

# A Machine Learning-Based Career Recommender System

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**Abstract:** In today's world, numerous students often find themselves pursuing career paths influenced by external factors such as family, peers, or societal expectations rather than following their true passions. This frequently results in discontentment and a sense of unfulfilment within their chosen professions. To address this issue, we propose the creation of a personalized career recommender system built to guide students in identifying and selecting career path that get align with their genuine interests. In our daily lives, we encounter a constant barrage of recommendations and information from various sources, including individuals, newspapers, and the internet. The sheer volume of information available on the internet can pose a challenge for the students who are exploring diverse educational and career opportunities. Our recommendation system aims to simplify this process by narrowing down choices based on individual interests, thereby facilitating a more straightforward decision-making process for students as they chart their future paths.

**Keywords:** Career, Education, Recommendation, Machine Learning

## I. INTRODUCTION

Now day's whenever we ask any students what is the reason behind choosing the particular path/ career many students reply that it was suggested by family members or by their friends and many students reply that it was by their parent's force and few students didn't know what to choose and therefore they chose this career but only few students reply that they chose it by their interest. Therefore, we are trying to develop a system which helps students to find out the career path based on their interest. We make decisions in our daily lives based on the advice of friends, family, the media, and the internet. Searching and settling on a course of action may be made more challenging by the exponential growth of online content. A student who is looking for his/her next opportunity may be exposed to so many different areas that it becomes tough to narrow their options down to those that pertain most to them. Therefore, the suggestion system aids the learner in investigating potential educational and occupational avenues. It simplifies the process of deciding what to do next by limiting the data to just that which is relevant to the user. Students have different educational requirements depending on their interests and desired professions. To this aim, personalized course recommenders have exhibited to be helpful additions to conventional academic advising in guiding students towards the right course selections in pursuit of their individual objectives. Make course suggestions according on which courses students have already taken. After analyzing the benefits and drawbacks of existing methods, we offer an advanced course recommender system to guide students in identifying valuable coursework in light of their individual career goals.

## II. LITERATURE SURVEY

### 1. IEEE PAPER TITLE : An Intelligent Career Guidance System using Machine Learning

YEAR OF PUBLICATION: 2021

AUTHORS: Shuyun S Vignesh , C Shivani Priyanka , H Shree Manju and K Mythili

Description: In order for assisting students in selecting the best career route based on student skills, the paper introduces an intelligent career guidance system that uses machine learning. Engineering students and students in 11<sup>th</sup> and 12<sup>th</sup> grade participated in numerous rounds of discussion for the study. The suggested system assesses a person's skill set through an objective evaluation and maps it with the fundamental abilities of several engineering departments. An overview of the students overall performances in the skillets analysis section is provided by the system, along with a recommendation for the department where they performed best. Additionally, the research makes use of earlier investigations into evaluation strategies and the idea of cognitive information processing.

### 2. IEEE PAPER TITLE : Career Recommendation Systems using Content based Filtering

YEAR OF PUBLICATION: 2020

**AUTHORS:** Tanya V. Yadalam ; Vaishnavi M. Gowda ; Vanditha Shiva Kumar ; Disha Girish ; Namratha M

**Description:** This study examines how machine learning fits within data science, particularly with regards to generating algorithms for data analysis and prediction. It emphasizes the significance of recommendation frameworks in dealing with the difficulty of handling enormous amounts of data in diverse disciplines, allowing users to concentrate on pertinent information. The report cites a single area where recommendation systems can have a big impact: helping college graduates realize their career goals by recommending job opportunities based on students interests and talents. While acknowledging the abundance of websites offering extensive employment information, the paper emphasizes the tedium faced by students in sifting through this data to find most suitable job.

### III. PROPOSED WORK

This study offers doable forecasts for students' field choices, supported by their grades and interest choice. The method would suggest a professional path for the student based on students personality, areas of interest, and aptitude for the subject matter. This method gives pupils wide ranges of employment alternatives based on part, self-talent, memorization ability, and most importantly, based on their academic credit score.

### IV. METHODOLOGY

#### 1. Data Visualization

We compiled the dataset by gathering information on courses at a variety of academic levels. The data gathering process started with the fundamental criteria of: courses taken after 10th grade; courses taken after 12th grade; courses taken after undergrad.

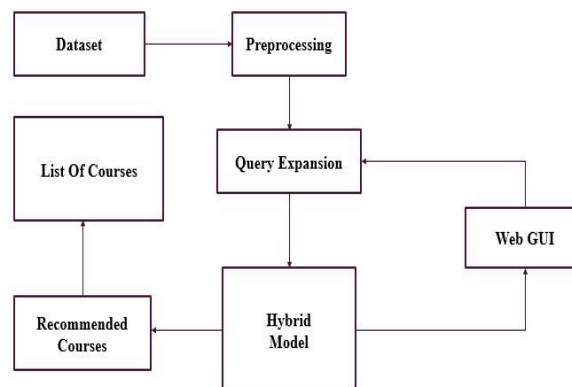
These data are divided into subsets based on the specifics of the topic in question. Following data gathering, information is pre-processed in a machine learning environment. Once the data has been filtered to provide an accurate recommendation, it is displayed in two formats: a list of courses and a visualized format of a pie chart to show the percentage of an interesting area of study. The cold start problem is overcome by combining course data with user data.

#### 2. Proposed Methodology

An online tool that analyses a user's interests and preferences to recommend a career path. The proposed software takes the form of multiple-choice questions (MCQs), from which the user must choose the area of expertise or study in which he is most interested. A web page with text, graph, or voice-based recommendations on the course is generated depending on the user's chosen alternatives or replies and then processed and analyzed using a specialized hybrid-based model.

Research towards a hybrid strategy to address the issue of over specialization experienced by content-based recommendation systems has been conducted. Similarly, if no comparable neighbors can be located, the system will fall back on the preferences of the learners, solving the "cold start" issue common to collaborative filtering-based systems. Given that both techniques were memory-based, they ran into scalability problems as the size of the item and user databases increased.

#### 3. Implementation



**Figure No. 1 Implementation Diagram**

Our dataset consists of a classified list of courses. We then use pre-processing methods on the data. To improve search results, query expansion is used to reformat information. Filtering methods, including collaborative filtering and content-based filtering, are used to create a hybrid model, which is used to categories the incoming data. Next, the user's input data is sent to the model through a web interface, where it is further analyzed in order to provide course recommendations.

**V. CONCLUSION**

In this proposed approach, the problems of cold start trust and privacy is solved in this approach and a recommendation system is built. This approach improved our course and college recommendations by creating a hybrid recommendation system. It combines two methods: one that looks at what other people like, and another that looks at specific details. This made the recommendations more accurate and personalized for user.

**FUTURE ENHANCEMENT**

The future scope of education career recommendation system project holds potential for expansion, enhancement, and further impact such as : Enhanced Recommendation Algorithms, Advanced Data Analytics, User Feedback Integration and , Dynamic Skill Assessment ,Collaboration with Institutions.

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