AI-Based Career Guidance Website 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.**

Index Terms— **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.

III. 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.

Yuliadi Erdani, Politeknik Manufaktur 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 evaluated 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 Wangand 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.

IV. 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.

V. 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.

VI. FLOWCHART & ALGORITHM

1. Input student data (academic performance, interests, personality traits).
2. Query the knowledge base for relevant information.
3. Use the inference engine to match input data with career pathways.
4. Generate a ranked list of recommended careers and academic programs.
5. Provide feedback opportunities for iterative improvement.
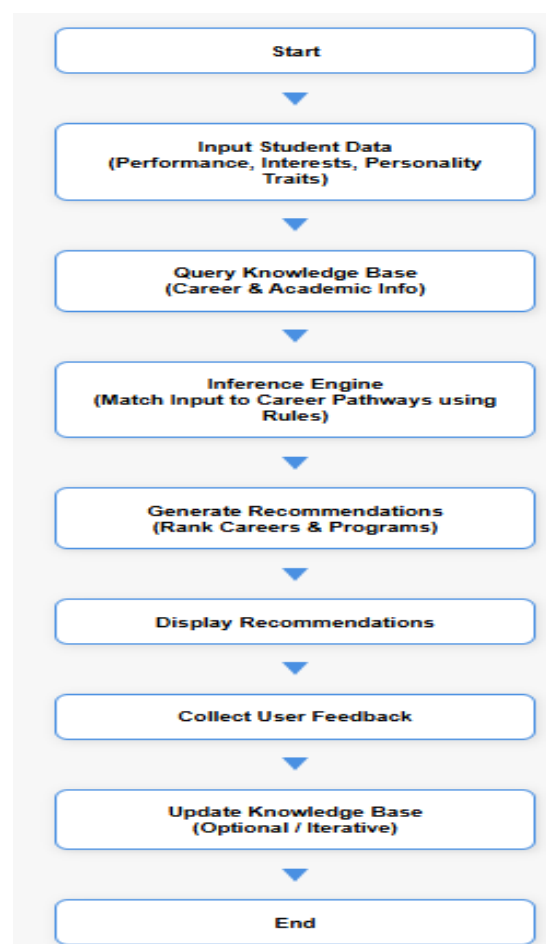
VII. RESULT AND DISCUSSION

The section shows overall accuracy of classification technique. So this works gives better prediction compare to existing method.
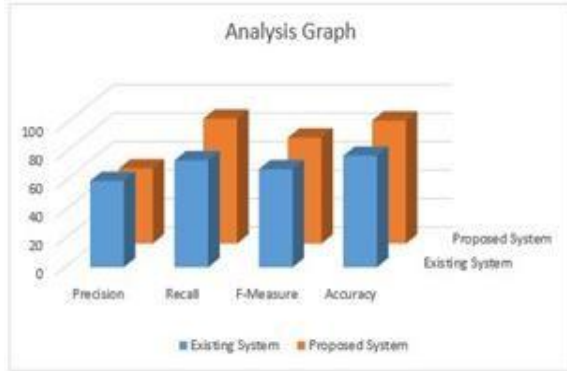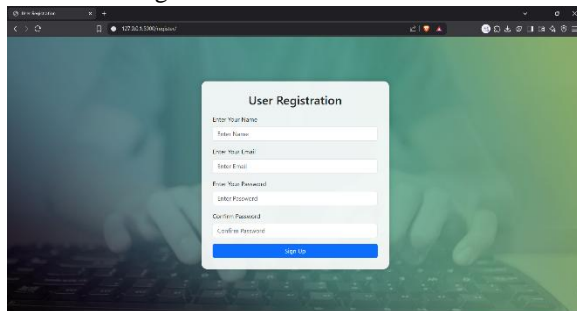

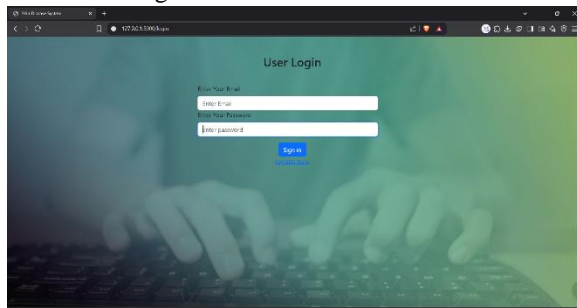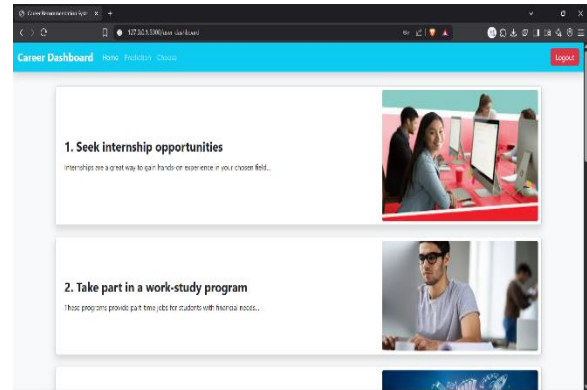Fig. 1. Classification Accuracy Graph

7.1 Main Page

7.2 USER
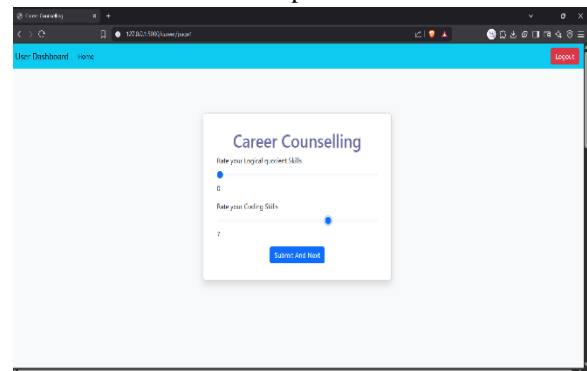#### 7.2.1 User Registration

7.2.2 User Login

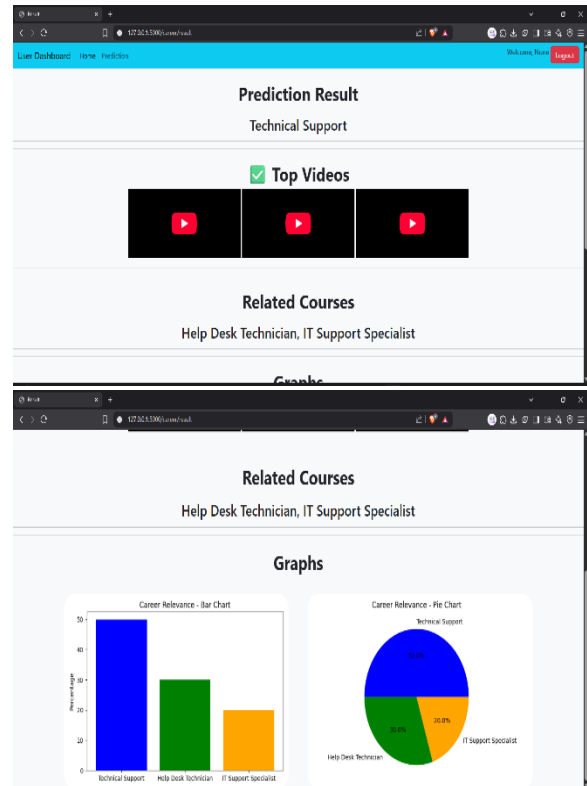### 7.2.3 User Home Page
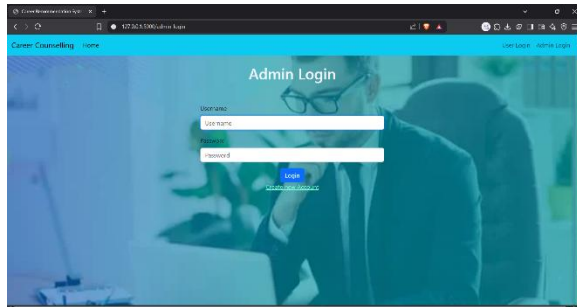

7.2.4 One of the form for prediction

7.2.5 Predicted result
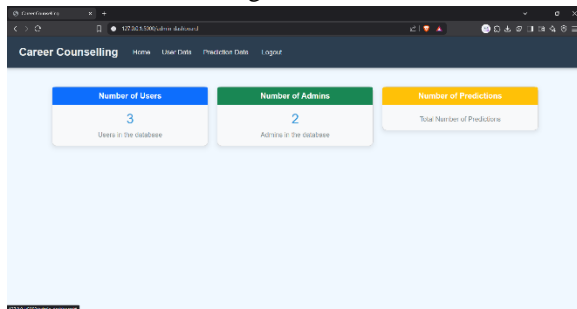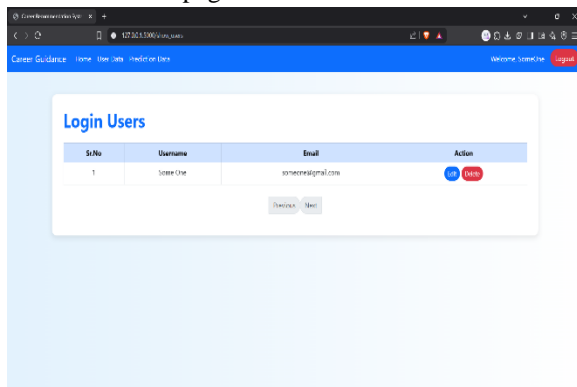
7.3 ADMIN

7.3.1 Admin Login

7.3.2 Admin Home Page

7.3.3 User Data page

VII. 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.

REFERENCES

1] Ansari G A 2017 Career Guidance through Multilevel Expert System Using Data Mining Technique I. J. Information Technology and Computer Science.

2] Erdani Y 2011 Developing Recursive Forward Chaining Method in Ternary Grid Expert Systems International Journal of Computer Science and Network Security 11 (8) 126-130

3] Nada Y A 2013 Construction of Powerful Online Search Expert System Based on Semantic Web International Journal of Advanced Computer Science and Applications 4

4] Sánchez L E, Santos-Olmo A, Álvarez E, Huerta M, Camacho S and Fernández-Medina E 2016 Development of an Expert System for the Evaluation of Students' Curricula on the Basis of Competencies Future Internet 8

5] Sanjaya D B and Divayana D G H 2015 An expert system-based evaluation of civics education as a means of character education based on local culture in the Universities in Buleleng International Journal of Advanced Research in Artificial Intelligence 4 (12) 17-21

6] Razak T R, Hashim M A, Noor N M, Halim I H A and Shamsul N F F 2014 Career path recommendation system for UiTM Perlis students using fuzzy logic In Intelligent and Advanced Systems (ICIAS) (pp 1-5) IEEE

7] Eremie M D 2014 Comparative analysis of factors influencing career choices among senior secondary school students in Rivers State, Nigeria Arabian Journal of Business and Management Review (OMAN Chapter) 4 (4) 20-25

8] Wang C and Wu F 2018 An Expert System Approach to Support Blended Learning in Context-Aware Environment In International Conference on Blended Learning (pp 45-56) Springer, Cham