Student Career Guidance System for Recommendation of Relevant Course Selection

E K Subramanian, Ramachandran

Abstract- ***The increasing number of courses in education nowadays enables students to find their study programs of their interest. But some students end up with confusion to choose from variety of courses and not able to take the right decision for their career . The proposed Students Career Guidance (SCG) software will help them out to choose the career path using data mining. Many students are open to suggestions or forced by others like parents, relatives but after they select a course that aren't really interested in them and then they are faced with different problems and as a result they don't excel in it or do it with interest. So, this software intends to create a system that will recommend a course based on some basic details about the students like personal information, academic details, hobbies, co-curricular activities, extracurricular activities and other activities interests, background, aims of the specific person. This software uses school results, students' school/home activities and academic itinerary interests as inputs to recommend an appropriate study field. The inputs into SCG system were entered in the form of questionnaires which were later analyzed and computed.***

Keywords— Education;Data Mining; Students; Performance;

I. INTRODUCTION

The student career guidance system can be used by the student to select the best suited career path based on their unique qualities, strength and weaknesses. This software can help to student to select their career path without putting more efforts. Now a days the more number of related study field is available which makes the student confused to avoid their problems we developed this software. The software will recommend only basis of student response and then follow the same as previous one .

if the student is selected correctly the system will predict the related study fields which would be the final suggestion of the student. further student wants to change the study field then fill the required details . The number of related study programs is continuously increasing, if further decomposition of study fields into specific sub-fields might be necessary in order to have more specialized fields of study. .

II. RELATED WORK

Developing a new tools requires to find the drawbacks in existing tools and need to overcome the failures in them. so survey of literature is most important step in the process of development. Then programmer build the tool by getting external support. So following are the some of the existing work reviewed before proposing new system.

Kuyoro, et al. implemented an optimal algorithm to predict performance of students in academics and designed a framework for recommendation system to help students to identify factors that affect their performance at first year. Research used WEKA tool to generate classification models and an artificial neural network function. It is found that background factors of students affect the performance and recommends the required strategies to adopt to overcome them[16].

Nguyen, et al. proposed an approach for user recommendation system for educational data mining determine performance of the students. They made comparison with logistic Linear regression for intelligent tutoring. Experimental results shows improvement in prediction.[17]

Kanokwan suggests that in Thailand, program selection by students is important for job opportunities. There could be a mismatch between student profile and their opted course if proper counseling not given prior to selection. This leads to failures and low retention rate. The universities in Thailand, to enhance efficiency and relationship developing novel systems. one such initiative is Student Recommendation System. This system reports correlation among student history and results by clustering techniques. They help students to find interesting program of their interest and reduces attrition, increases satisfaction and improve placements[18].

III. METHODOLOGY

1. Collect the data required and arrange the data in suitable format.
2. Eliminate unwanted data.
3. Derive conclusion and then define feature vector.
4. Feed the input to neural network and process data in hidden layer.
5. Match the result and output.
6. display subset of data if matches and adjust weights otherwise.

Parameters

Some of the parameters are student preference, previous results, subject score, overall percentage , Job Interest and Feedback.

Data preparation

The data collected is formatted and transformed in respective parameters and the missing values are handled efficiently.

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Data analysis

Bayes Classification Algorithm with training data was applied to group the data [15] and generated groups based on previous data which are meaningful.

Association rule

The association relationship among the subgroups are determined [16] and used to find the characteristics of students[15]. The general output and clustering output is compared to make the prediction correctly. Classification is performed using fuzzy set theory and rough Set[18]. Fuzzy set used for knowledge and decision making.

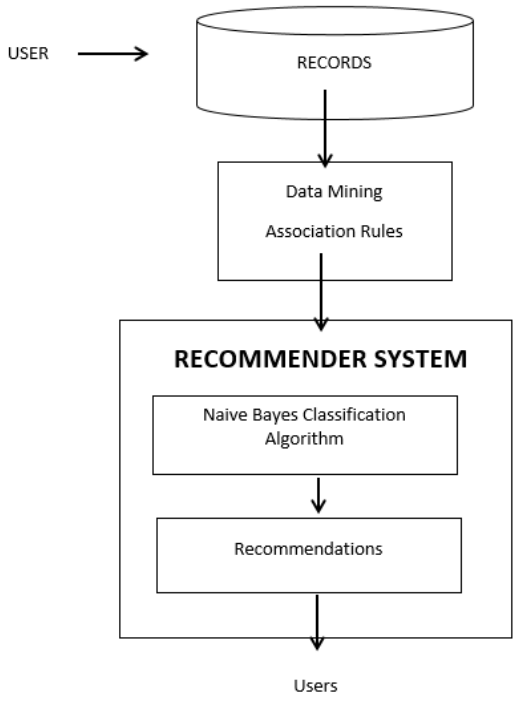
The modules are fuzzy module, inference module, fuzzy rule and de-fuzzification module. The sampling process is used to select data and the training set used to derive classification rules. For example, a simple fuzzy rule is written as:

If GradeAerage="A" and subject1="Science" and subject2="Computers" then suggestion= "Computers".

If GradeAverage="S" and subject1="Science" and subject2="Math" then suggest="Mechanical".

With Testing dataset validation for accuracy of the rules can be performed. The most important is the efficient training set to create rules. Rough set is applied to data with different categorical values to find the minimal subsets of attributes[19].

IV. ARCHITECTURE DIAGRAM



MODULES DESCRIPTION

The project mainly contains 3 modules which are given as

- Data collection
- Prediction analyzer
- Report generation

DATA COLLECTION

- Student's details like subjects, activities, student hobbies, subject mark etc. Are get it during student form filling.
- Stored those data in to the database.

PREDICTION ANALYZER

- Select the student area of interest and get the all subject with marks.
- Administrator already assigned course for each subject.
- Student choose physics, math, chemistry subject and compare with threshold value.
- If student got above threshold value means suggest that engineer as career.
- Otherwise system go for the next category and so on.

REPORT GENERATION

- Student got above 80% in PCM report would be generated as "better you will choose engineering as your career".
- Student got above 90% in PCB report would be generated as "better you will choose medical as your career".
- Above two condition are failed means report would be generated as "better you will choose arts and science or commerce as your career".

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DATA COLLECTION

- We will collect the student's details like subjects, activities, student hobbies, subject mark, personal details academic details etc. Are get it during student form filling. And then stored those data in to the database.

Table 1. Personal details of students

S.N.	Attributes
1	Student Name
2	Mobile Phone Number
3	email-id
4	SSLC
5	HSC
6	Groups(MCM,PCB,ARTS)
7	Marks of PMC, PCB, ARTS
8	Activities, Interests
9	Sports

PREDICTION ANALYZER

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Naïve Bayes Classification Algorithm

Naïve Bayes classification is a simple probability classification technique based on conditional probability as given below.

$$P(A|B) = \frac{P(B|A)\,P(A)}{P(B)}$$

where ,

- $P(A/B)$ is the posterior probability of *class* (A, *target*) given *predictor* (B, *attributes*).
- $P(A)$ is the prior probability of *class*.
- $P(B/A)$ is the likelihood which is the probability of *predictor* given *class*.
- $P(B)$ is the prior probability of *predictor*.

pseudo code for data analysis steps :

```
1.Get the input.
2.Read data and analyze the data by
3.if (q1.equals(ans)) {mark=mark+1}
if(q2.equals(ans) ){mark=mark+1;}
if( q3.equals(ans)){mark1=mark1+1;}
if(q4.equals(ans)){mark=mark+1;}
if(q5.equals(ans) ){mark=mark+1;}
if(q6.equals(ans)){mark=mark+1;}
if(q7.equals(ans) ){mark=mark+1;}
if( q8.equals(ans)){mark=mark+1;}
if( q9.equals(ans)){mark=mark+1;}
String p1 = null,p2 = null,p3 = null,p4 = null,p5 = null;
if(mark==0){ p1="0 %";}
if(mark==1 || mark==2 ||mark==3){p1="30 %";}
if(mark==4|| mark==5||mark==6){p1="50 %";}
if(mark==7|| mark==8||mark==9){p1="90 %}
if(someName === str){
window.alert("You can join Automobile Engineering");
window.location.href = "login.jsp";}
if(someName === str1){
window.alert("You can join Electrical Engineering");
window.location.href = "login.jsp";}
if(someName === str2){
window.alert("You can join Mechanical Engineering");
window.location.href = "login.jsp";}
4. Display the result.
```

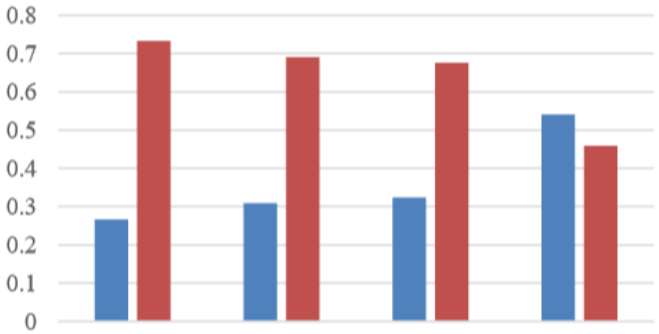
Table 1. Probability of Engineering

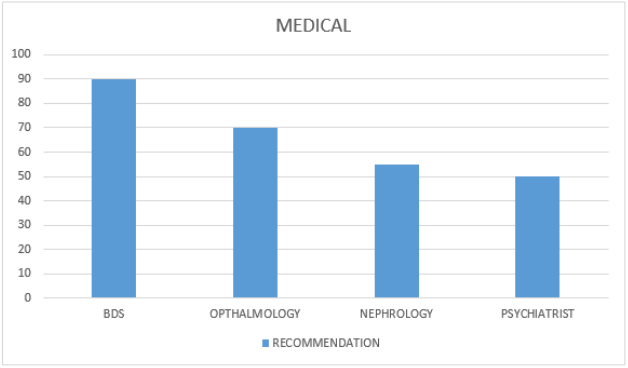
Attributes	Values	Probability			
		Mach&Auto	EEE&ECE	CSE & IT	Civil&Arch
1,2,3,	Yes	30%	0%	0%	0%
4,5,6,	Yes	50%	0%	0%	0%
7,8,9,	Yes	90%	0%	0%	0%
10,11,12,	Yes	0%	30%	0%	0%
13,14,15,	Yes	0%	50%	0%	0%
16,17,18,	Yes	0%	90%	0%	0%
19,20,21,22	Yes	0%	0%	0%	30%
23,24,25,26	Yes	0%	0%	0%	50%
28,29,30,31	Yes	0%	50%	0%	90%
32,33,34,35	Yes	0%	0%	30%	0%
36,37, 38,39	Yes	0%	0%	50%	0%
40,41,42,43	Yes	0%	0%	90%	0%

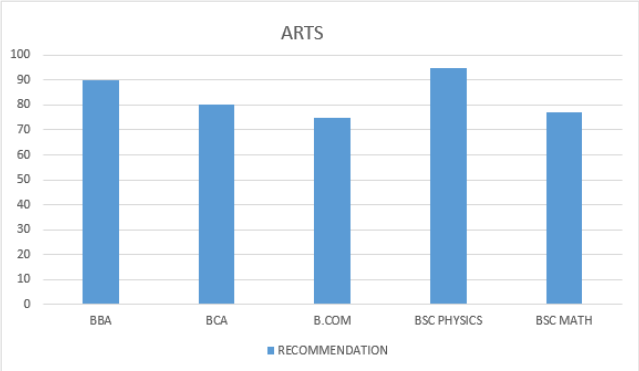
Table 2. Probability of Medical

Attributes	Values	Probability									
		BDS(%)	OPTHALMOLOGY	NEPHROLOGY	PSYCHIATRIST	NEUROLOGIST	VETERINARY	CARDIOLAGIST	DERMATOLOGIST-	PULMONOLOGY	OTOLARYNGOLOGIST
1-5	Y	20	0%	0%	0%	0%	0%	0%	0%	0%	0%
6-10	Y	0	20%	0%	0%	0%	0%	0%	0%	0%	0%
11 15	Y	0	0%	20%	0%	0%	0%	0%	0%	0%	0%
15-20	Y	0	0%	0%	20%	0%	0%	0%	0%	0%	0%
21-25	Y	0	0%	0%	0%	20%	0%	0%	0%	0%	0%
26-28	Y	0	0%	0%	0%	0%	20 %	0%	0%	0%	0%
29-34	Y	0	0%	0%	0%	0%	0%	20%	0%	0%	0%
35-40	Y	0	0%	0%	0%	0%	0%	0%	20%	0%	0%
47-	Y	0	0%	0%	0%	0%	0%	0%	0%	0%	20%

V. RESULT ANALYSIS







VI. CONCLUSION

As a conclusion, Indecisive prospective students are to be guided to select study programs. Most of the study programs are closely related and recommending a specific programs are difficult. Further, existing solutions lacking in the use of students' skills, interests and academic performance towards filtering a possible recommendation. Hence, the proposed system enables students to choose from the recommended study field. The design process considered the factors such as academic performance of the student's school results; his/her skills from activities and interests. The main benefit of SCS is the prospect to recommend a field of study rather than an SP. In this way, the prospective students can select a specific SP on their own within a recommended study field. Every day new programs are introduced and continuously increasing. So further decomposition may be needed in order to have more specialized fields of study. In future the students dropout must be studied to know the reason. Such research helps in designing better recommendation systems for education domain .

VII. FUTURE ENHANCEMENT

It is possible to perform data mining tasks using the same dataset and apply more algorithms. Association rules and clustering are interesting mining task. The data that was collected by sampling process which was a time consuming task. So it could be better if the data was collected during the admission process to make the dataset large. Then run these data mining tasks regularly on their data to find out interesting patterns and performance can be improved.

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