GuideMe

A Minor Project Synopsis Submitted to

Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal
Towards Partial Fulfillment for the Award of

Bachelor of Technology
(Computer Science and Engineering)

Under the Supervision of
Prof. Preeti Shukla

Submitted By
Apoorva Shrivastava (0827cs201041)
Archika Kasliwal (0827cs201042)
Atharv Sharma (0827cs201047)
Bhavik Sharma(0827cs201058)

Department of Computer Science and Engineering
Acropolis Institute of Technology & Research, Indore
Jan - June 2022

1. 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 must 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.

2. Introduction of the Project

The field of engineering offers a vast array of career opportunities, making it difficult for students to choose the right path. To help students make informed decisions about their future careers, a career guidance system is being developed specifically for engineering students. This system uses machine learning techniques and the K-Nearest Neighbor (KNN) algorithm to predict three fields of interest based on the data provided by the student.

The project aims to address two key issues in career guidance - whether the student is willing to build their career based on their interests and passions, and whether the student has proper identification of improving their skills by pursuing certification courses based on their interests. To achieve this, the model includes questionnaires that aim to classify the reflections of the student's outcomes. The questionnaires, in combination with surveys and interviews with relevant industry leaders and reference materials, provide a comprehensive study of the career-related aspects.

The goal of this career guidance system is to help engineering students make informed decisions about their future careers by providing personalized recommendations based on their interests, skills, and career opportunities. By providing students with accurate and relevant information, they will be better equipped to navigate the complex world of engineering and make informed decisions about their future careers.

3. Objective

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

- Enhance understanding of their personality types.
- Educate on the various options.
- Enable them for their career planning, development, and guidance.
- Make information available on career, education, etc. through sources.
- Assist from choosing wrong options.
- Be a partner in the overall journey.

4. Scope

Intelligent Career Planning & Guidance Assistant is a computer program where the details of the students and their aptitudes help find 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.

Recruiters, while recruiting people into their companies evaluate candidates on different parameters and draw a conclusion to select an employee or not and if selected, finds a relevant stream and career area for the 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 themselves of such facilities.

5. Study of Existing System

The study of existing systems for career guidance projects involves analyzing and evaluating the various methods and resources currently available for individuals seeking career guidance. This includes evaluating traditional methods such as career counseling, job fairs, and career centers, as well as newer methods such as online career assessments, career networking platforms, and virtual career fairs.

- One traditional method that has been widely used for career guidance is career counseling. Career counselors provide individuals with assessments, guidance, and support throughout the career exploration and decision-making process. They typically use a variety of tools such as interest assessments, personality tests, and skills assessments to help individuals identify their strengths and interests and match them to potential careers.

- Online career assessments and career networking platforms have become increasingly popular in recent years. These platforms offer individuals the opportunity to take online career assessments, explore different careers, and connect with professionals in their field of interest. These online platforms are easily accessible to anyone with an internet connection, making them more convenient and accessible than traditional career guidance methods.

- Virtual career fairs are also becoming more popular in recent years. They allow individuals to interact with employers and recruiters from the comfort of their own home and explore job opportunities in a variety of industries.

Overall, the study of existing systems for career guidance projects aims to identify the strengths and weaknesses of the various methods available, and to identify areas where improvements can be made to provide individuals with more comprehensive and effective career guidance.

6. Project Description

The application of machine learning techniques has been widely used to develop prediction algorithms for career guidance. However, there are two main issues to be considered while developing this type of model. The first issue is whether the student is willing to build their career based on their interests and passions. The second issue is whether the student has proper identification of improving their skills by pursuing certification courses based on their interests.

To address these issues, the model being developed in this project includes questionnaires that aim to classify the reflections of the student's outcomes. A comprehensive study of the career-related aspects is being conducted, including the current situation, opportunities, and possible options. This involves surveys with specific questionnaires, interviews with relevant industry leaders, and reference materials.

The aim of career guidance is to help students make informed decisions based on their interests, passions, and abilities, while considering current and future career opportunities. Students are encouraged to learn more about different industries and take the necessary steps to achieve their goals and aspirations. Career guidance can be defined as services and activities aimed at assisting individuals of any age and at any stage in their lives to make educational, training, and occupational choices and manage their careers. It refers to systematic programs that facilitate individual career development and career management.

In conclusion, the above text highlights the importance of considering both the student's interests and skills in career guidance and the comprehensive approach being taken to develop the prediction algorithm for this project. The questionnaires, industry interviews, and reference materials being used aim to provide students with accurate and personalized career recommendations to help them make informed decisions about their future careers.

7. Methodology/Planning of the Project work

- **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 the 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 Skill:** 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 in harnessing knowledge through various sources. This would also have a section to provide the information by students, which would be made available only for 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 leveraging this platform.

- **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.

The 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 the 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 based on 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.

8. Expected Outcome

The outcome of this career guidance system for engineering students, utilizing the K-Nearest Neighbors (KNN) algorithm, has the potential to provide numerous benefits and improve the career exploration and decision-making process for students. Some of the potential outcomes of this project include:

- Improved career decision-making: By providing personalized and accurate recommendations for fields of interest, students will be better equipped to make informed decisions about their future careers. This will help them avoid pursuing careers that may not be a good fit for their interests and skills, leading to greater job satisfaction and career success.

- Better alignment of skills and interests: The KNN algorithm will analyze the student's data to determine the fields in which they are most likely to excel. This will help students understand which careers align with their interests and skills, leading to a more fulfilling and satisfying career.

- Increased career opportunities: By providing students with information about different engineering fields, including job descriptions, average salaries, and career prospects, the project will help students identify potential career opportunities that they may not have considered otherwise.

- Increased accessibility to career guidance: The use of the KNN algorithm and online platform for this project will make career guidance more accessible to students. This will help more students explore different career options and make informed decisions about their future careers, regardless of their location or accessibility to traditional career guidance resources.

Overall, the outcome of this career guidance system project has the potential to have a positive impact on the career exploration and decision-making process for engineering students. By providing personalized and accurate recommendations, students will be better equipped to make informed decisions about their future careers and achieve their career goals.

9. Resources and Limitations

HARDWARE REQUIREMENTS

- RAM : 4 GB
- HDD SPACE : 80 GB
- PROCESSOR : Intel Pentium IV

SOFTWARE REQUIREMENTS

- OPERATING SYSTEM : Windows
- WEB SERVER : Tomcat
- DATABASE : MySQL5.0
- TECHNOLOGY : HTML, CSS, JavaScript, Bootstrap, PHP
- LANGUAGE : PYTHON

LIMITATIONS

- There is always the possibility that you leave out some resources so it is possible that some users might not locate their quested places sometimes.

10. Conclusion

In conclusion, the career guidance project will provide valuable insights and resources for individuals looking to explore and pursue their career aspirations. Through the research and analysis conducted, we have highlighted various career paths and industries, as well as the skills and qualifications needed to succeed in them. We have also discussed the importance of networking, internships, and continued education in the job search process. By utilizing the information provided in this project, individuals can make informed decisions about their career goals and take steps towards achieving them. We hope that this project has been helpful in providing guidance and inspiration for individuals as they navigate their career journey.

11. References

https://www.javatpoint.com/k-nearest-neighbor-algorithm-for-machine-learning
https://data.world/datasets/career