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Online Job Portal With Resume Parsing and Matching

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Abstract - Campus placements often demand significant manual effort, from matching student profiles to job requirements to tracking application statuses. This process is transformed with the Training and Placement Officer (TPO) portal, built using the MERN stack and AI-powered resume parsing. The portal automates candidate shortlisting by analyzing resumes and ensuring at least a 50% skill match with job descriptions, significantly reducing TPO workloads. Job postings created by TPOs are instantly visible on student dashboards, with automated email notifications keeping students updated and engaged. Beyond facilitating placements, the system empowers students by offering personalized skill improvement recommendations, guiding them to enhance their profiles and stay competitive in the job market. For TPOs, the portal provides robust features like report generation for shortlisted candidates, offering valuable insights for better decision-making. Its intuitive interface ensures seamless navigation for users, fostering a transparent and efficient placement process. By bridging the gap between student abilities and employer expectations, the TPO portal creates a streamlined, fair, and mutually beneficial ecosystem, enhancing the campus recruitment experience for all stakeholders.

Key Words: Resume Parsing, Job Matching, Automation, Resume Builder, MERN Stack, TPO.

1. INTRODUCTION

In an age defined by technological innovation, traditional methods of campus placements are increasingly falling short in meeting the dynamic needs of students and employers. Placement processes often involve labor-intensive tasks such as manually shortlisting candidates, posting job openings, and tracking application statuses. These methods are not only time-consuming but also lack the precision and scalability needed in today's competitive job market. To address these inefficiencies, we present an Online Job Portal, leveraging the MERN stack and AI-powered resume parsing to transform the placement experience for all stakeholders. This platform re-imagines the

recruitment process, introducing automation and intelligence to eliminate redundancies while enhancing transparency and fairness. The system bridges the gap

between student capabilities and employer requirements by automatically shortlisting candidates whose skills match at least 50% of the job description. This innovative approach ensures that the right candidates are connected with the right opportunities without manual intervention. One of the standout features of the portal is its AI-driven resume parsing. Instead of relying on generic matching, the system deeply analyzes resumes to identify key skills, qualifications, and experiences. It compares these insights against job descriptions posted by companies, enabling targeted and precise candidate recommendations. This ensures that students are evaluated on their actual capabilities rather than superficial keywords, making the process both equitable and effective.

For students, the portal is more than just a job application platform—it is a personalized career assistant. Real-time dashboards provide updates on new job postings, application statuses, and shortlisting results. Automated email notifications keep students informed at every step, ensuring they never miss an opportunity. Additionally, the portal provides tailored recommendations for skills they need to acquire or improve, empowering students to stay competitive in a rapidly changing job market. From the perspective of Training and Placement Officers (TPOs), the portal streamlines tasks such as posting jobs, generating reports, and managing candidate data. The report generation feature allows TPOs to analyze placement trends, create insightful summaries, and share results with stakeholders. These capabilities free up valuable time, enabling TPOs to focus on strategic activities like fostering relationships with recruiters and planning campus drives. Beyond individual features, the portal fosters an ecosystem of collaboration between students, TPOs, and recruiters. By automating repetitive tasks and ensuring accurate matchmaking, it creates an efficient workflow that benefits all parties involved. Recruiters gain access to a well-curated pool of candidates, while TPOs can confidently present their students to potential employers, knowing the system ensures a fair and rigorous selection process.

The technological backbone of the portal includes the MERN stack (MongoDB, Express.js, React.js, and Node.js), which provides a robust and scalable foundation for the platform. The integration of AI not only enhances the functionality but also introduces a layer of intelligence that sets the portal apart from traditional placement systems. Additionally, features like email automation and

report generation add significant value by reducing manual intervention and increasing operational efficiency.

Ultimately, this Online Job Portal goes beyond being a simple placement tool—it is a comprehensive solution designed to meet the needs of the modern recruitment landscape. By automating tasks, providing actionable insights, and creating a seamless experience for users, the portal redefines how placements are managed. It empowers students to take charge of their careers, helps TPOs operate with greater efficiency, and ensures recruiters find the talent they need quickly and accurately.

2. OBJECTIVES

- Simplify and automate job application, shortlisting, and hiring workflows.
- Extract and analyze resume data accurately for skill assessment.
- Match candidates to job opportunities based on skill compatibility.
- Provide tailored recommendations to candidates for upskilling.
- Generate insightful reports on placement metrics and recruitment progress.
- Offer interactive dashboards for students and TPOs to track job postings and application statuses.
- Notify students about job updates, applications, and recommendations via email and dashboard.

3. LITERATURE REVIEW

We read different exploration papers, primers and documents that are identified to our design idea. Following are some literatures that are useful to fête different ways or strategies to make this design.

Title: Based on the application of AI technology in resume analysis and job recommendation
Author: Yi-Chi Chou, Han-Yen Yu
Year: 2020 (Oct)
Limitation: Operations of AI technology grounded HR matching have gradationally attracted public attention and are getting trendy. Analogous to former trends of severance and task metamorphosis brought by crucial inventions in the history, AI is creating further high-tech and directorial positions while replacing millions of low-to- middle rank positions and low-tech positions of a different nature [1].

Title: Ontologies to Model User Profiles in Personalized Job Recommendation
Author: S.R. Rimitha, Vedasamhitha Abburu, Annem Kiranmai, K. Chandrasekaran
Year: 2019 (March)
Limitation: This study introduces a capsule analysis and position recommendation system leveraging AI for personalized resume analysis and job recommendations. It evaluates candidates' competitiveness and personality traits, offering tailored career insights. The system also aids recruiters by generating talent recommendation lists from electronic resumes, enhancing the efficiency and precision of job matching processes [2].

Title: A Résumé Evaluation System Based on Text Mining
Author: Yi-Chi Chou, Chun-Yen Chao, Han-Yen Yu
Year: 2019 (March)
Limitation: This study introduces a résumé evaluation system utilizing text mining techniques to automate and enhance the recruitment process. By analyzing electronic résumés, the system assesses candidates' competitiveness and personality traits, providing personalized insights. It also generates tailored job recommendations, streamlining the hiring process for recruiters and offering valuable feedback to job seekers [3].

Title: Placement Management System for Campus Recruitment
Author: Ajeena Sunny, Aneena Felix, Angelin Saji, Christina Sebastian, Praseetha V.M
Year: 2020 (May)
Limitation: This study presents a Placement Management System designed for lot reclamation, streamlining placement-related conditioning for Training and Placement Officers (Twos). It enables scholars to modernize their biographies and simplifies seeker operation. Still, the system lacks features like customized company recommendations grounded on academic criteria. The system was developed using the Laravel frame with the Model-View-Template(MVT) pattern [4].

Title: Student Analysis System for Training and Placement
Author: Praneeth Ambiti, Navaneeth Kumar B, K Hema, Vamsi Kandula, Kishore Buddha
Year: 2020 (Mar)
Limitation: This study introduces a system providing comprehensive tools for Training and Placement Officers (TPOs), students, and recruiters. It includes features like recruitment exam analysis (Cocubes, Amcat) for students and year-wise placement statistics in graphical formats for TPOs. Recruiters can filter students based on specific criteria. While effective, it focuses primarily on graphical data representation and lacks advanced AI-driven functionalities [5].

Title: CABAL-Training and Placement Departmental Portal
Author: Payal Gothi, Jidnyasa Raut, Prof. Nileema Pathak, Komal Patil, Riddhi Kamat
Year: 2019 (Aug)
Limitation: This portal features modules for report generation, forums, SMS notifications, resume building, and management by administrators, companies, and students. Built using Microsoft Visual Studio, ASP.NET, and SQL Server Management Studio (SSMS), it provides

robust data handling. However, the system lacks advanced automation and AI-driven functionalities, limiting its adaptability to modern placement needs [6].

Title: Training and Placement Cell Application
Author: J. Swathi, K. Priya Tharsini, S. Suganya Janani, Asso. Prof. Dr. G. Vinoth Chakkaravarthy
Year: 2018 (March)
Limitation: This application, built using Android ADT Bundle, includes modules for students, administrators, and training staff. Students can update personal details and check placement opportunities. Administrators can generate Excel-based eligible student lists by applying company criteria. Despite its efficiency, the system lacks features like AI-driven candidate recommendations and advanced analytics for placement trends [7].

Title: A comparison study for job recommendation
Author: Minh-Luan Tran, Anh-Tuyen Nguyen, Quoc-Dung Nguyen, Tin Huynh
Year: 2017 (June)
Limitation: This research delves into job recommendation algorithms, seeking the most efficient way to connect job seekers with ideal opportunities. By analyzing a dataset of 7,623 job postings from leading Vietnamese platforms and gathering insights from 59 users, it compares various methods. The study highlights content-based filtering as a standout approach, delivering precise and effective job recommendations compared to traditional techniques [8].

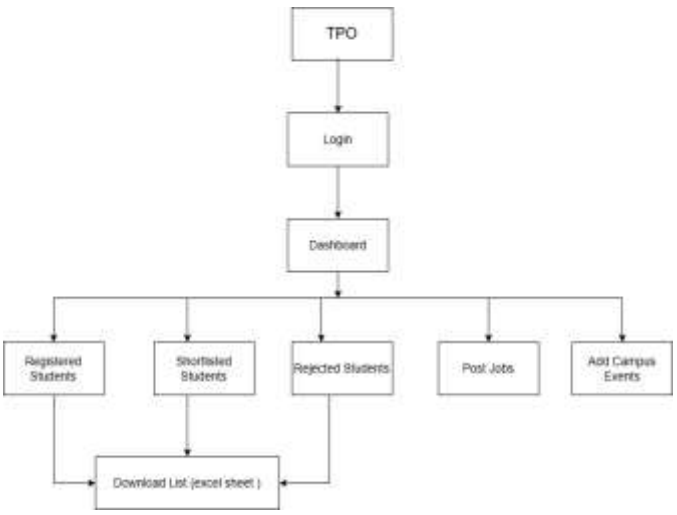
Title: Online Training and Placement Portal with Android Application
Author: Sandeep S. Chorge, Ganesh A. Bhabad, Balaji D. Chate3, Rahul T. Take, Nitin R. Shinde
Year: 2017 (Mar)
Limitation: This system integrates web and Android platforms to manage training and placement conditioning efficiently. It features modules for Twos, staff, scholars, and department-wise operations. Crucial functionalities include vacancy shadowing, automated dispatch announcements, and streamlined pupil-company mapping. While effective for executive tasks, the system has limitations similar to the absence of AI-driven analytics, dynamic recommendation features for individualized job matching, and tools for skill improvement. Also, it lacks advanced capabilities like real-time shadowing of aspirant status and detailed report generation to support better decision-making for reclamation processes [9].

Title: Study of Implementation of Online Placement System
Author: C. K. Patil, K. G. Patel
Year: 2016 (Mar)
Limitation: This study presents an online placement system designed to automate and streamline lot recovery processes. The system offers distinct modules for scholars and placement officers, enabling scholars to register online, update academic and particular details, and view job bulletins. Placement officers can manage pupil and company data, induce reports, and shoot adverts. Developed using the Struts 2 frame, which follows the Model-View-Controller(MVC) design pattern, the system enhances effectiveness by reducing manual intervention and consolidating placement exertion into a single platform. Still, it lacks advanced features like AI-driven analytics and dynamic job recommendations. [10].

4. METHODOLOGY

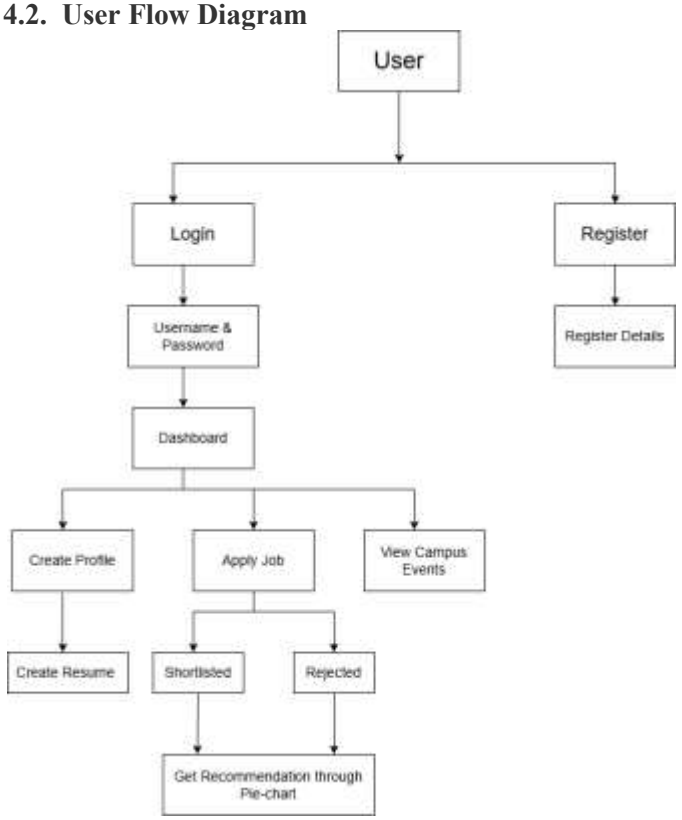
The TPO (Training and Placement Officer) Portal is developed using the MERN stack, which includes MongoDB, Express.js, React.js, and Node.js. These technologies collectively provide a full-stack JavaScript environment for building scalable and responsive web applications. The frontend is developed using React.js, enhanced with HTML, CSS, and JavaScript to create an interactive and user-friendly interface for both students and TPOs. The backend is powered by Node.js and Express.js, which handle the server-side logic, API endpoints, and communication with the database. MongoDB is used as the database for storing structured data like student profiles, job listings, resumes, applications, and placement status. The system also integrates Postman for testing APIs, ensuring that routes such as login, job posting, resume parsing, and data retrieval work as expected. JWT (JSON Web Tokens) is implemented for secure authentication of both students and TPOs. Email functionality is incorporated using Nodemailer, which allows the system to send automated job alerts and application updates to students. For generating downloadable reports, backend modules are used to export student data in formats such as Excel or CSV. In addition, skill-matching logic is embedded in the backend to automate shortlisting decisions based on resume-job requirement comparisons. The modular structure of the system allows for easy future upgrades, such as AI-based recommendations or admin-level analytics.

4.1. Data Flow Diagram (DFD)



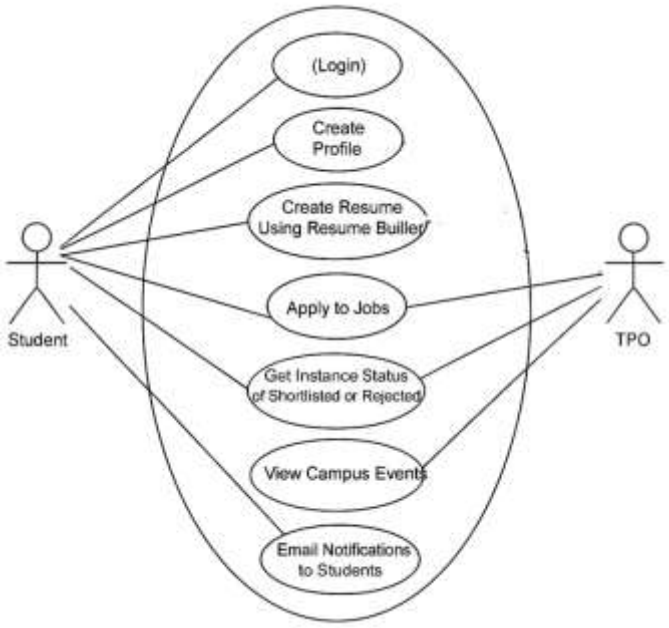
This diagram illustrates the key functional areas accessible from the TPO dashboard. After logging in, the TPO can manage tasks such as viewing registered students, shortlisting or rejecting them based on system - generated matches, posting jobs, adding campus events, and downloading student lists in Excel format. The diagram highlights the central role of the dashboard in managing the flow of information and control.

4.2. User Flow Diagram



This flow illustrates how students navigate the system—from logging in and building resumes to applying for jobs and receiving results. The system checks each student's skills against job requirements. If more than 50% of the required skills match, the student is shortlisted. If not, the system provides feedback on the skills they lack. The TPO can then view applicant status and download reports. This diagram shows the logical and user-centric workflow, providing immediate feedback and automation.

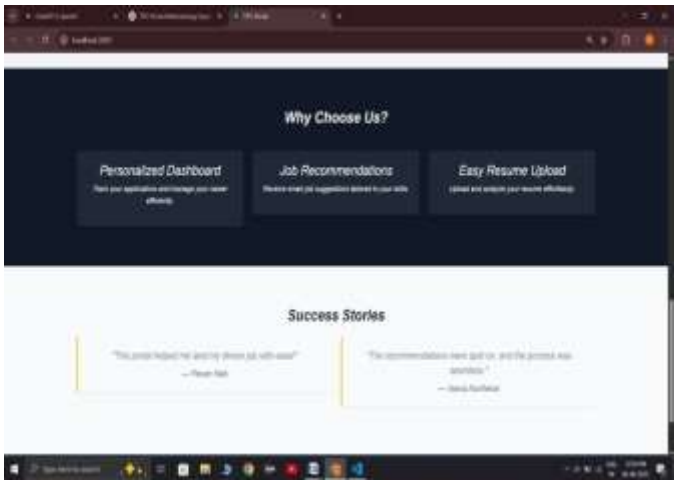
4.2. Use Case Diagram



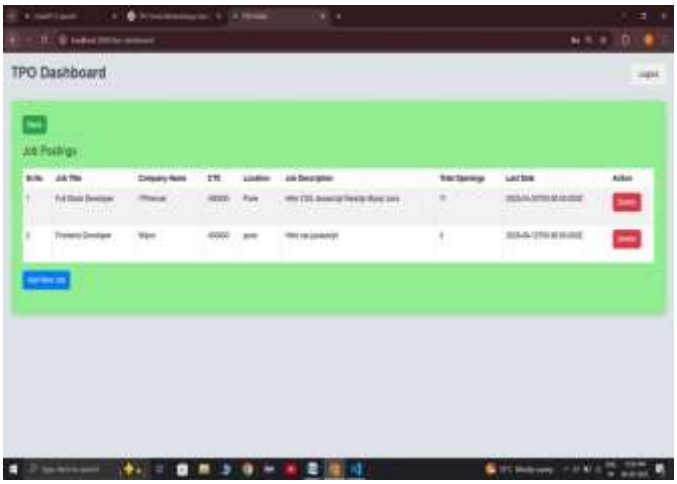
This diagram defines the actions available to the two types of users: students and TPOs.
Students can log in, build their profiles and resumes, apply for jobs, view application statuses, receive notifications, and stay updated with campus events. TPOs are responsible for posting jobs, managing applications, shortlisting or rejecting students based on skill match, and sending out notifications. This use case overview presents a clear map of user roles and system functionalities.

5. RESULTS

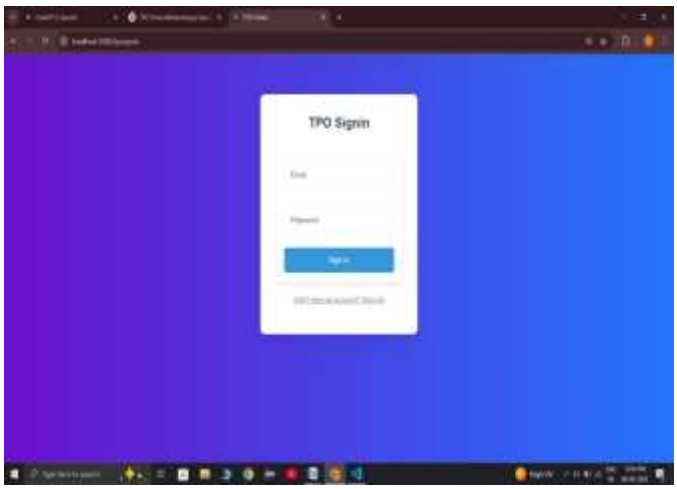
1.1 Home Page



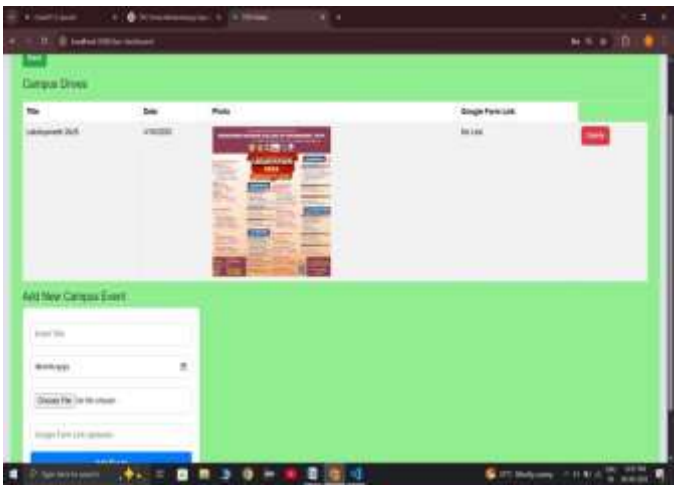
1.2. Home Page



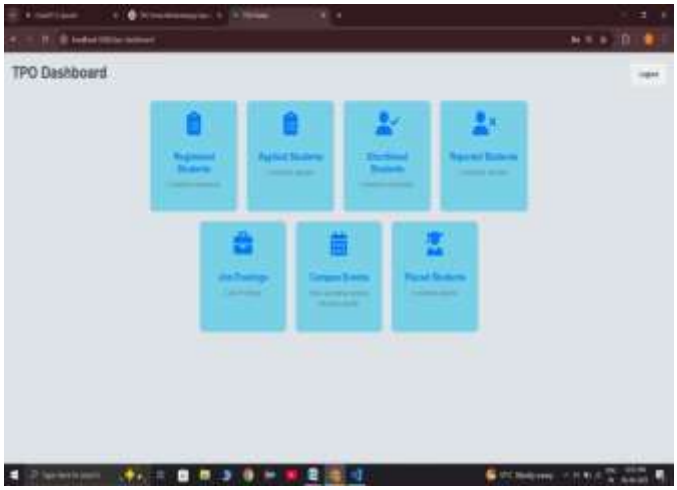
2.3. Job-Posting Page



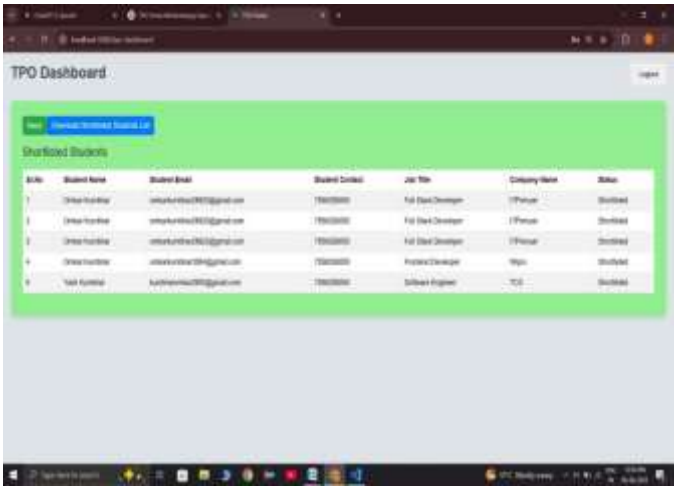
2.1. TPO Login



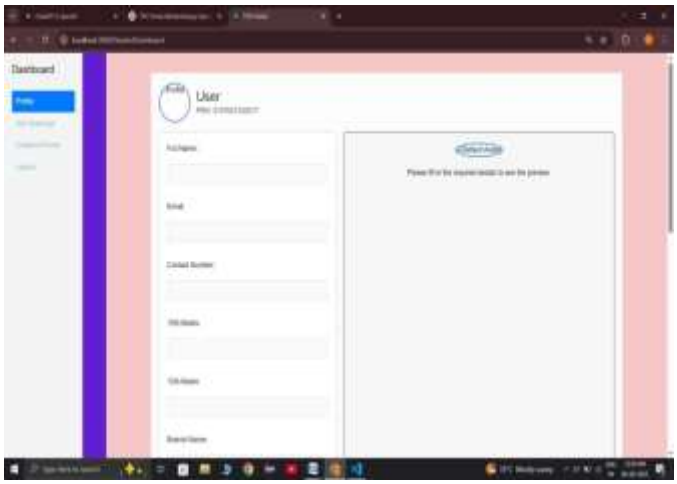
2.4. Campus-Event Posting



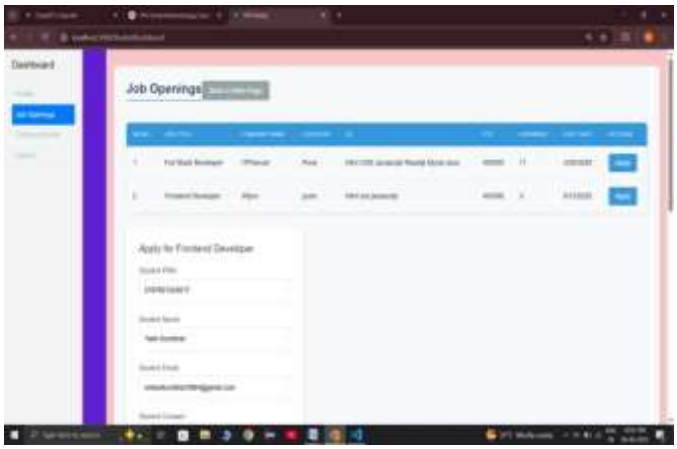
2.2. TPO Dashboard



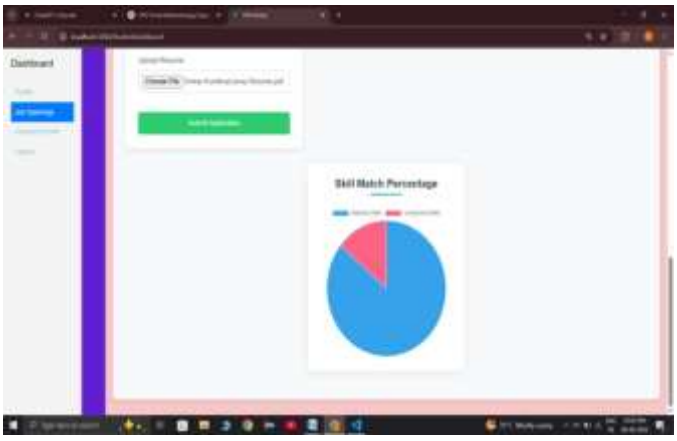
2.5. Shortlisted Students



3.1. Student-Dashboard



3.2. Job Applying



3.3. Skill Match Percentage

6. CONCLUSIONS

The Online Job Portal with AI Resume Parsing and Job Matching revolutionizes the campus recruitment process by integrating advanced technologies like AI and the MERN stack. This system eliminates the need for tedious manual work, ensuring that students and recruiters experience a streamlined, efficient, and transparent process. By analyzing resumes and matching student skills with job requirements, the portal ensures fair shortlisting based on measurable criteria. Features like automated notifications, personalized skill recommendations, and insightful report generation further enhance user engagement and decision-making for both students and TPOs. This platform not only saves time and reduces administrative burden but also empowers students to focus on skill development and career growth. It fosters an environment of fairness and clarity, bridging the gap between student abilities and recruiter expectations. Ultimately, this project sets a new standard for campus placements by blending technology with functionality, paving the way for smarter and more inclusive recruitment processes that benefit all stakeholders involved.

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