

# Placement Module

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**Abstract**—A web application called the placement module was created primarily to assist companies and college students in their job hunt. The colleges placement department may securely keep students' academic and personal information as well as their technological skills in a database that is only accessible by those who require it. Student login, admin login, hod login, and company login are the four primary modules of the application. Employers can access the list of job applicants and students can create accounts change their profiles and upload their resumes. The administrator has broad access to the system and can alter or remove individual student accounts in response to wrongdoing. Hod has access to the profiles of students within their department. The placement module is the most effective way for placement officers to manage students and place them in organizations as well as to evaluate the student's suitability for those companies. For both employers who need a way to find and screen the best applicants and students looking for work, the system provides a solution however as they shortlist qualified applicants based on business needs. It relieves the strain on college placement officers by reducing the amount of paperwork and manual labor that college placement offices have historically relied on. This method boosts productivity. The placement module's main goal is to streamline the hiring process for the benefit of the student and cut down on needless expenses.

**Keywords**—Placement, Companies, Resource sharing, Stage-tracking, Module, customization

## I. INTRODUCTION

It appeals to students often self-identified as "budding engineers" who are currently pursuing a B.E. or B.Tech - that the transition from the academic background to the real world is rather a very crucial phase of their life, especially as final year comes to an end. Increased stress levels have become a reality among students at this point-on account of the impending placement season-which may be a source of immense tension. This crucial time involves more than just finding a job; it also involves planning, strategizing, and putting oneself out there in a variety of recruiting channels, since many employers are increasingly looking for candidates on campuses. The Training and Placement Officer (TPO) is involved in this situation. The TPO serves as a liaison between companies and students,

guiding them through the various stages of job placement. It becomes clear that a more contemporary method of handling placements is required as the educational landscape changes. The average income paid and the number of job placements made on campus successfully in a particular year are increasingly used to evaluate academic institutions. As a result, the idea of campus placement for accomplished students and institutional accountability are now being taken into account [7]. These issues are addressed by the creation of an extensive Placement Module based on web technologies: React.js, express.js, which provides an integrated solution that expedites the placement process for companies, educational institutions, and students alike.

The proposed system streamlines data management and communication, easing the workload of placement officers while empowering students to manage their career journeys. It provides a centralized platform where students can access job opportunities, recruitment drives, and resources, while placement officers can efficiently handle student data, track placements, and collaborate with hiring companies.

By replacing manual processes, the system reduces delays, errors, and administrative burdens, ensuring accurate and timely information for all stakeholders. It also addresses challenges like managing diverse data formats, enhancing trust and transparency in student profiles, and improving overall placement outcomes. This web-based platform would serve multiple functions, including:

1. *Centralized Data Management:* Employer and student data would be kept in a single repository, making it simple for authorized people to access, simplifying profile changes, and lowering the possibility of data loss.
2. *Student Engagement and Empowerment:* The system encourages students to take a proactive approach to their careers by giving them the ability to update their profiles, keep track of job vacancies, and get real-time information regarding interviews, recruiting campaigns, and openings.

3. *Analytics and Reporting:* Placement officers can utilize reporting tools to gather data on placements, enabling them to make well-informed decisions about future training initiatives and outreach strategies. This analysis could lead to improved placement rates and foster a culture of continuous improvement within the institution.

In an increasingly competitive job market, students need clarity, guidance, and resources to enhance their employability. By providing a user-friendly interface where students can:

- *Register and Update Profiles:* Students could easily create and modify their profiles to ensure all information, such as academic grades, skills, and experiences, is always current and accurately presented to potential employers.
- *View Job Opportunities:* The system would enable students to explore available job listings, recruitment drives, and internships.
- *Access Resources and Training Material:* The platform could also house a resource section, offering students access to preparation materials, example resumes, interview tips, and other beneficial content designed to enhance their readiness for recruitment processes.

The Placement Module offers educational institutions a number of significant benefits, including:

- **Improves Reputation:** By showcasing the accomplishments of its alumni to prospective students, a high placement rate improves the institution's standing.
- **Boosts Efficiency:** By centralizing data management, placement officers may concentrate on more crucial, strategic responsibilities by reducing the burden of administrative duties.
- **Enhances Industry Relationships:** Placement officers may increase their relationship with firms and provide students with additional career options by spending less time managing data.

## II. RELATED WORK

A web application called the placement module is used to manage the student's placement-related data. [1,4]. Additionally, it can be utilized as a tool to examine the kids' placement information. In an organization, it will assist students, instructors, and placement officers in giving the right care to help people improve during the course of the course. In the current situation, the Placement Officer must manually screen the list of suitable pupils for the drive either by visiting each class for each drive or by gathering the list via WhatsApp. This will be a very challenging task [2]. The college's faculty coordinator, placement officer, and head of department can

utilize this system as an application to manage student data related to placement. Information can be uploaded by the student. There are four modules in the system: the admin, company, student, and HOD modules as mentioned in [3]. The administrator will use their username and password to log in. After the administrator logged in, a page with information about the student, company, and hod was displayed. The administrator has complete control over the website and can utilize the query tab to obtain all the information he requires for campus drives [4]. An essential part of our project is the administrator. He grants permission for students to register and update. [10]

## III. EXISTING SOLUTION

**LineupX** – A strong platform driven by AI that facilitates campus placements by optimizing hiring procedures. To prepare students for the workforce, it provides features including AI-driven job sourcing, AI interview preparation, and mock exams.

### LineupX Algorithm and Features -

LineupX leverages a big data platform with the following key features:

- **AI Job Sourcing and Recommendations:** AI bots scrape job listings from various career sites, making it easier for candidates to discover opportunities.
- **AI-Powered Candidate Matching:** AI scans resumes, analyses job descriptions, and evaluates candidates' compatibility with specific roles.
- **AI Interviews and Mock Assessments:** The platform offers AI-based mock interviews and assessments, providing feedback to help candidates improve their performance.
- **Employer and Learner Dashboards:** Analytics dashboards monitor recruitment progress, success rates, and candidate readiness while offering predictive insights to optimize placement outcomes.

**Reculta** - is essentially an online portal specifically being deployed as platform for recruitment on campuses and automating services relating to career. Its intent is to enhance effectiveness when it comes to institutions of learning as well as employers, by offering a single online portal. Some of its main uses include:

- *Automated Job Matching:* Reculta helps in eliminating the middleman by providing students with jobs depending on their profiles as well as skills.
- *Campus Placement Management:* It facilitates fully the process of placement including the arrangement of interviews, job fairs and monitoring of student progress in the recruitment and selection process.
- *Data-Driven Insights:* It also offers superior analytical tools that help business head, recruiters, campus

placement cells monitor performance, level of students' involvement and their companies' results.

#### IV. METHODOLOGY

The Placement Module proposed here will serve to integrate and manage the various tasks related to placement process of a particular organization starting from the placement officer, HOD, faculty coordinators to students. It enables students to feed their information and is taken and sorted academically through different user menus with operational privileges for the admins, HODs, placement officers, and students both. Using MongoDB for database storage, the system will screen students based on the company criteria for recruitment and will send an email notification, which will inform interested candidates about the openings for the drives, where they can upload their interest. To further enhance the system's functionality, the following three implementations will be added:

##### *Probability of Selection of Student in a Particular Company: A Concept as to Its Implementation*

This feature is to work out the likelihood of a student being offered an opportunity by a given company given historical records of recruitment, student performance and other attributes intrinsic to different companies. The algorithm will compare academic performance, skills, certification, internships and profiles of previous successful placements. To this regard, the given probability score can be valuable for the students to understand their chances and adjust their strategies instead of guessing and choosing the easy job, while for the recruiters, one can see the potential candidate right away.

##### *Use of the Resource Sharing Feature for Students during Recruitment*

This feature will facilitate students share documents, the experience gained during interviews, company-specific tips and how they prepared for any exercise. It is planned to provide a discussion board or a database with documents and further recommendations for students on the platform. Through this kind of collaboration, the success of student in interview, assessment and any other recruitment related exercises will be enhanced.

##### *Placement of Recruitment Stage Tracking in Placement Module*

The system's recruitment stage tracking feature enables both administrators and students to monitor candidates' progress through various stages, from application submission to test completion, interview rounds, and final selection. Regular updates ease the workload for placement officers, who may be handling multiple recruitments at once, and help students stay informed, reducing uncertainty and follow-up inquiries about their status.

These enhancements will boost up the Placement Module to become useful for all the users, employers, learners and institutions involved in the placement process.

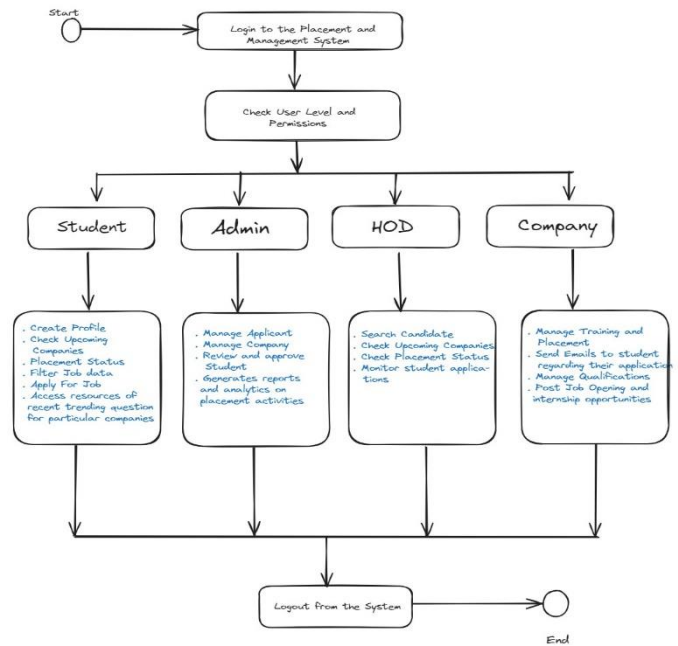


Fig 1: process map and user categories of a Placement Module

Below is an explanation of the diagram, which can be included in a research paper:

##### **Start and Login**

It starts when user click on the Placement Module and log on to it. After users log in the system checks their level and permissions and defines their position and their ability to make decisions.

##### **User Roles and Permissions**

The system categorizes users into four distinct roles: Student, Admin, HOD, Company. Each role has different functionalities, as described below:

**Student:** The students can have own accounts where they provide their general and academic information. Students can check the next company recruitments, their current placement, and even sift through job data to get the proper job. They can apply for vacancies and use such features as popular questions that a particular firm may ask a candidate.

##### **Admin:**

Admin users deal with student applications and company information. Student profiles for placement activities are being reviewed and approved by them [5]. Admin can change the details like Company's name, drive date and eligibility criteria for the next placement drives [6]. Placement related activities of the system and placement statistics are monitored by admins through reports and analytics.

##### **HOD (Head of Department):**

HODs can search the candidates according to the requirement of the company they are working in or according to the student's profile. They track the frequency and date of upcoming recruitments and verify the placement of the students in

their department. HODs are also expected to follow as well as supervise the process and records of the student's application for placements within departments.

#### *Company:*

The training and placement activities are handled by the companies through the system. They use email to communicate with applicants especially students regarding the position/program the student applied for and generally other recruitment communication. Companies also control the qualification requirements, put up job vacancies, and provide internships to the rightful candidates.

#### *Logout*

After a user accomplishes all his jobs, he may exit the system and thus, terminate his session.

#### **Purpose of the Diagram:**

These diagrams help gain a clear understanding of how individuals relevant to the placement process interface with the system and aids the simplification of the placement management process. It draws out the number of functions accessible to each type of users including enhancing the placement process by ensuring it is well ordered. This visualization can be useful in a context of a research paper where to show how a multi-user environment can adopt a system for effective coordination among the students, admins, Heads of Departments and companies during the campus placement.

## V. IMPLEMENTATION & RESULT

### *A. Implementation of Probability of Selection of Student in a particular Company*

In this study, we incorporated a feature to estimate the probability that a student will be selected in company recruitment based on several performance related parameters. The XGBoost method outperforms other algorithms used in the study in terms of early student placement prediction when supported by pertinent input information [9]. An approach which assists in comparing the skill levels of pupils who were placed and those who were not. It forecasts whether or not a student with a certain skill set will be able to find employment mentioned in [8]. These considerations include the student's academic performance, coding platform rating – including Leet Code and Hacker Rank – and placement tests. This feature is relatively useful regarding how well the student fits into sectors of a particular company as they study better and how recruiters help them to arrive to decisions more decisively.

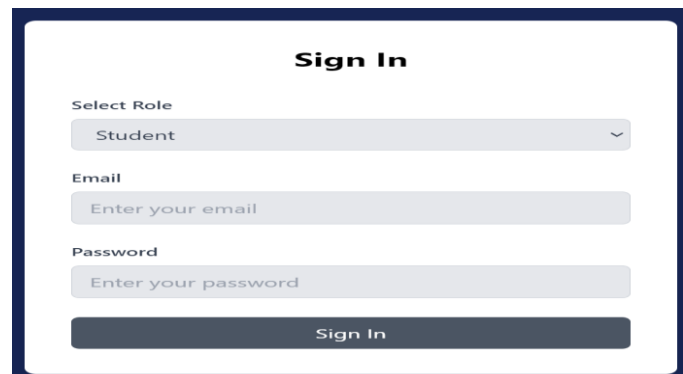
#### *Factors Influencing the Probability of Selection:*

To calculate the probability of the student being selected, the primary factors used in the model are:

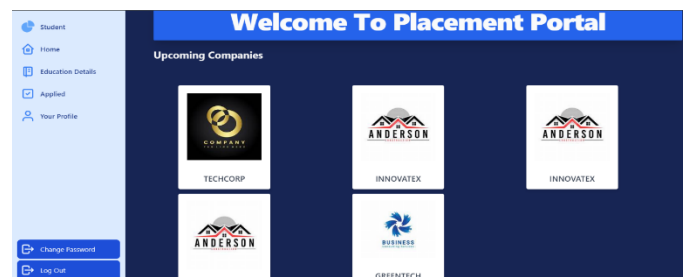
- **Previous Test Scores:** This includes the student's result from any Placement related test conducted by the University or through the third-party testing websites like AMCAT or Coding tests. These scores

indicate the kind of problem solver, the logical thinking ability of the student and the technical performances of the student.

- **LeetCode Score and Ranking:** On the competitive programming platform, there is one that stands out known as LeetCode. The ranking and score given are a measure of the student's proficiency in computer programming or particularly in algorithm design, which is very essential according to the demand of various tech companies in the world today. This distribution creates a situation where more scores and ranks are likely to lead to selection.
- **HackerRank Score:** HackerRank is a competitive programming platform on which students can engage themselves into coding challenges. A student's performance on HackerRank (number score obtained and the order of the difficulty level of problems completed) informs the coding aptitude and the preparedness for the technical interviews.
- **Technical Skills and Certifications:** Any of the certifications about the technical subjects (for instance AWS, Azure, Python etc) that are pertinent to show that a student is competent on the certain types of techniques were considered. Such certifications supplement the student's resume resulting to improved selection probability density.

A screenshot of a 'Sign In' form. At the top, it says 'Sign In' in bold. Below that is a 'Select Role' dropdown menu with 'Student' selected. Then there are two input fields: 'Email' with the placeholder 'Enter your email' and 'Password' with the placeholder 'Enter your password'. At the bottom is a 'Sign In' button.

*Fig 2: Login/SignUp Dashboard*



*Fig 3: Student Login*

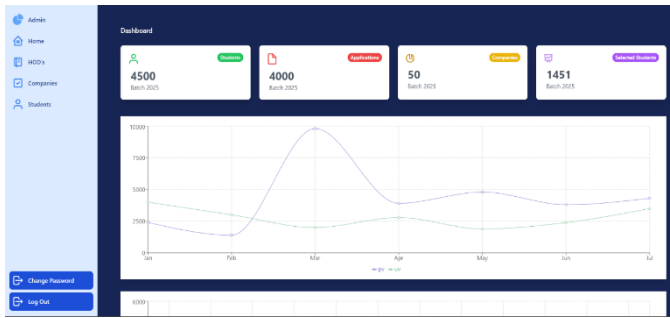


Fig 4: Admin/Hod's Login

ROLE	DEPARTMENT	POSTED DATE	STATUS	ACTIONS
Software Engineer	Engineering	2024-08-15	Open	
Product Manager	Product	2024-08-10	Open	
UI/UX Designer	Design	2024-08-05	Closed	
Data Scientist	Data Science	2024-07-25	Open	
HR Specialist	Human Resources	2024-07-20	Closed	
Marketing Coordinator	Marketing	2024-07-15	Open	

Fig 5: Company Login

## B. Implementation of Resource Sharing Feature for Students in Recruitment Process

In this study, we piloted this functionality, which allows students who have been placed in the firms to share their resources and experiences with other students. This is a source that works to promote greater collaboration since students can learn useful information from other students' experiences, particularly regarding the hiring process and how to get ready for future placements.

## C. Objective of the Resource Sharing Feature

The primary purpose of this feature is to provide the audience of students who have been placed and those seeking recruitment with relevant knowledge. In achieving placed students' intention to share notes, preparation techniques, and interview feedback, the web site will be a valuable tool to future candidates seeking to increase their potential for success.

## D. Impact on Recruitment Preparation

The resource-sharing feature enhances the preparation process by giving students access to **relevant, tried-and-tested materials** from their peers who have already navigated the recruitment process successfully. Some of the key advantages include:

- **Targeted Preparation:** Students can concentrate on the particular questions and difficulties they might encounter in an interview with a given organization.
- **Time Efficiency:** Students can save time by avoiding less productive study materials and concentrating on what has been shown to be effective by using carefully chosen resources.

- **Confidence Building:** Future candidates feel less anxious and more confident after hearing from peers who have overcome comparable recruitment obstacles.

## E. Implementation of Recruitment Stage Tracking in Placement Module

To help students track their progress in corporate recruitments, we added a feature that breaks down the process into stages like registration, tests, and interviews. This allows students to plan better and see what they've completed and what's next.

## F. Purpose of the Stage Tracking Feature

Thus, the goal of this feature is to provide the students with a status of recruitment pipeline of a particular company. It is not uncommon for students to pay attention to several companies at the same time, and they may get lost over the status of the recruitment process going on within a certain company.

## How the Stage Tracking Feature Works

**Stage Breakdown:** Each company's recruitment process is divided into specific stages that may vary depending on the company's policies. The general stages include:

- **Registration:** In the initial application, students register with the recruiting company by providing their personal information.
- **Aptitude exam:** Students take an aptitude exam to evaluate their general skills, reasoning, and problem-solving ability.
- **Coding Exam:** Take a coding tour to test students' coding skills and algorithmic thinking for the job.
- **Group Discussion (GD):** Some companies conduct group discussions to test communication, teamwork, and thinking skills.
- **Interview:** One or more interviews that assess spelling, writing skills, and problem-solving abilities.
- **HR Interview:** Final HR interview to assess culture fit, communication, and overall fit with the company.

**Instant Progress Updates:** The system updates students' status as they progress through each recruitment stage. For instance, after clearing a test and receiving company approval, their dashboard reflects the next step, like a coding test. Students also receive notifications and reminders about upcoming phases, deadlines, or test dates to keep them informed.

**Company Related Customization:** The system allows customization to align with each company's unique recruitment process. It adapts to include or skip stages, such as adding case studies or omitting group discussions, ensuring accurate tracking tailored to every job profile.



## VI. CONCLUSION AND FUTURE SCOPE

The designing and the implementation of new functionalities in the placement module have significantly improved the overall functionality and user experience for both the students and the recruitment coordinators. Some added functionalities include:

1. *Probability of Selection*: It gives students information about their employment prospects, enabling them to make wise choices and reach their full potential. The methodology shows strengths and limitations in accordance with business expectations by concentrating on exam scores, interview outcomes, and coding platform performance (such as LeetCode, HackerRank).
2. *Resource Sharing*: Sharing materials, preparation techniques, and insights among students is one way we can promote environmental variety. increasing the confidence of potential candidates and encouraging peer support and mentoring.
3. *Tracking for recruitment Stage*: The system provides clarity and transparency throughout the recruitment process, ensuring students know exactly what to expect—registration, aptitude test, coding test, interview, etc. Real-time updates make preparation easier, reducing stress and confusion for students.

Together, these tools allow students to be more prepared in advance of and during the placement process with more ease, confidence, and preparedness.

### Future Scope

The current placement module is a great foundation for managing recruitment, but with many scopes of improvement and growth areas:

1. *AI-Powered Personalized Recommendations*: Future release of the module could be embedded with AI-driven personalize feedback for the student based on a percentage likelihood of being selected.
2. *Efficient Resource Sharing through Organized Content*: It would be simple for candidates to locate the information they require if we created a content library with materials arranged according to experience level and skill type.
3. *Virtual mock interview can be integrated*: The inclusion of virtual mock interviews, where students may take part in AI-simulated technical and HR interviews catered to particular business needs, could be another enhancement. They would be able to improve their abilities and get immediate performance feedback as a result.
4. *Inter-Institution Interaction*: This module can be stretched to interact with many institutions, providing the students with greater access to a larger reservoir of combined resources and knowledge base. It would thus create a broader learning and preparation network across institutions.
5. *Advanced Analytics in Career Services*: By emphasizing recruiting trends, student performance, and regions in need of further training or resources, advanced analytics and

dashboards can help recruiters make well-informed decisions that will eventually improve placements and applicant readiness.

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