Quality control tracking of the graduate based on support vector machine theory

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ABSTRACT

Evaluation of student employment capacity module was designed and discussed. The information management system can be used for security module, student basic information module, the basic information module, weight information module, query module of basic information and employment ability analysis module. In this paper, the actual demand analysis of research system was carried out, the system solution of the student information management and employment guide decision-making scheme are introduced. The result showed the specific realization of each function, finally we verified through the test software which can realized accurately, the system employed on each student's scientific guidance and purpose of work efficiency. At the same time, further monitoring of the talent quality assessment of the employer was taken out, the evaluation system and monitoring system of teaching quality developed with a professional level, practical significance. The input of each student can road factor score, then the system analysis of the students employment comprehensive ability was evaluated, it find out the suitable range of the occupation and the corresponding recruitment of enterprises..

Key words: Ability evaluation; AHP; employment guidance; artificial neural network
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INTRODUCTION

Along with the society to the talents of this change, correspondingly, reform of higher education, country should also pay more attention to the cultivation of college students' comprehensive quality [1]. With the rapid development of modern society, economy and science and technology, social demands put forward more and more higher, the students recommended value on the results from previous, comprehensive quality change to more emphasis on people, especially pay more attention to students' practice ability and innovation ability [1]. Therefore, how to comprehensive, objective, scientific evaluation of the comprehensive quality of college students, is the test of occupation quality cultivation results, promote the optimization of culture means. An important link also is the current universities in promoting a realistic problem faced in the process of quality education [3].

Occupation of the scientific assessment is based on a particular theory, through the questionnaire design, sampling, statistical analysis, establish the norm program, must meet three conditions [4]: Validity: accuracy of test results; reliability: stability test results; the norm: every one of the psychological test has a raw score, usually the score of no practical significance, unless this score can compare with others. Associated with this standard is the norm. Norm refers to a representative sample of the test score distribution. Evaluation of science is an objective and standard question, it is scientific, objective [5]. Occupation evaluation has got more and more widely used, and even many magazines, television will also appear on the evaluation of every kind of occupation. But we should clearly know, occupation evaluation most see in the media is not the strict sense only regards them as entertainment [6].

Artificial neural network is a nonlinear complex network system composed of a large number of similar to the processing unit biological neurons, which are connected with each other. It is with simple mathematical model to

describe the structure of biological neural networks, and in a certain algorithm under the guidance, so as to simulate the intelligent behavior of biological neural network has to a certain extent, solve the intelligent information processing problems of the traditional algorithms are not capable of.

It is huge information parallel processing and parallel computing based, neural network is a highly nonlinear dynamic system, and adaptive self organizing system, can be used to describe intelligent behavior cognition, decision and control [7, 8]. In a variety of standard and complex evaluation system, evaluation of a student's employment ability is a complex process and time-consuming. Therefore, in the introduction of occupation evaluation, the efficient evaluation of the automated solution analysis is required. In this paper, we will develop the automation of occupation evaluation system based on neural network algorithm to realize the evaluation work. According to the evaluation system, evaluation theory development in colleges and universities was contributed. The input of each student can road factor score, then the system analysis of the employment of students comprehensive ability evaluation, and then give the scientific, and find out the suitable range of the occupation, and the corresponding recruitment of enterprises.

2. INFORMATION SYSTEM FOR EVALUATION OF THE GRADUATES OF THE SCHOOL
2.1 GM model
In this paper, with the understanding of science, detailed quality evaluation of college graduates in the society, through the data acquisition, enterprise level enterprise face-to-face visits to research, understand the ability and the quality of what employers are most important [9, 10]. The most obvious manifestation of the students and undergraduate, graduate students in employment, working process the advantage, disadvantage in where [11]. In order to adjust the knitting technology and clothing scientific professional settings, teaching objectives, teaching content, teaching method and teaching means, improve the quality of personnel training, according to industry demands the cultivation of graduates, let our teaching better service for students, for the social service [12].

GM (1, N) model is a dynamic model of N stage variables, is the highest level of quantitative models. Its mechanism model by solving differential equations of the first order, and get the system parameters to determine the development and coordination of the system can also predict the appropriate data according to its formula [13].

Ink on $X_1^{(0)} = (X_1^{(0)}, X_2^{(0)}, X_3^{(0)},..., X_n^{(0)})$ of the system characterized by a data sequence, the plurality of data sequences and their associated factors were:

$$\begin{cases} X_2^{(0)} = \left(x_2^{(0)}(1), x_2^{(0)}(2), ..., x_2^{(0)}(n) \right) \\ X_3^{(0)} = \left(x_3^{(0)}(1), x_3^{(0)}(2), ..., x_3^{(0)}(n) \right) \\ \quad\quad ...... \\ X_n^{(0)} = \left(x_n^{(0)}(1), x_n^{(0)}(2), ..., x_n^{(0)}(n) \right) \end{cases} \tag{1}$$

$$X_1^{(0)}(k) + aZ_1^{(0)}(k) = \sum_{i=2}^{n} bx_i^{(1)}(k) \tag{2}$$

2.2 The college graduates situation analysis
The employer dismissed the college graduates higher proportion; the college graduates had a higher proportion; the employer with the hospital had a lower proportion of school enterprise cooperation. Analytic hierarchy process according to the nature of the problem and to achieve the overall objective, the problem can be decomposed into different constituent elements, and in accordance with the elements of the interrelated effects of affiliation to the factors at different hierarchical clustering combination, form a multi-layered structure model, and ultimately to make the problem boils down to the lowest layer (for decision the scheme, measures) relative to the top (target) to determine the relative merits of or scheduled order of relative importance weights [14, 15].

In follow formula, $\alpha_i \geq 0$ Lagrange multiplier, in order to obtain the function type (2) the minimum value, respectively

$$\begin{cases} \dfrac{\partial L}{\partial w} = 0 \Rightarrow & w = \sum_{i=1}^{N} a_i y_i x_i \\[2mm] \dfrac{\partial L}{\partial b} = 0 \Rightarrow & \sum_{i=1}^{N} a_i y_i = 0 \\[2mm] \dfrac{\partial L}{\partial a} = 0 \Rightarrow & a_i [y_i(w*x_i+b)-1] = 0 \end{cases} \tag{3}$$

The two function optimization problems of the existence and uniqueness of solution, if α_i optimal solution, then:

$$w^* = \sum_{i=1}^{N} a_i^* y_i x_i \tag{4}$$

The $\alpha_i \neq 0$ corresponding to the support vector corresponding to the support vector. And the optimal classification face the weight coefficient vector is a linear combination of support vector machines. Classification threshold by (6) type

$$b^* = -\frac{1}{2}(w^*, x_r + x_s) \tag{5}$$

$$a_r, a_s > 0, y_r = -1, y_s = 1 \tag{6}$$

2.3 The basic principle of support vector machine
SVM is the optimal class and surface development by linear separable case, for the two problem, the following to illustrate the basic idea of SVM using a two dimensional problem. C1 and C2 represent two types of data samples, each in a two-dimensional display was shown in Figure 5, a straight line in P0, P1 is a classification function. If a linear can put two of all samples, then say it is a classification function. As shown in Figure 1 is the basis for most support vector machine model.
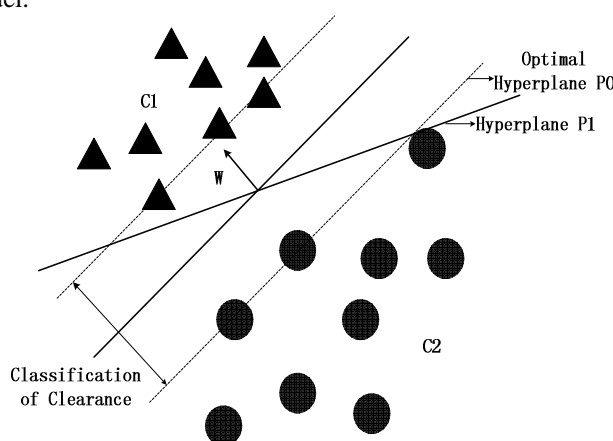

Figure 1. The basis for support vector machine model

Now the discriminant function is normalized, so that the two types of all samples are satisfied: $|f(x)| \geq 1$, then from the surface, near the sample has $|f(x)| = 1$. If all samples classified correctly to meet:

$$y_i[(w*x)+b]-1 \geq 0, i = 1, 2, \cdots N \tag{7}$$

Then the classification interval of $2 \parallel w \parallel$ classification. Can find the maximum equivalent to $1/2 \parallel w \parallel$ minimum. So the optimal classification face problems can be expressed as the following constraints:

$$Min\ \Phi(w) = \frac{1}{2} \parallel w \parallel^2 \tag{8}$$

The constraint conditions are:

$$y_i[(w*x)+b]-1 \geq 0, i = 1,2,\cdots N \tag{9}$$

Define the following function:

$$L(w,b,a) = \frac{1}{2} \| w \|^2 - \sum_{i=1}^{N} a_i[y_i(w*x_i+b)-1] \tag{10}$$

For the i units:

$$v = [v_1, v_2, \cdots v_n] \tag{11}$$

The corresponding weights connected to the i units to:

$$\omega_i = [\omega_{1i}, \omega_{2i}, \cdots, \omega_{ni}] \tag{12}$$

The units themselves threshold for export, the output can be expressed as:

$$Y = f(u_i) = f(\sum_{j=1}^{n} \omega_{ji}v_j - \theta_i) \tag{13}$$

ui representative neuron i active value, namely the neuron state; function expression of the characteristics of the input and output neurons. In the M-P model, factory is defined as a step function:

$$v_i = f(u_i) = \begin{cases} 1, & u_i > 0 \\ 0, & u_i \leq 0 \end{cases} \tag{14}$$

2.4 The construct of graduate evaluation system
Collect related graduates and resources, to evaluate our graduates and the requirements of data gathering and analysis, software development suggestion report. Early should be "social" evaluation on correlated sampling questionnaire design, contact the graduates and graduates of the units, made the graduates and unit contact number and email, research mode and project design. Through the analysis of the existing employment evaluation system, and combined with the definition of the employment capacity of the component, we use the following 19 ability and quality index [8].

The sense of responsibility, initiative, innovation consciousness and ability, task planning, problem solving skills, interests and hobbies, win the trust from others, teamwork ability, social practice, community activities, internships, interpersonal, verbal expression, anti setback resistance ability, professional knowledge, thought quality, solve the professional problems, related professional certificate, learning ability. Individual meaning database is a database management system software specific and set up by his database; scientific meaning of it refers to the research, development, establishment, maintenance and application of database system involved in the theory, method, wherein the subject. In this sense, the database system is an important branch of software research.
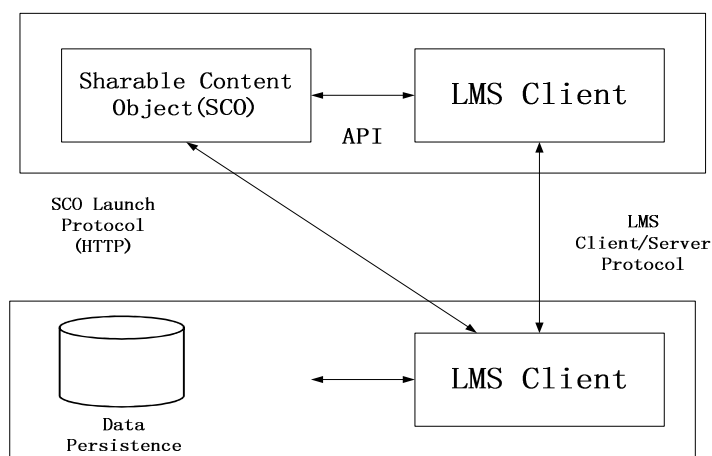

Figure 2. The consists of ADL system

ADL (Advanced Distributed Learning) reference model by the U.S. Department of Defense at 1997 was proposed. ADL is based on C/S network, through Internet as a web page presented to the user by the LMS, SCO and API

together form a SCORM runtime environment to achieve. In the ADL system, all learning content classification according to uniform standards, creating a knowledge base for collecting, storing all learning content SCO, which base through the API interface is managed by the LMS system. This mode is mainly composed of three parts, as shown in Figure 2.

3. EVALUATION INFORMATION SYSTEM OF EMPLOYERS DEMAND

3.1 The objective development

The student information to add and modify: in the collection of student information, the first requirement is to collect information, and then to realize the input information modify. Before collecting input information, the integrity of the system needs to achieve the information, and the correctness of the inspection, only to meet the integrity and correctness condition, information can be submitted to preserve. In the modified input information, also need to conduct such inspection. The company information to add and modify the same: student information management, information management also needs a collection of input and modify the function of information.

No single quality index and evaluation can not be criticized or does not exist any flaws in the application, therefore universities need multiple indicators to improve its teaching quality evaluation, evaluate of employers is very important dimension of the employer which is a direct reflection of the quality of higher education. Feedback recruitment needs, to graduate employer recruitment channels, recruitment and salary decisions, to understand the employers to the graduates' basic ability and the core knowledge requirements, evaluation of performance of the graduates, job performance relative evaluation and overall satisfaction, Graduate turnover situation and reasons of dismissal, the school enterprise cooperation proposals. The cultivation of mode and school education can enhance the quality of teaching.

The employment ability added and modified weight coefficient. With the management of student information, employment ability weight management also needs a collection of input and modify the function of information. Analysis of the employment ability: according to the system design, need to pass the basic data on the employment of students and companies choose talent condition obtained by analytic hierarchy process, and finally showing compliance with all the students a firm's employment ability score sorting. Main function of neural network tracking evaluation system based on the quality of graduates was shown in Figure 3. The keyword query of student information or company letter, also can not enter the keyword, and the use of all information to one by one to select browse. Modify password. In order to guarantee the security of the system, to realize the password can be modified.
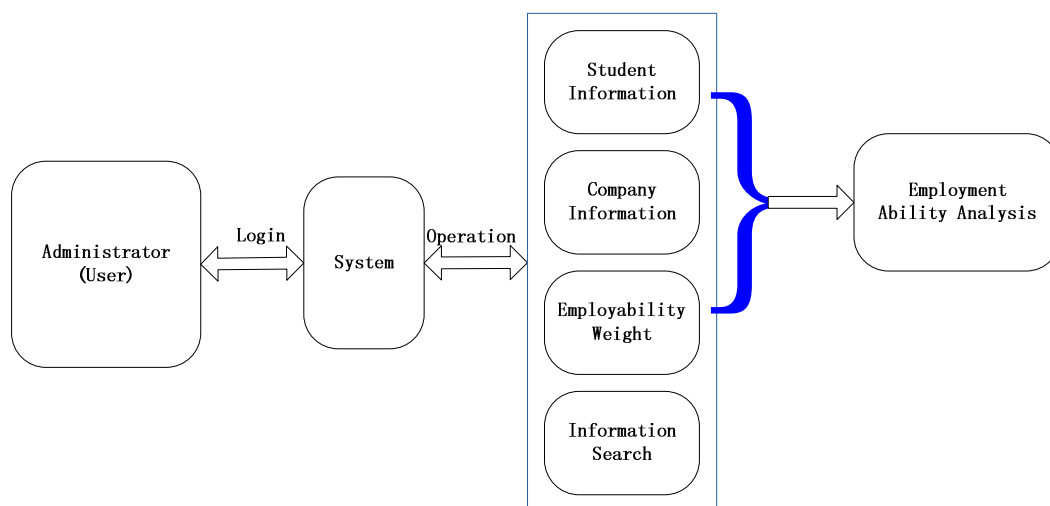

Figure 3. Main function of neural network tracking evaluation system based on the quality of graduates

3.2 The system development ideas

Evaluation system of employment ability mainly through the input of each student's employment ability index and require the employer to talents, and then the information analysis by level, then the students in the employment unit requirements under the score ranking, so as to guide students to employment. Employment ability evaluation system can be divided into two parts: analysis of the basic information management and information. Figure 4 is the IMS defines the data structure of the content structure.

The understand hospital of knitting technology and clothing professional graduates in the inaugural period through the investigation, the employing units in the work of moral thinking, professional skills, professional knowledge and

comprehensive application ability, post adaptability, contribution to enterprises, enterprise satisfaction degree of understanding, provide social evaluation data to report the true, reliable for our college knitting technology and clothing specialized teaching education. Promote the professional service enterprise training ability structure requirements.
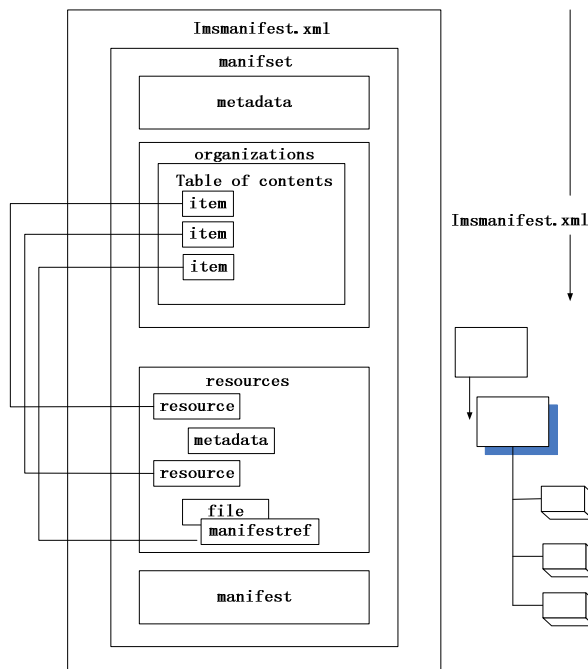

Figure 4. The file structure resistant of Imsmanifest.xml

3.3 The design of index system

Given recruitment company, according to its value requires the ability of the right, we can count the six basic employability of students, according to the six basic capabilities of these companies different expectations by AHP exclude individual students the business requirements under score. The student basic information management design logical entity relationship diagram as follows (Figure 5):
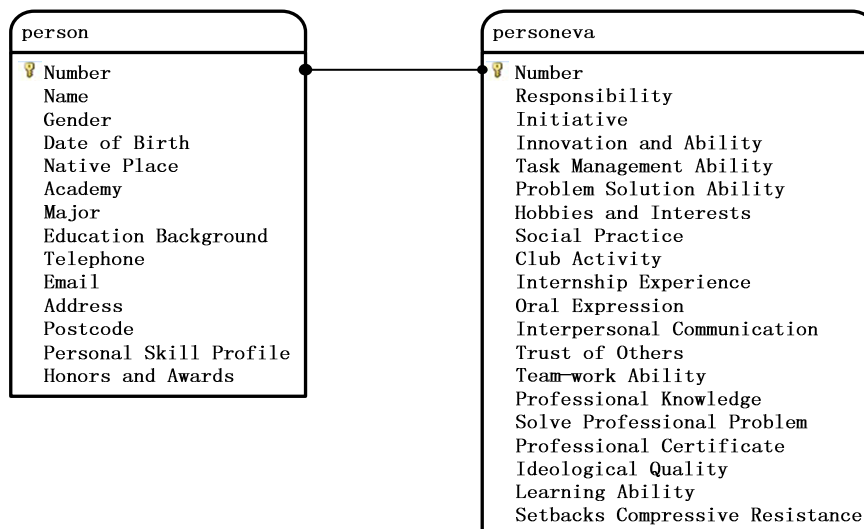

Figure 5. The student basic information management design logical entity relationship diagram

3.4 Construction of information database unit

In this system, the data are student basic personal information form, student individual occupation ability evaluation form, basic information table, the company occupation quality requirements table, weight coefficient table, and system information table. Student's occupation ability evaluation form was shown in Figure 6.

The data dictionary is one of the effective ways for developers and users to communicate with each other. It can

describe the image of the developer to the intentions of the user, the user may have to understand database project, can effectively alleviate the communication gap between developers and users, but also help users make their own demand for developers to avoid the huge problems, interface caused by understanding differences.

person	
Fieldname	Data Type
Name	Text
Gender	Text
Date of Birth	Text
Native Place	Text
Academy	Text
Major	Text
Education Background	Text
Telephone	Text
Email	Text
Address	Text
Postcode	Text
Personal Skill Profile	Remarks
Honors and Awards	Remarks

Figure 6. Student's occupation ability evaluation form

4. EVALUATION OF STUDENT TEACHING INFORMATION SYSTEM
4.1 The goal of Construction
In view of the Institute of knitting technology and clothing professional teachers, curriculum, students from three different dimensions using a combination of quantitative and qualitative methods on activities carried out in-depth analysis and exploration, and to conduct sampling inspection on the evaluation sample data using SPSS statistical software. At the same time in the spare time with the students to discuss their mind a good course standard, so as to improve the existing "sect" evaluation system.

User login is to identify the user identity, the only interface to guide the user to enter the operating platform. Open link in the user login interface, the user input form information integrity judge, judge whether the user is authenticated user, if it is to go directly to the operating platform, or need to fill in the user name, password, and to verify the information management system, after the successful verification to the operating platform, the verification fails, to prompt the cause of error.

"Sect" as a teacher teaching quality evaluation is an important link in, because it involves many teachers, curriculum, students, and the evaluation results of school will often only the results of evaluation in fractional form of feedback to the teachers, and did not go to the analysis and search for the indexes, evaluation model, evaluation methods, evaluation of the main difference on present situation and existing problems of good, the information system construction significance lies in the discovery of problems in the teaching activities, professional construction and better, improve the quality of teaching reform.

RESULTS AND DISCUSSION

In amending the basic information when after entering the registration number, the system will automatically find the students' personal information to meet the registration number, if the registration number exists, then the system automatically displays the value of the rest of the data item. If there is no system will prompt the registration number does not exist. Design of recruitment information unit software was shown in Figure 7.

Figure 7. Design of recruitment information unit software

From the recruitment scale, the past three years employing the college graduates is relatively low, the main reason is the lack of choice of the knowledge and skills needed for graduates of other schools and the college graduates. The next three year plan to recruit graduates of the employer, the largest demand jobs is garment/textile/leather, the largest industry is textile and leather products processing industry. Suggestions according to the Institute of unit of choose and employ person future hiring needs to further strengthen the knowledge and skills training, improve the employment competitiveness of graduates.

Over the past three years have hired the institute graduates of the employing units, a total of two into above the employer is the college graduates had broken. Breach of contract will affect the individual and school reputation, the college should be seriously, through practice, so as to guide the graduates, establish occupation orientation preliminary, reduces the blindness of job.

CONCLUSION

The improve of the personnel training quality control system was carried out, the third party evaluation to complete the teaching quality from the principal, process and result on careful analysis of data, and find the reasons to consider feedback, from the method of training programs and methods. At the same time, further monitoring of the talent quality assessment of the employer, study on the evaluation system and monitoring system of teaching quality in school students and graduates of the development of professional level, practical significance. This paper also introduced the application analysis in employment guidance and introduces the concept of tracking the quality of graduates and related theories, in reference to foreign three have recognized influential employment organizations on employment capability elements in a comprehensive definition, and finally into six factors: work attitude, ability to solve problems, the ability of self-development, group communication skills, professional ability, adaptive skills.

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