Big Data and Nature Language Processing Application: Research on Construction of Intelligent Employment Platform for College Graduates

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Abstract：Higher education expansion has exacerbated vertical stratification and diploma inflation in colleges and universities. It overlaps with the rich-poor divide and economic recession, which leading to the dilemma of extremely difficult employment for college graduates. Implementing the employment priority strategy and improving the promotion mechanism of high-quality employment can expand employment capacity, improve employment quality, and alleviate structural employment conflicts. This paper starts from the employment demand of college graduates and the requirements of college employment work. Combining the current situation of employment platform, it explores the construction scheme of intelligent employment information service management platform in the new era. The use of big data analysis, natural language processing and other methods can help college graduates achieve higher quality employment and provide ideas and suggestions.

Keywords: College Graduates; Big Data Analysis; Natural Language Processing; Employment Informatization; Service Management Platform

1. Main

Since the 21st century, many countries have been experiencing educational inflation (Brown & Bills, 2011). The rapid expansion of higher education has led to a decline in the gold value of college degrees and a rise in the demand for qualifications for employment positions (Dore, 1976; Brown, 2001). However, the knowledge economy has not resulted in more highly skilled jobs, and the number of low-barrier jobs has increased instead.Countries have deliberately suppressed labor costs to enhance economic competitiveness, and precarious employment of college students has become the norm (Kariya, 2011; Keep & Mayhew, 2010).

As the basis of people's livelihood, employment of college graduates is not only a comprehensive economic issue, but also a complex social issue (Acemoglu, 2002). The analysis of the employment situation of college graduates, at the national level, helps to reduce the dramatic fluctuations of socio-economic activity (Drucker, 1995). It is important to promote the sound development of higher education and build a harmonious society. From the perspective of universities, the establishment of a sound employment situation analysis mechanism is an inevitable requirement for deepening education and teaching reform and realizing the internal development of universities. Theoretically, practically, it can reduce the investment of human resources in colleges and universities, and provide data support and decision-making basis for the employment work of governments and colleges at all levels.

To solve the above problems, this study uses natural language processing and mathematical methods based on valid data to examine the real situation of employment of typical college graduates in China. To explore the construction demand, function orientation, implementation path and future prospect of intelligent employment information service management platform in the new era, and to provide ideas and suggestions to help college graduates find higher quality employment.

2. Data Sources and Research Methodology

(1) Data sources

Data mining method is used to mine the key data needed for this study in the employment website of Chinese higher education graduates. The database will contain several data such as (id, province, city, company name, minimum salary, maximum salary, salary level, years of work, education, age minimum, age maximum, number of people needed), which is the basis for the whole function completion. After getting this college student employment data, it is saved in MySQL as the cornerstone data for functional analysis, and the specific structure form of the data is shown in Table 1.

Table 1. Structure of the data.

(2) Data Analysis

The data analysis part contains data cleaning, natural language processing and visualization analysis. The content of the data is mapped with key knowledge using natural language processing method and visualized and analyzed. Further, the correlation analysis method is used to correlate the relationship between the employment structure and industrial structure of college graduates. The specific data analysis methods can be seen in detail in the supplementary content.

(3) Salary prediction method

The linear regression-based salary prediction is implemented using “sklearn” technique. The technique contains mainly data normalization, normalization, and unique heat coding. Standardization is mainly to ensure that the eigenvalues of the data are machine underlying binary 0 (mean removal), the main purpose is to eliminate the quantitative relationship of college employment data, so that college employment data are comparable, and one of the most widely used standardization in programming is Z standard, whose mean is 0 and variance is 1 for the resultant college employment data. Normalization is mainly for the telescoping transformation of data in different dimensions, where the different dimensions are mainly several aspects such as region and self-expected salary, and the normalization of college employment data makes the weight of its three aspects on the target linear regression function is consistent and unbiased.

3. Functional Features Needed of Intelligent Employment Platform for College Graduates

(1) Interest algorithm to integrate employment information into daily life

As the information age continues to develop, massive information is growing explosively, which requires us to "think what students love, push what students see, choose what students like, and guide what students learn". How to start from the needs of students, through similar interest algorithm, the students' concerns, relevant employment information, employment policies into the students' push, subconsciously guide students' attention, stimulate students' interest, enhance the frequency of use of the platform, all put forward new requirements for intelligent employment work information.

(2) Refined employment management makes employment guidance from "information" point of view

In the process of daily employment guidance, teachers mostly face the problem that students want to talk but have no way to do so, which makes professional employment guidance teachers unable to give corresponding guidance countermeasures according to the real state of students. Doctors tend to start from the "case" when consulting, but for career guidance, teachers can't grasp students' daily behavior, personality characteristics, interests, and other information in advance. In the process of refining employment management, intelligent employment information technology is required to grasp the information of graduates' employment concerns in real time and organize and classify the information to help teachers give correct guidance.

(3) Intelligent big data analysis should hit the "key points" of the employment difficulty groups

Employment difficulty groups are often divided into subjective employment difficulties and objective employment difficulties. This requires how to analyze the root causes of the fear and negativity of students with subjective employment difficulties through intelligent big data analysis, and to instill the importance, necessity and feasibility of employment (i.e. the path) through daily guidance and instruction by means of refined management and interest algorithms, so as to guide students to establish Correct employment concept. Students with objective employment difficulties are mainly manifested in special

groups, family difficulties, large gaps in psychological expectations, and inability to meet job requirements, which requires the use of big data analysis to give instructors reasonable guidance suggestions as well as provide students with appropriate information push to help them solve their employment difficulties.

4. The Realization Path and Prospect of Intelligent Employment Platform for College Graduates

(1) Strengthen employment policy promotion and provide efficient employment services

In terms of employment services, we need to monitor students' current status more intelligently and become a "little housekeeper" and "little assistant" for students' employment, so as to provide students with relevant employment guidance, employment consultation, employment support and other services in a timely and forward-looking manner, and to When students inquire about the relevant job information, certificate preparation, interview lines, interview notes, fraud prevention tips, etc. In terms of serving enterprises, it is necessary to better maintain the recruitment needs of enterprises, and provide them with timely and accurate previews of relevant recruitment, lecture and other activities, intelligent scheduling, notification and previews, which will also be the trend to further provide efficient employment services.

(2) Improve the quality of employment information and enrich the way of enterprise promotion

Intelligent employment should effectively improve the quality of employment information, including the recognition, integration, unity and timeliness of employment information, compare, filter and optimize different employment information, and give students more reasonable job recommendations and employment choices. In terms of enterprise publicity, the sharing mechanism of enterprise information should be continuously improved. The intelligent employment platform should become an authoritative platform for information release of service units, which can do intelligent capture and update when enterprises maintain the recruitment information of other websites and help enterprises realize real-time maintenance in this platform, and at the same time, it can provide personalized customization as well as publicity programs and other functions to enrich the publicity channels of enterprises.

(3) Improving the efficiency of job matching and enhancing information integration management

It is necessary to continuously improve the employment matching degree and labor participation rate of graduates from universities and vocational colleges. Among them, improving the efficiency and matching degree of man-job matching is a new requirement for employment work. Intelligent man-job matching should be carried out in the service management platform. The previous management platform needs students to set their own concern positions, industries and majors to match and push relevant positions, while the intelligent employment platform should be able to use students' personal basic information, daily concern information, behavioral habits and other data to determine the positions that students may like and have a higher degree of fit through a more intelligent interest algorithm to improve the efficiency of man-job matching. At the same time, information integration management should be further enhanced. The information pushed to students can not only be limited to the job information of its own service platform, but also can capture similar jobs of different employment information platforms to improve the uniformity and timeliness of employment information acquisition and enhance the employment guidance to students.

(4) Analyzing and predicting with big data, promoting visualization and intelligent supervision

The current society has entered the era of big data, and big data deep mining and analysis of graduates' employment information is one of the means to improve employment efficiency, employment quality and job matching. At present, most employment platforms can only do superficial data screening, organizing and summarizing, while simple employment rate statistics, professional matching rate calculation and industry direction analysis can no longer meet the daily work demand. Starting from students' information data after entering university, we can continuously collect students' daily interests, activity scope,

academic performance, club activities, borrowed books, work and rest habits and other massive data information, and through intelligent employment big data analysis, we can come up with a detailed guide of students' employment positions.

From the perspective of visualized data, most employment platforms are limited to visual analysis of existing data and access to relevant data by college administrators, but the visualization application scenario of data can be extended to students and enterprises. Students can use the visualized data to understand their current learning status, make a "task list", and improve their ability in the form of "task card" to To meet the basic requirements of the target position. For college administrators, it is necessary to change from general statistical summary to supervision, analysis and early warning and work front, so as to further improve working efficiency, convenience and management ability.

(5) One-stop login service and multi-port information sharing

At present, there are many employment recruitment websites in government, society and universities, and the information cannot be shared among different websites, which leads to more classification and redundancy of recruitment information, and students often need to register multiple employment websites when looking for more comprehensive employment information. One-stop login service can greatly improve the quality of employment services, enhance the integration of employment information data, reduce repeated searching and multi-site registration, and will be the trend of linkage development of various employment websites.

In terms of multiple ports, the employment platform of colleges and universities should strive for more government and commercial and industrial resources, and try to get more port resources, so that the intelligent employment websites of colleges and universities can access, capture and change relevant job information and enterprise information in time, introduce the latest and most complete recruitment information and push it to students precisely, increase the information communication between students and enterprises, and further enhance the information symmetry between supply and demand. But at the same time, it also needs the government's guidance to break the barriers of websites, build a more open and inclusive job resource market, and provide higher quality employment information services for college graduates.

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