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A SURVEY ON PREDICTING FACULTY IN MEDICAL EDUCATION USING ARTIFICIAL NEURAL NETWORK

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ABSTRACT

Higher education is an essential element in the organization and the modern society. It teaches us to become an independent. It prepares us for the workplace and allows us to learn from our mistakes before we are out in the real world. It is the very important stage for them career because whole future is depend on it. In choosing bachelor field there are lots of fields available. For the choosing field they have to think about some criteria like their interest for the specific field, mathematical concept, understanding, intelligence, and interest for the specific subject and his/her past records. In Gujarat for medical education the Admission committee for Professional medical of courses (ACPMC) does whole process. Due to lake of awareness and experience, students cannot do choice of proper stream and proper institute. For career choice artificial neural network will give the best solution. Decision support system will help to choosing specific field by asking some questions related to them interest capabilities and intelligence level. Paper includes different types of models used in online admission process.

Keywords- Admission System, Artificial Neural Network, Decision Support System, Factors

I INTRODUCTION

Higher education is an essential element in the organization and the modern society. It determines your academic future and career. In medical education there are different streams are available. The streams are MBBS, BDS, BPT, BAMS, BHMS, B.Sc. Nursing, B.P.O., B.O., B.O.T., B. NAT., and B.A.S.L.P. To take admission in these streams of government and self-financed colleges the Gujarat Professional Medical Education Colleges or Institutions made the rules on behalf of the Government Gujarat. Currently Admission committee for Professional medical of courses does this process manually. They prepared merit list based on GUJCET exam and 12th exams main subjects' theory marks.[1] Higher education is not only depended on student, it also depended on college, infrastructure, facility, staff, and transportation. To identify the suitable college according this quantitative and qualitative parameters decision support system is required. In decision making process we can find suitable parameter from many of the alternatives. Decision support system can be used in managing educational resources. It can be use for academic planning. It is also developed for balancing

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the process of educational demand and Supply University. A Decision Support System (DSS) uses in many fields like education system, organization, agricultural production, marketing, forest management, railway station. Decision Support System (DSS) for the higher education should be gathering of all the information of academic process and give feedback for the improvement.

DSS used quantity factors, need knowledge for analysis, model limitation and assumption, design failure, wrong modeling of design, wrong objective may create problem in existing Decision support system. To overcome this problems of Decision Support System (DSS) field, not only depending on computer's decision we are integrating decision with the encapsulating artificial intelligence techniques and methods. Some of the its methods are knowledge bases, knowledge bases, fuzzy logic, multi-agent systems, natural language, genetic algorithms, neural networks and so on. [2]

Neural network is generally consists of following component. A set of Processing unit, the state of activation of a processing unit, the computational function of output of processing unit, the pattern of associative among processing unit, activation rule, activation function, rule of learning [3]. Artificial Neural Networks are made up of interconnecting artificial neurons. It can used in two ways either used in understanding of biological neural network or solving artificial intelligence problem without developing real life model. [4] The main advantage of neural network is network learning. In that case, we can find solution of any problem without building algorithms and problems. Another advantage is it is more like real nervous system. Parallel organization permits solutions to problems where multiple constraints must be satisfied simultaneously. Rules are implicit rather than explicit.[5]

II OBJECTIVES

The main objectives are:

To determine suitable factors that affect to choose specific branch and college

To transform this factor into the form which is acceptable by adaptive system

To model an Artificial neural network that can be used to predict a suitable branch and college based on given data for the specific student

To resolve the difficulties faced by stack holders such as students, parents, help centers during the entire process.

1. Need for expert system

Expert system is a computer program that combines the judgments and the behavior of the human or an association that has skilled knowledge in particular field. It is difficult to find any suitable course or college by any knowledgeable person for the specific student. Because of today's environment there are lots of different colleges and courses are available so for any person it is very difficult to judge. Any expert system is needed for the career guidance. Expert systems are attempted to replace human experts.[6] Generally career counselor gives booklet for the university courses and prerequisite subjects and cut-off points due to limited skills human and

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time resource. This problem is overcome by any Expert system. Expert system would store the specialized knowledge of the counselor. Therefore they proved in paper that Expert system can achieve effective career guidance objective. [7] Any advising system plays a very important role for preventing wrong choices based on current trend. Expert system can provide those prerequisites courses, appropriate subjects according to the courses and its plan. [8]

2. Factors affected in career selection

There are several factors affected to the medical student in career selection process. Hin Hin Ko and et. al. taken the survey of 118 students and they found that Personal interests, previous positive clerkship experience, lifestyle and financial rewards, geographical location, job opportunities are affected factors in choosing medical field.[9] Another survey was taken of 250 pharmacy students. They found that desire a career in the health field, desire to help people, opportunity to earn a high salary, job security, and respected occupation, family members are in these field, career prestige, earning potential, flexibility of career and availability of Jobs.[10]

III LITERATURE REVIEW

There are many studies on the role of decision support system to improve more effectiveness of student admission system. M. Ayman Al Ahmar [11] describes the expert system in which they have developed object oriented model for the student to assist and advice to take quick decision for the course selection from the variety of choices. By implementing this model, the system will give a very useful tool for quick and easy course selection and also provides its alternative to the students and advisors. This system has Graphical user interface and menus and easy flow of data which can be easily understand by students and advisors. System testing proves that 93% of academic advising test cases shown as the human advising and system advising are same. But over this advantage system has some limitations like currently system is working as stand-alone system so it can't be import the student's data. Determination of course can't be calculated because of time conflicts between lectures. Warned students and exceptional students are out of this scope of the system.

Samy S. Abu Naser, and et al. [12] has describes a model which guides the students in selecting major in Al-Azhar university. They develop 2-step process in the model, 1st step is getting background detail of the student like his or her name, high school course marks, branch and year of education. In 2nd step they take a test to measuring student's ability and capability. The questions are adopted from QEYAS (National Center for Assessment in Higher Education in Saudi Arabia). Expert system is rule-based system and to store the knowledge CLIPS language is used. According to student's capability and ability most suitable faculty/major will be given. But this system has limitation is that taking this type of test is very complex. When numbers of students are more at that time realistic result is withdrawn.

The intelligent Course Advisory Expert System (CAES) is the expert system, which is combination of rule, based reasoning and case-based reasoning to guide the student to choose suitable course to register. They developed three- tier architecture. It comprises a Presentation Layer, Web application server Layer and data

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layer. Java Expert System Shell implements it and JDBC Protocol is use for the data layer. This system is an application of Artificial Intelligence (AI). The goal of the system is to decrease the work, and reducing time in the process of student advising, and to improve quality. This system has limitations like to change the course is the very complexity task and drop out courses and failed students are out of this system. [13]

Waghmode M. L, Dr. P.P. Jamsandekar creates a survey on career selection through expert system. In that literature review they proved that there is an expert system is needed for choosing better career. In that survey they found that expert system is helpful the students of higher secondary, secondary, graduate in selecting proper faculty/major in a specific university. They also found that different factors are affected in choosing faculty. The factors can be student's ability, age, aptitude, hometown area, his attitude, jobs vacancy, society, course syllabus, family environment, family business, parents income, friends influence, sex, hobbies, interest, IQ, job guarantee, learning experience, location, life style, opportunity, outcome expectations, parents influence, past academic performance, personality, physical condition, political consideration ,preference, prestige, previous work experience, program, self-efficacy, self-employment, scholarship, school attended, skills, students strength, teacher, tuition fees etc. All these factors are helpful in selecting field. The review concludes that all existing expert system has some of these limited factors. [14]

Chathra Hendahewa et. Al. designed a tool named iAdvice, Career Advisory Expert System. This system gives customized advice to its user based on career preference and their performance. This system is categorized in to two parts: First implementation of expert features and Second implementation of business logic. The implementation of knowledgebase part and inference is designed in Flex Intelligent server and the business logic for the inferences and the interface is done by Visual Basic DLLs(Dynamic Link Libraries) and Standard Executables. By applying evaluation of this system it has the capability of around 70% accuracy in forecasting performance, and about 85% advices are relevance provided and overall about 87% of informative and useful advice is provided. [15]

In Indian University admission process is done manually. So, that manually process has some drawbacks like time consuming, costly etc. So B. Sankarsubramanian and et. Al. has developed an automated system for admission system for all courses using artificial neural network. Neural network based architecture has 6 input layers, 2 hidden layers and 1 output layers. It requires some data from the user like Stream, Age, qualifying exam marks, community etc. They have tested Accuracy of selection by manually, without back propagation and with back propagation. They found that manually they got 90% result, without back propagation they got 95% result and with back propagation they got 99% result. [16]

IV CONCLUSION

From the above literature review it is found that any expert system is needed in choosing suitable stream in any part of the study it can be higher secondary, Graduation or post graduation. In the above research all the expert system has some limited factors are consider. This system is very helpful to the students who willing to take admission in medical education in Gujarat. Currently ACPMC does this admission process manually so they have to take decision on the spot and they are also not aware with available choices. Some of them are also not

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economically affordable to take guidance from professional advisors. Research has been done little on this area so there is a wide scope in medical education in Gujarat. Researcher wants to do plan with creating an expert system using Artificial Neural Network for career choosing in medical education in Gujarat.

REFERENCES

[1] COURSES, A. C. (2016-2017, June). *RULES FOR ADMISSION TO M.B.B.S/B.D.S./B.P.T./B.A.M.S./B.H.M.S. B.Sc. NURSING/B.P.O./B.O./B.O.T/B. NAT/B.A.S.L.P. COURSES IN GOVERNMENT, MUNICIPAL, GRANT-IN-AID AND SELF FINANCED COLLEGES OR INSTITUTIONS IN THE STATE OF GUJARAT.* Retrieved July 20, 2017, from www.medadmbjmc.in: www.medadmbjmc.in

[2] Das, R. V. (2011). INTELLIGENT DECISION SUPPORT SYSTEMS FOR ADMISSION MANAGEMENT IN HIGHER EDUCATION INSTITUTES. *International Journal of Artificial Intelligence & Applications (IJAIA)* , 63-70.

[3] Ms Priti Puri, M. M. (2007). Forecasting Student Admission in Colleges with Neural Networks. *IJCSNS International Journal of Computer Science and Network S 298 ecurity* , 298-303.

[4] Mwakondo, F. W. (2011). Students Selection for University Course Admission at the Joint Admissions Board (Kenya) Using Trained Neural Networks. *Journal of Information Technology Education , 10*, 334-347.

[5] Abdelhamid, Y., Ayoub, A., & Mohammed Alhawiti, U. o. (n.d.). AGENT-BASED INTELLIGENT ACADEMIC ADVISOR SYSTEM. *International Journal of Advanced Computer Technology (IJACT)* , 1-6

[6] S. Saraswathi, M. H. (2014). DESIGN OF AN ONLINE EXPERT SYSTEM FOR CAREER GUIDANCE. *IJRET International Journal of Research in Engineering and Technology , 3* (07), 314-319.

[7] Lawrence, O. W. (123-131). Career Guidance Using Expert System Approach. *Information Systems* .

[8] AL-Ruhaili, D. A.-G.-G.-A. (2012). An Expert System for Advising Postgraduate Students. *Abdullah Al-Ghamdi et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 3 (3) , 2012,4529-4532* , 4530-4532.

[9] Hin Hin Ko, M. T. (2007). Factors influencing careerchoices made by medical students, residents, and practising physicians. *BC MEDICAL JOURNAL , 49* (9), 482-489.

[10] Keshishian F, B. J. (2010). Motivating factors influencing college students' choice of academic major. *American Journal Of Pharmaceutical Education* , 1-7.

[11] Ahmar, M. A. (n.d.). A Prototype Student Advising Expert System Supported with an Object-Oriented Database. *(IJACSA) International Journal of Advanced Computer Science and Applications,* , 100-105

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

[12] Samy S. Abu Naser, M. H. (n.d.). A PROPOSED EXPERT SYSTEM FOR GUIDING FRESHMAN STUDENTS IN SELECTING A MAJOR IN AL-AZHAR UNIVERSITY, GAZA. *Journal of Theoretical and Applied Information Technology* , 889-893.

[13] Olawande Daramola, O. E. (2014). Implementation of an Intelligent Course Advisory Expert System. *(IJARAI) International Journal of Advanced Research in Artificial Intelligence* , 6-12.

[14] Waghmode M. L, D. P. (2015). A Study of Expert System for Career Selection: Literature Review. *International Journal of Advanced Research in Computer Science and Software Engineering* , 779-785.

[15] Chathra Hendahewa, M. D. (2006). Artificial Intelligence Approach to Effective Career Guidance. *Sri Lanka Association for Artificial Intelligence (SLAAI)* , 32-42.

[16] B. Sankarasubramanian, M. R. (2004). AN AUTOMATED IMPLEMENTATION OF INDIAN UNIVERSITY ADMISSION SYSTEM USING ARTIFICIAL NEURAL NETWORKS. *ICTACT JOURNAL ON SOFT COMPUTING* , *4* (3), 767-771.