RESEARCH ARTICLE   OPEN ACCESS

WEB BASED CAREER GUIDANCE SYSTEM

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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.

Keywords – Student Career Prediction, Machine Learning, Web Development, Course Recommendation System, SVM

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I.   INTRODUCTION

While graduation signifies the end of college many students can be left wondering, 'what's next?' Many students face a difficult time choosing a career path in college, especially in fields like Engineering where there are vast domains to choose from. Thus, it is very important for students to assess their capabilities and identify their interests while pursuing their studies so that they are clear about their dreams and the career path leading towards it.

   Thus, we have proposed an idea of an **ML-based "Career Guidance System"** which helps the students (esp. In their pre-final and final year) to decide the job role the candidate should undertake based on his/her performance and other evaluations.

1.1INTRODUCTION

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/her options, find his best skills and get acquainted with the world of work in order to make choices about employment, education and life. The career guidance project aims to provide comprehensive and personalized guidance to students to help them make informed decisions about their careers. The project recognizes that the lack of proper career guidance is a significant challenge faced by students in choosing a suitable career path. Due to a lack of awareness and knowledge about various career options, students often end up making the wrong choices, leading to

dissatisfaction and lower productivity in their professional lives.

The project aims to address this challenge by providing students with a comprehensive understanding of various career options, including the latest trends and opportunities in the job market. It also seeks to help students identify their interests, strengths, and weaknesses, enabling them to make well-informed career choices.

The career guidance project offers personalized career counselling to students, helping them explore career options and make informed decisions. It provides guidance on the educational qualifications and training required for different careers and offers support in developing the necessary skills and competencies required for their chosen careers. Additionally, the project offers guidance on job search strategies, including resume writing, interviewing skills, and networking.

The project's goal is to empower students to make informed decisions about their careers and equip them with the skills and knowledge required to succeed in their chosen fields. By providing ongoing support and follow-up, the project aims to ensure that students are successful in their careers and achieve their full potential.

The rapid pace of technological advancements and changes in the job market has made it even more challenging for students to keep up with the latest trends and opportunities. Therefore, the career guidance project recognizes the need to provide up-to-date and relevant information to students, helping them stay informed and adapt to the changing job market.

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 analyse 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 counsellors may assist the students many times it would be difficult for them to completely understand the inclination of the students, academics and thus the counselling 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 "Career Guidance System using Advanced ML Techniques"

Career Guidance System is a Web based application 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

II. LITERATURE SURVEY

[1]The paper "Design and Implementation of a Web-Based Career Guidance System for High School Students" by **Lixing Zhou and Ronghui Zhou** (2020) presents the design and implementation of a web-based career guidance system for high school students and evaluates its effectiveness in improving their career awareness and decision-making.

The authors first discuss the importance of career guidance for final year students and the challenges they face in making informed career decisions. They argue that web-based career guidance systems can provide students with access to relevant and up-to-date information about different career options and help them make informed decisions about their future.

The paper "Design and Implementation of a Web-Based Career Guidance System for final year Students" by Lixing Zhou and Ronghui Zhou (2020) presents the

design and implementation of a web-based career guidance system for high school students and evaluates its effectiveness in improving their career awareness and decision-making.
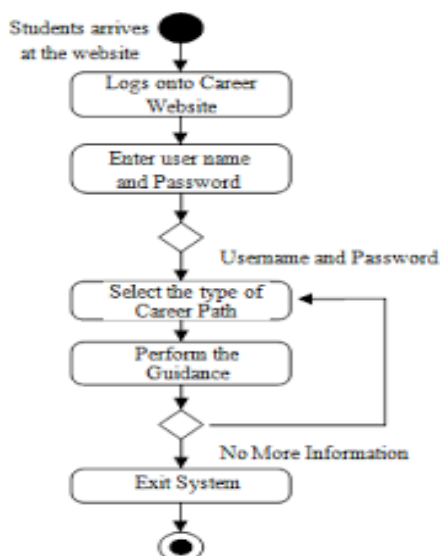
Overall, this paper provides valuable insights into the design and implementation of a web-based career guidance system for students and its effectiveness in improving their career awareness and decision-making. The findings of this study can be useful for the development of a career guidance web application project that targets final year students and aims to enhance their career awareness and decision-making.

[2] An Approach of Improving Student's Academic Performance by using K-means clustering algorithm and Decision tree **Md. Hedayetul Islam Shovon, Md. Hedayetul Islam** Shovon GPA still remains the most common factor used by the academic planners to evaluate progression in an academic environment. Many factors could act as barriers to student attaining and maintaining a high GPA that reflects their overall academic performance, during their tenure in university. These factors could be targeted by the faculty members in developing strategies to improve student learning and improve their academic performance by way of monitoring the progression of their performance. With the help of clustering algorithm and decision tree of data mining technique it is possible to discover the key characteristics for future prediction.

[3] Online Career Counselling System using Adaptive e-Learning **Kazi Fakir Mohammed**, Sushopti Gawade, Vinit Nimkar Adaptive learning can be termed as an educational method that tends to bring interactive teaching devices in the form of computers which in turn accustom the exhibition of educational entities according to the student learning necessities which is depicted by their acknowledgment to tasks and queries. The technology therefore includes concepts which are derived from numerous fields of study including psychology, computer science and education.

[4] The paper "User Acceptance of a Career Guidance Web Application: An Empirical Study" by **Muath Alzghoul and Abdulaziz Almudarris** (2021) presents an empirical study of the user acceptance of a career guidance web application and identifies the factors that influence users' intention to use such systems.
The authors first discuss the importance of user acceptance in the success of career guidance web applications. They argue that understanding users' intention to use such systems is essential for ensuring their adoption and continued use.
The paper then presents a study that examines the user acceptance of a career guidance web application among 350 university students. The study used the Technology Acceptance Model (TAM) to identify the factors that influence users' intention to use the system. The authors found that perceived usefulness, perceived ease of use, and attitude towards using the system were the most significant predictors of users' intention to use the system.
The authors also discuss the implications of their findings for the development and implementation of career guidance web applications. They suggest that developers should focus on designing systems that are easy to use, provide relevant and useful information, and are perceived as valuable by users. They also recommend that career guidance web applications should be integrated into the

educational curriculum to enhance their adoption and use.

Overall, this paper provides valuable insights into the user acceptance of career guidance web applications and the factors that influence users' intention to use such systems. The findings of this study can be useful for the development of a career guidance web application project that aims to enhance users' adoption and continued use of the system.

[5] The paper "Designing Effective Web-Based Career Information and Guidance Systems" by **Tariq Naeem and Klaas Sikkel** (2019) provides valuable insights into the design principles and factors that contribute to the success of web-based career information and guidance systems.

The authors first discuss the importance of user-centred design in creating effective web-based career information and guidance systems. They argue that such systems should be designed with the needs, goals, and preferences of the end-users in mind. The paper highlights the importance of usability testing and user feedback in ensuring that these systems are easy to use and meet the needs of the end-users.

The authors then present a conceptual model for designing effective web-based career information and guidance systems. This model includes three key components: (1) content, (2) navigation, and (3) interaction. The authors argue that effective web-based career information and guidance systems should provide high-quality, relevant, and up-to-date content that is tailored to the needs of the end-users. Navigation should be intuitive and easy to use, with clear labelling and organization of information. Interaction should be engaging and interactive, with features such as personalized recommendations and self-assessment tools.

The paper also explores the factors that contribute to the success of web-based career information and guidance systems. These include factors such as the credibility and trustworthiness of the information provided, the availability of expert support and guidance, and the level of customization and personalization of the system.

Overall, this paper provides a comprehensive overview of the design principles and factors that contribute to the success of web-based career information and guidance systems. The insights presented in this paper can be useful for the development of a user-centred and effective career guidance web application project.

[6] Many machine learning techniques, such as decision trees, artificial neural networks, matrix factorization, collaborative filters and probabilistic graphical models, have been applied to develop prediction algorithms. Most of this work ignores the continuous effect that students enhance their knowledge over time and follow the prediction as a one-time task. To take the temporal/sequential effect into account, a three-mode tensor factorization (on student/problem/time) technique was developed for predicting student performance in solving problems in IT Sector. There are mainly two issues while developing this sort of model one is weather the student is willing to build his career based on his interests and compassions and weather the student has proper identification of improving his Skills by pursuing certification courses based on the interests of the students. So, a Questioner developed in this model must classify the reflections of the student outcomes.

III. SYSTEM ANALYSIS

A. Existing System

Currently, engineering students mainly rely on seniors, mentors, professors, and parents for career guidance. Some may also seek guidance from counsellors. There is no unified Online Career Guidance System for career guidance.

In the absence of adult guidance, they often find it difficult to find relevant information about the career they want. Generally, students make poorly researched decisions which they have to struggle with.

In the current scenario, the career prediction system work for getting job recommendations. Several platforms such as AMCAT, CoCubes, etc. they sand gives recommendations of the suitable job profile.

Limitations Of the Existing Manual System

The Manual career guidance is limited in the following ways

a) Guidance and counselling have been limited to secondary schools in most cases. The bed rock of education i.e., the primary schools has been completely neglected.

b) Though counsellors are found in secondary schools, but the numbers of full-time counsellors are highly insignificant and cannot cater for the number of students.

c) Some counsellors are not committed or diligent and can sometimes be unapproachable.

d) Counsellors can only attend to students during working hours of the day.

B. Proposed System

The development of career guidance and counselling system lies on one of the roots of expert system which is also one of the major roots in expert systems called „cognitive science‟ i.e., the area of human information processing.

The study of cognition is very important due to the fact that the human expert has to be available for the knowledge engineer to encode his knowledge into the programs so as to make the computer emulate the human. In the case of this particular research the knowledge was acquired from the human experts (career counsellors) by the means of interview with them.

Input Design

The input of this system from the user point of view is basically his actions on the pages of the site which make up the system, these pages will be implemented by encoding them with HTML (Hyper Text Markup Language) and the page layout and design done with CSS (cascade style sheet). The user will interact with the system by clicking on menus a hyperlink as well as selecting the answers on the quiz page, the quiz answers will be implemented using radio buttons whereby only one option out of the four (4) can be picked.

Storage Design

The proposed system will have a fully dynamic and functional database. The database will be created using WAMP and queried using SQL. The following data about the student will be collected and stored in the database:

1. First Name (Input type= Text)

2. Last Name (Input type= Text

3. Email address (Input type= Text)

4. Password (Input type= Password)

5. State of origin (Input type= Option)

6. Phone number (Input type= Text)

7. Date of Birth (Input type= Option)

8. Gender (Input type= Radio)

9. Educational status (Input type= Checkbox}

The quiz questions also will be stored in the database and subsequently retrieved using PHP and SQL commands, the result of the quiz will also be stored in the database and can be retrieved any time the student revisits the site. A student can take the quiz several times and the result of each quiz will be stored for future use or reference.

Phase II: Developing MERN Website

1. Specification: This stage involves identifying the requirements and objectives of the MERN news website. It includes defining the features and functionalities that the website should have, such as user authentication, fetching from API, and storage of links in MongoDB.

2. Design: This stage involves creating a visual and functional design for the website. It includes designing the user interface, wireframing, and prototyping.

3. Coding: This stage involves actual programming of the website using MERN stack (MongoDB, Express, React, and Node.js) and integrating ML Model

4. Integration and testing: This stage involves integrating all the individual components of the website, such as the front-end and back-end. The testing is conducted to ensure that the website is functioning properly and all the requirements are met.

5. Implementation: This stage involves deploying the website to a live server and making it accessible to users.
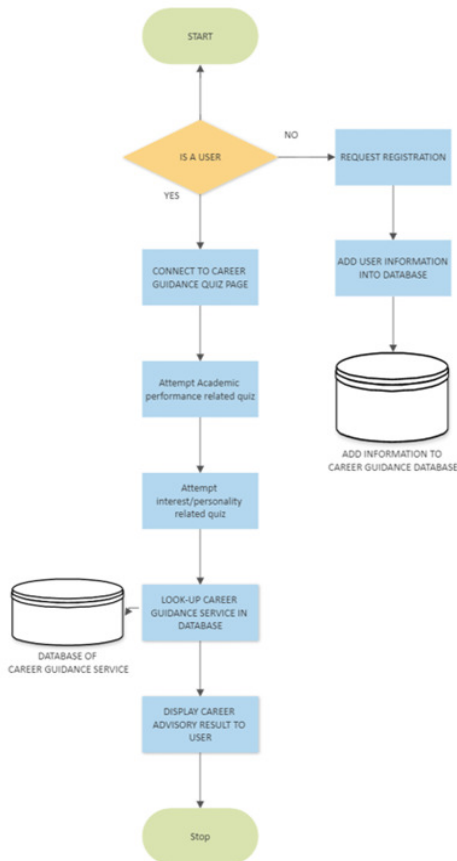
IV. SYSTEM DESIGN

Figure 4 System Design

1. Start: This is the beginning point of the career guidance system. A user can start by accessing the system through a website, mobile application or any other platform.
2. Register and Login Page: The user is first directed to the registration and login page. If the user has not registered yet, they can register by providing the necessary details. If they have already registered, they can log in to access the website.
3. once the user is registered, he/she is then taken to the career guidance quiz page and the user information is stored into career guidance database

4. Connect to career guidance quiz page: The user is then directed to a career guidance quiz page, which consists of two quizzes - an academic performance-related quiz and an interest/personality-related quiz. The user can choose to attempt both quizzes or just one of them.

5. Attempt academic performance-related quiz: The academic performance-related quiz assesses the user's academic performance, such as their grades and the subjects they excel in. The quiz may also ask questions related to the user's future academic plans, such as the courses they are interested in pursuing.
6. Attempt interest/personality-related quiz: The interest/personality-related quiz is designed to understand the user's interests and personality traits. This quiz may include questions related to the user's hobbies, passions, and preferences.
7. Look up career guidance service in database: After the user completes both quizzes, the system will then look up a career guidance service in its database. The database may include information about various career paths, job opportunities, and career development programs.
8. Display career advisory result to user: Based on the user's quiz responses and the information in the database, the system will provide a career advisory result to the user. The result may include suggestions for career paths that align with the user's interests, academic performance, and personality traits. The result may also include information about job opportunities, career development programs, and other resources that can help the user achieve their career goals.
9. Stop: This is the end of the career guidance system flowchart. The user can now choose to explore the career advisory result further or exit the system
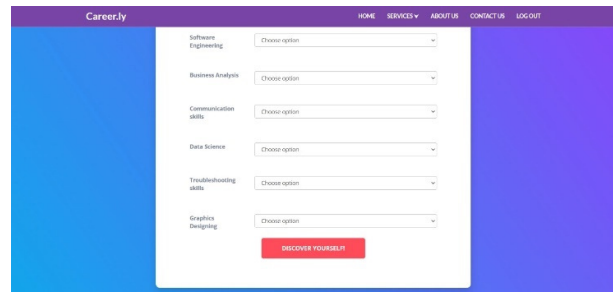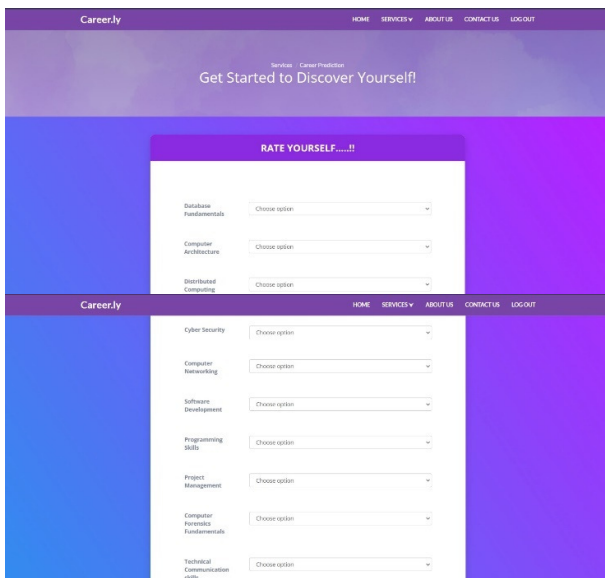
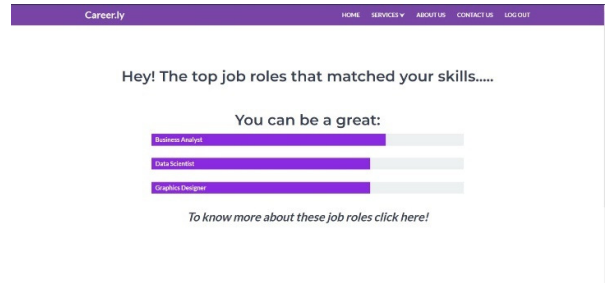## V. RESULTS

1. Login Page
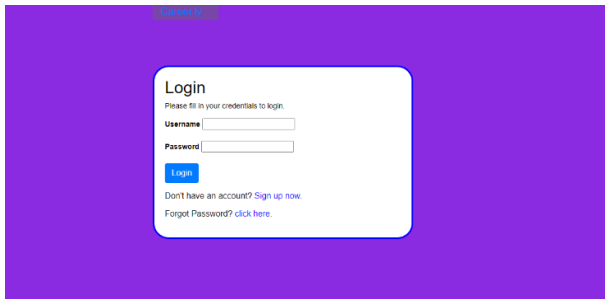
2. Sign Up page
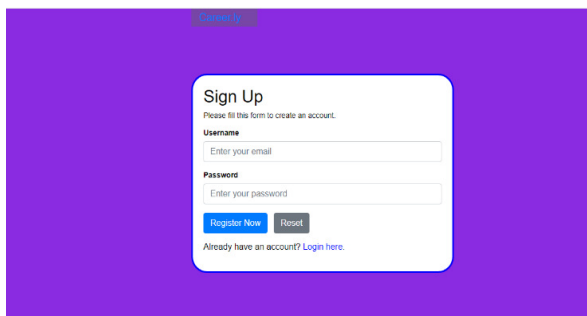
Quiz fields

4. Suggested Career Job Role

VI. CONCLUSION AND FUTURE SCOPE

We hereby conclude that this software can be useful for students for finding a correct career path. The software/project will provide a detailed report which can help a user analyse his/her strengths and weaknesses and choose a profession accordingly.

In conclusion, this project has the potential to provide students with a comprehensive and personalized approach to career exploration and decision-making

.

There port proposes a Career Guidance System which uses Machine Learning for Prediction. It is most effective and efficient System, which will be used by any Engineering Student of CS/IT (currently in final year or completed graduation)to evaluate their talent,skills and which particular Career path to choose from numerous Career paths available. This System is developed as per user requirement and provides an excellent user interface experience.

Existing career guidance systems often suffer from problems such as outdated information, lack of personalization, and limited accessibility. By implementing a proposed system that

incorporates personalized recommendations, interactive tools, up-to-date information, integrated support, students can receive the necessary resources and guidance to make informed decisions

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