

Career Path Finder for Students

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Abstract- Decision-making and accessibility have been greatly improved by the incorporation of information and communication technology (ICT) into career counseling for students. The ability of expert systems to enhance learning outcomes, self-evaluation, and career alignment is highlighted in this study's examination of their function in educational advice, assessment, and career planning. Expert systems use artificial intelligence to evaluate student data, offering tailored suggestions and resolving issues like unclear career paths and insufficient information. Notwithstanding their advantages, the current systems have drawbacks in terms of application uncertainty and user adaptability. To maximize their precision, scalability, and efficacy in assisting students' academic and professional success, ongoing improvement is necessary.

Keyword- Career Guidance, Expert Systems, ICT, Artificial Intelligence, Student Decision-Making, Vocational Education.

I. INTRODUCTION

For vocational students to successfully navigate their career choices, career counseling is essential. Career mentorship has historically involved parents and teachers, but as ICT has advanced, these procedures have grown more autonomous and accessible. ICT offers decision-support tools like expert systems in addition to facilitating communication.

Expert systems are a subclass of artificial intelligence that use knowledge bases and inference techniques to simulate human skill in particular fields. These tools help career and educational advising by offering rational answers based on the facts at hand. They can be used to assess students' performance, forecast future achievement, and match academic interests and skills with career trajectories.

Expert systems have been used to fill in the gaps in traditional guidance because profession choices have a significant impact on students' prospects. They reduce the possibility that students may make ignorant or incompatible decisions by enabling them to

independently acquire thorough, up-to-date career information. Notwithstanding their advantages, problems including system restrictions and user adaptability highlight the need for more study and improvement.

II. LITERATURE SURVEY

Dr. Gufran Ahmad Ansari: In this paper, the author provides a framework for Multilevel Expert System to advice scholars for their future career. The proposed framework aims at providing information to decide the career paths for the academics. The emerging fields of Expert System, Education, and Data Mining are speedily providing new possibilities for collecting, analyzing and guiding the scholars in their careers. Many scholars suffer from taking a right career decision, only a few scholars took the right decision about their careers. A poor career decision of scholars may push his whole life in the dark. Nowadays selecting a right career becomes very difficult for the scholars. Among the works reported in this field, we concentrate only Experts Systems that deal with scholar's career selection problem through Data Mining technique.

YuliadiErdani, BoliteknikManufaktur, Negeri Bandung: This paper describes the development of inference engine of expert system that can work in ternary grid knowledge model. The strategy to inference knowledge uses forward chaining with recursive process. The design result is implemented in the form of software. The result of experiment shows that the inference process works properly and more efficient in comparison to the previous developed iterative forward chaining.

Yasser A. Nada: In this paper we intends to build an expert system based on semantic web for online search using XML, to help users to find the desired software, and read about its features and specifications. The expert system saves user's time and effort of web

searching or buying software from available libraries. Building online search expert system is ideal for capturing support knowledge to produce interactive on-line systems that provide searching details, situation-specific advice exactly like setting a session with an expert. Any person can access this interactive system from his web browser and get some questions answer in addition to precise advice which was provided by an expert. The system can provide some troubleshooting diagnose, find the right products; Etc.

Luis Enrique Sánchez, Antonio Santos-Olmo, Esther Álvarez, Monica Huerta, Sara Camacho and Eduardo Fernández-Medina: This article aims to show some of the research that has been conducted to determine why companies have not found these skills useful and how both can be aligned. Finally, we show the development of an Expert System that will enable companies to select the most suitable candidates for their jobs, considering personal and social skills, along with technical knowledge. This prototype will serve as a basis to align the competencies defined in the curricula with professional requirements, thus allowing a true alignment between degree courses and the needs of professional companies.

Dewa Bagus Sanjaya, Dewa Gede Hendra Divayana: In the educational process, various strategies and methods of value education can be used. In Civics Education characters are developed as the impact of education and also as its nurturing effect. Meanwhile, other subjects, which formally have the major mission other than character development have to develop activities that have the nurturing effect of character development in the students. However, in the educational process this has not run well. Hence, there is a need to evaluate educational programs at public as well as private universities in Buleleng regency. One of the evaluation techniques that can be used is the CIPP model combined with certainty factor method in expert system. The CIPP Model can evaluate the Civics education processes at all the public and private universities in Buleleng regency objectively, especially in probing local culture in character educational development. Meanwhile, the certainty factor method is used to determine the extent or degree of certainty of a component being evaluated in Civics educational processes.

Tajul Rosli Razak, Muhamad Arif Hashim, Noorfaizalfarid Mohd Noor, Iman Hazwam Abd Halim, Nur Fatin Farihin Shamsul: In Malaysia, choosing a career between students is significant due to the existence of multiple human abilities. Many students have chosen their career path without receiving proper advice from suitable professional or university services. This may potentially cause mismatch between academic achievements, personality, interest and abilities of the students. In order to recommend students in career selection, it is essential to build a recommendation system that provides direction and guidance to students in choosing their career. Hence, this study proposes a career recommendation system driven by fuzzy logic technique. The use of fuzzy logic approach helps students by giving career recommendation based on career test. Based on conventional method that have been applied, they just focus to one job careers without look up the other potentials job careers that also can be match with their skills or abilities. So by implementing this system it give a better result and also students also can involves with this system.

Dr. Maxwell. D. Eremie: The study investigated factors influencing career choices among Senior Secondary School Students in Rivers State, Nigeria. Simple random sampling techniques were adopted to select four hundred (400) Senior Secondary School Student from five Secondary Schools in Rivers State. The "Comprehensive Career Choice Survey" (CCCS) was administered to the respondents to collect necessary data. The t-test statistics was used to test three null hypotheses at 0.05 level of significance. The findings revealed that there were significant differences among male and female secondary school students in their career choices in terms of: Prestige of a profession, gender parity, and parental influence. Based on the findings some recommendations were made: (1) Professional career counsellors should be consulted to assist students in planning and choosing their careers. (2) Professional career counsellors should include the students in the selecting process, considering interest, ability, skills and personality of the students.

Cixiao Wang and Feng Wu: In this study, an expert system named Plant-expert which can provide decision-making questions for students to acquire

knowledge about plant classification was developed. To explore the learning effectiveness of Plant-expert, another app named Plant-general that only contains information pages of target plants was designed. An experiment has been conducted on a secondary school biology course to evaluate the effectiveness of the proposed method. The experimental group with 46 students using Plant-expert in campus with target plants and the control group with 47 students using Plant-general in the same campus. We conducted pre-test, post-test and delayed test to evaluate learning achievement of students and used the Paas (1992) cognitive load rating scale to measure the mental effort of students invested into blended learning activities. The experimental results show that the proposed approach can improve the learning achievements of the students, and not increases mental effort.

III. GAP ANALYSIS

Despite the significant contributions of expert systems to educational and career guidance, several key challenges remain. One major issue is the lack of development in vocational guidance; many existing systems do not address the specific needs of vocational education, leading to a gap in supporting students pursuing alternative career paths. Additionally, user interaction issues persist, as many students face difficulties in adapting to or fully understanding the system, limiting its overall effectiveness. Finally, there is a limited integration of advanced AI technologies in current systems, which hampers their ability to provide more nuanced and accurate recommendations. The absence of cutting-edge AI techniques reduces the potential for these systems to offer highly personalized, data-driven guidance, thereby limiting their impact. Addressing these gaps is essential to enhance the system's relevance and efficacy in career guidance.

Proposed System

The proposed system is a web-based expert system designed to assist students in making informed career choices by analyzing their academic performance, interests, and personality traits. It leverages AI and ICT to provide personalized career and academic recommendations while integrating real-time labor market trends. The system features an intuitive interface, a robust knowledge base, and an inference

engine to ensure accurate suggestions. Accessible across platforms, it empowers students to explore career options independently, providing skill development guidance and adapting through user feedback for continuous improvement.

IV. ARCHITECTURE

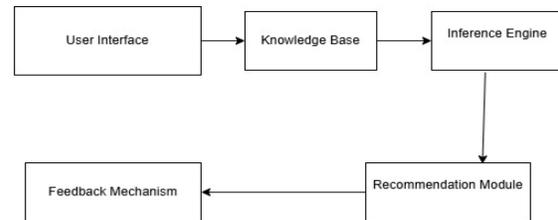


Figure 1. System Architecture

Proposed Work:

The proposed system aims to develop an intelligent and interactive career recommendation platform that can guide students toward their ideal career paths using machine learning techniques. The system collects answers from students through a series of questions designed to capture their interests, aptitude, and mindset. Based on this input data, the machine learning model predicts the most appropriate career option for each individual. The platform includes a student panel where users can register, log in, and answer the questionnaire, and an admin panel that allows the administrator to manage student data and monitor the system. Once the prediction is generated, the system recommends YouTube videos or other learning resources related to the predicted career, helping students gain deeper insights into that field. This proposed approach reduces human bias, saves time, and delivers accurate, data-driven recommendations for students seeking career guidance.

V. SYSTEM OVERVIEW

The Career Path Finder System consists of two main modules — the student panel and the admin panel — integrated with a backend database and a machine learning model. In the student panel, users first register and log into the system. They then answer a set of 20–22 career-related questions that evaluate their interests, academic inclination, and personality attributes. Once the questionnaire is submitted, the data is processed by

the trained machine learning model, which predicts the most suitable career field for the student. The result is displayed on the interface along with video recommendations from YouTube that correspond to the predicted career. The admin panel, on the other hand, is designed for system administrators who can view, manage, and monitor all registered users and their results. The backend is supported by a database that stores user information, responses, and prediction outcomes. Overall, the system provides a seamless interaction between students, the predictive model, and the administrator, offering a complete, automated solution for career guidance.

Existing System:

In the existing scenario, career guidance for students is mostly carried out through manual counseling sessions or generic online tests. Traditional counseling methods are subjective, time-consuming, and often influenced by personal opinions of career counselors. Similarly, most online quizzes available today use predefined rules and static logic without applying any intelligent algorithms to understand individual differences. These systems usually fail to provide personalized recommendations and do not offer any additional learning resources such as videos or tutorials related to the suggested career. Moreover, manual systems are not scalable and are less accessible to students from rural or underprivileged backgrounds. In contrast, the proposed system uses data-driven machine learning models to predict careers automatically, providing more accuracy, objectivity, and convenience to users through an accessible web-based platform.

Predicted Result:

The predicted result of the system is a personalized career suggestion for each student based on their responses to a set of 20–22 carefully designed questions. These questions cover different aspects such as interests, subject preferences, academic performance, personality traits, and skills. After a student submits the questionnaire, the trained machine learning model processes the data and predicts the most suitable career path for them. The system displays the predicted career field along with the model's confidence level or accuracy score. In addition to this, the system also provides relevant YouTube video recommendations that help students

explore their predicted career domain in more detail. Thus, the predicted result is not just a label of a possible career but a complete guidance output that supports students in making informed career decisions.

VI. CONCLUSION

Expert systems have the potential to transform student career guidance by providing personalized, data-driven recommendations. However, challenges such as user adaptability, system precision, and a lack of focus on vocational guidance limit their effectiveness. Addressing these gaps requires the integration of advanced AI techniques to improve accuracy and user experience, as well as expanding support for diverse career paths, including vocational options. Future research should prioritize scalable and inclusive solutions to enhance the impact of expert systems in career guidance.

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