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Intelligent Career Guidance System using Machine Learning

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Abstract: Most students throughout the world are always perplexed after completing high school and reaching the point where they must choose a job route. Students under the age of 18 lack the maturity to understand what steps must be taken to pursue a rewarding professional path. As we progress through the phases, we find that every student has questions or thoughts about what to do after 12th grade, which is the single most difficult question. Then there's the question of whether they have the necessary talents for the career path they've selected. Based on an objective test of an individual's skills, our computerized career counselling system predicts the best department for them. If a person completes the online evaluation that we have established in our system, they will automatically end up choosing an acceptable job, which will reduce the number of people who fail because they choose the wrong career path.

I. INTRODUCTION

When it comes to choosing a job, it's important to consider not only what course you want to take, but also what you want to do after graduation. Career counselling is more about getting to know and understand yourself, as well as your skills and abilities. This is the moment when each student receives a lot of advice from numerous sources (parents, teachers, other educational specialists, etc.) and determines which course they want to enrol in. We've seen many instances where a student chooses a course/stream and then regrets it afterwards. To give an example, there is a notion that someone who does very well and has the top grades in 12th grade chemistry will pick chemical engineering because of their chemistry skills; however, this is not the case. We went through several rounds of deliberation with students who are currently studying engineering as well as students in 11th and 12th grades. Then we had the notion of offering an objective assessment of one's skill set and calibre that would propose the best stream to pursue, so we chose this as our problem statement and began brainstorming ways to assist students in answering this issue. We started by identifying larger skill sets that are critical for each engineering career path, such as computer science and engineering, electronics, and communication engineering, electrical and electronics engineering, mechanical engineering, and so on. We will analyse a person's skill set and predict which job is best for them based on their score on the objective evaluation we established. If this functional chart is used to answer all of these questions, the chance of making a mistake is much reduced. Our probing questions will reveal the student's core strength in their unique skill sets.

II. RELATED WORKS

1. Student Placement Analyzer: A Recommendation System Using Machine Learning

YEAR OF PUBLICATION: 2017

METHODOLOGY: Decision Tree Classifier, Sci-kit Learn, Machine Learning, Prediction, Python.

LIMITATIONS:

- Less number of outcomes considered such as Dream Company, Core Company, Mass Recruiters.
- Not Eligible and Not Interested.
- Only 2 parameters used.
- Applicable for B.Tech Course.

2. A Review on Student Placement Chance Prediction

YEAR OF PUBLICATION: 2019

METHODOLOGY: logistic regression, random forest, and Decision Tree

LIMITATIONS:

- Literature Survey paper.
- Implementation not done.

3. Utilizing Exploratory Data Analysis for the Prediction of Campus Placement for Educational Institutions

YEAR OF PUBLICATION: 2020



METHODOLOGY: EDA techniques applied

LIMITATIONS:

- This concept is applied for only MBA specialization.
- Here only YES OR NO is predicted.
- Huge amount of data required.
- Less accurate results.

4. A Prediction Model to Improve Student Placement at a South African Higher Education Institution

YEAR OF PUBLICATION: 2020

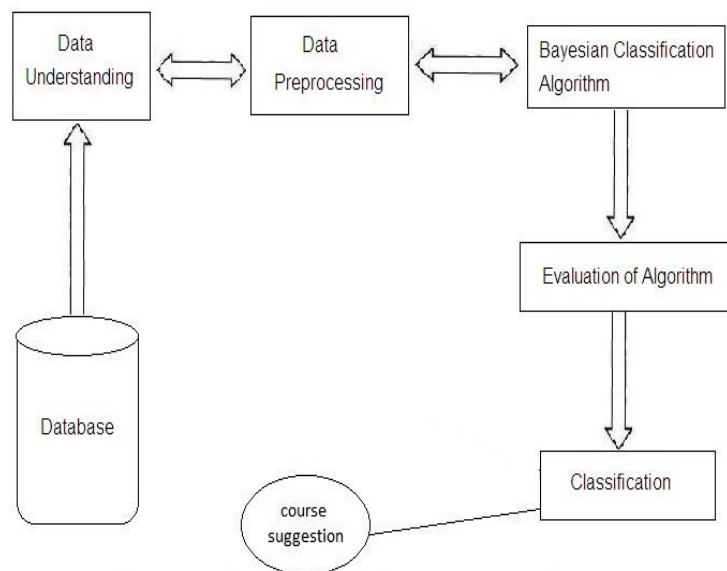
METHODOLOGY: J48 Linear Regression, RF

LIMITATIONS:

- This is an advising system related to academic subjects.
- Not Suitable for company campus selection.
- Algorithms used generates graphical results.
- Not suitable for real time application.

III. PROPOSED WORK

The proposed system is a "Web Enabled Application" that extracts important information using the Machine Learning technique [prediction of student suited course using categorization criteria]. Users with similar qualities and habits will have similar preferences, according to the proposed approach. Students are divided into groups and offered counsel based on their commonalities in the proposed system. Based on the student's qualities and conduct, the proposed system offers a course for the student. The proposed system is an academic advising tool.



System architecture

IV. METHODOLOGY

Machine Learning

Machine learning is a process of studying a system based on data. Machine learning is a part of data science where we use machine learning algorithms to process data.

Supervised Learning Technique

It's a predictive model used for the tasks where it involves prediction of one value using other values in the data-set. Supervised learning will have predefined labels. It classifies an object based on the parameters to one of the predefined set of labels. We have many algorithms to build model in supervised learning such as KNN, Naive bayes, Decision Tree, ID3, Random Forest, SVM, Regression techniques etc.... Depending of the requirement, labels, parameters and data-set we select the appropriate algorithm for predictions. Algorithm is used to build a model that makes predictions based on evidence in the presence of uncertainty.



In this project for prediction, we make use to “naive bayes algorithm” which is an efficient and works fine for all different sets of parameters. It also generates accurate results.

Step 1: Initially all educational data collected and stored in database, we use SQL Server as database to store more amount of data.

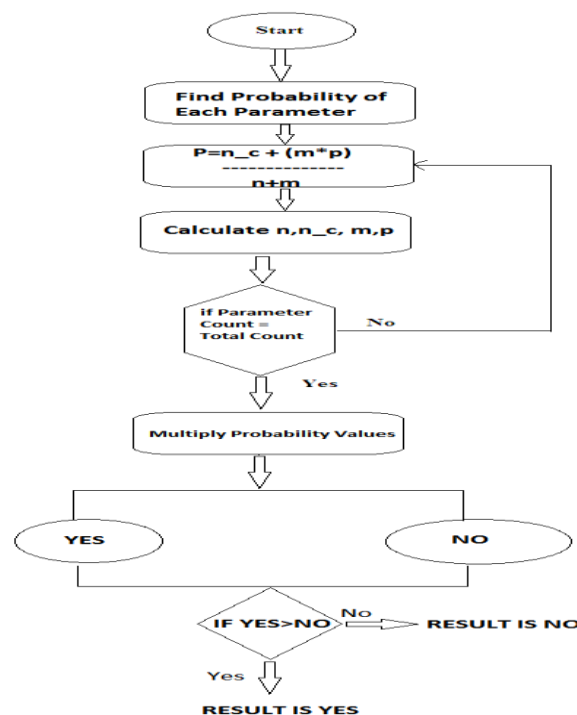
Step 2: Data understanding is more important once data collected. The type of the data such as text data, images or numerical data or binary data etc... In our requirement data type is of text data and it contains educational based parameters.

Step 3: Then we need to pre-process the data where we remove the irrelevant data and extract the relevant data required for processing. We apply “Binning Method” to pre-process and missing values filled and only relevant data extracted and inputted to the algorithm.

Step 4: After data pre-processing, pre-processed data inputted to the Bayesian classifier algorithm and algorithm used to train the training datasets and model is built.

Step 5: Once model is built, model will be evaluated, and best model will be selected with best accuracy.

Step 6: Finally best model will be evaluated, and classification is done, and job recommendation is done.



FLOW OF NAIVE BAYES ALGORITHM

V. CONCLUSION

We used data mining methods to extract important information from an educational dataset in this study. To begin, association rule mining is applied to a student dataset in order to answer the question "how may data mining assist in the student management process?" The findings revealed a strong link between student characteristics and employment categories. This finding could aid educators who are responding to a management working procedure in planning their admission promotions. Then, using a job dataset and a data mining method, the question "how can data mining forecast student jobs?" is answered. The outcome rule demonstrates that the significant subject chosen by the student is critical for his or her future profession.

FUTURE ENHANCEMENTS

SMS/Email Module – In the proposed system, admin assigns Id and password for students and is intimated manually, so we can add SMS/Email module as a future enhancement where students receive an SMS or Email regarding the Id and password.



Additional Parameters - In the project we have use few student parameters for job prediction, in future we can add some more additional parameters, so that accuracy will be more.

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CERTIFICATE OF PUBLICATION

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