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Placement Path: A Placement Management Portal

Prof. Aparna Bagde[1], Bhavesh Sutar[2], Sahil Parmar[3], Nikhil Talware[4], Shriyash Shetti[5], Reuben Lavane[6]

[1]*Professor, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*
[2]*Student, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*
[3]*Student, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*
[4]*Student, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*
[5]*Student, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*
[6]*Student, Department of CSE, JSPM's Narhe Technical Campus, Narhe, Pune*

Abstract – The internet has completely changed how we access and manage information—and one area where this has made a big impact is college placements. This project introduces a user-friendly, web-based Placement Management System that makes the recruitment process easier for both students and placement officers. With this system, placement officers can quickly post job openings, manage applications, and stay organized—all from one platform. On the other hand, students can easily search for jobs that match their interests and qualifications, and apply without the usual hassle. The platform also improves communication between students and the Training and Placement Cell by sending regular updates about application status, upcoming interviews, and other important details. Every student gets their own account and dashboard to track their progress, which cuts down on paperwork and saves time for everyone involved. By replacing outdated manual processes with a streamlined digital solution, this system helps create a more efficient and structured placement experience. In the end, it benefits students, recruiters, and placement officers alike—making the entire process smoother and helping more students reach their career goals.

Key Words: Placement Management System, College Recruitment, Campus Placement Automation, Profiles Management, Centralized Recruitment System, Web based Application

1. INTRODUCTION

In today's digital age, colleges and universities are increasingly turning to technology to manage important processes more efficiently. One key area where this shift is making a big difference is campus placements. The **Placement Management System**, or **Placement Portal**, is a digital solution designed to simplify the entire recruitment process for students, faculty, and placement officers. As placements become a more critical part of the student experience, there's a growing need for systems that can handle everything in a smooth and organized way—from managing academic records to tracking job applications. In many colleges, placement data is still handled manually using spreadsheets or basic tools, which often leads to delays, errors, and missed opportunities.

A web-based placement portal helps solve these issues by bringing everything together in one place. Students can easily register, update their profiles, and apply for jobs that match their skills. On the other side, placement officers can share important updates, approve applications, and monitor student progress more effectively.

The portal also strengthens connections with recruiters by giving them quick access to student profiles and relevant documents. By automating repetitive tasks and cutting down on manual work, the system creates a more streamlined and collaborative environment where students, faculty, and companies can focus on what really matters: helping students launch their careers.

Beyond just improving efficiency, this platform also builds student confidence by giving them a clear, organized path through the placement process. It provides the tools placement teams need to communicate better, generate useful reports, and manage opportunities more effectively—all in one convenient system.

2. LITERATURE REVIEW

Traditional placement systems often rely heavily on manual processes, which can lead to inefficiencies and a high risk of errors. These outdated methods make it difficult to maintain accurate student records and delay the timely sharing of job opportunities. As a result, many students miss out on valuable placement chances simply because they don't receive important updates when they need them. Our proposed web-based solution addresses these issues by providing a centralized platform for managing student information, job postings, and communication. By reducing the reliance on manual tasks, the system not only minimizes errors but also ensures that data is more accessible and accurate.[3]

The shift from manual processes to digital training and placement systems has significantly improved how educational institutions connect students with job opportunities. Traditional methods were often time-consuming and made it challenging for placement officers to manage records efficiently or keep students informed on time. Modern web-based platforms, with their user-friendly interfaces, have changed that. They enable real-time updates and smoother communication between students, recruiters, and administrators. Overall, the integration of technology into the placement process has made it more efficient, reliable, and beneficial for everyone involved.[4]

The 2020 study by Geetanjali Kori, Hitesh Kumawat, Jigyesh Rathod, Mayank Jeevtani, Murtaza Anis, and Akshita Sharma served as the impetus for our campus placement portal initiative. In particular, the research report assisted us in putting in place tools that facilitated the viewing, management, and retrieval of student data.data on students in CSV format. Their emphasis on user-friendly interfaces and efficient management supports our goal of increasing the accessibility and efficacy of job placement.[5]

Angeesh Tyagi, Pranjul Agrawal, Prankur Srivastav, Pulkit Sagar, and Abha Sharma's 2023 study "College Placement Portal System" presents a campus placement portal intended to enhance the user experience for both students and institutions. The user-friendly design of the portal facilitates easy access and effective administration of placement activities, with separate logins for administrators and students. Students can sign up for placement events, apply for employment, and receive updates on corporate visits. With a focus on accessibility and user experience, the system, which was developed using JavaScript, HTML, CSS, React, Node.js, Flask, and MongoDB, aims to improve the conventional campus hiring process by emphasizing usability and aesthetic appeal [6].

In order to reduce errors and enhance communication between students and Training Placement Officers (TPOs), Kapil Wagh, Dnyaneshwari Tilekar, Bramhesh Chaugule, and Pradip Gorde's 2023 study highlights the significance of automating campus placement administration. Their Campus Placement Portal makes it simpler to manage duties like job applications, event registrations, and updates, so streamlining the job search process for both students and universities. The portal improves the accuracy and efficiency of the entire placement process by automating these tasks.[7]

In their 2019 paper *"College Placement Portal System,"* Varsha Mali and her team proposed a well-rounded campus placement portal aimed at boosting students' confidence and readiness for entering the workforce. One of the standout features of their portal is the inclusion of a detailed FAQ section and clearly outlined guidelines. These resources are designed to help students navigate the job application process, understand what to expect during interviews, and better meet employer expectations.

By offering structured support and easy-to-follow information, the portal acts as a practical guide that empowers students, making them feel more prepared and self-assured. Overall, the system is focused on equipping students with the tools they need to effectively explore and take advantage of placement opportunities.

3. PROPOSED SYSTEM

The proposed system is a web-based **Placement Portal** developed to modernize and simplify the campus recruitment process. It addresses the inefficiencies of manual systems commonly used in many institutions, where placement officers often rely on spreadsheets and paper-based methods to manage student records, job drives, and application tracking. These traditional approaches are not only time-consuming but also prone to errors and communication delays, which can negatively impact student's placement opportunities.

Our system provides a centralized platform that brings together students, placement officers, and faculty members under a single interface. It allows for personalized user experiences through role-based access, giving students, administrators, and faculty tailored dashboards to manage their specific tasks. Students can easily create and update their profiles, explore available job opportunities, apply for placements, and track the real-time status of their applications. Meanwhile, placement officers can post job drives, filter eligible candidates, monitor applications, and generate comprehensive reports to evaluate placement performance and institutional progress.

The platform is designed to support better coordination between students and the Training and Placement Cell, improving communication through automated notifications and timely updates. Built using modern technologies like HTML, CSS, JavaScript, React for the frontend, Node.js for backend operations, and MongoDB for data storage, the system ensures scalability, responsiveness, and secure data management. By automating routine tasks and streamlining the flow of information, the proposed system aims to make the placement process more transparent, efficient, and accessible for all users involved.

4. METHODOLOGIES

The The development of the Placement Portal follows a structured and iterative methodology aimed at ensuring a robust, user-friendly, and scalable system. The project was executed using a modular development approach, allowing for the separation of concerns across different components such as the frontend interface, backend logic, and database management. This division not only facilitated parallel development but also made testing and debugging more efficient.

Initially, the **requirements gathering phase** involved understanding the key challenges faced by students and placement officers during campus recruitment. Feedback was collected from potential users to identify core functionalities such as student registration, job drive management, application tracking, and administrative reporting. Based on this, a clear set of functional and non-functional requirements was established.

In the **design phase**, the system architecture was defined using a three-tier model consisting of the frontend (client interface), backend (application server), and database layer. The frontend was designed to be responsive and intuitive, using technologies like HTML, CSS, JavaScript, and the React framework. Wireframes and UI mockups were created to guide the frontend development and ensure a user-centric design.

The **backend** was developed using Node.js and Express to handle application logic, user authentication, and interaction with the database. RESTful APIs were implemented to enable smooth communication between the frontend and backend components. The **database layer** was built using MongoDB, chosen for its flexibility and ability to handle dynamic data structures, which is essential for storing diverse student and job-related data.

Throughout the **development phase**, Agile practices were followed, allowing for regular feedback, testing, and incremental updates. Key modules, such as the Student Dashboard, Admin Dashboard, Job Drive Management, and Application Tracking, were implemented and tested individually before being integrated into the complete system.

Finally, the **testing phase** included both functional and usability testing to ensure that the system met the expected requirements. Each module was tested for correctness, performance, and security. Special attention was given to data validation, role-based access control, and real-time updates.

By following this structured methodology, the Placement Portal was developed to be a reliable and effective tool that enhances the placement process for educational institutions.

5. SYSTEM DESIGN

The system design of the Placement Portal is structured to support multiple user roles, ensure smooth data flow, and maintain data integrity across various modules such as job posting, student applications, and administrative control. The architecture follows a **modular and scalable client-server model** and is implemented using modern web development technologies.

The Placement Portal uses a **three-tier architecture** consisting of:

Frontend (Client Side): Developed using **React.js**, this provides interactive user interfaces for students, faculty, recruiters, and administrators. It communicates with the backend via secure HTTP (RESTful API) requests.

Backend (Server Side): Developed with **Node.js and Express.js**, this handles all business logic, authentication, API routing, and interaction with the database.

Database Layer: Utilizes **MongoDB**, a NoSQL database, to store structured collections such as student profiles, job drives, applications, and user roles.

Fig-1: Architecture Diagram

3.1 Key Modules:

a) Authentication & Authorization

- Implements JWT-based authentication.
- Passwords are hashed using bcrypt.
- Role-based access ensures that users only see the functionalities permitted for their role..

b) Student Profile Management

- Students can update academic and personal details.
- Data is validated and stored in a users collection in MongoDB.
- Used to match eligibility with job drives.

c) Job Drive Management

- Admins and recruiters can post job drives including criteria (CGPA, branch, etc.).
- Drives are automatically filtered and shown only to eligible students.

d) Application Module

- Students can apply to jobs with a single click.
- Applications are stored with status (applied, shortlisted, selected) in the applications collection.
- Admins and recruiters can view, filter, and update application statuses.

e) Report Generation

- Admins can generate lists of placed/unplaced students.
- Reports can be exported in CSV format for official use.

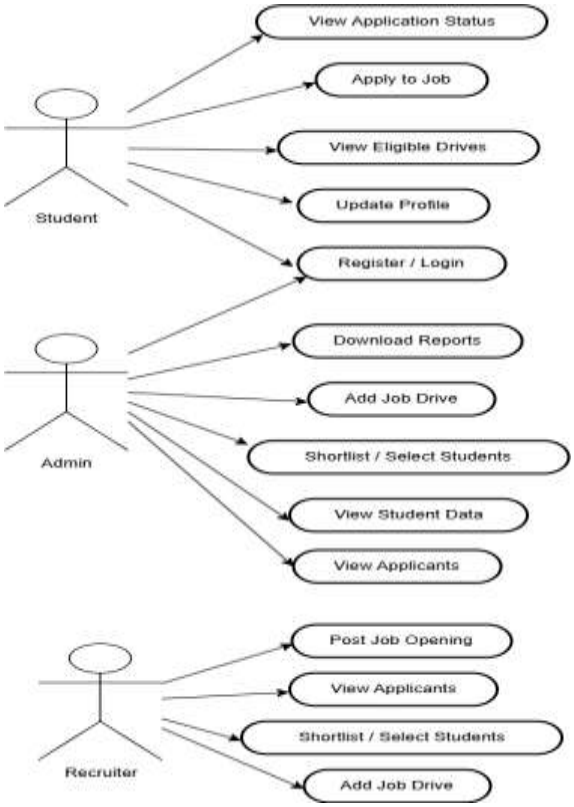

Fig-2: Use Case Diagram

6. CONCLUSIONS

In this context, the Placement Management System proposed is going to automate and simplify most of the procedures for recruiting agents, TPOs, as well as students in order to maximize the campus placement process. This digital first replaces many tasks manually operated by obsolete, prone to error, and inefficient techniques. While automating the eligibility check, the technology aids in bettering access and accuracy of data with detailed reports generation and real time alerting. Students will be provided with a specially designed portal which will enable them to maintain their profiles easily, view job postings based on their skills and monitor the status of applications submitted by them. Simultaneously, TPOs will be equipped with proper tools to track placements, manage student data and provide insights that will aid decision-making. This will not only make it easier to the placement process, but also sustainable, as it reduced paper usage and encouraged a consolidated, environmentally friendly system of digital records. In the end, this solution meets the ever-growing demand for campus hiring's digital transformation while making the experience with all parties involved more efficient, convenient.

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