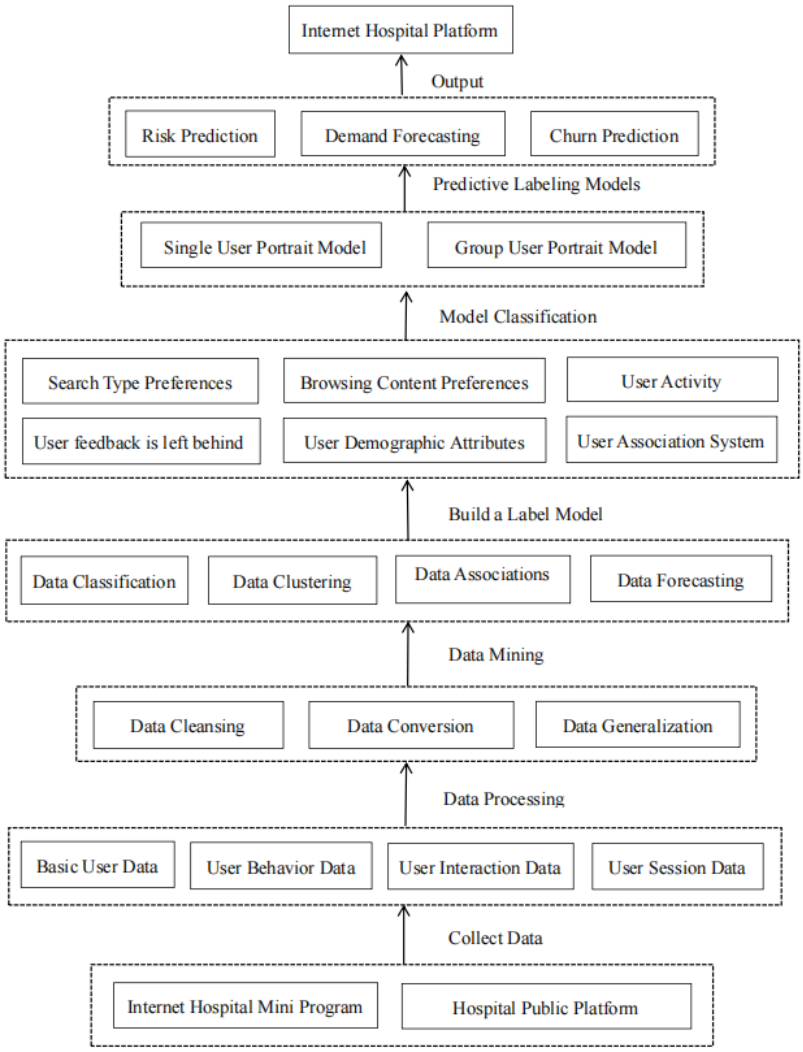


*Figure 2. The construction process of user portrait model.*

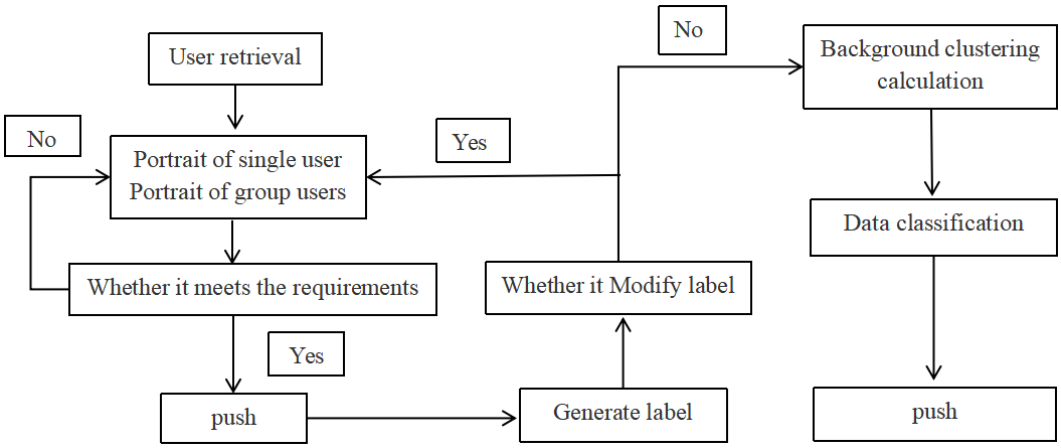


***Figure 3.*** *The accurate push process of Internet Hospital Platform resources.*

### 3.3. Accurate Push Process Construction

After data analysis of user portraits such as tagging, clustering and similarity calculation, the best content of resources is pushed to patients, and after repeated trial and error and label modification, the unified label of a single user or group of users is finally formed [10-12]. After a period of automatic push, the actual and potential information needs of individual users and group users are analyzed in the background of the system, and combined with the statistical analysis of platform business data, data support is provided for Internet hospital platform resource recommendation service. The accurate push process of Internet Hospital Platform resources is shown in Figure 3.

## 4. Discussion

The introduction of user portraits enables the Internet hospital platform resource service to achieve the following effects. Accurate push: aggregate individual user portraits into group user portraits, accurately identify the differences in the needs of different user groups, and ensure that the content pushed to each user group is more in line with the needs. According to the user's browsing preferences, search habits, etc., and push them to the user's mobile terminal. According to the data such as the user's stay time on the page, whether the information is collected or not, track and evaluate whether the user is interested in this information, and feed it back to the system to correct the next push. Taking Zhuhai People's Hospital as an example, there are 40 departments in the hospital, and patients need personalized medical recommendation service when they enter the Internet hospital platform. However, the user portrait behavior preferences of patients in each clinical department are similar to a certain extent. Using these similarities, different resource recommendation service strategies can be formulated for different users to achieve accurate push of medical resources.

## 5. Conclusion

In this study, the user portrait model is designed to establish an accurate push framework for Internet platform resources. Use user portraits to help the relevant data of the Internet hospital platform transform into effective recommendation information, and provide more accurate services for patients. New technological changes such as big data and Internet bring new opportunities for platform service innovation and transformation, and at the same time provide technical support for achieving accurate services. Combined with the application of user portrait technology in medical service platform, it is helpful to improve the overall service level and efficiency and improve the user experience to continuously explore the accurate service of Internet medical platform from the perspective of user portrait.

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## Conflicts of Interest

The author of this article declares no conflicts of interest.

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