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STUDENT CAREER GUIDANCE

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Abstract: Upon completing higher secondary education, students around the globe often find themselves at a crossroads, unsure of which career path to pursue. This pivotal moment demands a level of maturity and self-awareness that many students may not yet possess. As individuals progress through these stages, they inevitably confront the question of what to pursue post-graduation. Our proposed solution tackles this challenge with a computerized career guidance system. By objectively assessing individual skills, this system aims to predict the most suitable career path for each student. Through this process, we aim to provide clarity and direction as students navigate their academic and professional journey.
(Abstract)

Keyword s- Counsell Career, Learning Algorithms for machines, Classification*(key words)*

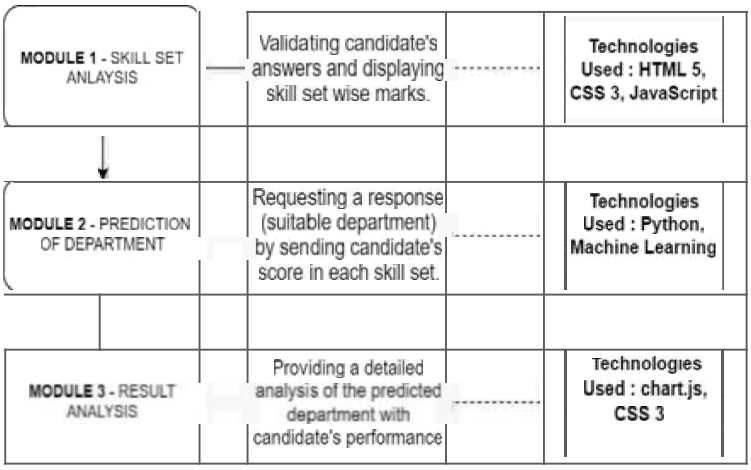
I. INTRODUCTION

Selecting a career path is more than just picking a course; it's about understanding oneself—abilities, interests, and aspirations. Students often seek guidance from parents, teachers, and specialists, but they may still regret their choice later on.For example, there's a common belief that excelling in high school chemistry leads to pursuing chemical engineering. However, this isn't always the case. To address this, we spoke with engineering students and those in PU grades. We realized the need for an objective tool to help students identify their skills and interests.Our goal is to develop an assessment considering factors like personality traits, interests, and values. Using established models such as Holland's RIASEC or the Myers-Briggs Type Indicator (MBTI), we aim to provide insights into students' strengths and preferences. Additionally, we'll offer guidance sessions for students to discuss their results with counselors or mentors, exploring potential career paths.

In our initial phase, we've established broad skill sets vital for different engineering branches such as Engineer in CSE and Engineer in ISE, Engineer in ECE, Engineer in MECH etc. By evaluating individuals' skills through our objective assessment, we aim to determine the most fitting department for each person. Utilizing the chart to address all queries will notably decrease an erroneous decision. Our specific questions will pinpoint each student's core strengths in their particular skill.

2.PROPOSED SYSTEM

Fig. 1 Recommended system



The diagram assesses the candidate's skillset and correlates it with the skills required for each department. It predicts and suggests the department where the student excels the most in core skills. Furthermore, it considers sub-skills for a more precise departmental match. Following the prediction, the framework offers a result analysis segment. Here, candidates can review their performance in skill checking and identify areas where they need improvement. The framework also presents graphical representations of the candidate's performance in different skills, providing a dynamic analysis. Additionally, it suggests secondary and tertiary departments suitable for the candidate based on the skillset analysis. Through these features, students can easily evaluate their strength and weakness in specific skill areas.

3 MODULES

The diagram consists of 3 modules facilitating different stages of the process. Firstly, the Skill assessment Module prompts candidates to complete an assessment comprising questions related to both psychological and core skills. Upon completion, candidates receive scores for each skill set separately. Secondly, the Prediction Module utilizes these scores to predict the most suitable department, employing a machine learning algorithm integrated into the web application's backend. The outcome is finding the department best suited for the student. Finally, the analysis of results module offers candidate performance, providing insights using various formats to ensure a thorough understanding.

a) Skill finding: Module is developed using Html5, CSS3, and Javascript. HTML 5 provides the basic structure for web documents, while CSS 3 adds styles to improve presentation. JavaScript enhances interactivity, making the webpage dynamic. Each question is presented separat with multiple choices, and JavaScript handles validation by assigning different weights to choices based on the suitability. Validation is done skill-wise, and the final results are displayed accordingly.

b). Prediction: Module is constructed using Python and incorporates machine learning algorithm, APIs, datasets for training. Python, being a versatile language, is used for various implementations. The K-Nearest Neighbors algorithm is utilized for classification, determining target values based on distance measures such as Euclidean distance or cosine similarity. Clustering purposes is done by K-Means Clustering is employed to group departments based on candidate performance and provide recommendations. Flask API facilitates communication between the front and back end, passing assessment module scores to the learning model and receiving predicted department recommendations. The dataset utilized for training model is manually created, containing numerical values for features like analytical, logical skills, etc. These features serve as both core and sub-skills for different departments. As it's a multi-class problem, multi-class classification techniques are applied during model development.

4 EXPERIMENTAL RESULTS

A. Prediction results

Performance can be determined by confusion matrix. Confusion matrix is presented in the form of a table where there will be 4 different values present in the matrix such as True +ve, True -ve, False +ve and False -ve. This can be used on the test data for which the values are known.

1. True +ve: TPvalue in which the example is correctly determined as positive.
2. False +ve: FPvalue in which the example is negative but are actually determined as positive.
3. True -ve: TNvalue in which the example is correctly determined as negative.
4. False -ve: FNvalue in which the example is positive but are actually determined as negative.

The confusion matrix finds the performance of the classification model by finding precision, recall, accuracy, f:measure and error:rate. The formula for each of the above-mentioned performance measures:

TPvalue = TPvalue/(TPvalue+FNvalue)

FPvalue = FPvalue/(FPvalue+TNvalue)

Precision = TPvalue/(TPvalue+FPvalue) Recall = TPvalue/(TPvalue+FNvalue)

Accuracy = (TPvalue+TNvalue)/(TPvalue+TNvalue+FPvalue+FNvalue)

F-measure=2*(precision*recall)/(precision+recall) Error - rate = 1- accuracy

Table 1

PERFORMANCE MEASURES FOR CLASSIFICATION TFCHNIQUES

Classification Technique	**Accuracy**	F - **measure**	**Error - rate**
KNN	0.9410	0.9213	0.01964
SVM	0.8632	0.9018	0.03154
Naive Bayes	0.8714	0.8835	0.06127

Table 2

F-MEASURE FOR DEPARTMENTS

Classified Department	F -**Measure**
Computer Engineer	0.9315
Electrical Engineer	0.9512
Electronics Engineer	0.9637
Mechanical Engineer	0.9849

Table 3

Success rate of various departments

Department	Cluster 1	Cluster 2	Cluster 3
CSE	70.71	83.34	60.73%
EEE	82.65	64.71	71.43%
ECE	65.89	79.91	86.67%
MECH	78.15%	89.12%	67.85%

Conclusion

In our system, we've created a web-based application for career guidance that offers more precise recommendations compared to existing systems. We've implemented XG- Boost to for predicting accurately and also gives the ranks of colleges across country. By analyzing success rates and minimizing failure rates, we can provide more accurate department recommendations. Opportunity into international job opporunities based on skills ,and industrial deExtensive research has been conducted on the career guidance system, leading to the design and development of the web-based application with expected outcomes. In the future, we plan to enhance the framework's accuracy and incorporate additional features to further refine department recommendations. Additionally, we'll gradually address any outliers within the framework.

REFERENCES

[1] Vignesh S, Shivani Priyanka C, Shree Manju H, Mythili K, “An Intelligent Career Guidance System using Machine Learning”, Sri Krishna College of Technology, India, July 2021.

[2] Pavel Kiselev, Boris Kiselev, Valeriya Matsuta, Artem Feshchenko, “Career Guidance based on Machine Learning: Social Networks in Professional Identity Construction”, Psychological Institute, Russia, September 2019.

[3] Andres F. Cruz, Laura Orozco, Carolina Gonzales, “Intelligent Web Platform for Vocational Guidance” International Conference on Virtual Reality and Visualization (ICVRV), June 2019

[4] John Britto, Sagar Prabhu, Abhishek Gawali, “Machine Learning Based Approach for Recommending Courses at Graduate Level”, IEEE Xplore Part Number: CFP19P17-ART, ISBN:978-1-7281-2119-2, October 2019.

[5] E K Subramanian, Ramachandran, “Student Career Guidance System for Recommendation of Relevant Course Selection”, IJRTE, ISSN: 2277-3878, Vol.7, Issue- 6S4, April 2019

[6] Lakshmi Prasanna, “Smart Career Guidance and Recommendation System”, IJEDR, Vol.7, Issue 3, ISSN: 2321-9939, June 2019.

[7] Vishal D. Kamath, Akanshya Meher, “An Android based Mobile Application For Career Guidance”, IEEE Xplore Complaint- Part Number: CFP18BAC-ART, ISBN: 978-1-5386- 1974-2, May 2018.

[8]Manasi Kawathekar, Kirti K. Bhate, Pankaj Belgoankar, Vijayalakshmi P. B. “An Android Application for Student Information System,” International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), vol. 4, no. 9, pp. 3615-3619, Sept. 2015.

[9]Vishwakarma R Ganesh, “Android College Management System,” International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), vol. 5, no. 4, pp. 882-885, April

2016.Student Career Guidance Program using Machine Learning (18CSP77) B.E, Dept. of ISE, CITech 2023-24 Page 20

[10] A. J. Kadam, Aradhana Singh, Komal Jagtap, Srujana Tankala, "Mobile Web Based Android Application for College Management System," International Journal of Engineering and Computer Science, vol. 6, no. 2, pp. 20206-20209, Feb. 2017.

[11] SandhyaYadav, Kajal Sutekar, Bharti Chikankar, Rupesh Yeole, Monali Gulhane, "E-BOOK: An Mobile Application for College Students," International Journal of Innovative Research in Science, Engineering and Technology, vol. 6, no. 12, pp. 22706- 22709, Dec. 2017.

[12] Ajit Thorat, Tanvi Pugaonkar, Viraj Kamble, Jyoti Mobarkar, Prof. Sachin Barahate, "An Android Application for Course Guidance and College Finder," International Journal of Scientific Research in Computer Science, Engineering and Information Technology, vol. 2, no. 2, pp. 1029-1037, 2017.