

An AI-Driven Framework for Enhancing Campus Placement Systems Through Skill Gap Analysis and Personalized Recommendations

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Abstract— Campus placement is really important for a students career. Most of the time the systems we have are very basic. They just list the jobs. Help students apply. They do not really help students understand if they are ready for a job or not. They do not give students any ideas on how to get better. So a lot of students apply for jobs without knowing what they are good at or what they are not good at.

We have made a system that uses Artificial Intelligence to make the placement process better. This system looks at the skills that students are missing and checks their resumes to see if they are good enough. It also matches students with jobs that're a good fit for them. The system uses a technique called Natural Language Processing to get useful information from resumes. Resumes are usually not organized in a way. The system compares what students can do with what the job needs. Gives students ideas on which jobs they should apply for.

We also came up with a placement readiness score. This score shows students how ready they're for a job. It is a way to measure if a student is ready or not. Our system puts all these things together. Analysis, suggestions and evaluation. To make the placement process better. We want to make the placement process more organized, transparent and effective for Campus placement. This will help students, with Campus placement.

Index Terms— Artificial Intelligence, Campus Placement, Skill Gap Analysis, NLP, Recommendation System, Resume Analysis

I. INTRODUCTION

Campus placements are a deal for students. They are a step from studying to working.. Many students do not know where they stand in terms of skills and readiness for placements. Most placement systems just list job openings. They do not help students. For example a student may apply to companies without checking if they are a good fit. This can be frustrating. Lead to missed chances.

With Artificial Intelligence getting fast we can change how placement systems work. They can go from being platforms to systems that help students. We propose a framework that looks at student profiles finds gaps and guides them to improve in a step-by-step way.

We focus on student profiles and Artificial Intelligence to make placements better. Artificial Intelligence can help students get ready for placements. Student profiles are key, to making the most of Artificial Intelligence in placements.

II. PROBLEM STATEMENT

The current campus placement systems suffer from several limitations:

- Lack of personalized feedback
- No automated skill gap analysis

- Inefficient job-role matching
- Absence of performance tracking
- Limited resume evaluation support

These challenges result in poor student preparedness and reduced placement efficiency.

III. OBJECTIVES

The main objectives of this work are:

- To extract meaningful information from student resumes
- To compare student skills with job requirements
- To identify specific areas where improvement is needed
- To recommend relevant skills, courses, and roles
- To compute a placement readiness score that reflects overall preparedness

IV. PROPOSED SYSTEM ARCHITECTURE

The proposed system looks like this in Figure 1.

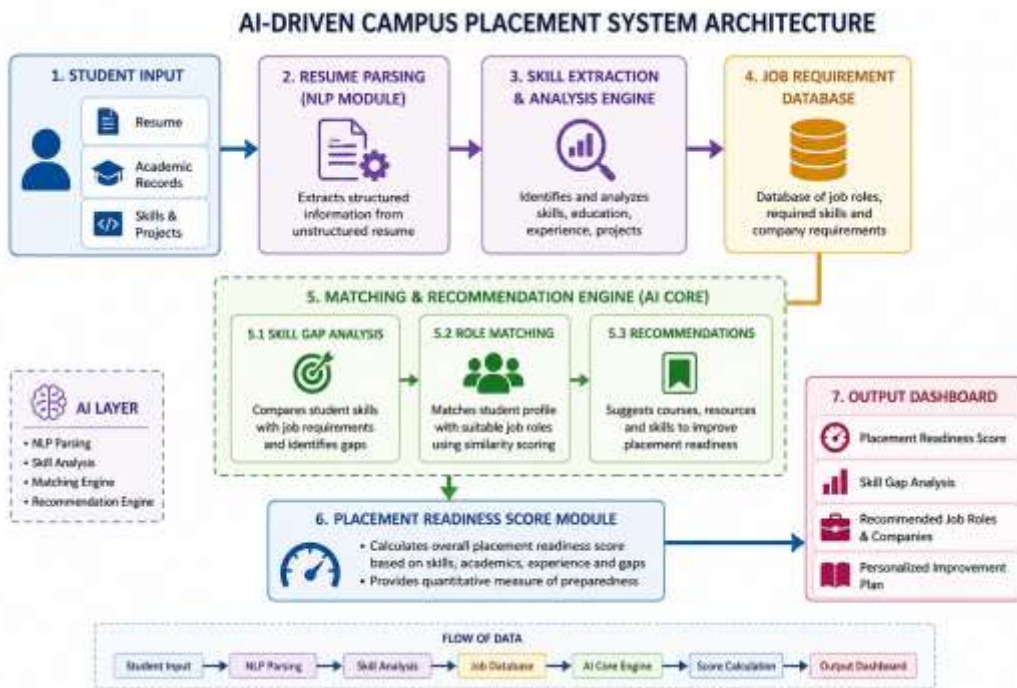


Figure 1: System Architecture

- Student Input Module: This is where we get the students resume and academic information.
- Resume Parsing Module: This part uses computer programs to make sense of the resume.

- Skill Analysis Engine: This is what figures out what skills the student has and how good they are at them.
- Job Requirement Database: This is where we keep all the information about what companies are looking for in a candidate.
- Recommendation Engine: This generates suggestions that're just for the student.
- Readiness Score Module: This calculates a score that shows how ready the student is, for a job.
- Output Dashboard: This is where the student can see all the information and suggestions.

V. SYSTEM WORKFLOW

The workflow of the system is illustrated in Fig. 2.

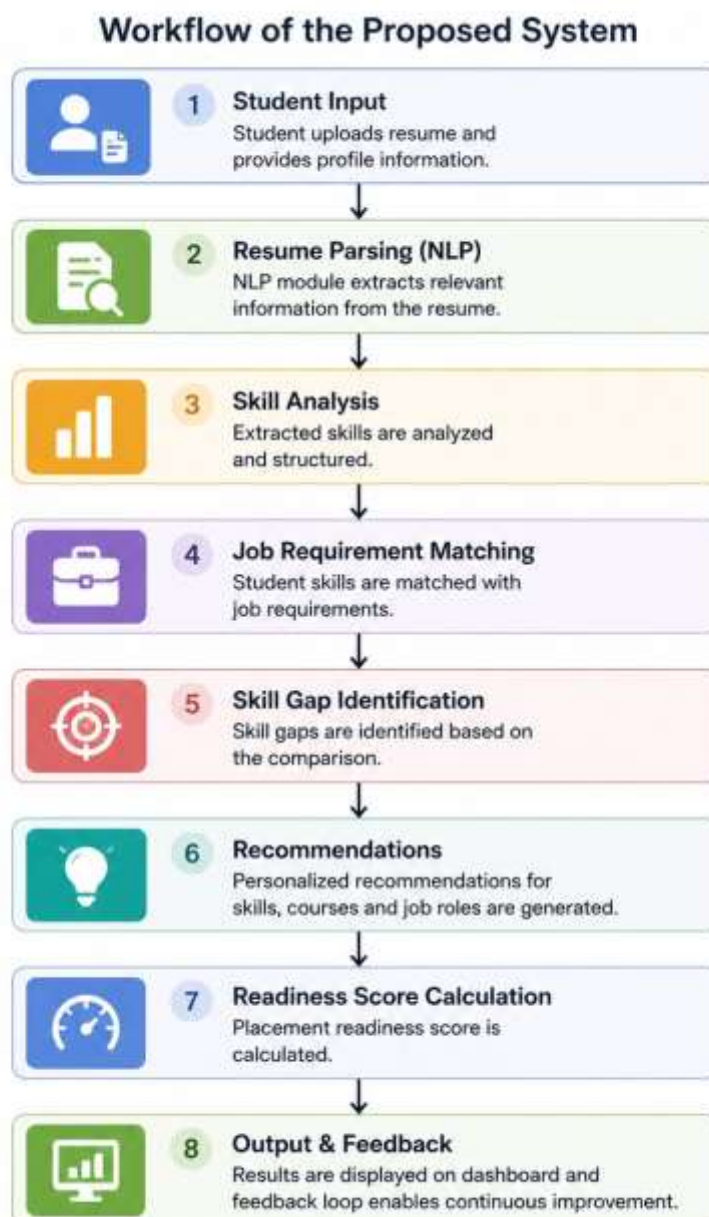


Figure 2: System Workflow

- Student uploads resume and profile data
- NLP module extracts relevant information
- Skills are analyzed and structured
- Job requirements are matched with student profile
- Skill gaps are identified
- Recommendations are generated
- Placement readiness score is calculated
- Results are displayed on dashboard
- Feedback loop enables continuous improvement

VI. DATABASE DESIGN

Figure 3 shows the database schema.

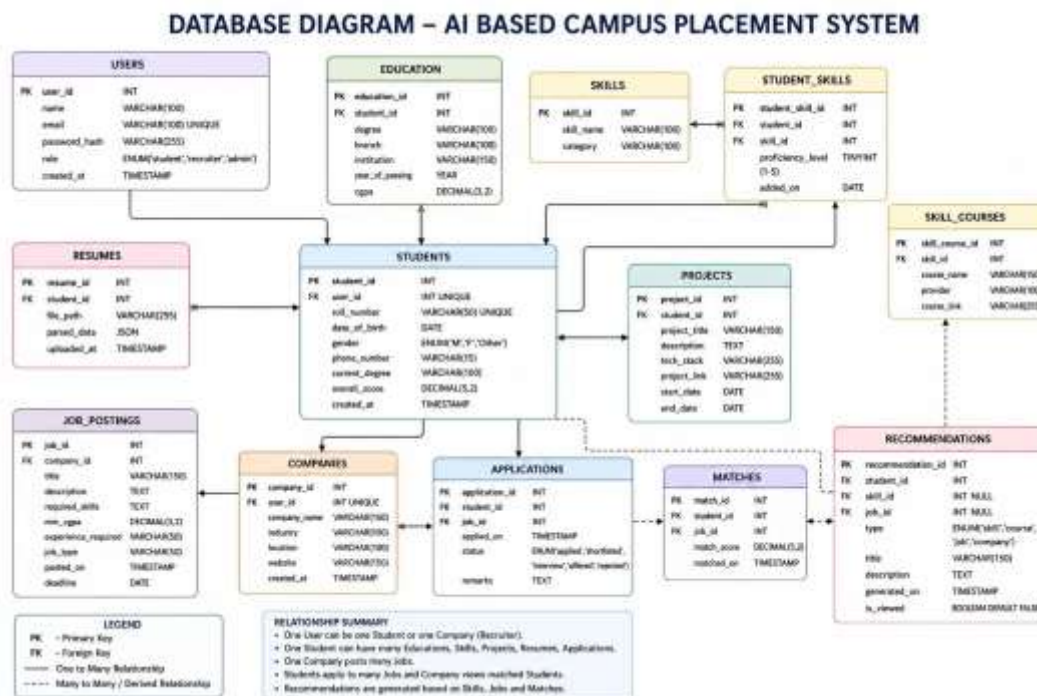


Figure 3: Database Schema

- Users: Authentication and roles
- Students: Personal and academic details
- Skills & Student Skills: Skill tracking
- Education & Projects: Academic background

- Companies & Job Postings: Recruiter data
- Applications: Job application tracking
- Matches: Matching results
- Recommendations: AI-generated suggestions

VII. KEY FEATURES

A. Analysis of Skill Gaps

Finds skills that are missing based on the needs of the job.

B. Review of the Resume

Looks at the structure and content of resumes.

C. Suggestions that are specific to you gives suggestions for courses, skills, and ways to get better.

D. Job Matching

Matches students with relevant job roles.

E. Placement Readiness Score

Quantifies student preparedness.

VIII. MATHEMATICAL MODEL

$Score = w_1(Skills) + w_2(CGPA) + w_3(Projects) + w_4(Experience)$ Where:

- w_1, w_2, w_3, w_4 are weights
- Skills → Matching score with job requirements
- CGPA → Academic performance
- Projects → Practical experience
- Experience → Internships / real-world exposure

IX. EVALUATION STRATEGY

The system can be evaluated based on:

- Accuracy of job matching
- Improvement in placement rates
- Student satisfaction
- Reduction in skill gaps

- Recommendation relevance

X. FUTURE SCOPE

Future enhancements include:

- Integration with coding platforms (GitHub, LeetCode)
- Use of deep learning models
- Real-time analytics dashboards
- Multi-institution deployment
- Recruiter-side analytics

XI. CONCLUSION

This paper talks, about using Artificial Intelligence to make campus placement. It suggests a method that looks at what skills students are missing recommends jobs based on their skills and scores how ready they are. This way students can get more prepared. Get placed in jobs more easily.

Using AI in placement can really change how things are done traditionally. It can make the whole process smart and based on data.

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