

Competency Assessment

Vedant Kharatmal, BE Student, Department of computer engineering SKNSITS, Lonavala, India

vedant14052002@gmail.com

Jay Rane, BE Student, Department of computer engineering SKNSITS, Lonavala, India

ranejay1407@gmail.com

Aditi Mahamuni, BE Student, Department of computer engineering SKNSITS, Lonavala, India

aditimahamuni1302@gmail.com

Ritesh Deo, BE Student, Department of computer engineering SKNSITS, Lonavala, India

riteshdeo100@gmail.com

Prof. S. P. Gunjal, Professor, Department of computer engineering SKNSITS, Lonavala, India,

spgunjal.sknsits@sinhgad.edu

Abstract:- In an era of diverse educational and career opportunities, the process of guiding students toward well-informed decisions is increasingly complex. Competency assessment projects, driven by computer-based assessments and machine learning algorithms, have emerged as a promising solution. This research paper explores the intricate synergy of technology and education in competency assessment. It delves into the design of comprehensive assessments that transcend conventional knowledge-based tests, focusing on students' problem-solving skills, critical thinking abilities, and personal interests. Leveraging machine learning algorithms, these projects dissect assessment results to reveal latent competencies, and subsequently, recommendation systems provide personalized guidance, aligning students with fields of study and career paths that harmonize with their proficiencies and passions. Nevertheless, the paper also addresses the ethical, privacy, and continuous improvement considerations that underscore the journey toward transforming career and educational guidance. Ultimately, this research underscores the potential of competency assessment projects to reshape the educational and career landscape, empowering students to navigate their future with competence and conviction.

Keywords — *Competency Assessment, Educational Guidance, Recommendation System, Knowledge-based Test, Career, Skill test*

I. INTRODUCTION

In the ever-evolving landscape of education and career choices, the task of guiding students towards fields that align with their inherent competencies and passions is a formidable challenge. As the digital age advances, technology has emerged as a potent enabler in addressing this challenge. Competency assessment projects, driven by the integration of computer-based assessments, data analysis, and recommendation systems, have arisen as a compelling solution to empower students in their educational and career decisions. This is where competency assessment projects, often embedded within educational institutions or accessible through web platforms, have become catalysts for transformation. Leveraging cutting-edge technology, these projects offer students the opportunity to undergo comprehensive assessments in

various fields, from mathematics and science to the humanities and beyond. The assessments are meticulously designed to gauge not only factual knowledge but also problem-solving abilities, critical thinking skills, and personal interests. Once the assessments are completed, the real magic unfolds. In this review paper, we embark on a comprehensive journey to explore the landscape of competency assessment projects, dissecting their fundamental components and dissecting their potential impact on the educational and career development of students. We delve into the technological intricacies that power these projects, unveiling their capacity to redefine educational guidance. Moreover, we scrutinize the challenges and ethical considerations that underpin these projects, ensuring that the benefits they bring are not compromised by pitfalls. In sum, this review aims to shed light on a transformative paradigm in the world of

education and career counselling. Competency assessment projects, equipped with the computational prowess of modern technology, stand poised to empower students, creating a future where career choices are anchored in aptitude and passion. As we embark on this exploration, we embark on a journey of discovery, where bytes of data and lines of code merge with the aspirations and potential of students, forging a new trajectory towards a brighter and more fulfilled tomorrow.

II. OBJECTIVES

1. Develop a simple yet affective User Interface:

The first objective is to develop a website which can handle multiple students simultaneously. The user should be able to navigate between the web page easily and should be able to interact with the web page. The structure of the website should be simple and easy to understand. Complex website may be difficult to understand. The User Interface of the webpage should be user friendly, users and developers should be able to interact with the website easily.

2. Build an Interactive website:

The next objective is to build an interactive website in which a user can engage with the website by clicking on interactive elements of the website. The interactive elements in the web page should be able to increase the readability of the webpage. The information conveyed should be short and clear.

3. Webpage should be able to analyse the student responses:

When a user will submit its response to the webpage, the algorithm should be able to interpret and analyse the skillset of an individual.

4. To analyse the link between the competency mapping and human practices

5. To Display the result of the assessment to the user

III. LITERATURE SURVEY

Previous research had been focusing on different aspects of the program and Competency assessment such as study of models and framework, empirical, and statistical studies. The studies had been conducted in different industry sectors.

Sr No. Title Author Drawbacks

[1] Competency Based Training Need Assessment for IT Companies in Chennai N. Akbar Jan, Dr.C. Muthuvelayutham A drawback of this analysis is that it relies solely on the number of responses received to prioritize training programs, which may not necessarily reflect the true importance or effectiveness of the training needs, as other factors like the expertise of respondents or

the specific organizational context may not have been considered.

[2] Competency Evaluation Model for the Software Development Team Dandan Liu, Wei Peng, and Wei Liu A drawback of this Paper is that while the proposed evaluation model combines various methods like VIKOR, it may not sufficiently address potential biases or subjectivity in the evaluation process, as it emphasizes evaluator opinions and does not explicitly address the potential for evaluator bias in assessing software development team competency.

[3] High School Students' Career Decision-making Difficulties According to Locus of Control Oğuzhan Kırdök1, Esranur Harman A drawback of this Research is that it primarily relies on self-reported data and observational findings, which may not fully capture the complex and multifaceted factors that influence career decision-making difficulties, potentially oversimplifying the relationship between locus of control and these difficulties.

[4] A Study on Competency mapping for IT Professionals working in indian IT companies, with reference to chennai Dr. R. Gayatri, Purushothaman This research doesn't provide specific methods or data on how the identified competency skills were assessed or validated, which may raise questions about the reliability and accuracy of the proposed training and HR strategies.

[5] An Empirical Study on Competency Mapping R. SUGUMARI, S. RUPA (ALIAS) ANDAL A drawback of this paper is that it emphasizes the importance of competency mapping without providing specific details or data to support the effectiveness of the suggested measures or their impact on employee performance and development.

[6] Developing career management competencies among undergraduates and the role of work-integrated learning

Kuijpers and Meijers A limitation of this analysis is that it relies on self-report data, which may not fully capture the complex influences on career management competencies, and it does not provide a comparative analysis of different strategies for competency development.

[7] Career Decision-Making for Undergraduates Enrolled in Career Planning Courses Diandra Prescod, Beth Gilfillan, Christopher Belser, Robert Orndorff and Matthew Ishler

This paper acknowledges the limitations of the study, including the lack of diversity in the sample and the absence of age data, which restricts the generalizability of the results and may not fully represent the experiences of students at more diverse institutions.

IV. METHODOLOGY

1. Define Project Scope and Requirements:

- Define the purpose and goals of the competency assessment.
- Specify the number of questions per field, the format of questions (MCQ), and the evaluation criteria.

2. Design User Interface:

- Create a user-friendly interface for the assessment website.
- Design the layout to display questions and options clearly.

3. Develop Questions Database:

- Create a database to store questions, options, and correct answers for each field.
- Populate the database with questions for each field (30 questions per field).

4. Implement User Authentication (Optional):

- If required, implement user authentication to track individual assessments.

5. Develop Assessment Logic:

- Load questions from the database based on the selected field.
- Allow users to select options and submit their answers.
- Validate and store user responses.

6. Implement Evaluation Algorithm:

- Develop an algorithm to evaluate user responses.
- Calculate the score for each field based on the number of correct answers.
- Determine the suggested field with the highest score.

7. Display Assessment Results:

- After evaluation, display the suggested field to the user.
- Show the number of correct answers for each field and the overall score.

8. Enhance User Experience (Optional):

- Add features like progress tracking, timer for each question, and feedback on correct/incorrect answers.

9. Testing and Quality Assurance:

- Test the website thoroughly to ensure all features work as expected.
- Check for usability and accessibility.

10. Deployment:

- Deploy the website to a hosting server.

- Ensure the website is accessible to users.

11. Feedback and Iteration:

- Gather feedback from users and stakeholders.
- Make any necessary improvements based on feedback.

12. Maintenance and Updates:

- Regularly update the website with new questions or features.
- Ensure the website remains compatible with browsers and devices.

V. SYSTEM DESIGN

In system design section the basic structure of whole system is defined, The first step in this is to create an interactive website which is efficiently functioning and delivering the desired results. The next step will be to add questions from various fields for the assessment, this fields includes- Medical, Engineering, Arts, Commerce etc. There will be 30 questions from each fields and there will be another test for each sub field. Then we have to create database which will store the responses of the responses submitted by the students. The technology used for storing the database will be MySQL. After taking students response the algorithm should be applied on the data received. After this a result showing web page will be displayed, this webpage contains the score of the students and their performance results, this webpage will also contain the suggestion for which field will be most suitable for the student. This will be the final stage of the process.

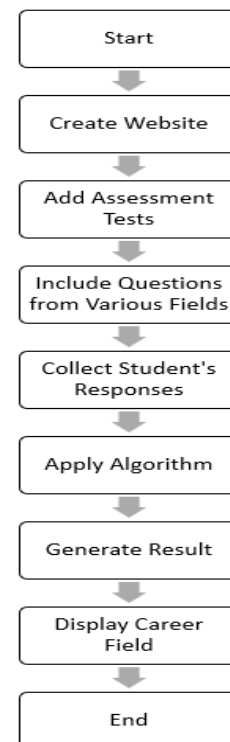


Fig 5.1 System Design

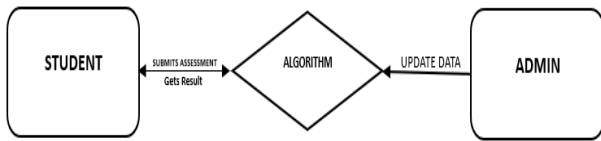


Fig.5.2 DFD Level-0

VI. SYSTEM PROTOTYPE

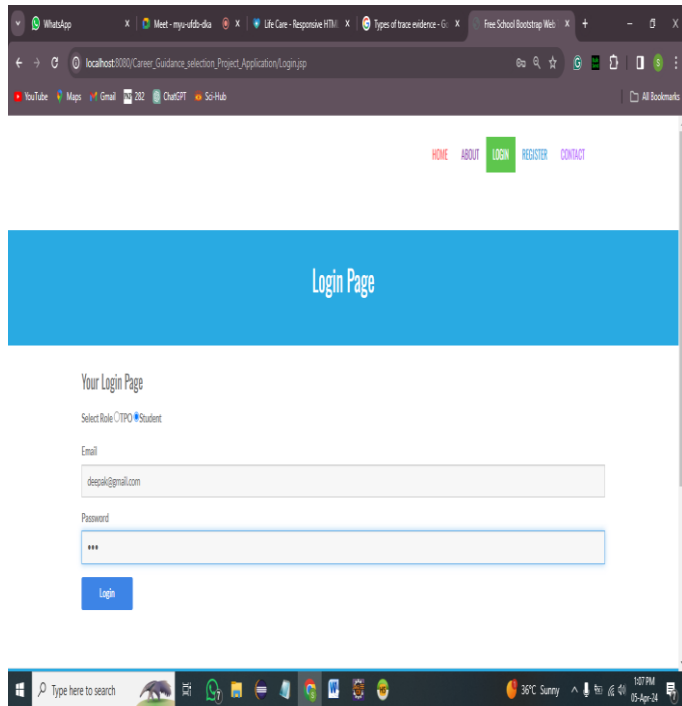


Fig 6.1 Login page

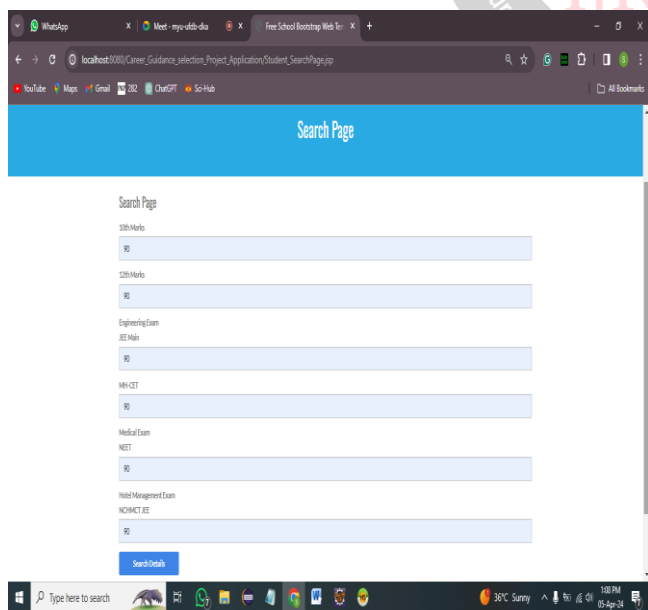


Fig 6.2 Test 1

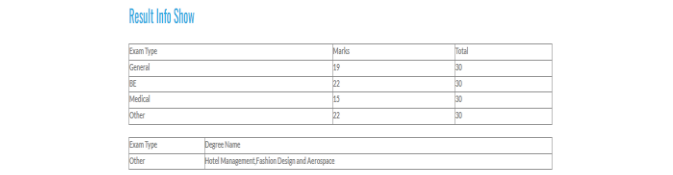
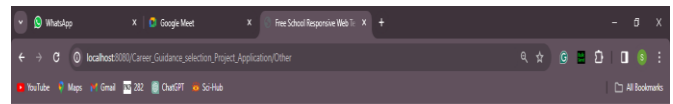


Fig 6.3 Result page

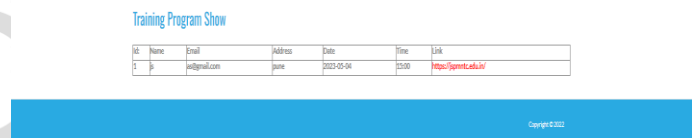
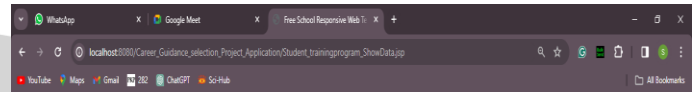


Fig 6.4 Suggestion page

VII. CONCLUSION

In conclusion, the competency assessment project has proven to be a pivotal initiative in addressing the pervasive issue of career uncertainty among students. Through a comprehensive battery of tests spanning various fields, we have successfully identified and nurtured students' interests and aptitudes across diverse domains. By analyzing the results obtained, we were able to provide tailored recommendations for further exploration, aligning students' passions with relevant career paths. This approach not only mitigates the risk of misguided decisions but also empowers students with informed choices, paving the way for their academic and professional success in the long term.

Moving forward, the insights gained from this project lay a solid foundation for ongoing efforts to support students in their journey towards fulfilling careers. By continuing to refine and expand our assessment methodologies, we can ensure that future generations are equipped with the guidance and resources necessary to navigate the complexities of the modern job market. Ultimately, the competency assessment project stands as a testament to our commitment to fostering the personal and professional development of students, as they embark on their chosen paths with confidence and clarity.

VIII. ACKNOWLEDGMENT

We felt great pleasure in submitting this paper on COMPETENCY ASSESSMENT. A huge thank you to Prof. S.P. Gunjal, for your supreme support, guidance, and patience. We would like to express our sincere gratitude and appreciation to all our colleagues who have helped us in one way or another in the writing of this paper.

IX. REFERENCES

- [1] National Careers Service, UK “Skills Assessment” <https://nationalcareers.service.gov.uk/skills-assessment>.
- [2] Dr. R. Gayatri Professor & Head-MBA, St Peter’s University, India Purushothaman Research Scholar, Bharathiar University, India, A STUDY ON COMPETENCY MAPPING FOR IT PROFESSIONALS WORKING IN INDIAN IT COMPANIES, WITH REFERENCE TO CHENNAI .Journal of Management(JOM)Volume5,Issue3, May–June 2018, pp. 1–8, Article ID: JOM_05_03_001 <http://www.iaeme.com/jom/issues.asp?JType=JOM&VType=5&IType=3>
- [3] Oğuzhan Kırdök1,*, Esranur Harman2 1 Faculty of Education, Çukurova University, Turkey 2 Provincial Directorate of National Education, Turkey, High School Students’ Career Decision-making Difficulties According to Locus of Control, Universal Journal of Educational Research 6(2): 242-248, 2018). <http://www.hrpub.org/>.
- [4] Dandan Liu a*, Wei Peng a , and Wei Liu b a School of Commerce, Shandong University at Weihai, China b School of economics and management, Harbin Institute of Technology at Weihai, China, Competency Evaluation Model for the Software Development Team, First International Conference on Economic and Business Management (FEBM 2016).
- [5] An Empirical Study on Competency Mapping by Dr. R. Gayatri, Purushothaman..
- [6] Developing career management competencies among undergraduates and the role of work-integrated learning by Kuijpers and Meijers.
- [7] Career Decision-Making for Undergraduates Enrolled in Career Planning Courses by Diandra Prescod, Beth Gilfillan, Christopher Belser, Robert Orndorff and Matthew Ishler.