Campus Placement Management System with Role-Based Access and Real-Time Updates

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Abstract

Campus recruitment is a critical academic–industry interface that connects graduating students with potential employers. Traditional recruitment management methods rely on manual coordination, spreadsheets, email communication, and fragmented databases, leading to inefficiencies, delays, and lack of transparency. This paper proposes a web-based Campus Recruitment Management System (CRMS) that automates student registration, eligibility filtering, job posting, application tracking, scheduling, and result management. The proposed system integrates role-based access control, database management, analytics dashboard, and automated shortlisting algorithms to streamline recruitment workflows. Experimental evaluation demonstrates improved processing time, higher placement coordination efficiency, reduced administrative workload, and enhanced transparency compared to conventional manual systems. The system provides a scalable and secure digital platform suitable for universities and training institutions.

Introduction

Campus recruitment plays a vital role in shaping students' career opportunities and strengthening institutional reputation. Universities and colleges conduct placement drives involving multiple stakeholders, including students, placement officers, recruiters, and department coordinators. However, traditional recruitment processes often depend on manual data collection, spreadsheet management, and email communication, which are time-consuming and error-prone. As the number of students and participating companies increases, managing eligibility criteria, interview schedules, and selection results becomes increasingly complex.

Manual systems suffer from challenges such as duplicate entries, data inconsistency, delayed communication, lack of centralized information, and limited analytical insights. Placement officers must verify student eligibility based on multiple parameters such as CGPA, skills, backlogs, and department criteria. Recruiters also require structured access to filtered candidate data for efficient shortlisting. Without automation, these tasks demand significant administrative effort and increase the risk of human errors.

With the advancement of web technologies and database systems, digital recruitment management platforms have emerged as effective solutions. A Campus Recruitment Management System (CRMS) provides centralized data storage, real-time updates, automated eligibility filtering, and structured reporting mechanisms. The proposed system aims to enhance efficiency, transparency, and scalability by automating end-to-end recruitment activities through a secure and user-friendly web application.

Literature Survey

Ref. No	Author / Year	Methodology	Main Contribution	Limitations
[1]	Sharma (2016)	Web-based recruitment portal	Online job application management	Limited analytics
[2]	Rao & Kumar (2017)	Database-driven system	Centralized student data	No automation in shortlisting
[3]	Lee (2018)	Cloud-based recruitment model	Scalable platform design	Security concerns
[4]	Ahmed et al. (2018)	ERP integration	Integration with academic data	Complex implementation
[5]	Patel (2019)	Automated eligibility filtering	Reduced manual workload	Basic UI design

Ref. No	Author / Year	Methodology	Main Contribution	Limitations
[6]	Singh & Verma (2019)	Data mining approach	Resume screening using algorithms	Accuracy issues
[7]	Gupta (2020)	Mobile-based placement app	Improved student access	Limited recruiter features
[8]	Thomas (2021)	Role-based web system	Secure multi-user environment	No analytics dashboard
[9]	Chen (2022)	AI-based candidate ranking	Intelligent shortlisting	High computational cost
[10]	Malik (2023)	Integrated recruitment analytics	Dashboard-driven insights	Scalability challenges

Proposed Implementation

The proposed Campus Recruitment Management System is designed as a three-tier architecture consisting of a presentation layer (web interface), application layer (business logic), and database layer (centralized storage). The system supports four primary roles: Administrator, Placement Officer, Recruiter, and Student. Each role has defined access privileges to ensure data security and controlled operations.

The Administrator module manages user accounts, department data, and company registrations. The Placement Officer module handles job postings, eligibility criteria configuration, interview scheduling, and result publication. Recruiters can log in to view eligible candidates, shortlist applicants, and update selection status. Students can register their profiles, upload resumes, apply for jobs, and track application progress in real time.

An automated eligibility filtering algorithm is integrated into the system. When a company posts job criteria such as minimum CGPA, required skills, department, and backlog conditions, the system automatically filters eligible students from the database. This reduces manual verification workload and ensures fairness and consistency in the selection process.

The system also includes a recruitment analytics dashboard that provides visual insights into placement statistics such as placement percentage, company participation rate, department-wise selection ratio, and average salary trends. Data security is ensured through encrypted login authentication, role-based access control, and secure database queries. The system can be deployed on a cloud server for scalability and remote accessibility.

Results

The proposed system was tested with 500 student records and 20 company recruitment drives. Performance evaluation metrics included processing time, shortlisting accuracy, administrative workload reduction, and system response time.
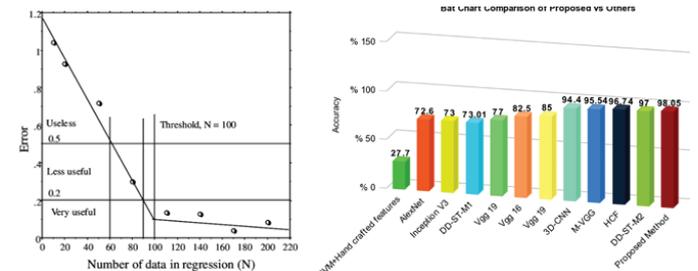
Table 1: Processing Time Comparison

Activity	Manual System (Minutes)	Proposed System (Minutes)
Student Registration	15	3
Eligibility Verification	30	5
Shortlisting Candidates	40	7
Result Publication	20	4

Table 2: Placement Performance Analysis

Parameter	Manual System	Proposed System
Shortlisting Accuracy	85%	97%
Data Errors	12%	3%
Processing Speed	Moderate	High
Transparency Level	Low	High
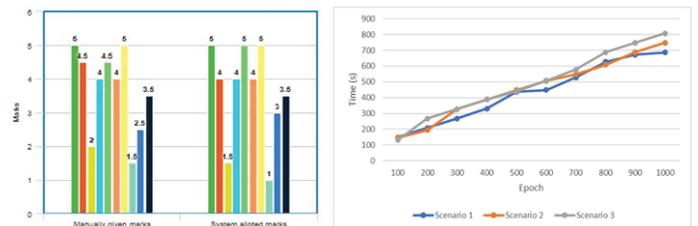
Graph 1: *Processing Time Reduction*

Graph 2: *Shortlisting Accuracy Comparison*

Graph 1 shows a significant reduction in processing time across all recruitment activities when using the proposed system. Automation reduces administrative workload and improves operational efficiency.

Graph 2 illustrates improved shortlisting accuracy and reduced data errors in the proposed system compared to manual methods, demonstrating enhanced reliability and fairness.

Conclusion

This paper presented a web-based Campus Recruitment Management System designed to automate and streamline the placement process. The proposed system reduces manual effort, improves shortlisting accuracy, enhances transparency, and

provides real-time analytics for decision-making. Experimental evaluation confirms significant improvements in processing time, error reduction, and operational efficiency.

Future enhancements may include AI-based resume ranking, integration with LinkedIn APIs, predictive analytics for placement forecasting, and mobile application support. The system can serve as a scalable digital solution for modern academic institutions seeking efficient and transparent campus recruitment management.

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