The Alumni Information Management Model Based on "Internet +"

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Abstract. "Internet+" has been integrated deeply into various industries, which also inspires the innovation of the alumni management work. There are many problems existing in alumni management work, such as the fragmentation of alumni information and time, the delay of information transmission and the simplification of management system function. In view of these deficiencies, this paper analyses and designs an intelligent integrated alumni information management system framework based on the combination of online and offline. This framework includes three modules: "Alumni Social Network", "Intelligent Data Acquisition and Storage" and "Data Mining and Decision-Making Support". The system aims at building social platform to firm alumni network by using intelligent technology to collect and store massive alumni data and datamining technology to improve the decision-making of talent training scheme.

Introduction

In the development of colleges and universities, alumni resources can be used to promote teaching and research, drive internships and employment, strengthen the multi-dimension interaction and communication of industry-university-research [1]. Alumni management work is directly related to the amplification effect of alumni resources in "Internet+" era. The problem is that traditional alumni information management system is difficult to adapt to the huge alumni groups and the mass alumni information. Therefore, the paper builds an intelligent integrated alumni information management model using intelligent data processing technique, data mining, machine learning and intelligent algorithm. This model promotes the exchange of students, teachers and alumni through alumni social networks, collects and stores mass alumni information intelligently based on multi-platform media, integrates alumni resources into employment, teaching, research, management and service, finally achieves the efficient use of alumni resources.

The Current Situation and Problems of Alumni Information Management

In "Internet+" era, how to collect, excavate and utilize alumni resources is one of the most important management work for colleges and universities. This section analyses the current situation and problems of alumni information management.

The Current Situation of Alumni Information Management Model. Through the investigation of alumni information system in East China, the survey shows that alumni management work only relies on simple alumni information systems in the artificial and semi-artificial state. Its workflow includes collect alumni information by the artificial and one-on-one way (alumni archives, telephone, alumni association) organize information and paper files artificially, input information into system manually, search and export alumni information.

The traditional approach not only caused a lot of repetition of work, but also caused the loss, dislocation, and delay of information[2]. In addition, the alumni websites of some colleges and universities only provided the function of information dissemination, and were not integrated and associated with the alumni information management system.

The Problems of Alumni Information Management Model. The model mentioned in Section 2.1 has been unable to satisfy social demands in modern colleges and universities, so the following problems must be solved:

Fragmented alumni information increased the difficulty of information collection. In "Internet+" era, many platforms like social networking sites, recruitment sites and enterprise personnel systems release a large number of fragmented alumni information including social information, educational information, job-search information and so on[3]. The traditional way of manual collection is difficult to cope with massively fragmented alumni information and mine the hidden information of social networking and knowledge structure about alumni[4].

Fragmented alumni time led to the effect of alumni activities drastically weakened. As the outstanding talent from the school to the society, alumnus are engaged in their own professional work in different industries, and distributed in different areas. Simultaneously, the division of labor in society is becoming more detailed with the rapid development of the Internet and the rapid expansion of the city. Fragmentation of everyone's time is an inevitable trend. It leads to the effect of alumni activities drastically weakened and alumni information management work in trouble.

Delayed alumni information cannot match the needs of schools and society. The information collected by the traditional alumni information collection method is delayed. Therefore, the delayed information cannot satisfy the transformation of the alumni information system from the practical operation to the decision support, which relies on the real-time alumni information to achieve the functions of information forecast, data analysis and decision support[5].

Simplistic function of the alumni management system cannot satisfy the development of school[7]. Traditional alumni information systems that only collect alumni basic information did not fully mined and utilized other information, such as alumni's network resources, industry resources, knowledge structure and so on. In the strong social competition, it is urgent to construct an integrated intelligent system of alumni management based on huge alumni information and advanced modern information technology.

The Construction of New Alumni Information Management Model in "Internet+" Era

The current business processes and system frameworks are difficult to solve these problems mentioned in section 2.1. It is necessary to transform the management model through information gathering technology, data mining technology and social networking platform[6]. In this section, we build an integrated intelligence alumni information management system to optimize the process of alumni management, assist school leaders in making decisions, and promote the full use of alumni resources. This system consists of three major platforms: Alumni Social Network Platform, Intelligent Data Acquisition and Storage Platform and Data Mining and Auxiliary Decision-Making Platform. Its architecture is shown in Figure 1.

The Construction of Alumni Social Network Platform. Nowadays, due to frequent changes in alumni contact, building a strong and sustainable alumni network has been one of the difficulties in alumni work. However, the emergence of social network service (SNS) has brought new revolution for alumni management work. The reason is the SNS provides an important channel for the exchange of information exchange, the transfer of knowledge and the gathering. Therefore, this paper constructs an alumni social network platform that can promote interactive communication and knowledge sharing between alumni, teachers and students, and also allow alumni to feel plenty of care and warmth from their alma mater.
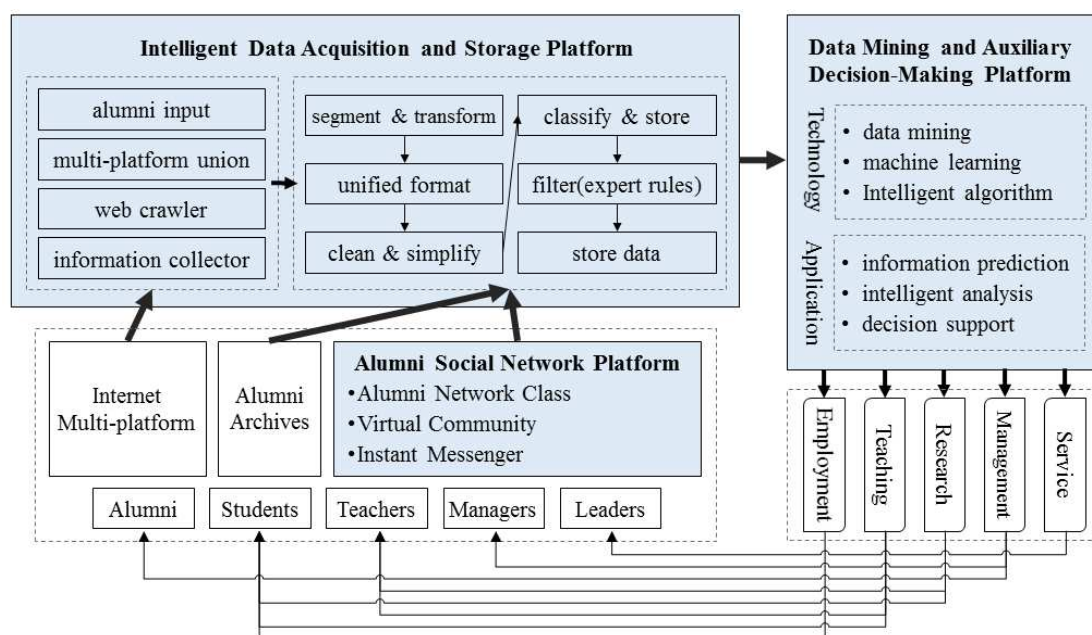
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Figure 1. The Architecture of Integrated Intelligent Alumni Information Management System

The alumni social network platform compatibles the function of traditional alumni portal including news release, registration, login and alumni donation[7], a7nd expands the following four functions. First, Alumni Personal Centre. It is an alumni information editing and display area, where alumni can use fragmented time to edit and update personal information anywhere. Furthermore, it can solve the problem of alumni information distortion, incomplete and other issues in the alumni management work, and optimize the process of alumni information collection. Second, Alumni Network Class. It constructs a virtual class on the alumni social network platform, which enhances the collective cohesion and promotes knowledge sharing among alumni. Third, Virtual Community. It is an online community to promote communication between alumni, teachers and students[8]. In the community, alumni can provide employment guidance to graduates, and provide good practice platforms and employment channels to students relying on their own rich employment resources. Fourth, Instant Messenger. It achieves the one-on-one real-time communication between alumni, students and teachers, and speeds up the delivery of information and facilitates communication[9].

The Construction of Intelligent Data Acquisition and Storage Platform. There are a lot of problems using the traditional way of alumni information collection, such as information loss, information delay and information dislocation. Based on the traditional way of manual information collection, we just put forward a new multi-channel approach of alumni information collection, which is based on the campus alumni information and is supplemented by the off-campus alumni data from multi-platform. Therefore, this paper constructs an intelligent data acquisition and storage platform, whose function includes data acquisition, data pre-processing, experts filtering, and data storage and so on. In addition, the platform has the three characteristics of datamation, platform and intelligence, and they are introduced as follows.

Firstly, the processing of information converts from digitization to datamation. In the traditional alumni information system, some paper documents was stored by the technology of image scanning, which is even used to store alumni files in some schools. This digital form is not only unable to achieve the function of keyword retrieval, but also impede the system to extend other functions such as data analysis and data mining. This paper adopts the rotating multi-font character recognition

technology with eigenspace method to achieve the transition from digitization to datamation, improve the ability to character recognition, and promote the datamation process of information.

Secondly, mine the multi-platform form of information collection mode. In the traditional model of alumni information management, alumni information is mainly from student archives, graduate information and so on. However, this paper puts forward a new alumni information collection model that is based on multi-platform (such as recruitment platform, social platform, and talent system)[3], and achieves the improvement of alumni information database in breadth and depth. In breadth, it increases the alumni information fields stored in the database. In depth, it can obtain alumni social network, knowledge structure, the work experience and other hidden resources, which is difficult to collect by the artificial approach.

Finally, the operation of data collection, integration and input convert artificial to intelligent. Intelligent data acquisition and storage model has significant advantages. Firstly, the model that applies the ways of multi-platform cooperation, web crawler and information collector accelerates the speed of alumni information collection and reduces the workload of alumni management staff. Secondly, data pre-processing is divided into four stages: data segmentation and transformation, data cleaning and simplification, data classification and storage. Meanwhile, it contains four characteristics, including filtering effective data, abandoning data noise, converting data format and labelling the data. Therefore, it reduces the pressure on management and improve the accuracy and multi-dimensional of the data. Thirdly, this paper puts forward the expert filtering rules, which can judge and filter the pre-processed data and update the corresponding fields accurately in the database. This approach increases the efficiency of management work, optimizes the processes of alumni information processing, and increases the reliability of alumni information.

The Construction of Data Mining and Auxiliary Decision-Making Platform. This paper presents a data mining and decision-making model to assist the leadership of school to carry out some multi-dimensional, multi-level management decisions by mining relevance and orientation in alumni information.

At the technical level, the model includes the following steps. Firstly, select the data from the database based on problems. Secondly, deal with data by Online Analytical Processing (OLAP), whose operations include roll-up, drill-down, and slicing and dicing. Thirdly, proceed with information prediction and intelligent analysis by the data mining technology like classification, clustering and association rule. Finally, display and analyse the results.

At the function level, the model intelligently collects and stores alumni information, including basic information, contact information, educational experience, work experience, social network and knowledge structure. In addition, it uses data mining technology to extract the available alumni information, which is applied to employment, teaching, research, management and service.

Employment: The platform fully mines the educational background and work experience of alumni in order to intelligently simulate the career planning of graduates, and improves the employment rate of graduates and the enrollment rate of the school.

Teaching: The platform mines valuable information from alumni including the latest development trend of the industry and the basic requirements of the enterprise for graduates. The information can also be useful for teaching reform.

Research: As a high-quality personnel trained in colleges and universities, alumni provide research funding support, deliver the latest industry information and technology needs, and promote the application of scientific research achievements in practical production.

Management: Data mining technology makes alumni management work automated, intelligent and efficient. These work includes alumni information updating and tracking, donation forecast and statistics.

Service: The platform can assist school leaders to carry out many efficient, reasonable and accurate decision-makings, and provide multi-dimensional analysis reports including the analysis of alumni employment trend, the forecast of alumni industry distribution and the evaluation of alumni job satisfaction.

Conclusions

More and more colleges and universities focus on how to effectively develop and use alumni resources. Combining the problems of alumni management in "Internet+" era, this paper presents an integrated intelligent alumni information management system that implements three breakthroughs. Firstly, build a dedicated communication social networking platform for alumni to increase the communication between alumni, teachers and students and promote the combination of industry, university and research. Next, through the intelligent technology of data acquisition and storage, the system achieves the effective collection of mass alumni data based on "multi-platform", the optimization of alumni management process and the extension of alumni information collection channels. At last, through data mining, machine learning and other technologies, the system can assist decision-making in order to achieve effective, comprehensive and reasonable decision-making. In short, colleges and universities should fully mine and use alumni resources to maximize its function through the integrated intelligence alumni information management system.

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