

A Smart Mobile Campus Placement System with Explainable AI and Auto-Apply Facility

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Abstract—Currently, campus placements suffer from some persistent problems such as inadequate counselling, mismatch between job skills and job requirements, and the absence of any feedback on the rejection or non-placement of the student. Our Smart Mobile Campus Placement System takes care of all these problems through the use of an integrated platform meant for use by the student, counsellor, and the administration panel. Some of its key features include a role-based dashboard, sign-in module, and other features. One of the most important features is the resume parser, which helps in building a student profile based on the resume that can be uploaded with the addition of versioning support, thus decreasing the work involved in the creation of the student profile. The system gives intelligent recommendations to students along with gap analysis and 'what-if' scenario capabilities. It also has auto-apply capability. Other important features for both students as well as administrators, counsellors, and advisers are career DNA, interview readiness index, and placement passport, respectively.

Index Terms—Campus Placement, Explainable AI, Resume Analysis, Skill Gap Analysis, Job Recommendation, Mobile Application

I. INTRODUCTION

Campus placement is the gateway that leads college students into careers. It is an important link between what they learn while in school and the future. At the same time, it gives employers an opportunity to find students that are qualified to work for them. At the moment, fundamental processes such as the collection of applications, the matching process, and the review of resumes as well as the verification of eligibility, are completed either manually or through very simple online applications. As the number of Students and Companies rises, such processes and systems become more and more inefficient, are increasingly time-consuming, and become more resource intensive to sustain.

Students are still able to apply for jobs through the current placement systems, even if they have no idea what they are qualified to do or what qualifications they actually possess. This leads to a huge number of applications that are inadequate and a corresponding number of rejection notifications. In the meantime, placement officers are overburdened with administrative tasks including reviewing applications, choosing candidates, and managing several job fairs at once.

Recent research has examined the use of artificial intelligence (AI) and machine learning (ML) for resume screening, job suggestion, and placement prediction [2], [3]. The accuracy of Natural Language Processing methods in extracting information and abilities from resumes has shown promise when compared to traditional keyword-based methods [4]. Nevertheless, most of the methods have been created as stand-alone programs or web applications and have not been integrated or presented in a way that would make them accessible to students [12].

This project aims to develop a mobile application for Campus Placement Management System based on the concept of explainable decision support and intelligent automation. It will analyze the student's profile and resume to identify the skills and information, and then based on the information, it will provide job suggestions.

To assist the student in understanding why they would be a suitable candidate for the job openings posted, a rationale for the selection will also be provided for each set of recommended job openings. One of the major features of this system is the capability for the student's application to automatically apply for placement drives based on the criteria set by the student themselves. This reduces the workload for the placement team by half and saves time for the student themselves. It also includes features like Interview Readiness Score, which helps the student assess their

preparedness for the next stages of recruitment, and Skill Gap Analysis, which helps identify gaps in skills for the student [10],[14]. This approach helps in increasing efficiency, transparency, and fairness in campus placements for the student.

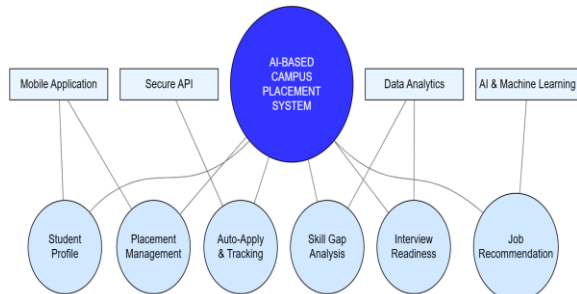


Fig. 1 The AI-based campus placement management system's conceptual architecture

Fig. 1 depicts the conceptual architecture of the AI-based campus placement management system. The functional modules of student profile management, job suggestion, interview readiness analysis, skill gap analysis, and auto-apply tracking are integrated with the central placement management core of the proposed AI Campus Placement Management System. The suggested method analyzes student data and placement requirements using machine learning and artificial intelligence. The proposed mobile campus placement management system will be utilized by both students and placements officers via mobile applications. In addition, the proposed system uses data analysis tools and secure APIs for its processing. The flow of the research paper is straightforward. The literature review section is explained in Chapter 2, while the methodology and process involved in the Campus Placement Management System are discussed in Chapter 3. Chapter 4 explains the verification and results of the proposed system, while the comparative analysis between the proposed system and the existing system is provided in Chapter 5. Chapter 6 concludes the report.

II. LITERATURE REVIEW

Over the last few years, the prevalence of artificial intelligence within the recruitment process has risen. Traditional resume screening involves manual review of hundreds of resumes and is very time-consuming and often not consistent. Researchers have considered applying NLP technologies to automate the resume screening process to deal with this issue. For instance,

Saatçı et al. demonstrated how an NLP-based system can use the technology to obtain the necessary abilities and qualifications from the resumes. Based on their findings, the technology has great potential to save a lot of time while performing the screening without compromising the quality of results.

Additionally, developments within the resume processing through the use of deep learning technologies have been discussed by Gan et al. They have introduced a concept where large language models could be used in resume summarization and evaluation. The researchers also presented a system that could rank the candidates based on how suitable they are for the position. Finally, Khelkhal and Lanasri have introduced a system where resumes and job postings could be matched to facilitate hiring process. They suggested incorporating semantic matching into the system.

With the increasing usage of artificial intelligence technology in recruitment processes, there is an increased demand for transparent decision-making processes, which require adequate explanation. Zhang and associates. highlighted the necessity of using interpretable AI in the employment process. Kalas Ampath and his team [16] suggested using technology to provide a clear explanation of the hiring and rejection process. additionally suggested using XAI tools like SHAP and LIME to verify the recruiting process's characteristics [17].

Another study by Deepa and coauthors [9] on resume parsing models identified various machine learning and entity recognition approaches used for skill extraction. According to their finding, parsing resumes involves dealing with different document types and irregularities in resumes. This challenge is being addressed in newer studies by Jha and colleagues, where AI tools are used to connect recruitment with long-term retention a factor highly relevant to academic placement, where different types of resumes are submitted.

Although these studies have contributed greatly to hiring and resume analysis automation, most studies have focused on individual aspects such as parsing or job recommendation in isolation. However, according to a comparison conducted by Kumar and colleagues on integrated platforms for hiring automation, these integrated platforms are more accurate in predictions compared to fragmented tools. There is still little research on a completely integrated hiring system for

academic campus placement environments. For example, mobile platforms for integrating resume parsing, AI-based job matching, reasoning, skill gap analysis [20], and automatic application submission are still relatively understudied [21].

The proposed AI-Based Campus Placement Management System builds upon these previous studies by integrating multiple AI modules into a unified mobile application tailored for educational institutions.

Table I Summary Literature Review of technologies and their characteristics, benefits, and limitation.

Reference	Technologies	Characteristics	Benefits	Limitations
[5]	NLP resume screening	Skills and qualification extraction process automated	Saves time without compromising screening effectiveness	Works on text resumes but cannot offer job matching services
[6]	LLMs	Resume summary writing and ranking the resume	Automated evaluation of candidates' eligibility	No integration into the campus placement module
[7]	Semantic matching (NLP)	Extracts details from the CV and performs job matching	Fully explainable recruitment module	Adaptation to the academic environment impossible
[8]	Explainable AI (XAI)	Machine learning algorithms which can be explained by humans	Human-understandable algorithms	Cannot incorporate resume parsing or a mobile application
[18]	AI-based HR tools	Connecting recruitment with long-term retention	Considers retention along with hiring decisions	Not designed for student/campus placement
[19]	Integrated ML platform	Comparative evaluation of placement prediction	Higher accuracy than fragmented tools	No mobile deployment or auto-apply feature
[10]	AI-based skill gap analyzer	Detects skill gaps against job requirements	Motivates students to upskill proactively	No resume parsing or auto-apply module

The disparities between the data from previous studies and what would be needed for future study are highlighted in the table above. We demonstrate how the problem can be resolved with a single solution the Smart Mobile Campus Placement System by integrating all of the previously specified requirements into a mobile application.

III. METHODOLOGY

The proposed system's methodology involves student login and resume upload via the application. The resume is then processed for skill and academic details using NLP. The profile information is then analyzed based on CGPA and eligibility criteria. The system then fetches placement requirements from the database and uses AI for job matching. The system then calculates the interview readiness score and skill gaps based on the match score. If the student meets the criteria, the auto-apply engine applies for the placement automatically. Every process is recorded in the cloud database for placement officers to view and process for recruitment. The approach of the system is divided into the following functional modules.

- **Student Registration & Login:** This page lets students get registered and logged in to the application. During registration, it asks for the basic information of the students, such as name, email, branch, and CGPA. It establishes a backend database user authentication system to protect placement features from any unauthorized access.
- **Resume Upload:** The student logs in to the system and is required to upload their resumes in PDF format. The AI engine will then process the information provided in the resumes. After that, the resume will be stored in the cloud database.
- **Resume Parsing & Skill Extraction:** The tool will utilize the capabilities of Artificial Intelligence and Natural Language Processing to read the student's resume. It will scan the key skills required in the resume, thus eliminating the need to go through the resume manually. Resume becomes skill set.
- **Analyzing Student Profiles:** The skill sets are then connected with academics to generate a profile of the student in terms of placement criteria - CGPA, stream, and year of passing out.

- Processing of Placement Information: Administration Portal helps in the processing of placement procedures. The system maintains company names, job roles, eligibility criteria, skill sets required, and deadlines.
- AI-Driven Job Recommendations: The AI matching tools compare the student profile with the job criteria and provide recommendations based on the best skill and eligibility matches.
- Interview Preparedness Evaluation: An interview readiness score is assigned based on skills and academic achievements, aiding students in gauging their preparedness for recruitment processes.
- Skills Gap Assessment: This program detects skill gaps related to specific job requirements and offers ideas for students to increase their employability.
- Auto-Apply: This technology enables for the automatic submission of job applications if the student fulfils specified parameters such as the threshold CGPA, particular branch, and skill threshold.
- Application Management and Staff Review: All applications, whether human or auto-applied ones, are stored in the database. Staff members in the placement department can choose to shortlist and select applications based on recruitment needs.

The general design of the suggested AI-Based Campus Placement Management System is shown in Fig. 2. Under the new system, students will be able to upload their profiles and resumes via a mobile application, and companies will be able to communicate their requirements. This new system will read the student-uploaded resumes and extract the talents listed in them using AI and NLP approaches. It will evaluate the student's profile based on their skills and other parameters like CGPA. An AI-powered job recommendation tool will match the job requirements with the students' profiles. It will also determine the gaps in skills and provide courses for the improvement of the students' skills. In addition, the suggested Auto-Apply engine will automatically apply the application once the students satisfy the set eligibility criteria. The application of students who satisfy the set requirements will be saved in the database, and the placement manager will be able to filter the

applications, while the students can see the suggested jobs and career guidance.

IV. RESULT & VALIDATION

The design and implementation of an AI-based campus placement management system were done on mobile technology and implemented for several practical cases. The primary aim of the evaluations was to assess the system's efficacy and confirm the effective management of all processes related to student job placement. The testing process included the main functions: uploading resumes, extracting skills, suggesting jobs, analyzing skill gaps, and the automatic application feature.

The tests showed that integration of AI-based components in the mobile campus placement management system makes the system more efficient, transparent and automatic. In contrast to the existing system which involved a manual screening of resumes, the current one involves smart decision support, automation of application process, and analysis.

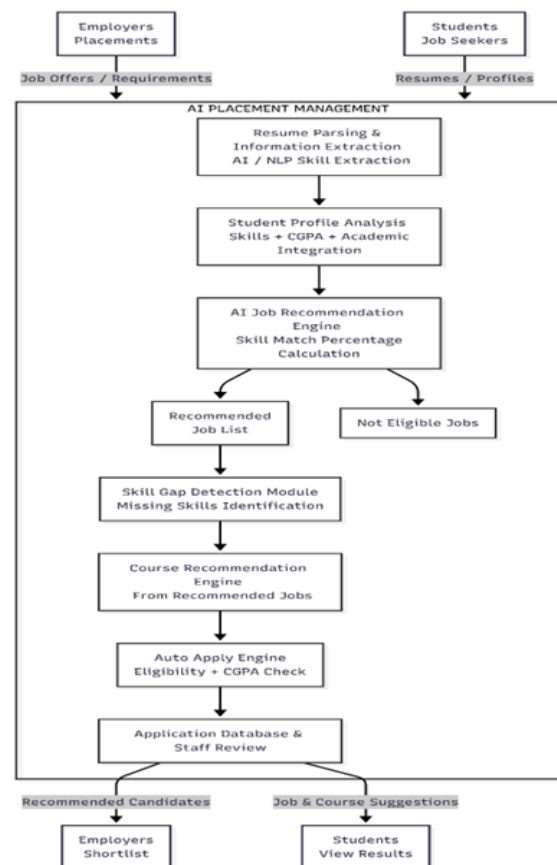


Fig. 2: Architecture of the AI-Based Campus Placement Management System

Table II Functional Module Testing

Module	Expected Result	Status
Resume Upload	Resume stored in cloud	Pass
Resume Parsing	Skills extracted correctly	Pass
Placement Creation	Drive stored in database	Pass
Job Recommendation	Show recommended jobs	Pass
Skill Gap Analysis	Missing skills shown	Pass
Interview Readiness	Score generated	Pass
Auto-Apply Engine	Auto application submitted	Pass
Application Tracking	List displayed	Pass

The Auto-Apply functionality was proved to be effective and ensured the fairness of the process as it applied the applications once the set requirements were satisfied. On the other hand, the skill gap analysis and interview preparation assistance motivated the students to take an active role.

Validation demonstrates that the system is technically correct, functionally correct, and very useful.

V. DISCUSSION

The AI-based campus placement management system proves how incorporating AI elements can make the campus placement management process more efficient. This AI-based campus placement management system automates many processes such as resume management, job matching, gap analysis, and auto-submission of applications. This AI-based campus placement management system can match resumes based on eligibility criteria such as CGPA, branch, and skills. The auto-submission feature can make things even easier for students whose applications are automatically submitted to the relevant opportunities. Apart from automation, this campus placement management system provides valuable information to students on how to prepare for interviews based on their interview readiness scores. This AI-based campus placement management system proves how AI-based mobile applications can make campus placement management more efficient.

VI. FUTURE SCOPE AND CONCLUSION

The paper explains how an AI-powered campus placement management system was created as a mobile application. Intelligent features like resume processing, skills extraction, job suggestions, interview preparation, skills gap assessment, and auto apply are all part of this system. The study's findings show how the application can help students and the placement process by boosting productivity and lowering the need for human intervention throughout the whole hiring process. The research's future scope allows for the improvement of the application through the use of intelligent components like AI-based mock interviews, career growth tracking utilizing tools like Career DNA, machine learning prediction for placement prediction, and integration with other learning and employment platforms.

Future research could improve the program by adding intelligent components like AI-based mock interviews, machine learning-based placement prediction, and career growth tracking tools like Career DNA, as well as integration with other learning and employment platforms, will enhance the application's overall intelligence and utility in the current recruitment landscape.

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