DATA MINING CLASSIFICATION AND ANALYTICAL MODEL OF PREDICTION FOR JOB PLACEMENTS USING FUZZY LOGIC

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ABSTRACT

One of the main problems faced by new graduates is insufficient understanding of basic concepts. Lack of detailed understanding of technical information, lack of client management skills and insufficient knowledge of various areas are major skills gaps in this area. The study attributed a lack of English communication skills, which they found in 73.63% of applicants, and poor analytical and quantitative skills, which they found in 57.96% of applicants, as a major cause of unemployment. Aptitude tests are taken to find out your problem-solving skills, how effectively you can try to solve a problem at a given point in time. In this study, we collected data on students who had different information about their previous and current academic records, and then used different classification algorithms using the Data Mining Tool (VEKA) to analyze academic performance in training and accommodation. This study presents a proposed model based on a classification approach to find a better evaluation method to predict student accommodation. There are many basic classification algorithms and statistical methods that can be used as good resources for classifying student data sets in education. In this article, a fuzzy inference system was used to predict student performance to help determine student performance and improve academic performance. This model can determine the relationship between student achievement and campus placement.

Keywords: Mining classification, fuzzy logic, predictions, low analytical and quantitative skills

I. INTRODUCTION

This is indeed a big problem facing the IT industry in India. NASSCOM data shows that only about 25% of graduate engineers work. Even those that can be hired are not readily available. The computer industry spends between 16 and 24 weeks training graduate students on campus. NASSCOM data shows that the IT industry spends almost 0.75 billion [INR 1062 kr.] Per year to train new graduates on campus. “Up to 97% of graduate engineers want software or basic engineering jobs. But only 5% have sufficient professional skills in the software or product market and only 7% can handle basic technical tasks”. MCA Students Predict Where They May Be defined at the end of the MCA course will help increase students’ efforts to progress properly. Akan they also help teachers to give due attention student progress during the course. It will help build the reputation of the institution in a similar category that exists institutes in the field of information education. This study focuses on the prediction Placement of MCA students. We implement data mining techniques that use the creation of naive trees and berries classification to interpret potential and useful knowledge.

II. LITERATURES REVIEW

Vinita Sinha and PriyaThaly have conducted a research study on ‘A Review on Changing Trend of Recruitment Practice to Enhance the Quality of Hiring in Global Organizations’. The human resource of any organization is being a treasure and highly valued asset for them. Even a company is fully machinery oriented, but there needs of human for at least switch on the machine. In this paper the researchers has made an attempt to examine the changing trends of hiring process and its effectiveness [3]. They also studied about the impact of the human resources on the leading global organization under the condition of globalization. It was concluded from the study the change has started from traditional method of recruitment to the innovative sources of hiring and selecting of human resources. The recruiters are following trendy methods to recruit the people. For the quality hiring of the human resources the potential recruiters are using innovative strategies to hire the people [5]. For example, in campus recruitment selection the top recruiters are selecting the prospective employees through the social media (like Facebook,
LinkedIn etc.). Whatever the trend of recruitment is followed by the recruiters the right human resources have to select for the betterment of the organization.

Dr. S.P. Maheshwari and Jayashree Sapra have conducted a study on ‘Campus Recruitment: Acquiring high quality talent through corporate presence’. It was found from the study the recruitment is a human resource management function. It is being one of the activities which have impact on the performance of the organization. The poor recruitment decision will create huge negative effect on the performance of the organization. Selecting the right persons for the right positions is being a difficult task to the organizations. The educational institutions are producing thousands of graduating students every year. All the students are expecting good job for their studies. The organizations are also in need of huge number of human resources. There should be a balanced output and expectations [8].

The organizations are started to hunt their expected human power by the campus recruitment. They are hiring the people from the colleges through the campus recruitment drives. There are huge number of students are failing in the placement interview at first and second stage itself. This is because of lack of knowledge in current knowledge and lack of communication skills. The organizations are expecting highly talent candidates for their organization [9]. The expectations of the potential recruiters are imbalanced with the skill of the students. The present business world is getting change tremendously. So the needed skills of the candidates are also changed [24]–[35].

The educational institutions have to create a career path to the students. The students believe the educational institutions blindly for their bright future. So it is a very difficult task and vital work of the institution to enhance the students according to the expectation of the updated corporate world[36][37]. The placement cell of the organization should work for it. Students have to rise up with updated knowledge from their first year of study. Then only the students can attend the interview and get success with confident and knowledge. If an educational institution producing talents the potential recruiters will start to approach the institution without having any references. Preparation of the students with updated knowledge will help the student to have a better future in direct and will increase the rate of goodwill to the educational institution indirectly [8-12].

### III. DATAMINING AND FUZZY INFERENCE SYSTEM

Data mining is the finding of methods and models in large databases to guide decisions about future activities. Data mining tools need to retrieve the model with minimal user input in order to recognize the model. The presented model helps to understand the unexpected and provides the following data analysis [10].

![Data mining classification model](image)

Other decision tools will be considered, which will ultimately lead to strategic decisions and business insights. The simplest word for extracting knowledge and exploring vast amounts of data is very high, and the more appropriate name for this term is "database knowledge exploration." The database is knowledge about the discovery process. This process involves compiling and interpreting the results.

The naive Bayes classifier is especially suitable for large input sizes. Despite its simplicity, Naive Bayes can often overcome more sophisticated classification methods. The naive Bayes model identifies the characteristics of abandoned student’s shows the probability of each input attribute for predictable conditions.
Obscure logic is essentially logic that makes it easy to recognize the truth and false values that those values represent in sentences.

Again, in obscure logic, sentences can be represented by true and false values. Let's look at an example of truths and inaccuracies. For example, the weather is good today. This is not 100% true as it could be 100% true in the absence of clouds, but it could be 80% true. If there is fog and rain, then it rains all day, so obviously 0% is correct. The idea of fuzzy logic is an approach to calculating the degree of truth, wrong or wrong logic (1 or 0) [14].

He presents vague logical uncertainties in two ways, the first of which is probabilistic and lexical uncertainty. Fuzzy logic uses language variables. Language variables are associated with words and can be any sentence that uses a persuasion function recognized by a membership function. To create a fuzzy system, use a fuzzy inference system and create rules based on the specified parameters. The rule looks like this: If and Then, as shown in Figure 2.

IV. OBJECTIVES
1. To understand the expectations of Engineering Students in Campus Selection.
2. To offer suggestions for improving Campus Recruitment.

V. RESEARCH DESIGN
The descriptive research design was used with supporting empirical data and with hypothesis testing.

VI. COLLECTION OF DATA
Primary and Secondary sources of data collection has been used for the study. Primary data like questionnaire has been collected from Individual using Random Sampling Method.

A. Sample Design
Sampling Method: Simple Random Sample method was used. The students’ survey questionnaire has structured well-framed questions. Questionnaires were collected from individuals [18-23].

B. Respondents’ Career Aspirations-wise Classification
Following is the table for Respondents’ Career Aspirations-wise Classification. Percentage analysis has been used to analyze the data.

<table>
<thead>
<tr>
<th>Career Aspirations</th>
<th>No. of Respondents</th>
<th>Frequencies</th>
<th>Cumulative Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go for further studies immediately</td>
<td>200</td>
<td>26.92</td>
<td>26.92</td>
</tr>
<tr>
<td>Explore only job opportunities</td>
<td>205</td>
<td>27.59</td>
<td>54.51</td>
</tr>
<tr>
<td>Simultaneously work and part time study</td>
<td>135</td>
<td>18.17</td>
<td>72.68</td>
</tr>
<tr>
<td>Work only till get the Government job</td>
<td>168</td>
<td>22.61</td>
<td>95.29</td>
</tr>
<tr>
<td>Work and gain experience and later take a break for higher studies</td>
<td>35</td>
<td>4.71</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>743</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary source of data collection
The survey covered 100% of respondents, 27.59% of respondents are still looking for job opportunities, 26.92% of respondents will now do further research, 22.61% of those who have worked until they find a job in the state, 18.17% of respondents. At the same time, research part-time and 4.71% of respondents work and gain experience, then do a break for higher education.

C. Respondents’ Interest towards Campus Placements

Below is the table for the Respondents’ Interest towards Campus Placements. Percentage analysis has been used to analyze the data.

<table>
<thead>
<tr>
<th>Interest towards Campus Placements</th>
<th>No. of Respondents</th>
<th>Frequencies</th>
<th>Cumulative Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested</td>
<td>738</td>
<td>99.33</td>
<td>99.33</td>
</tr>
<tr>
<td>Not interested</td>
<td>5</td>
<td>0.67</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>743</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary source of data collection

Of the 100% of respondents, 99.33% were interested in campus placement and 5% were not interested in campus placement.

D. Reasons for Looking Campus Placements-wise Classification

Below is a table of reasons to consider placement based on campus placement percent analysis was used to analyze the data.

<table>
<thead>
<tr>
<th>Reasons</th>
<th>No. of Respondents</th>
<th>Frequencies</th>
<th>Cumulative Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy way to find an employer</td>
<td>299</td>
<td>40.24</td>
<td>40.24</td>
</tr>
<tr>
<td>Getting pre-placement offer (PPO)</td>
<td>243</td>
<td>32.71</td>
<td>72.95</td>
</tr>
<tr>
<td>Exposure and Knowledge Enrichment</td>
<td>201</td>
<td>27.05</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>743</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary source of data collection
The study found that 743 respondents, 40.24% of them searched for a low budget campus and 32.71% of those living on campus searched for the campus after receiving a gift and before staying. 27.05% of the candidates in the study were considered open and rich in information.

![Fig 3. Reasons for Looking Campus Placements-wise Classification](image)

Expectations of the Respondents to Join the Company-wise Classification. Following is the table clearing about the Expectations of the Respondents to Join the Company-wise Classification. Percentage analysis has been used to analyze the data.

Table 4: Expectations of the respondents to join the Company-Wise Classification – Percentage Analysis

<table>
<thead>
<tr>
<th>Expectation</th>
<th>No. of Respondents</th>
<th>Frequencies</th>
<th>Cumulative Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career growth being offered</td>
<td>163</td>
<td>21.94</td>
<td>21.94</td>
</tr>
<tr>
<td>Salary &amp; other benefits</td>
<td>289</td>
<td>38.90</td>
<td>60.84</td>
</tr>
<tr>
<td>Value, Ethics &amp; Culture</td>
<td>218</td>
<td>29.34</td>
<td>90.18</td>
</tr>
<tr>
<td>Well-known organization</td>
<td>73</td>
<td>9.82</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>743</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary source of data collection

The analysis explains 100% of respondents, 38.90% of those who hope to join a business to earn income and other benefits, 29.34% of those who hope to join a business for values, ethics and culture and 21.94% of those who hope to participate. The company has offered to advance his career and 9.82% of respondents hope to join the company through the well-known organization.

![Fig 4. Expectations of the Respondents to Join the Company-wise Classification](image)

Table 5 Analysis on the Ranks allotted by the Respondents towards the Expectations of the Students towards Campus – Rank Analysis

<table>
<thead>
<tr>
<th>Expectations</th>
<th>Weights</th>
<th>Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being able to identify with the organization (F1)</td>
<td>1872</td>
<td>11</td>
</tr>
<tr>
<td>Easily reachable by public transport (F2)</td>
<td>2457</td>
<td>2</td>
</tr>
<tr>
<td>Flexible working time I can choose (F3)</td>
<td>1864</td>
<td>12</td>
</tr>
</tbody>
</table>
It is clear from the analysis that student queues on campus are attributed to institutional needs such as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11. For the variable “Quality products / services”, “Easily accessible by public transport”, “Free parking in the organization”, "Long-term orientation of the organization", 12, 13, 14, 15, 16, 17 and 18, “Nice office / workspace”, “Free drinks”, “Complete replacement”, “Proximity of the workplace to where I live”, “Image of the organization”, “Presentation organization”, “Flexible work schedule I can choose”, “Great tool (eg laptop)”, “Mobile phone organizations”, “Work from home”, “Good member relations”, “Organizational culture” and “Good relations with the organizational environment”.

All demographic variables, such as respondent's age (D1), respondent's sex (D2), respondent's department (D3), distance from undergraduate (D4), funding for college studies (D5), career guidance (D6), the reasons for looking for accommodation on campus (D7), expectations for joining the company (D8) and expectations for salary scales (D9) are significant with student expectations for the campus by assessing the business requirements. There is a correlation. Below is a table that analyzes the correlation between the skills and variables that people need to respond to employment trends and assessments of a business's challenges.
VII. FINDINGS

- 27.59 per cent of the respondents are exploring only job opportunities and 4.71 per cent of the respondents work and gain experience and later take a break for higher studies.
- 99.33 per cent of the respondents are interested in the Campus Placements and 5 per cent of the respondents are not interested in the Campus Placements.
- 40.24 per cent of the respondents looking for campus placement for the reason of easy way to find an employer and 27.05 per cent of the respondents looking for campus placement for the reason exposure and knowledge enrichment.
- 38.90 per cent of the respondents expecting to join the company for the salary and other benefits and 9.82 per cent of the respondents expecting to join the company for the well-known organization.

VIII. SUGGESTIONS

Students who expect higher salaries and safer jobs for these students need to develop their knowledge, skills and especially their basic knowledge. Universities also train students according to the needs of the company. Finally, it is made in the form of students who are eligible for training or not clearly indicated in the last column, and if the value is greater than 2.1 of the education diploma, it indicates the value for each student, otherwise it is indicated. Show the value for each student. Not eligible for training for placement of student forecasts.

IX. CONCLUSION

Most students expect to join a paid company so that students from all engineering facilities can find employment after graduation. The system uses fuzzy logic to easily predict and analyze large sets of student data for a given class. This should be a great tool for organizations to analyze information on a large number of information and groups of students. The best algorithm based on the positioning data is a naive Bayes classification with accuracy of 86.15% and the total time required to build the model is 0 seconds. The mean error of the naive Bayes classifier was 0.28, which was the smallest compared to other classifiers. These results show that among the machine learning algorithms tested, Bayes' naive classifier has the potential to significantly improve traditional classification methods for use in distributions.

REFERENCES


