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Campus Career Hub: A MERN Stack Based Placement Portal

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Abstract: ***The Campus Career Hub is a MERN stack-based digital platform designed to revolutionize the campus recruitment process by providing a centralized, secure, and scalable system. It offers features like job posting, student application tracking, and JWT authenticated user access. . The platform integrates job postings, applications, and aptitude assessments into a single, user-friendly interface. Leveraging the MERN stack's flexibility and performance, the web application ensures scalability across platforms while maintaining a consistent and responsive user experience. This document outlines the system's architecture, key features, and its role in enhancing campus recruitment process. This paper presents the system's architecture, design methodology, implementation, and evaluation based on testing and user feedback, highlighting its effectiveness in reducing manual efforts and enhancing placement outcomes.***

Keywords: Campus Recruitment, MERN Stack, MongoDB, Resume Management, Web Portal, Placement System, Aptitude test

Introduction

I. INTRODUCTION

In today's competitive academic environment, the placement process plays a pivotal role in shaping students' career paths. However, traditional placement systems are often inefficient, time-consuming, and lack centralized control. To address these challenges, Campus Career Hub offers a comprehensive and modern solution in the form of a fully integrated web application.

Developed using the MERN stack (MongoDB, Express.js, React.js, Node.js), the platform leverages modern web technologies to deliver a scalable, interactive, and user-friendly experience. The system automates critical workflows involved in campus recruitment, reducing manual intervention and streamlining communication between students, recruiters, and administrators.

One of the core strengths of Campus Career Hub lies in its role-based access system, which ensures that each user—be it a student, recruiter, or admin—has access to features relevant to their role. Recruiters can post job opportunities, manage applications, and view candidate profiles, while students can apply for jobs, complete assessments, and track their application status in real time.

The platform also integrates aptitude assessments and application tracking, consolidating all essential features within a single dashboard. This centralization not only improves efficiency but also ensures transparency and consistency throughout the placement process. By harnessing the flexibility and performance of the MERN stack, Campus Career Hub is designed to scale across institutions while maintaining a responsive interface across various devices and platforms. This document outlines the system's architecture, core functionalities, implementation details, and its overall contribution to enhancing the effectiveness of campus recruitment. A defining feature of the system is its role-based access control, which customizes the interface and features based on the user type—students, recruiters, or administrators. Students can view job listings, apply to positions, upload resumes, and complete aptitude assessments, all from a centralized dashboard. Recruiters, on the other hand, are given tools to post job requirements, filter applicants based on pre-set criteria, and access detailed candidate profiles. Administrators can monitor overall system activity, manage users, and ensure the smooth functioning of the placement process. This tailored access structure enhances both usability and security, ensuring that each user interacts only with the data and tools relevant to their responsibilities.

Another key strength of the platform is its centralized dashboard, which consolidates vital features such as aptitude assessments, real-time application tracking, and communication tools. This all-in-one approach enhances operational efficiency, promotes transparency, and provides a seamless experience for all users. Additionally, the system is built with responsive design principles, ensuring accessibility across a wide range of devices and screen sizes.

II. METHODOLOGY

The system is developed using the MERN stack, which includes MongoDB, Express.js, React.js, and Node.js. Each technology plays a crucial role in building a seamless and responsive web application. Node.js serves as the runtime environment, enabling the backend to handle asynchronous requests efficiently and scale effectively under varying loads.

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Express.js acts as the backend framework, managing routing, API endpoints, middleware, and server-side logic to ensure smooth communication between the client and the server.

MongoDB is used as the primary database to manage and persist data. It efficiently stores user information, job postings, application statuses, and uploaded files. MongoDB's document-oriented design makes it ideal for handling diverse data structures, and its integration with the system allows for real-time updates and querying. It also handles user authentication, ensuring that sensitive information is stored securely. The file upload feature, such as student resumes, is managed using MongoDB's GridFS or compatible middleware to support large file storage.

On the frontend, React.js is utilized to create a dynamic and interactive user interface. The component-based architecture of React promotes code reusability and simplifies UI management. Features such as live updates, form handling, and application status tracking are implemented using React's state management and hooks. This not only enhances performance but also ensures a smooth and responsive user experience across different devices and screen sizes.

The entire system follows a modular architecture, making it highly scalable and maintainable. Security is a core aspect of the implementation, with JWT (JSON Web Tokens) used for secure, stateless authentication and authorization. Middleware is applied to protect API routes, ensuring that only authorized users can access specific resources. Additionally, input validation, error handling, and secure data transmission (HTTPS) are integrated to reinforce the system's reliability and resilience against potential threats.

III. SYSTEM FEATURES AND IMPLEMENTATION

Key features include a student dashboard for applications and resume uploads, a recruiter dashboard for job posting and applicant filtering, and a real-time application tracker. The resume builder integrates MongoDB storage, and job eligibility is automatically evaluated based on CGPA, skills and Aptitude test. The UI is responsive and optimized for various devices.

IV. PROPOSED SYSTEM

This section presents the outcomes obtained after implementing and testing the project, along with an analysis of those results. It includes system screenshots, functional demonstrations, and test results to validate the working of the application

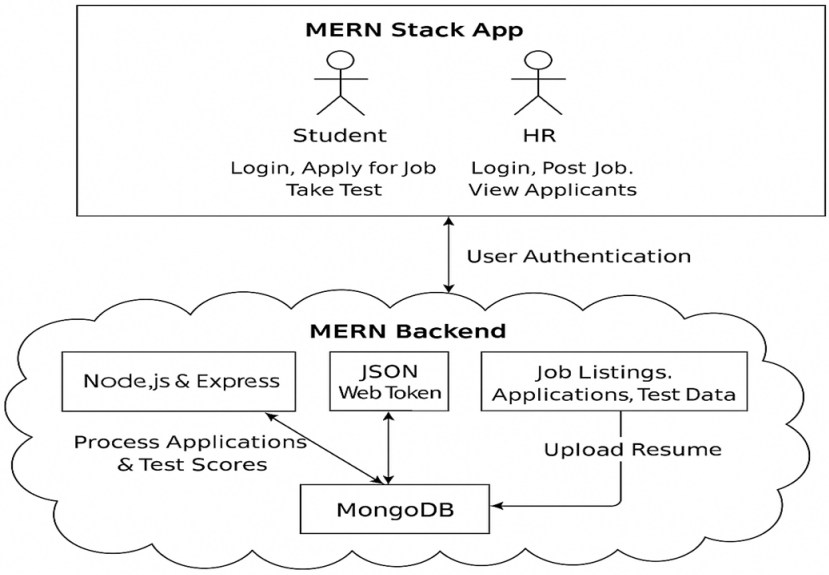


Fig 1: System Architecture

The diagram illustrates the architecture and data flow of the Campus Career Hub system, which is developed using the MERN stack (MongoDB, Express.js, React.js, Node.js) along with JSON Web Tokens (JWT) for authentication. At the top layer, two types of users interact with the MERN Stack App: Students and HR (recruiters). Students can log in, apply for jobs, and take tests, while HR personnel can log in, post jobs, and view applicants.

This interaction is secured through User Authentication, which is managed via JSON Web Tokens in the backend. The MERN Backend handles all core functionality. It uses Node.js and Express.js to manage server logic, including processing job applications and test scores. All data—such as job listings, user applications, test data, and uploaded resumes—is stored in MongoDB, a NoSQL database. The backend processes and stores data, ensuring seamless communication between frontend users and the database. This modular and secure architecture enables smooth operation and scalability for the placement portal system.

V. RESULTS AND DISCUSSION

This section presents the outcomes obtained after implementing and testing the project, along with an analysis of those results. It includes system screenshots, functional demonstrations, and test results to validate the working of the application. The discussion part interprets these results, highlighting the system's effectiveness, observed limitations, and possible improvements. It serves to confirm whether the project objectives have been met and provides insights into the system's real-world applicability and performance.

The system was tested with over participants, including students and placement officers. 95% preferred the platform over traditional methods. Resume uploads were successful in all cases, and recruiters efficiently accessed filtered candidate data. Integration testing confirmed stable performance and secure data handling.

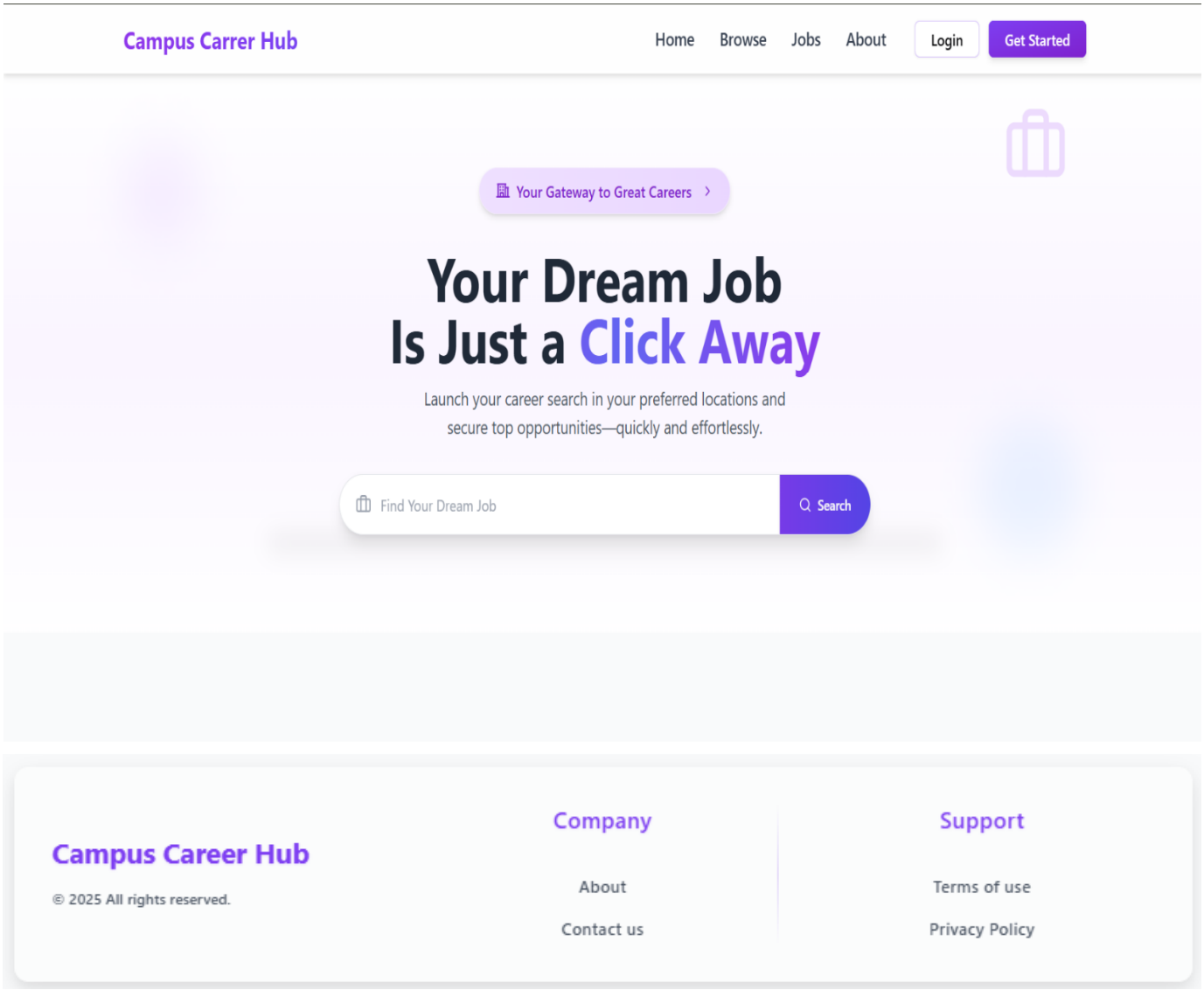


Fig 2: Home Page

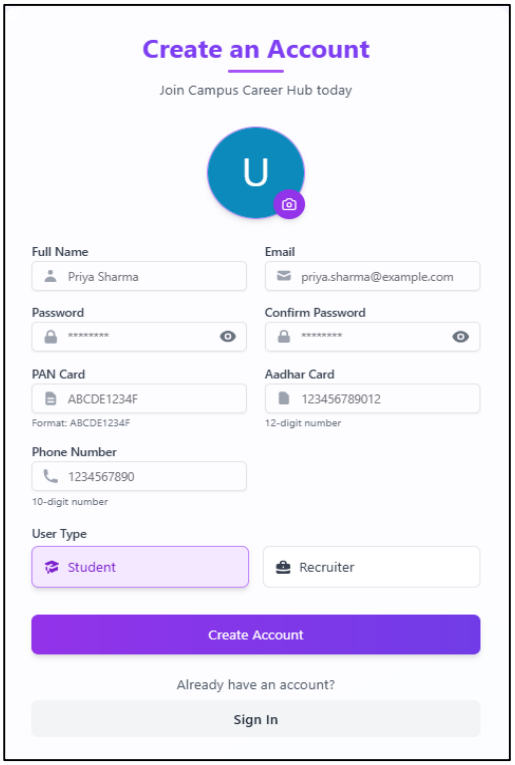


Fig 3: Register page

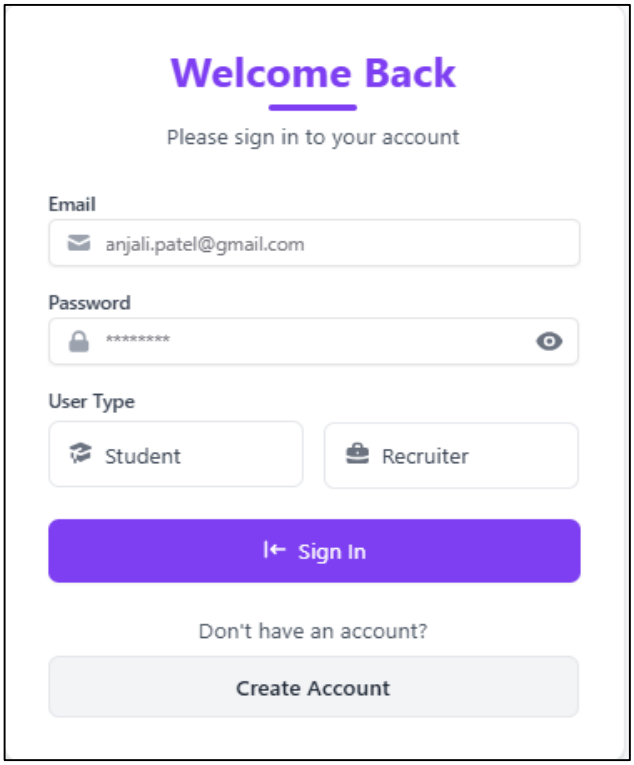


Fig 4: Login page

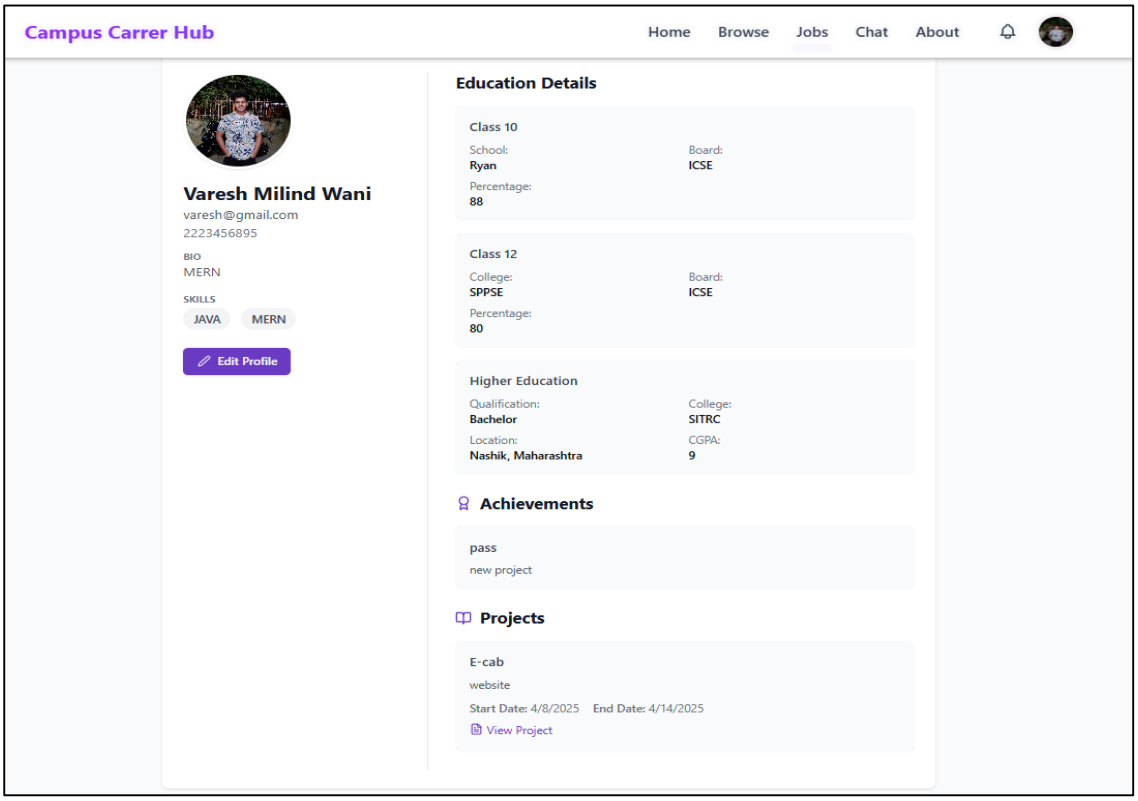


Fig 5:Profile section

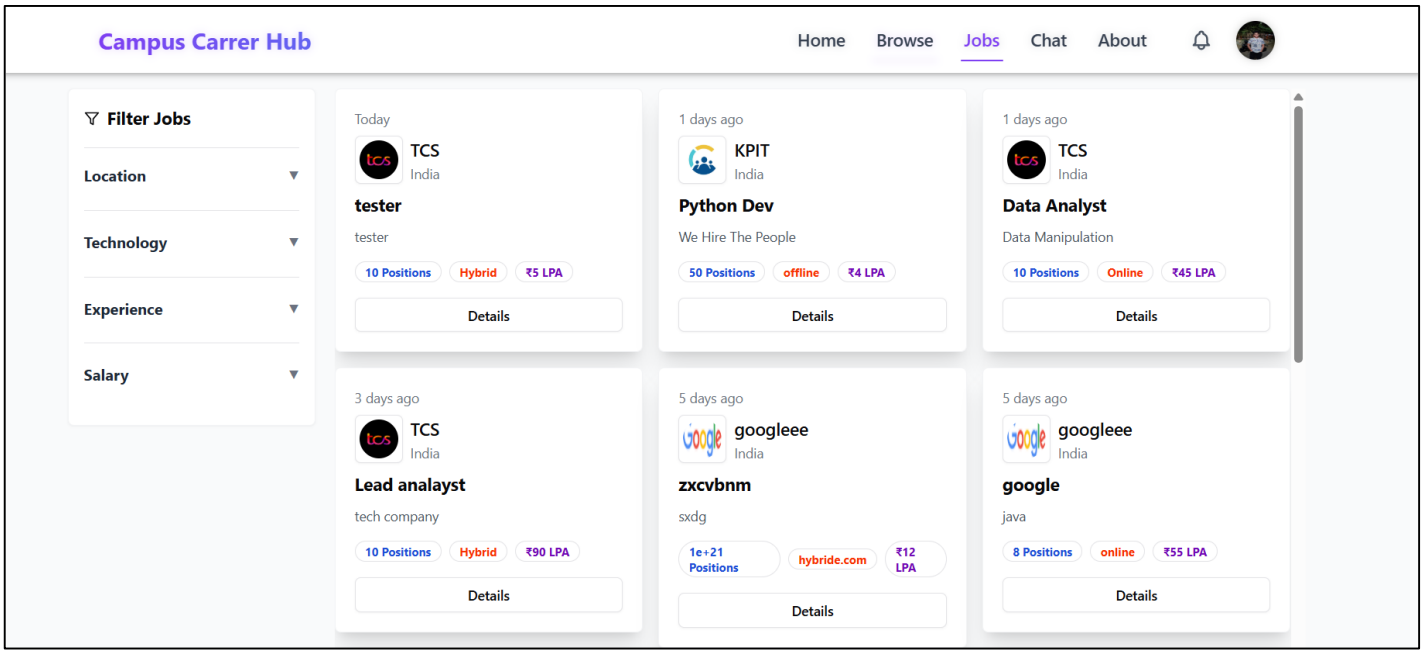


Fig 6: Job Section

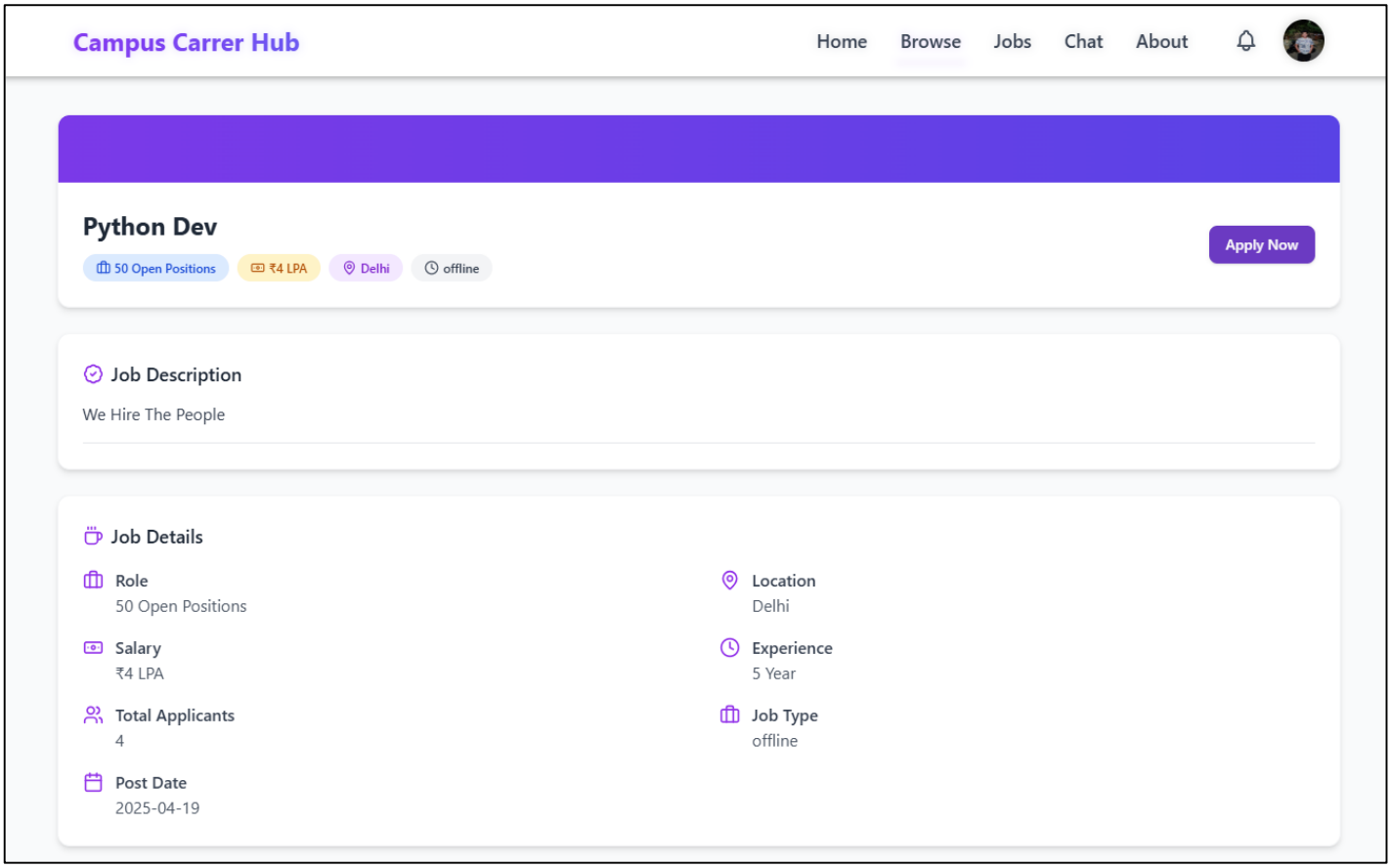


Fig 7: Apply Now Section

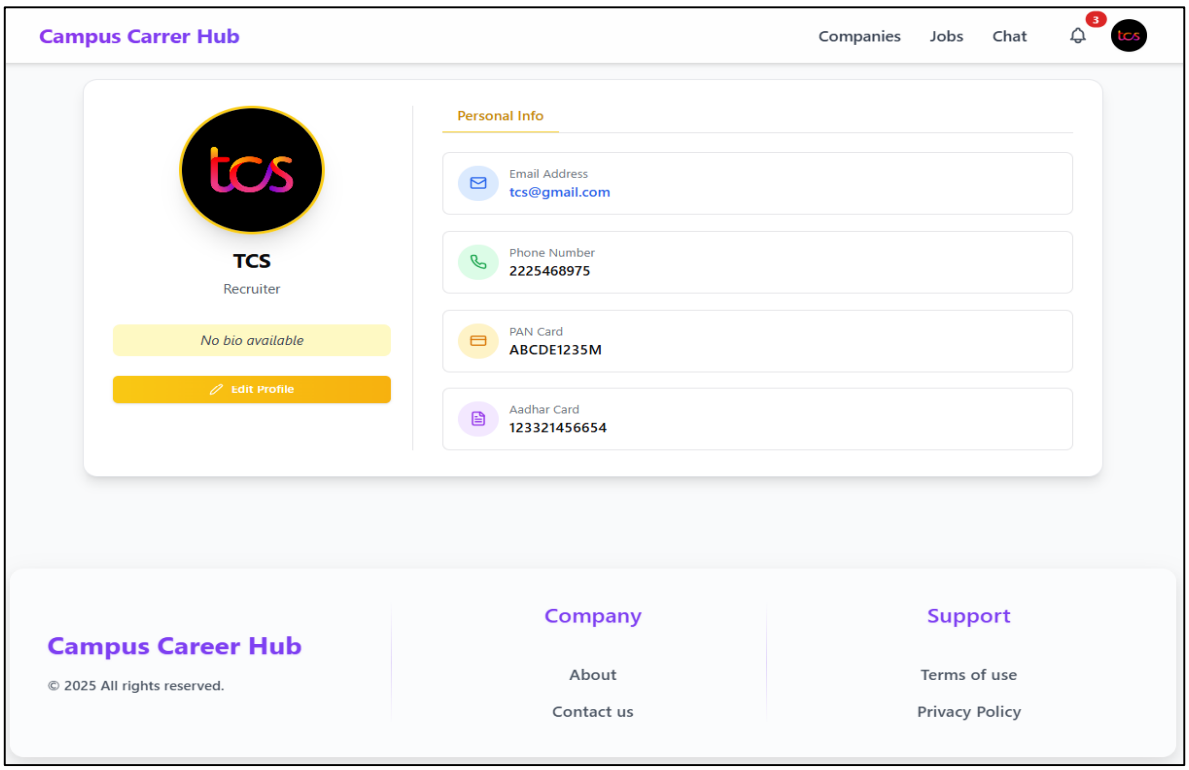


Fig 8: Recruiter's Profile

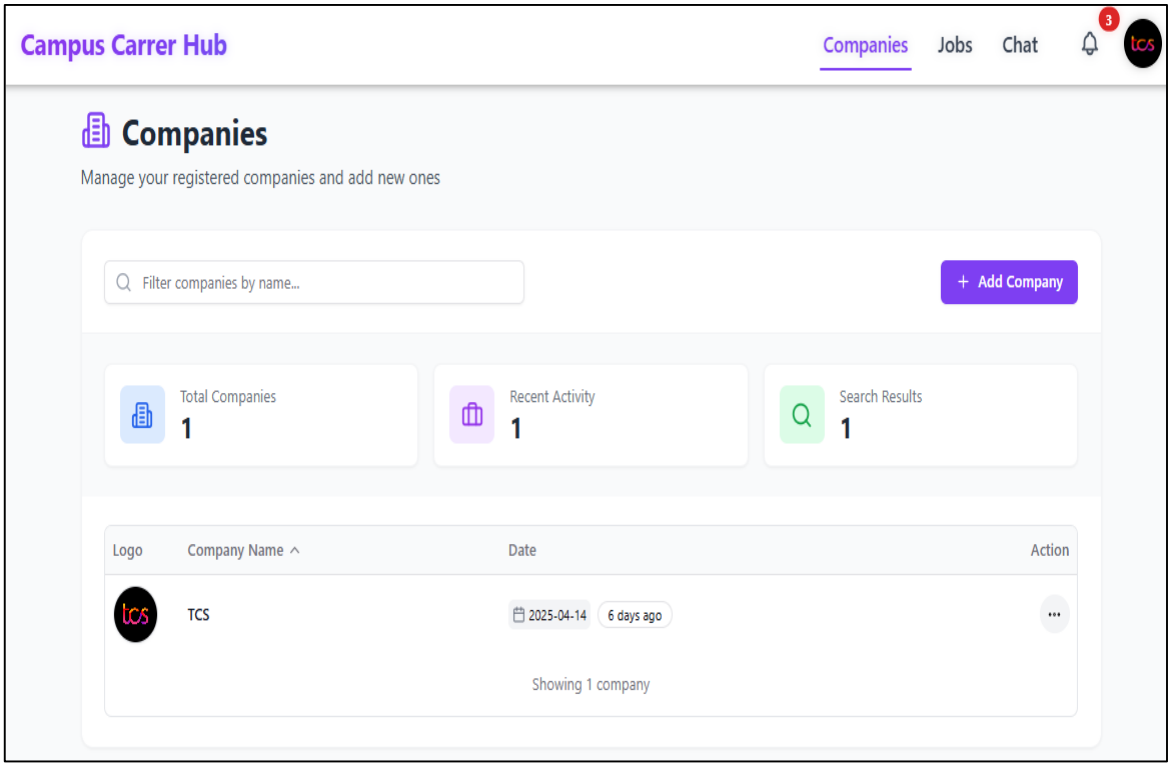


Fig 9: Recruiter Company Section

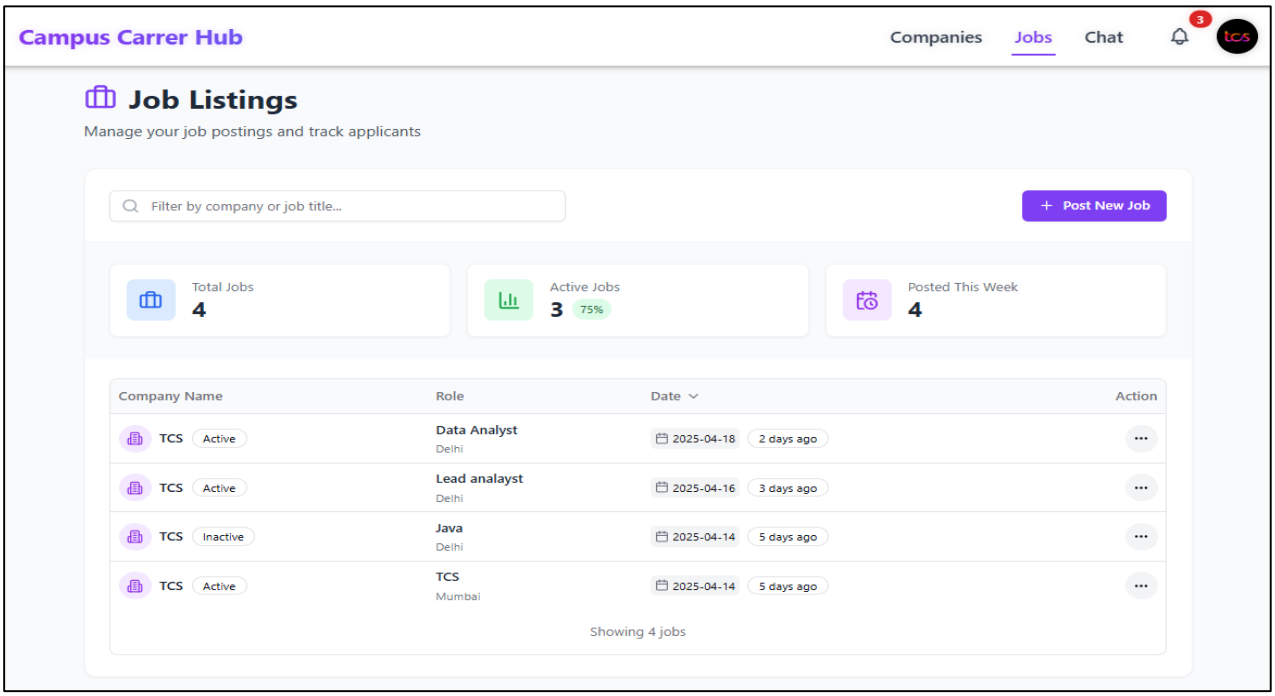
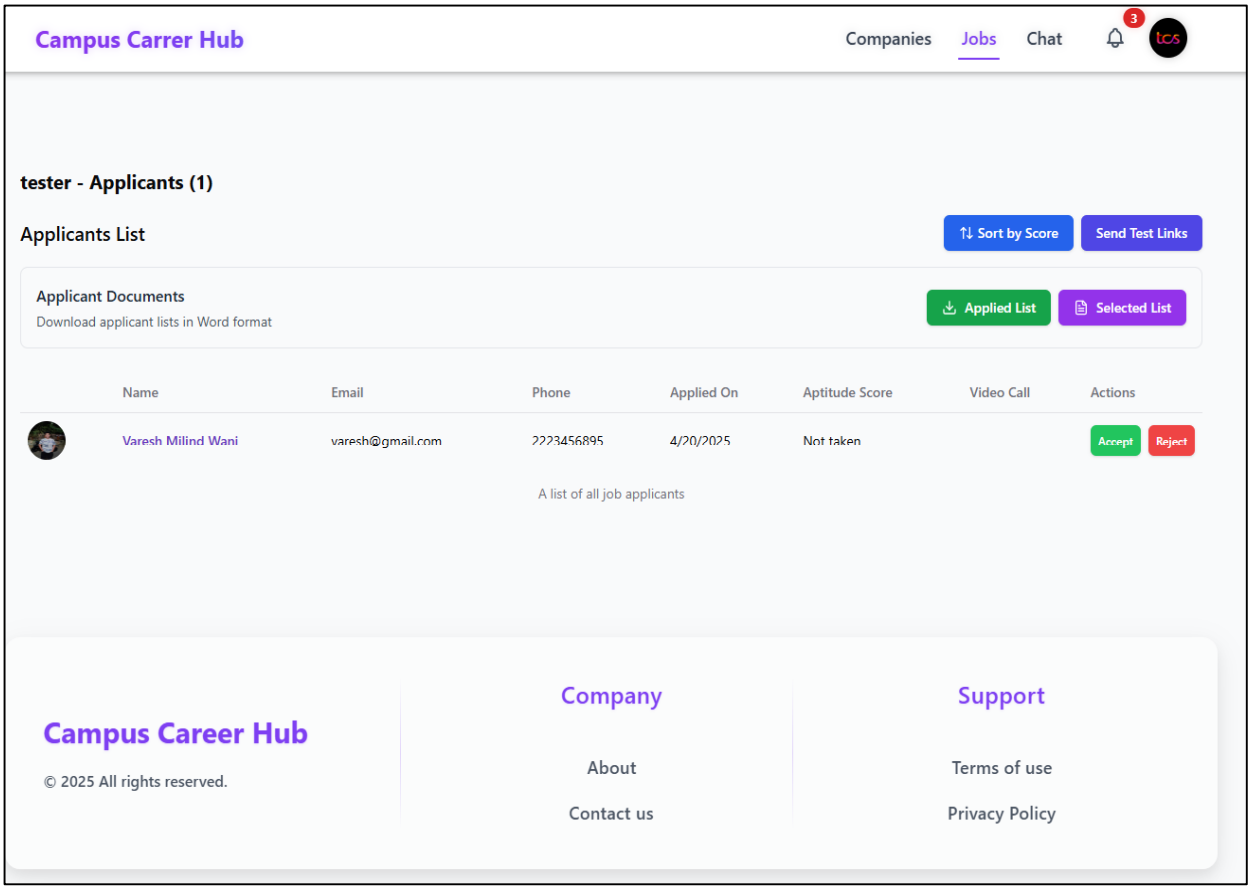


Fig 10: Recruiter job section

Fig 11:



Applicant list
Fig 12: Aptitude test

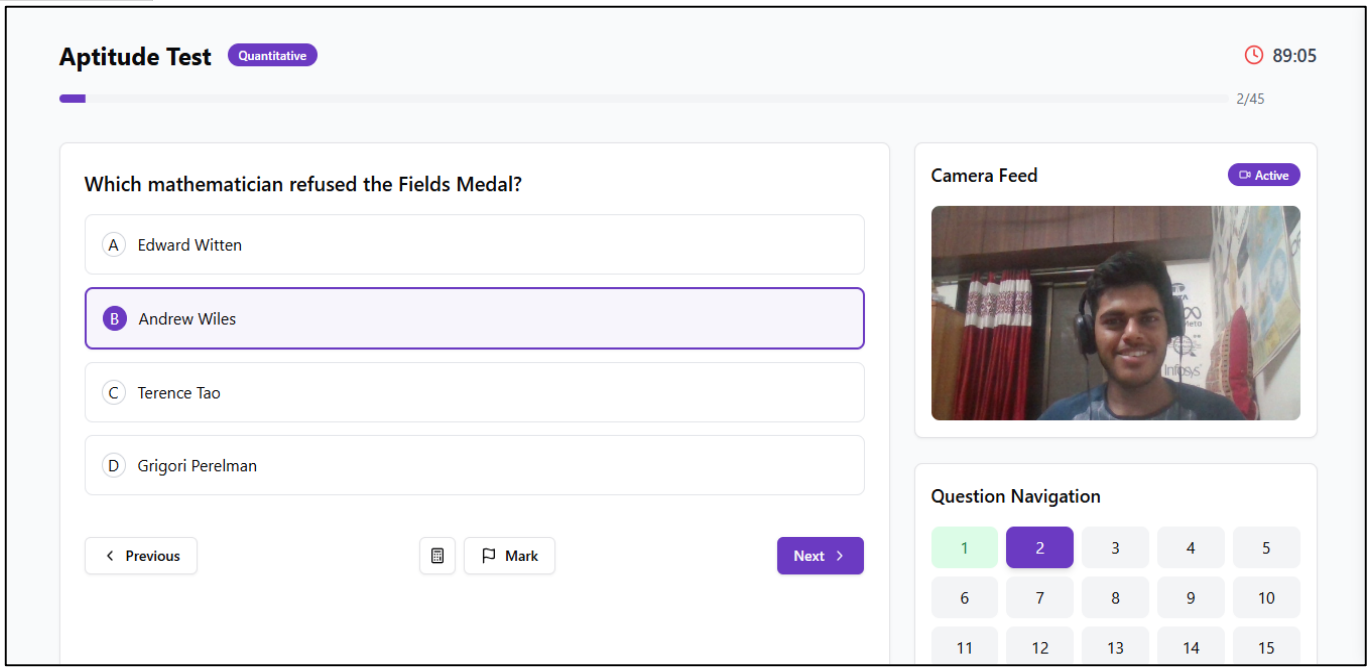
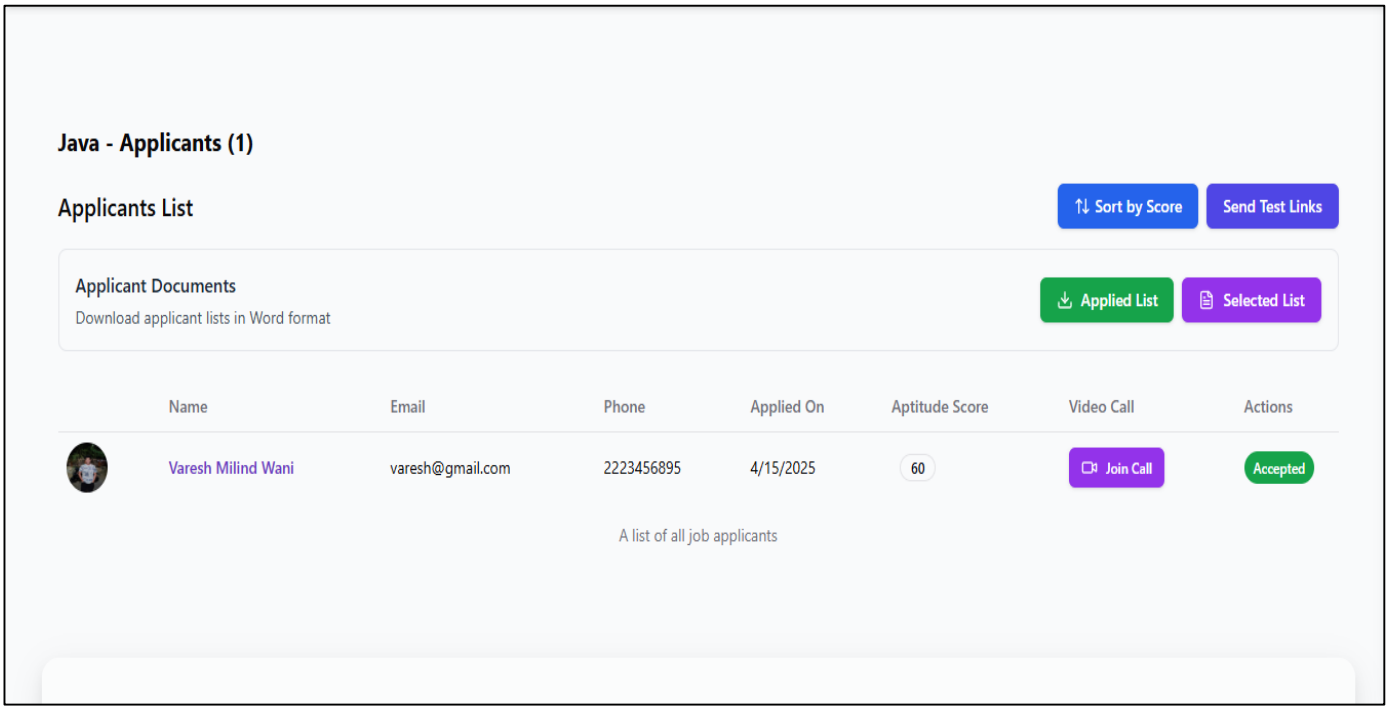


Fig 13: Result



VI. CONCLUSION

Campus Career Hub effectively addresses the limitations of conventional placement systems. It enhances user engagement, transparency, and operational efficiency. Future upgrades include mobile application development, interview scheduling, and AI-based candidate-job matching.

Moreover, the platform's responsive design and robust architecture ensure seamless performance across devices and scalability for deployment in institutions of various sizes. The integration of features like real-time application tracking, eligibility filtering, and secure authentication contributes to a transparent and efficient placement process. These elements collectively reduce the administrative burden while empowering students to take greater control of their career journey.

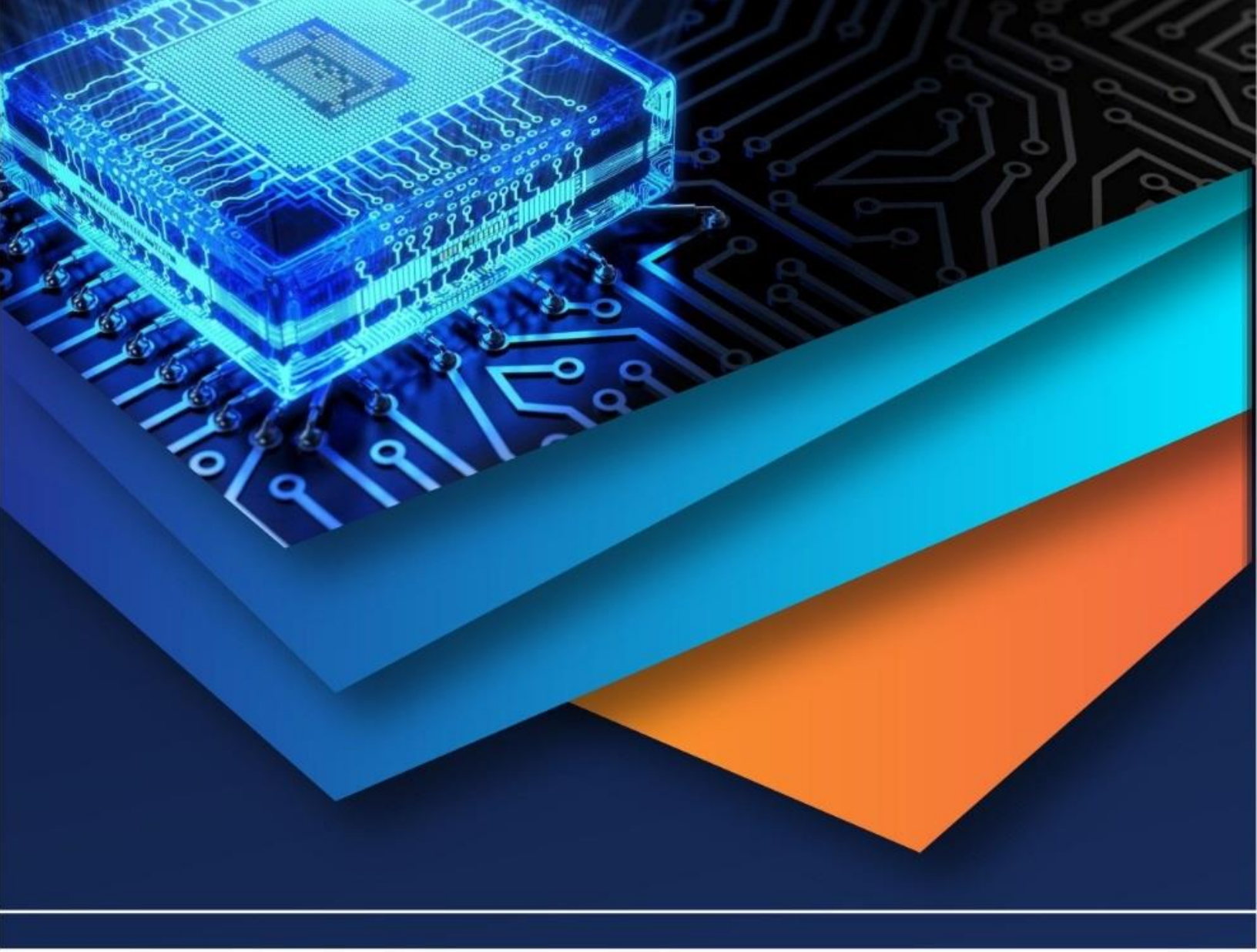
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Looking ahead, future enhancements aim to further increase the system's utility and adaptability. Planned upgrades include the development of a dedicated mobile application to improve accessibility on-the-go, automated interview scheduling to streamline communication between candidates and recruiters, and AI-driven candidate-job matching to improve the accuracy of application filtering. With these enhancements, Campus Career Hub is poised to evolve into a more intelligent and comprehensive platform, capable of meeting the growing demands of modern campus recruitment.

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