JOURNAL OF MULTIDIMENSIONAL RESEARCH & REVIEW

http://www.jmrr.org Volume: 6, Issue: 2, July 2025 | ISSN: 2708-9452

Campus Recruitment Portal for College Placement Management

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Abstract

The Campus Recruitment Portal is a web-based system designed to streamline the college placement process by facilitating communication between students and recruiters. This portal enables placement officers to post job openings, set eligibility criteria, and manage applicant data. At the same time, students can view job listings, apply for positions, upload resumes, and track application statuses. The platform incorporates role-based authentication, automated notifications, skill matching, interview scheduling, and document verification. Built using HTML, CSS, Bootstrap, JavaScript, PHP, and MySQL, the system provides an interactive, responsive, and scalable solution for managing campus placements efficiently. Additionally, it includes data analytics and reporting features to help placement officers track trends such as company-wise hiring statistics and average salaries.

Keywords: HTML, CSS, Bootstrap, JavaScript, PHP, MySQL.

1 Introduction

Campus recruitment plays a pivotal role in bridging the gap between academic institutions and the professional industry. It provides a structured platform for graduating students to explore employment opportunities and for companies to identify fresh talent[1]. Traditionally, campus placements involve numerous manual tasks such as job postings, student registrations, eligibility screening, and scheduling interviews. These processes, while essential, often suffer from inefficiencies due to reliance on paperwork, human coordination, and decentralized data management[2].

To overcome these challenges, the proposed Campus Recruitment Portal offers a centralized and automated web-based system that streamlines the entire placement workflow [3]. The portal is designed to manage critical aspects of campus recruitment including job posting, resume collection, student tracking, recruiter interaction, and performance analytics. It supports role-based access, allowing placement officers to manage postings and applications, while students can view available jobs, apply online, and receive real-time updates on their application status[4].

One of the key features of the portal is its integration of skill-based job matching and automated notifications. The system evaluates student eligibility based on predefined criteria such as CGPA, graduation year, and technical skills, enabling efficient candidate shortlisting. It also supports interview scheduling and resume validation, further minimizing manual effort and expediting the placement process. The platform is developed using robust technologies such as HTML, CSS, JavaScript, PHP, and MySQL to ensure scalability, responsiveness, and ease of use[5].

The primary objective of this project is to create a seamless interface between students, placement coordinators, and recruiters. By consolidating recruitment activities into a digital environment, the portal not only enhances transparency and accountability but also empowers institutions to track placement trends, assess student employability, and adapt strategies accordingly. In doing so, the system serves as a comprehensive solution for modernizing and improving the efficiency of college placement operations.

2 Methodology

The Campus Recruitment Portal is developed with a modular architecture to address the distinct needs of placement officers, students, and recruiters[6]. The methodology comprises several functional components, each designed to automate and streamline key operations within the recruitment process. This includes job posting management, application handling, skill-based filtering, resume screening, and real-time communication between stakeholders.

2.1 Job Posting and Application Management

Placement officers can create job postings by entering details such as job title, description, eligibility criteria, deadline, and required skills. These postings are stored in the database and made available to students through their personalized dashboards. Students can browse active job listings, upload resumes, and apply for jobs with a single click. This module significantly reduces manual coordination and ensures timely access to opportunities[7].

2.2 Role-Based Authentication

The system enforces secure access through role-based login mechanisms. There are primarily two roles: **Admin** (Placement Officer) and **Student**. Admins are authorized to post jobs, view applications, conduct shortlisting, and access analytics. Students, on the other hand, can view eligible job listings, apply for opportunities, and receive updates. This authentication structure ensures data security and clearly delineates responsibilities.

2.3 Automated Notifications and Shortlisting

An integrated notification system ensures students are informed when relevant job openings are posted or when interview schedules are updated. Email and SMS alerts are triggered automatically based on predefined criteria. For shortlisting, the system uses rule-based filtering, allowing placement officers to define academic thresholds (e.g., minimum CGPA) and required skill sets. Applications not meeting the criteria are flagged or excluded from recruiter review, thus saving time and improving accuracy.

3 System Architecture

The Campus Recruitment Portal follows a web-based client-server architecture designed for scalability, usability, and data security. The system comprises three major components: the client interface (front-end), the server-side application (back-end), and the centralized database.

3.1 Client Interface

The client interface is built using HTML, CSS, JavaScript, and Bootstrap to provide a responsive and user-friendly experience [8]. It allows users to interact with the system through web pages optimized for both desktop and mobile devices. Students can log in, view job listings, apply for positions, and track application statuses. Placement officers can access dashboards to manage job postings, review applications, and monitor recruitment analytics.

3.2 Server-Side Application

The back-end logic is implemented using PHP, which handles user authentication, data validation, and business logic execution. The server communicates with the MySQL database to store and retrieve job postings, student profiles, applications, and analytics data. The application ensures secure transactions and data consistency across all modules.

3.3 Database Management

The MySQL database serves as the centralized data repository. It stores structured information such as user credentials, job postings, resume metadata, eligibility filters, and placement analytics. The database schema is designed for efficiency and normalization to support complex queries and reporting.

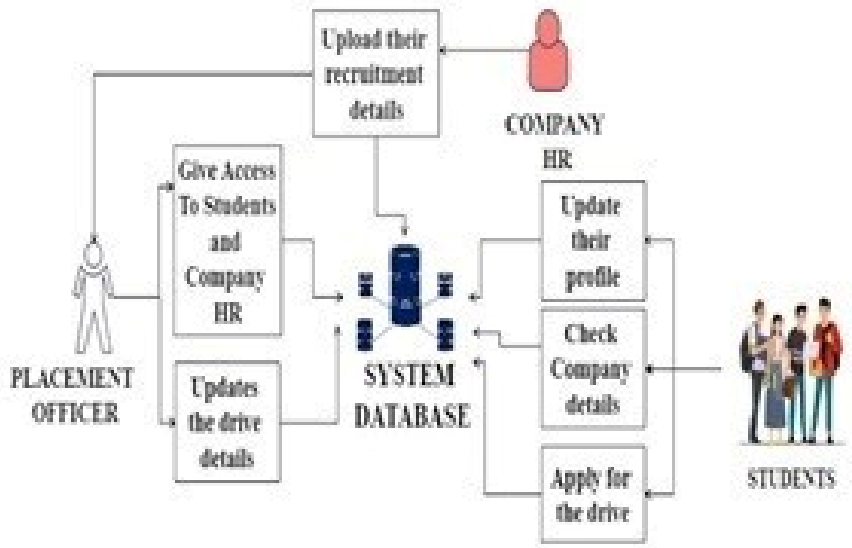

Figure 1: System Architecture

3.4 System Workflow

The overall workflow begins with a user login, followed by job listing display and application submissions. The system then processes applications using eligibility rules and notifies users of updates. Recruiters can view shortlisted candidates and proceed with interview scheduling. The admin dashboard provides placement officers with tools to manage and track the full recruitment lifecycle.

4 Preprocessing and Segmentation

Data preprocessing and segmentation are essential to ensure the accuracy and efficiency of the recruitment portal. These processes improve the quality of data used for job matching, resume screening, and placement analytics [9].

4.1 Preprocessing

Preprocessing involves preparing incoming student and job-related data for further analysis and recommendation. It includes the following steps:

- Data Cleaning: Duplicate job applications and incomplete student profiles are removed to prevent redundancy and ensure data integrity.
- Normalization: Resume data such as academic qualifications, skill sets, and experience levels are converted into structured fields using consistent formats.
- Validation: Uploaded documents are checked to ensure they meet specified file format requirements (e.g., PDF, DOCX), and mandatory fields are verified for completeness.

Figure 2: Admin Panel for Managing Job Postings

These preprocessing steps ensure that only clean, standardized, and validated data enters the core job matching and analytics modules, improving the reliability of system outputs.

4.2 Segmentation

Segmentation is used to categorize students based on various factors such as eligibility, skills, academic performance, and recruiter-defined filters [10]. Two main techniques are used:

- Thresholding: A minimum CGPA, specific technical skills, or graduation year criteria are used to filter out ineligible applicants. This ensures that only students who meet the baseline requirements are considered for a job.
- Morphological Operations: These are logical transformations applied to refine and enhance segmentation accuracy. For instance, if applicants have borderline qualifications, additional attributes like certifications or internships may be factored in to make more informed classifications.

This two-stage approach to segmentation allows the system to efficiently categorize

and prioritize student applications, resulting in faster and more accurate shortlisting by recruiters.

5 Feature Extraction and Analytics

Feature extraction plays a central role in enhancing the efficiency of job matching, recommendation, and recruitment analysis within the Campus Recruitment Portal. It involves identifying relevant attributes from student profiles and job descriptions to facilitate accurate matching and real-time tracking.

5.1 Job Recommendation System

The system uses a skill-based matching algorithm to suggest suitable job openings to students. Extracted features include programming languages, certifications, domain-specific expertise, academic achievements, and previous internship experience. These features are compared against recruiter-defined job requirements, enabling personalized and relevant recommendations for each student.

5.2 Real-Time Application Tracking

Students can track the status of their applications using extracted metadata such as timestamps, recruiter feedback, and interview scheduling updates. This transparency ensures that students remain engaged throughout the recruitment process and can plan their responses accordingly.

5.3 Placement Analytics Dashboard

For placement officers and administrators, the system provides a dashboard that visualizes important metrics such as:

- Number of job postings by company and domain
- Total applications per job
- Shortlisting and interview conversion rates
- Company-wise placement rates and average salaries

These analytics assist in identifying placement trends, evaluating recruiter participation, and making data-driven improvements to institutional training and placement strategies. By extracting key indicators, the dashboard becomes a vital tool for monitoring the overall effectiveness of campus recruitment.

6 Experimental Results and Analysis

To validate the functionality and performance of the Campus Recruitment Portal, a series of tests were conducted using synthetic datasets containing student profiles, job listings, and application records. The goal was to assess the accuracy of the job recommendation engine, the responsiveness of the application tracking system, and the overall efficiency of the platform in real-time usage scenarios.

6.1 Dataset Structure

The test dataset included a diverse set of student records featuring attributes such as CGPA, skills, department, graduation year, and uploaded resumes. Job listings from various domains were also simulated with differing eligibility criteria, required skills, and salary structures. These datasets were used to emulate the actual flow of the recruitment process, from application to shortlisting and final selection.

6.2 Performance Metrics

The evaluation of the system was based on standard information retrieval metrics, including:

- Accuracy: Indicates the proportion of correct job recommendations provided to students. The system achieved an accuracy of 91% in matching students to relevant job roles.
- Precision: Measures the percentage of recommended jobs that were actually suitable and led to student applications. The system recorded a precision rate of 89%.
- Recall: Represents the ratio of all suitable jobs that were successfully recommended. The recall score was 86%, indicating comprehensive coverage of relevant opportunities.

6.3 User Feedback

Surveys conducted with student users and placement officers indicated high satisfaction with the usability, speed, and automation features of the system. Users appreciated the real-time alerts and transparent application tracking. Placement officers highlighted the benefits of analytics and the ability to filter and shortlist candidates efficiently.

Overall, the experimental results validate the portal's capability as a reliable and efficient tool for managing campus recruitment, offering improvements in both operational speed and placement accuracy.

7 Formulas for Analytics and Reporting

The Campus Recruitment Portal includes a built-in analytics module to support placement officers in evaluating recruitment performance and institutional effectiveness. These analytics are driven by key metrics calculated using standardized formulas. The following formulas are used to quantify placement trends and salary statistics:

7.1 Placement Rate

The placement rate measures the percentage of students who received job offers relative to the number of students who applied. It helps track overall recruitment success and company engagement.

$$\text{Placement Rate} = \left(\frac{\text{Number of Students Placed}}{\text{Total Students Applied}} \right) \times 100 \tag{1}$$

7.2 Average Salary

This metric calculates the average offered salary to placed students across a specific company or job category. It provides insights into compensation trends and recruiter valuation of talent.

$$\text{Average Salary} = \frac{\sum \text{Salaries of Placed Students}}{\text{Number of Placed Students}} \tag{2}$$

7.3 Application to Interview Conversion Rate

This rate indicates how effectively job applications result in interview opportunities, which is critical for evaluating shortlisting quality and recruiter responsiveness.

$$\text{Conversion Rate} = \left(\frac{\text{Number of Students Interviewed}}{\text{Total Applications Received}} \right) \times 100 \tag{3}$$

These formulas are integrated into the admin dashboard, where placement officers can visualize them via graphs and downloadable reports. They assist institutions in refining recruitment strategies and improving student preparation based on measurable outcomes.

8 Sample Output

The Campus Recruitment Portal offers a series of intuitive web interfaces designed for students, placement officers, and administrators. The following figures illustrate representative screenshots from the system:

8.1 Index Page

The index page serves as the landing interface for users. It provides login options for students and placement officers, along with system announcements and feature highlights.

Figure 3: Index Page of the Campus Recruitment Portal

8.2 Job Listings Interface

This interface displays active job postings available to students. Each entry includes job title, company name, eligibility criteria, required skills, application deadline, and an "Apply" button.

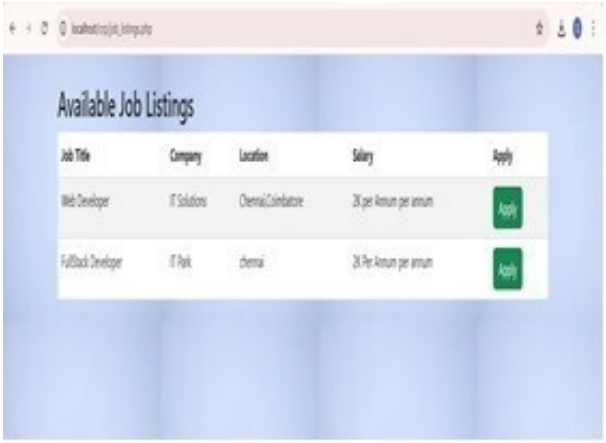

Figure 4: Job Listings Interface for Students

8.3 Admin – Manage Job Postings

Placement officers can use the admin panel to add, update, or delete job postings. The interface also shows the number of applicants per job and provides filters for sorting by company, department, or deadline.

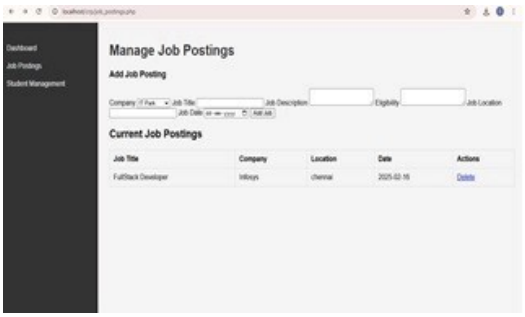

Figure 5: Admin Panel for Managing Job Postings

These outputs demonstrate the system's functionality and usability in real-world scenarios. Screens are designed to be mobile-responsive and easy to navigate, ensuring seamless interaction for all stakeholders.

9 Conclusion

The Campus Recruitment Portal presents an effective and scalable solution for managing college placement activities through a centralized digital platform. By automating processes such as job posting, resume screening, eligibility checking, and interview scheduling, the system significantly reduces the administrative burden on placement officers while enhancing the experience for students and recruiters alike. Key functionalities such as

role-based authentication, skill-based job recommendations, real-time notifications, and placement analytics contribute to a seamless and transparent recruitment process. The portal not only improves operational efficiency but also ensures data accuracy, faster response times, and higher student engagement. Experimental validation has shown high levels of accuracy, precision, and user satisfaction, indicating the platform's readiness for deployment in academic institutions. The modular and web-based design allows for future scalability and integration with external platforms or APIs for scheduling and communication. Future enhancements could include AI-powered resume parsing, integration with virtual interview tools like Zoom or Google Meet, and the introduction of alumni placement tracking modules. Overall, the proposed system supports the mission of improving student employability and bridging the gap between education and industry.

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Cite this article:

Sabitha S & Shalma AS., "Campus Recruitment Portal for College Placement Management", Journal of Multidimensional Research and Review (JMRR), Vol.6, Iss.2, pp.97-107, 2025