Approval Sheet

This is to certify that Sayali Wangane, Vaishnavi Tiwari and Sanika Purao has completed the project report on the topic "Intelligent Career Guidance System” satisfactorily in partial fulfillment for the Bachelor's Degree in Information Technology under the guidance of Prachi Dhanawat during the year 2020-21 as prescribed by SNDT University.

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Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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ABSTRACT

Career choice has a pivotal role in college students’ life planning. In today’s world choosing the right career is the toughest decision. Today many students are confused about their future. They do possess some skills but they are not able to identify their abilities and a proper domain. Different people suggest different career options but at last, the student has to select their career. In this project, we have focused on this problem of the student using machine learning. With the help of machine learning, we will help the student to decide which is the best career option and domain for them using different machine learning techniques. The career is decided based on academic information filled by the student. This project will help the student to get directed towards a specific domain as per their skills.

Key Words: Machine Learning, Web Development,Course Recommendation System, career Prediction

Over the past few years several systems have been built to help students select the right career path by predicting the best career option based on their academic factors. However, academic factors are not the only relevant factor, we do need to consider one's cognitive abilities and psychometric factors too; such as, speed, learning capacity, endurance and memory to achieve the best career outcomes. However, in order to develop a system that will predict one’s career based on both academic and psychometric factors we need to select a classification algorithm like SVM (Support Vector Machine) that will provide the best accuracy rate.

**Problem statement:**

Most of the engineering students do not get the proper guidance or are not very clear about what they would like to pursue in their life in terms of their careers.

Our proposed system takes inputs from GUI, which will process it and gives two job fields. We will be using various ML models for classification and prediction. We want the student not to get confused between so many fields. This model makes it easy for the student by recommending two fields that are most suitable for them based on their input.

INTRODUCTION

Career guidance can be described as a process through which students become familiar with various career options, job opportunities and are prepared for those opportunities. Career counselling is the approach that will allow the student to understand his options, find his best skills and get acquainted with the world of work in order to make choices about employment, education and life.

Competition in today’s society is heavily multiplying day by day. It is too hard in the present day to face the technical world. So as to compete and reach the goal of students ,they need to be planned and organized from the initial and final stages of their education. So it's important to perpetually assess their performance, establish their interests and assess how close they’re to their goal and assess whether or not they are within the right path that directs towards their target. This helps them in improving themselves, motivating themselves to a better career path if their capabilities are not up to the mark to reach their goal and pre evaluate themselves before going to the career peak point. Not only that, recruiters while recruiting people into their companies evaluate candidates on different parameters and draw a final conclusion to select an employee or not and if selected, finds a relevant stream and career area to student. There are many types of roles like Database administrator, Business Process Analyst, Developer, Testing Manager, Networks Manager, Data scientist and so on. All these roles require some prerequisite knowledge in them to be placed in them. So, recruiters analyze candidates' performance in skills, talents and interests and place the candidate in the right job role suited for them. These kinds of prediction systems make their recruitment tasks very easy because as the inputs are given, recommendation is done based on inputs.Though the career counselors may assist the students many times it would be difficult for them to completely understand the inclination of the students, academics and thus the counseling process may be limited. Also, not all students would be privileged to avail of such facilities. Globally there are some attempts in this area, but we need to work on this area for our students. Hence we would be working on the web-based application, henceforth referred to as “Intelligent Career Planning & Guidance Assistant”

Intelligent Career Planning & Guidance Assistant is a computer program built with the help of experts where the details of the students and their aptitudes help finding the right course for their future. Choosing the right field after engineering is a very important life decision. Many Machine learning techniques have been applied to develop student performance prediction algorithms.

The proposed solution is a web-based application for engineering students early enough to:

a. Understand their inclination

b. Enhance understanding of their personality types

c. Educate on the various options

d. Enable them for their career planning, development, and guidance.

e. Provide guidance on a continuous basis

f. Make information available on career, education, etc. through sources

g. Assist from choosing wrong options h. Be a partner in the overall journey

LITERATURE SURVEY

Many machine learning techniques have been applied to develop prediction algorithms. There are mainly two issues while developing this sort of model one is whether the student is willing to build his career based on his interests and compassions and whether the student has proper identification of improving his Skills by pursuing certification courses based on the interests of the students. So questionnaires are developed in this model that must classify the reflections of the student outcomes. We are doing a comprehensive study of the career-related aspects including the current situation, opportunities, and possible options. This would involve surveys with specific questionnaires, interviews with the relevant industry leaders, reference materials, etc. According to Watts and Fretwell generally, the aim of Career Guidance is to help students make decisions based on their interests, passion, and abilities, while taking into account current and future career opportunities. Students are encouraged to learn more about the world of work across different industries so that they may take the right steps to obtain their objectives and goals/aspirations. Another perspective indicated that Career guidance can be referred to as services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training, and occupational choices and to manage their career. “Career guidance” denotes systematic programs that facilitate individual career development and career management. Behdad Bankshinategh, Gerasimos Spanakis, Osmar Zaiane, and Samira ElAtia Pal conducted a study in India, to determine factors that most heavily affected student performance. They first utilized the classic Collaborative Filtering (CF) method for their study for achieving various goals in their research. They have used these algorithms on the real-time data sets but it is done on data mining and some tools are weak for mining the data. A second challenge lies with the scalability of the algorithm. To have a reasonable response time for making recommendations to a high number of students might raise the need to include new techniques. In this challenge the also tried matrix factorization will be explored, as well as explore how performance can be boosted. However, since this research focuses on predicting student academic motivation using data mining methods and only, this review of literature presents only the results from several relevant studies that have used diverse predictors available from different files and various methods for predicting academic motivation within the online learning environment.

SOFTWARE /HARDWARE REQUIREMENT

SOFTWARE

We would be using the following technology stack for this project: ● HTML ● CSS ● Javascript ● Bootstrap ● PHP ● Python ● MySQL Database

HARDWARE

SYSTEM Design

METHODOLOGY

**Registration and Login:** The students would be registered through a very simple method either by email id or Mobile number. The login credentials would be created and would be validated through every login attempt. Students Can See Various Fields.

**Discover yourself:** This section would enable the students to take a few tests to discover themselves in terms of their ability, interests, inclination, future plans etc. This would create a Student profile which would be used as a baseline for suggesting the possible career options. We will leverage the AI ML techniques to predict the way forward.

**Data Preprocessing**

We preprocess the data into required format. For Example, the data in data set will be stored in the form of words, nothing but alphabetic. We convert those into numerical format.

**Predicting the Skills**

from the Data By applying various machine algorithms on the data set ,we found more accuracy. At any one algorithm ,thus it suits for the recommendation system to be accurate.

**Then Recommend the respected skill**

Individual students differ from the other students in their skills. Recommendation system helps to predict the inherent skill of a student and recommend the respected skill courses

**Knowledge Networking:** As the name indicates, this module would assist to harness the knowledge through various sources. This would also have a section to provide the information by students, which would be made available only post scrutiny by the Admin team.

**Daily bytes:** This would be displayed as a daily important tip to create interest among the students and to spend time to leverage this platform.

**Online courses:**

**Community:**

**blogs:**

**Links to important information:** This section would contain important informational links and the students can be redirected to these links.

IMPLEMENTATION

1. **Algorithm- KNN**

K-nearest neighbors (KNN) algorithm is a type of supervised ML algorithm which can be used for both classification as well as regression predictive problems.

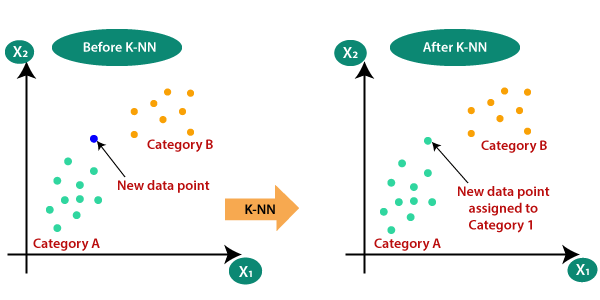
The K-NN algorithm assumes the similarity between the new case/data and available cases and puts the new case into the category that is most similar to the available categories.

K-NN algorithm stores all the available data and classifies a new data point based on the similarity. This means when new data appears then it can be easily classified into a well suited category by using K- NN algorithm.

K-NN is a non-parametric algorithm, which means it does not make any assumption on underlying data.

The K-NN working can be explained on the basis of the below algorithm:

* **Step-1:** Select the number K of the neighbors
* **Step-2:** Calculate the Euclidean distance of **K number of neighbors**
* **Step-3:** Take the K nearest neighbors as per the calculated Euclidean distance.
* **Step-4:** Among these k neighbors, count the number of the data points in each category.
* **Step-5:** Assign the new data points to that category for which the number of the neighbor is maximum.
* **Step-6:** Our model is ready.



Advantages of KNN Algorithm:

* It is simple to implement.
* It is very useful for nonlinear data because there is no assumption about data in this algorithm.
* It is a versatile algorithm as we can use it for classification as well as regression.
* It has relatively high accuracy but there are much better supervised learning models than KNN.
* It is robust to the noisy training data
* It can be more effective if the training data is large.

Disadvantages of KNN Algorithm:

* Always needs to determine the value of K which may be complex some time.
* The computation cost is high because of calculating the distance between the data points for all the training samples
* High memory storage required as compared to other supervised learning algorithms.
* it is very sensitive to the scale of data as well as irrelevant features.

1. **Dataset**

**SANIKA**

1. **Implementation**
2. **Training testing**
3. **accuracy**
4. **RESULT**

Reference

https://www.irjet.net/archives/V7/i6/IRJET-V7I6640.pdf