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CareerGenie: An AI-Powered Platform for Resume Analysis, Interview Simulation and Company-Specific Placement Preparation

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Abstract: ***Campus Placements play a crucial role in a student's academic journey. Students must become proficient in developing effective resumes, acquiring competitive interview skills by working on their communication skills and understanding company-specific recruitment processes due to rising competition in campus placements. Many students still struggle in cracking the placements not because they are weak but because they often struggle in identifying the right preparation strategy and lack structured guidance. Though several resources available on the internet none provide detailed guidance or structured material for preparing for the placements. This paper presents CareerGenie, an AI-powered platform developed to support students in each and every stage of their placement journey by improving their placement readiness with smart features and personalized guidance. The system evaluates student resumes and provides effective suggestions and customized feedback which helps to tailor the resume according to the job description by providing detail insights on the ATS Score, It also comprises an interview simulation module that allows students to practice answering questions and improve their confidence while facing the interview and communication abilities. Furthermore, the platform generates personalized preparation road maps by analyzing the student's current skills, interests, career goals and time left assisting them focus on the high priority topics and preparation strategies for targeted companies by providing previous year questions. Careergenie is implemented using modern web technologies such as React for the front-end and Node.js for backend services, along with AI-based APIs for providing intelligent perceptions. By integrating resume evaluation, personalized road-maps , Mock Interview Simulation and guided preparation within a single platform, CareerGenie aims to provide students with a ordered and effective approach to placement preparation.***

Keywords: Artificial Intelligence, Resume Analysis, Interview Simulation, Personalized Learning Roadmap, Placement Preparation.

I. INTRODUCTION

To address the drawbacks of the old preparation methods, this work presents a CareerGenie,an AI powered platform designed to help the students in their career placement path [1][2]. This platform provides the students with intelligent resume analysis which evaluates the structure,skills and content's in student's resume,makes it simpler and easier for students to understand without any sort of confusion [3].

Moreover,it also includes an interview simulation module that helps the students to practice answering the questions required for placements in a well defined manner [4].The system examines the answer given by the student and helps the students in enhancing their communication skills, clarity and confidence during the interviews [5][6].

In addition to this,the most important characteristic of the platform is the generation of personalised preparation roadmaps [7][8].It helps providing the students with required roadmaps based on their present existing skills,career interests and targeted roles .

The system suggests a proper learning path covering the important topics such as data structures and algorithms,aptitude preparation,core computer science subjects and project development.

Furthermore,the platform provides company-specific preparation counselling that assists students understand the recruitment patterns and help concentrate on their preparation accordingly [9][10]. Also,along with preparation tools, CareerGenie comprises a progress monitoring and analytic module that permits students and mentors to track improvement over time. With the help of visual dashboard and performance indicators [11]. Users can identify strengths,detect skill gaps and follow a structured preparation plan. By integrating resume evaluation,interview practice and guides learning within a single system,the platform helps to meet the gap between academic learning and industry expectations .

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The CareerGenie signify how artificial intelligence can be used to create a personalised and effective preparation environment [12][13].

By providing smart feedback,structured learning,guidance, perform evaluation.Also,system seems to improve students confidence, enhance skills and increase the chances of successful placement outcomes [14], [15].

II. LITERATURE SURVEY

Artificial Intelligence is one of the trending topics in the current IT market. AI has been increasingly applied in each and every domain. AI is been used rapidly in Ed-tech and learning platforms these days. Several studies have explored AI platforms that has automated the candidate evaluation in recruitment process.

Ravi Kumar et al. [1] proposed an AI-driven placement preparation platform that focus on providing a simulated interview platform for students preparing for job interviews The main objective of this system is to reduce the fear for students going to interview by providing a simulated interview environment and providing detailed feedback on their performance.

Thawali et al. [2] developed an AI-based mock interview evaluation system called Emo Confident Interviewer, which identifies the candidate performance based on three important aspects: emotion, confidence, and knowledge. The system applies convolutional neural networks to detect emotional expressions from facial images, while speech processing techniques are used to evaluate confidence levels.

Patil et al. [3] developed a mock interview platform that integrates machine learning algorithms with advanced advanced speech and facial detection algorithms. This platform was extensively used as it not only works as a interview platform but also provide several other exclusive features that makes this system unique.

Sumi et al. [4] proposed an AI-based interview simulations combines company specific preparation with mock interview module. [5] introduced SimInterview, a simluated mock interview platform.The platform dynamically generates interview questions based on the candidate's resume and intended job role. It also supports multilingual conversations and interactive dialogue generation. This platform provides more interaction between the user and system making the work a great asset to the users.

[6] Hemamou et al. proposed HireNet, a hierarchical attention-based model developed for the automatic evaluation of asynchronous video job interviews.The system provides accurate interview feedback based on the expressions and speech.This system can also detect cheating which makes this system unique from other existing platforms.

[7] has developed an AI-driven mock interview platforms the main objective of this platform is to enhance student performance by simulating real interview environments and providing clear feedback [8], [9].

Several studies have also explored the integration of placement preparation features into unified systems. An AI-driven placement preparation platform combining mock interviews and job portal functionalities was introduced to support students not only to prepare for jobs but also supports in applying jobs [10].

Systems like Emo Confident Interviewer does not evaluate answers but also evaluates content clarity,candidate confidence & emotions to provide detailed feedback on their performance during interviews, offering deeper insights into performance [11]. [12] has proposed system which uses Large Language Models to generate interview questions .

AI interview platform has also been integrated with learning platform for providing structured guidance to the students [13]. [14],[15] has worked with NLP techniques to resume analysis features.

While previous studies have made good progress in areas like automated interview evaluation and AI-based career guidance, most of them focus only on specific parts such as interview analysis or behavioral assessment, From Table 2.1: Comparative Analysis of Existing Systems, it can be observed that CareerGenie acts like an all in one platform that combines several features into one integrated platform.

III. PROPOSED SYSTEM

CareerGenie is an AI based smart platform which is mainly developed for the students exclusively preparing for the placements. CareerGenie acts like a close friend in pocket assisting students in each and every stage of placement journey. It provides end to end support by providing unique features like AI based resume analysis, Personalized road-map generation, Company specific preparation and AI based mock interview. It assists students in identifying what skills they are lacking often which helps them to focus more on those particular skills and achieve great results which efficiently improving interview performance.

CareerGenie follows a layered modular architecture were different modules work in different layers to provide its specific functionality. These modules integrate with each other to work as a single system. The system allows users to create accounts and login into them, upload their resumes, practice interview questions, and receive guidance on improving their skills and profiles.

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One of the primary modules of the platform is the Resume Analysis Module. This module parses the resume content and evaluates the content and structure of the student's resume using AI-based text analysis. The system reviews important details such as skill representation, formatting, and project descriptions, and provides step by step suggestions to enhance the resume. This module also helps to paste the company description and tailor the resume according to the job requirements which increases the chances of resume shortlisting. CareerGenie also contains one of the most important module called the Mock Interview Simulation module which helps students in experiencing real interviews which helps in enhancing the communication skills and practice. User has the ability to choose the type of interview like technical or behavioral and also option to choose the domain we want to face the interview and based on the chosen options interview questions are generated and responses are evaluated semantically and provided a detailed feedback on our strengths and weaknesses often helping students to improve the weak areas.

CareerGenie also includes a Personalized Roadmap paths covering topics such as data structures and algorithms, aptitude preparation, and core computer science subjects with weekly or monthly preparation timeline is displayed. In addition to these features, the platform provides Company-Specific Preparation module which sets this project apart from other existing projects. This module provides information about recently asked asked interview questions, high priority interview topics predicted based on the recently asked questions patterns, and preparation strategies for various companies. By learning and focusing on these preparation material helps students planning their preparation more effectively. By integrating these features, the platform achieves to provide students with a practical and structured approach to placement preparation, helping them to be job ready.

IV. SYSTEM ARCHITECTURE

CareerGenie's System architecture, as shown in Fig.1 provides an overall overview about how the components in the system interact and communicate with each other.CarrerGenie support placement preparation by integrating frontend modules with backend services, artificial intelligence processing, and a structured database which stores data ensuring smooth communication between different components. The frontend layer provide and interactive user interface attracting users by providing an appealing frontend. It displays several features which helps users easily navigate into the module they want to focus on. Frontend provides several modules like resume analyser where users can upload their resumes, personalized roadmap generation, Company specific prep module and AI Mock interview module. The AI processing component forms the brain of CareerGenie which is connected to Groq LLM. It collects and analyze user inputs and generate intelligent feedback. When students logs in and participate in mock interviews or upload their resumes, the backend send the data to the AI module which evaluates the content and provides suggestions for improvement. The LLM also helps come up with interview questions, rate answers, and suggest ways for students to prepare based on their profiles. The backend layer is very important for the CareerGenie system to work.Node.js and Express.js APIs were used to build the backend layer. It handles the communication between the AI processing module and the frontend interface. It takes care of middleware and processing requests. CareerGenie also has a PYQ (Previous Year Questions) database that keeps track of interview questions, company-specific study materials, and other useful information. The frontend modules, AI processing system, backend APIs, and database are all parts of the CareerGenie platform's overall architecture.

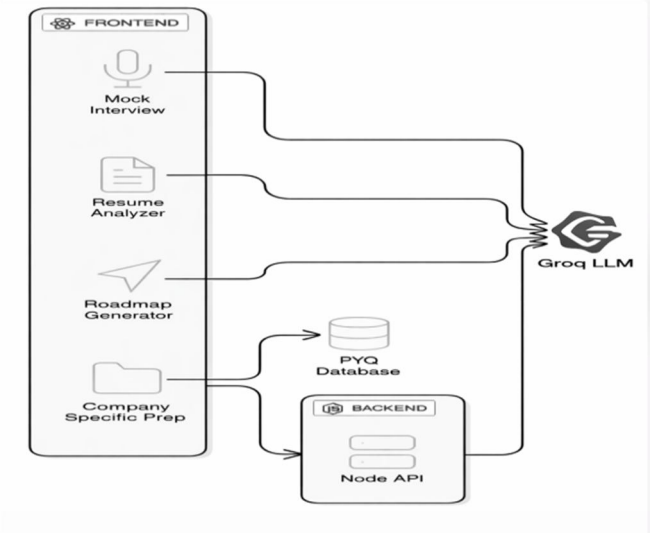


Fig. 1 System Architecture of the CareerGenie Platform

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V. IMPLEMENTATION

CareerGenie platform's main objective is to develop and intuitive user-friendly system that assists students in their placement journey. CareerGenie is implemented using web technologies.React.js has been used in frontend for creating intuitive and appealing interfaces.Node.js and Express.js have been used for the backend as it provides the run time environment and handle the system logic and middleware.

Groq LLM has been used as part of AI processing layer which forms the brain of the careerGenie .MongoDB database a NO-SQL database has been used for storing company-specific questions.

A. User Registration and Authentication Module

This module helps users to register into platform by craeting their account giving basic details and login to the account securely to access the CareerGenie platform. Students register into the platform by providing basic information such as name of the user, email, and password. The backend verifies whether the user is valid or not by sending an OTP to their Email.

The backend validates the OTP and input data and stores the user details in the database.This ensures that only registered users can access system.

B. Resume Analysis Module

The resume analysis module enables students to upload their resumes. The system uses this information to make suggestions and give personalized feedback on how to make the resume better.It also lets you check the ATS score and change your resume to fit the job description.

C. Mock Interview Module

The mock interview simulation module that allows students to practice answering questions and improve their confidence while facing the interview and improve communication abilities.

It helps students in experiencing real interviews which helps in enhancing the communication skills and practice. User has the ability to choose the type of interview like technical or behavioral and also option to choose the domain we want to face the interview and based on the chosen options interview questions are generated and responses are evaluated semantically and provided a detailed feedback on our strengths and weaknesses often helping students to improve the weak areas..

D. Personalized Roadmap Generation Module

CareerGenie also includes a Personalized Roadmap paths covering topics such as data structures and algorithms, aptitude preparation, and core computer science subjects with weekly or monthly preparation timeline is displayed

E. Company-Specific Preparation Module

This module provides information about recently asked asked interview questions, high priority interview topics predicted based on the recently asked questions patterns, and preparation strategies for various companies. By learning and focusing on these preparation material helps students planning their preparation more effectively.

VI. RESULTS AND DISCUSSION

The results proved that the each feature is working as expected providing accurate results. The system integrates several modules like resume evaluation, interview simulation, and personalized preparation guidance and company specific preparation into a single web-based interface.

The results obtained are attached below. The user registration and login interface, as shown in Fig.2 allows students to register into the platform by providing basic information such as name of the user, email, and password. The backend verifies whether the user is valid or not by sending an OTP to their Email.

The backend validates the OTP and stores the user details in the database. This ensures that only registered users can access system.

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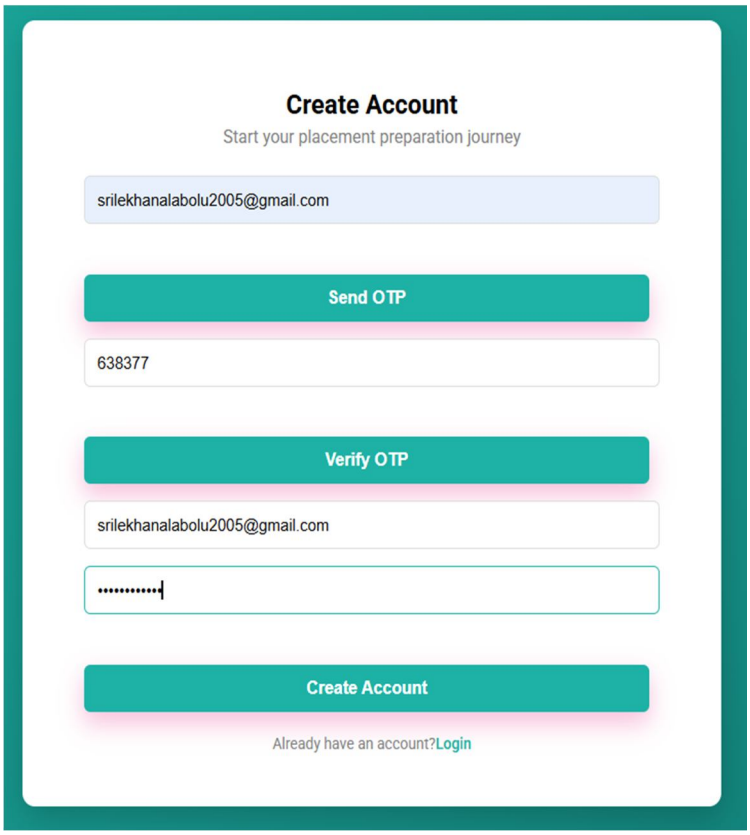


Fig. 2. User Registration and Login Interface

The resume analysis module, as shown in Fig.3 has been tested by uploading different resumes. The system successfully analyzed all the resume providing detailed insights ATS score and feedback. This module also helped users to tailor their resume based on the job description.

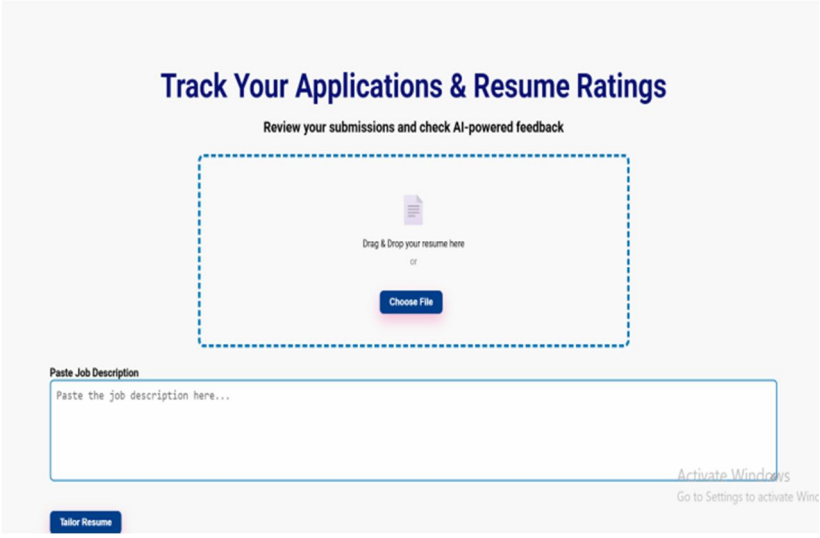


Fig. 3. Resume Analysis Output

Another crucial feature of the platform is the personalized roadmap generator, This module, as shown in Fig.4 is tested by giving different inputs and personalized roadmaps are generated. The roadmap suggests important topics and learning areas that students should focus on with detailed timeline to reduce confusion by clear structure learning path.

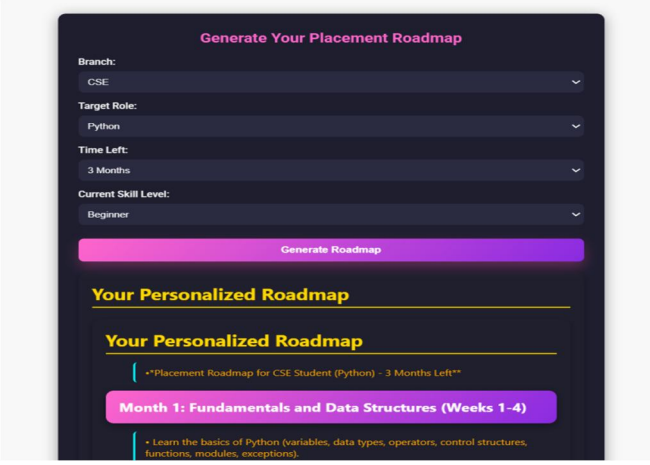


Fig. 4. Personalized Preparation Roadmap

The mock interview simulation module, as shown in Fig.5 that allows students to practice answering questions and improve their confidence while facing the interview and improve communication abilities. It helps students in experiencing real interviews which helps in enhancing the communication skills and practice.

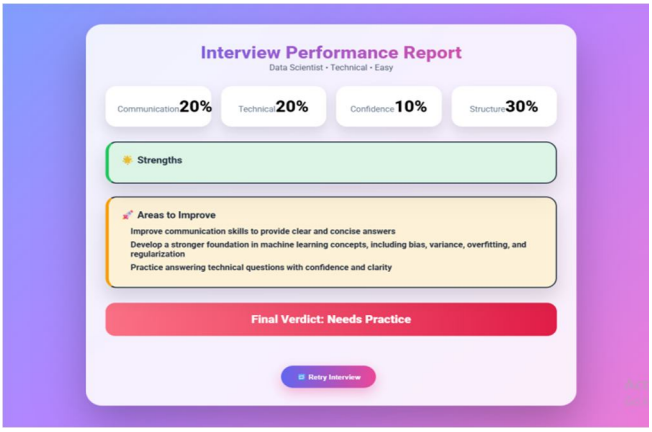


Fig. 5. Mock Interview Interface

The company-specific preparation module, as shown in Fig.6 provides information about recently asked asked interview questions, high priority interview topics predicted based on the recently asked questions patterns, and preparation strategies for various companies. By learning and focusing on these preparation material helps students planning their preparation more effectively.

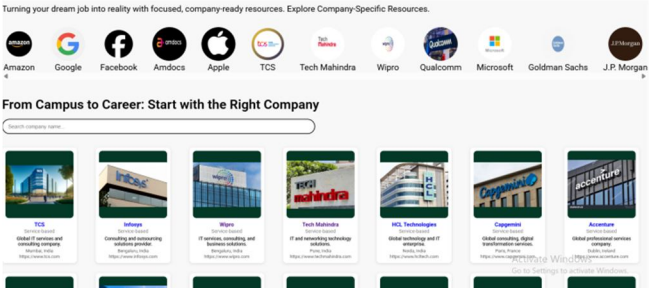


Fig. 6. Company-Specific Preparation Interface

VII. CONCLUSION

This paper introduced a CareerGenie,an AI -powered placement preparation platform designed to help students in improving their skills for campus recruitment processes.The system consists of various preparation tools such as resume analysis,mock interview simulation,personalised roadmaps, company-specific preparation resources within a single web based platform.

By uniting modern web technologies with artificial intelligence capabilities,the platform provides automatic feedback and proper guidance that assists students notice skill gaps and improve their performance in campus interviews.The implementation and testing of the system shows that CareerGenie sucessfully performs its functions.

The resume analysis module provides students with useful advices for improving quality of the resume.The mock interview module helps students to practice various interview which gives an idea for students on the questions which are often asked by the interviewer and the system also evaluates the answer provided by student and gives students a proper feedback.The personalised roadmap generator helps students oraganize their preparation based on their current skills and career goals.The company-specific preparation module allows users to practice questions asked often by different organisations.

Overall,the platform aims to meet the gap between academic learning and industry expectations by offering an smart and proper guidance.It helps students enhancing their communication skills, confidence and helps shaping them in a correct way which is required for campus placements. Therefore,CareerGenie is a wonderful platform for increasing the chances of success in placement interview.

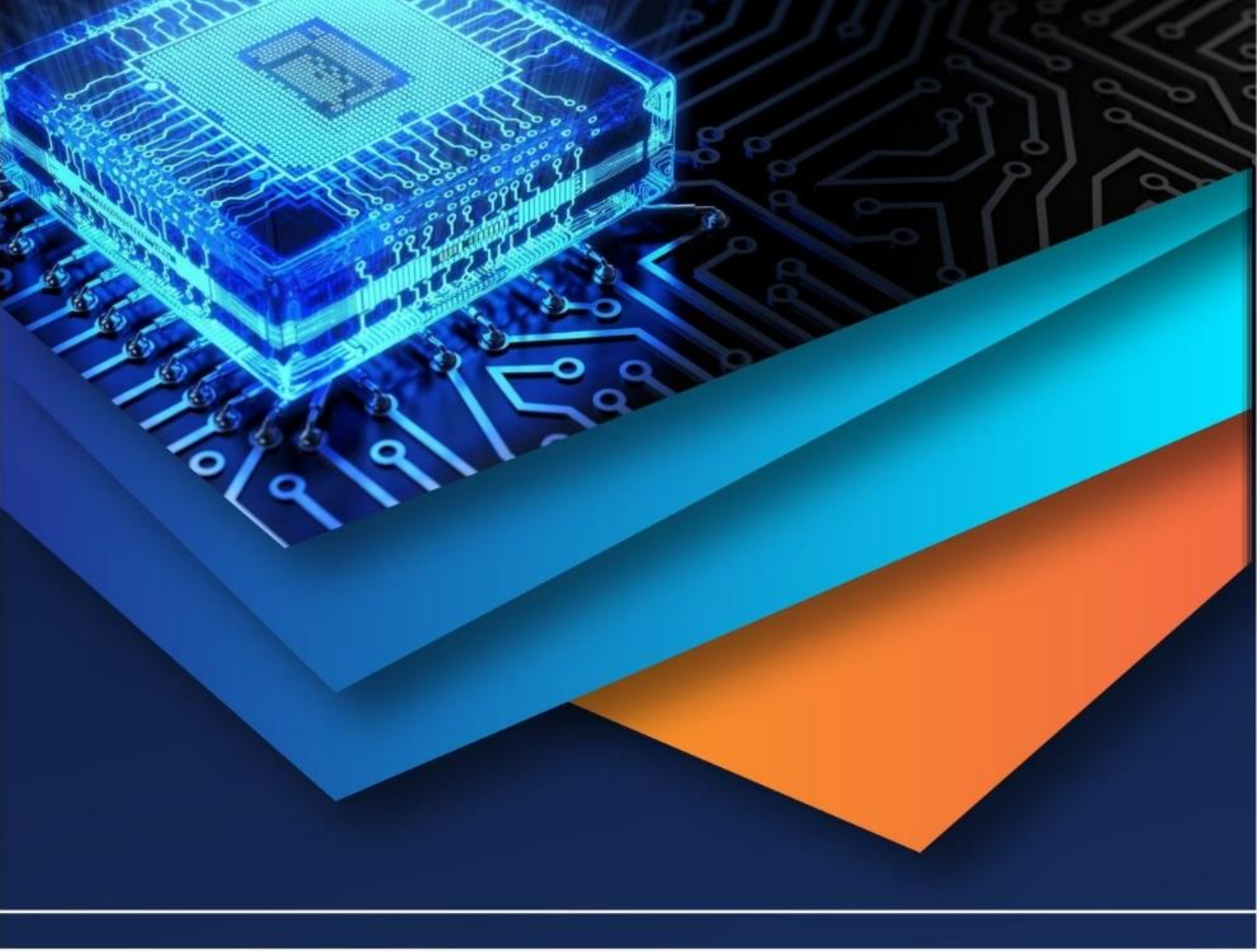
VIII. FUTURE WORK

CareerGenie is currently set up with a number of features to help people get ready for job interviews. However, there are a number of improvements that could be made in future versions of the system. One way to make things better is to add video-based interview analysis. This would let the system look at facial expressions, body language, and speech patterns to give more complete feedback. It could also find out if someone is cheating on their communication and confidence levels.

In addition, adding real-time job opportunity updates could make the platform even more useful.CareerGenie can become a more complete and smart platform that helps students prepare for their careers by adding these features.

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