PlaceNext: “A Gateway to Career Opportunities”

Submitted in partial fulfillment of the requirements of the degree

BACHELOR OF ENGINEERING IN **COMPUTER ENGINEERING**

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CERTIFICATE

This is to certify that the Mini Project entitled **" PlaceNext: A Gateway to Career Opportunities "** is a bonafide work of Mrunal Mahajan (41), Ayush Verma(61) , Latish Adwani(01), Madhura Anerao(06) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **"Bachelor of Engineering"** in **"Computer Engineering" .**

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Mini Project Approval

This Mini Project entitled "PlaceNext: A Gateway to Career Opportunities**"** by Mrunal Mahajan (41), Ayush Verma(61)**,** Latish Adwani(01), Madhura Anerao(06) is approved for the degree of **Bachelor of Engineering** in **Computer Engineering.**

Examiners

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2……
(External Examiner name & Sign)

Date:

Place:

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1 Introduction

1.1 Introduction :

"PlaceNext: A Gateway to Career Opportunities" is an innovative campus placement platform designed to streamline the placement process for students, companies, and Training & Placement Officers (TPOs). The platform efficiently collects and stores student data, enabling smooth filtering based on company-specific criteria. Students can update their profiles and resumes in real-time to match job requirements and apply for relevant positions. PlaceNext: A Gateway to Career Opportunities also offers comprehensive statistics dashboards, allowing TPOs to monitor placement metrics such as the highest package, total students placed, and company-wise recruitment trends. For students, detailed insights are provided on the number of job applications, interview appearances, and selection outcomes. To keep everyone informed, the platform features a robust notification and email system, ensuring timely alerts about interviews, application form updates, and important placement activities.

1.2 Motivation :

The motivation behind "PlaceNext: A Gateway to Career Opportunities" was to address the inefficiencies and challenges faced by both students and faculty during the campus placement process. Traditionally, students had to fill out multiple Google forms for each company, often missing opportunities due to miscommunication or deadlines. Faculty and TPOs also spent considerable time and effort manually managing student data, segregating applicants based on eligibility criteria, and sending constant reminders for interviews and updates. This manual process not only increased administrative workload but also caused students to apply to companies where they didn't meet the eligibility, leading to further complications.

PlaceNext: A Gateway to Career Opportunities solves these issues by centralizing student data allowing it to be stored just once and reused across multiple job applications. It automates the segregation of eligible candidates based on company requirements, eliminating the need for manual filtering by faculty. The platform also reduces stress on TPOs and faculty by automating reminders through notifications and emails, ensuring students stay informed about interviews and form changes. By streamlining the process and providing real-time statistical insights, PlaceNext: A Gateway to Career Opportunities enhances the placement experience for all stakeholders and maximizes opportunities for students.

1.3 Problem Statement & Objectives :

1. Manual Data Management: TPOs and faculty have to manually collect and manage student data across multiple forms, leading to data redundancy and errors.
2. Missed Opportunities: Students often miss filling individual Google form for each company, reducing their chances of getting placed.
3. Time-Consuming Candidate Filtering: Faculty needs to manually segregate students based on eligibility criteria for each company, which is labor-intensive and error-prone.
4. Lack of Centralized Data: Storing student data in scattered forms makes it difficult to track and reuse information effectively.
5. Inconsistent Communication: Faculty and TPOs must frequently remind students about interviews, deadlines, or form changes, which adds to their workload.
6. Limited Placement Insights:Both TPOs and students lack access to real-time statistics and insights, making it harder to monitor placement trends and performance.

1.4 Objectives:

1. Centralized Data Management: Develop a system to collect and store student data in a single platform, allowing it to be reused across multiple applications.
2. Automated Candidate Filtering:Implement a feature to automatically segregate students based on eligibility criteria set by companies, reducing manual work for faculty.
3. Increased Student Participation: Ensure students receive timely reminders and notifications about job openings, interviews, and form updates to prevent missed opportunities.
4. Reduce Faculty and TPO Workload: Automate reminders and communication to minimize manual intervention by faculty and TPOs.
5. Real-Time Insights and Statistics: Provide dashboards for TPOs and students to track metrics such as the number of jobs applied for, selections, highest packages, and placement rates.
6. Seamless Application Process: Make it easy for students to update their resumes and apply to relevant jobs with minimal effort.

2 Literature Survey

2.1 Survey of Existing System :

The survey of existing system for campus placements reveals several challenges and inefficiencies. Many colleges rely on Google Forms and spreadsheets to collect student data and track applications, leading to data redundancy and missed opportunities as students must repeatedly fill forms for each company. Faculty and TPOs spend significant time manually segregating students based on eligibility criteria and sending frequent reminders, increasing their workload. Email-based communication often results in miscommunication or missed notifications, while company-specific portals like TCS iON or Cocubes provide fragmented access to job opportunities and limit data control. Though some institutions use third-party placement software like Superset or HireMee, these platforms are often expensive, inflexible, and not tailored to specific institutional needs. Additionally, the absence of centralized data and real-time statistics makes it difficult for both students and TPOs to track placement trends effectively. “PlaceNext: A Gateway to Career Opportunities” addresses these gaps by offering a centralized data management system with automated candidate filtering, integrated notifications, and real-time dashboards, significantly reducing the manual workload of faculty while enhancing student participation and placement outcomes.

2.2 Limitation Existing system or Research gap :

1. Data Redundancy and Inconsistency:Existing systems store student data across multiple Google Forms or spreadsheets, leading to repeated data entry and inconsistencies in records.
2. Manual Candidate Segregation: Faculty and TPOs have to manually filter students based on each company’s eligibility criteria, which is time-consuming and prone to errors.
3. Missed Opportunities for Students: Due to the need to fill separate forms for every company, students often miss applications, reducing their chances of securing placements.
4. Communication Gaps: Email-based reminders and notifications are unreliable, as students may overlook or miss important messages about interviews and deadlines.
5. Limited Insight into Placement Metrics: Existing systems lack automated dashboards to track statistics like the number of jobs applied for, selections, and highest packages, making it difficult for TPOs and students to monitor progress in real-time.

6. Overburdened TPOs and Faculty: The manual processes of sending continuous reminders and managing data increase the workload and stress for TPOs and faculty.
7. Fragmented Platforms and Lack of Centralization: Company-specific portals and third-party placement platforms are not interconnected, making it difficult to manage applications efficiently from a single place.
8. Customization and Cost Issues: Existing third-party software solutions are often expensive and offer limited customization, restricting institutions from tailoring the platform to their specific requirements.

3 Proposed System

3.1 Introduction :

The proposed PlaceNext: A Gateway to Career Opportunities is a comprehensive solution designed to streamline and automate the placement process for faculty, TPOs, and students. The system is built using a modular architecture that integrates multiple components, including user management, job postings, resume tracking, and interview scheduling. The architectural design follows a client-server model with a user-friendly web or mobile interface for students, faculty, and TPOs, backed by a secure and scalable server-side framework. Conceptually, the system employs MVC (Model-View-Controller) design principles to separate concerns, ensuring smooth data flow between the interface and backend logic. Frameworks like React for the front end and Node.js/Django for the backend are utilized to ensure efficient and responsive design. The process design includes various modules such as student registration, company job posting, placement tracking, and reporting, all linked through a central database. Agile methodology is employed throughout development, ensuring iterative progress and continuous improvement based on feedback.

3.2 Architectural Framework / Conceptual Design

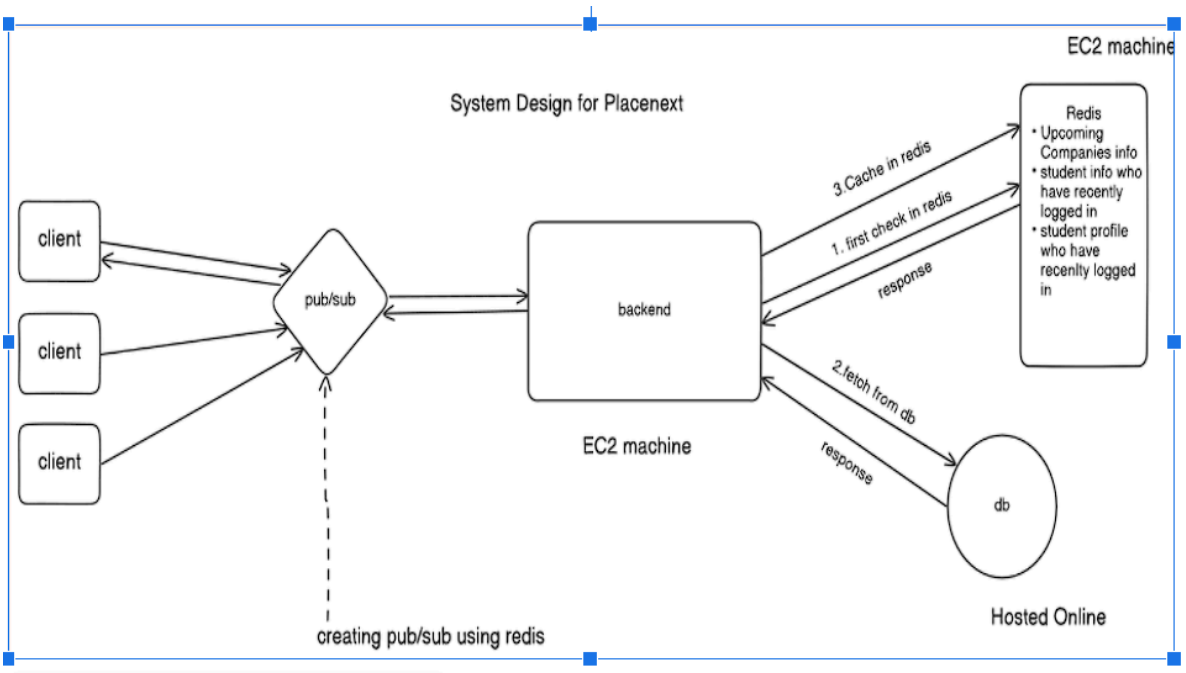

Fig 3.2.1 : System Design

The **PlaceNext: A Gateway to Career Opportunities architecture** consists of the following components:

1. **Clients**: Multiple users (students, companies, admins) interact with the system.
2. **Pub/Sub System**: Redis-based publish/subscribe mechanism manages client requests and forwards them to the backend.
3. **Backend (EC2)**: Central processing unit that handles client requests, checks Redis for cached data, and queries the database when necessary.
4. **Redis (Cache)**: Stores frequently accessed data (like upcoming companies and recently logged-in students) to reduce database load and improve response time.
5. **Database (Hosted Online)**: Stores all persistent data such as student profiles and placement records. It is accessed when data is not found in Redis.

3.3 Algorithm and Process Design

Student process flow:

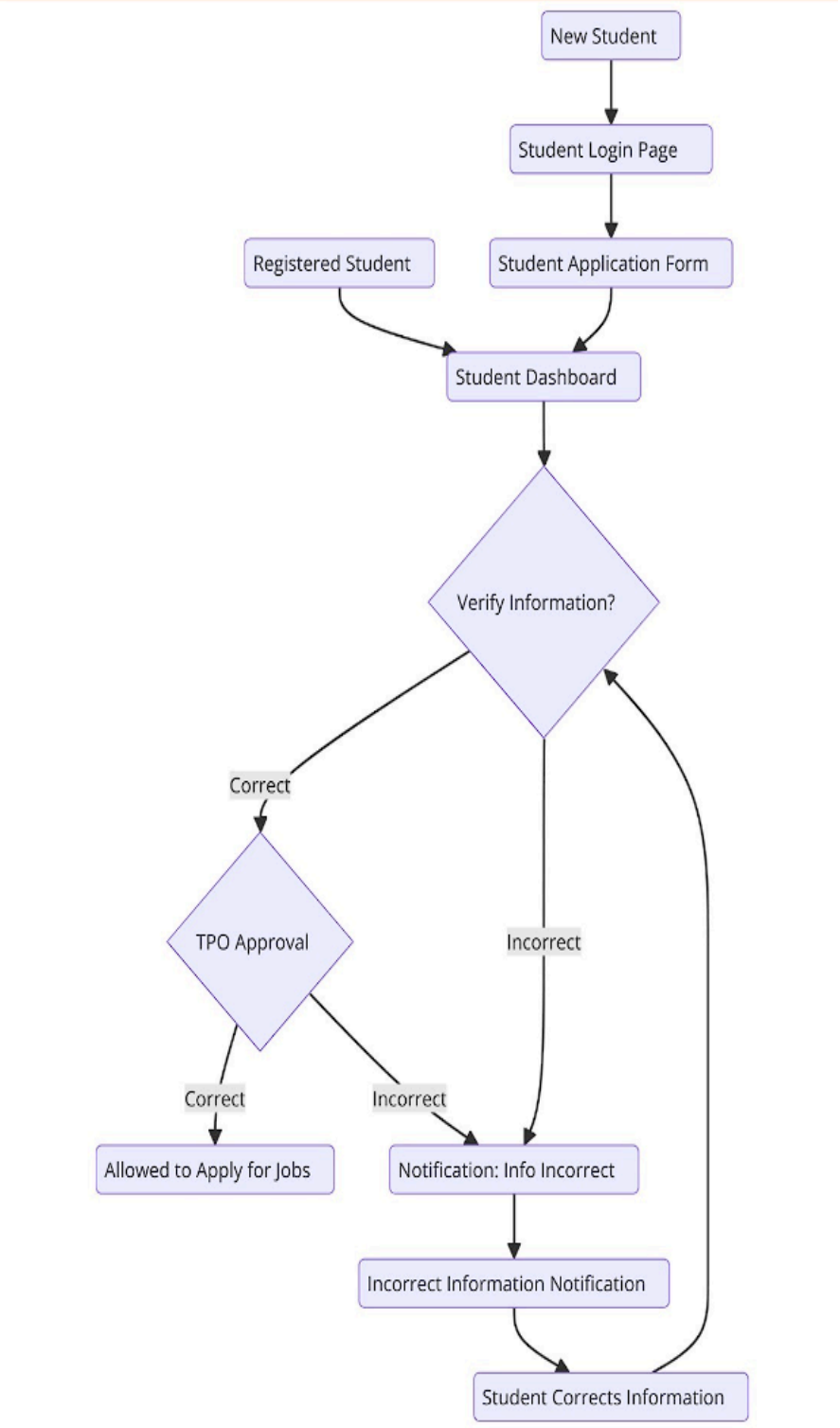

Fig 3.3.1 Student Process Flow

The flowchart depicts the student job application process within a placement system. After logging in and filling out the application form, students verify their information. If correct, the Training and Placement Officer (TPO) approves their eligibility to apply for jobs. If incorrect, the student is notified and prompted to correct the information before proceeding.

company process flow:

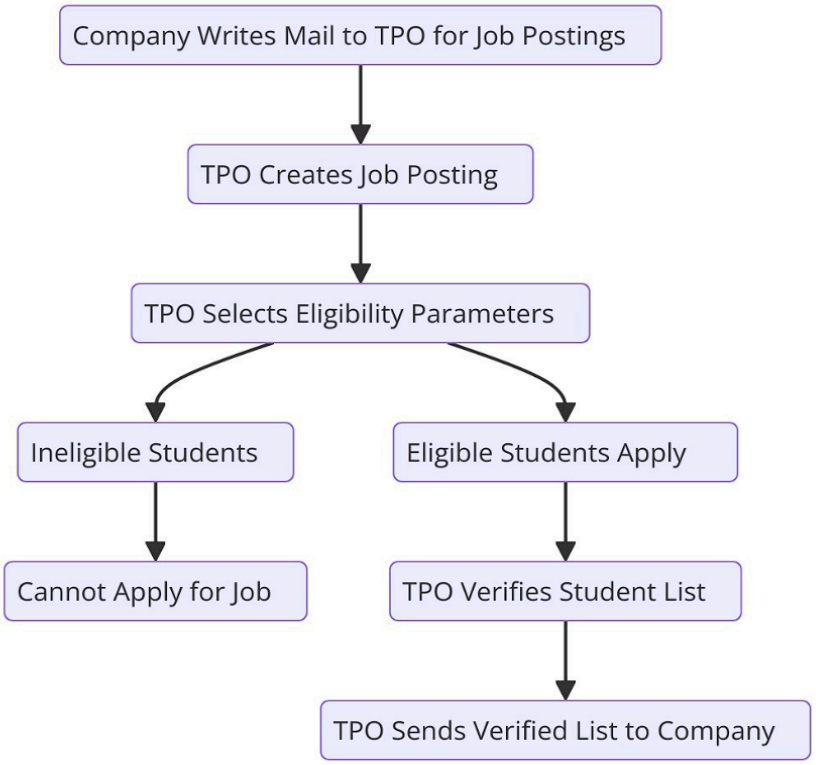

Fig 3.3.2 Company Process Flow

The figure depicts the "Company Process Flow" for job recruitment through the Training and Placement Officer (TPO). It begins with a company requesting job postings from the TPO, who then creates the job posting and sets eligibility criteria. Eligible students apply, and their applications are verified by the TPO. The verified list of students is then sent back to the company for further consideration, while ineligible students are excluded from applying.

3.4 Methodology Applied

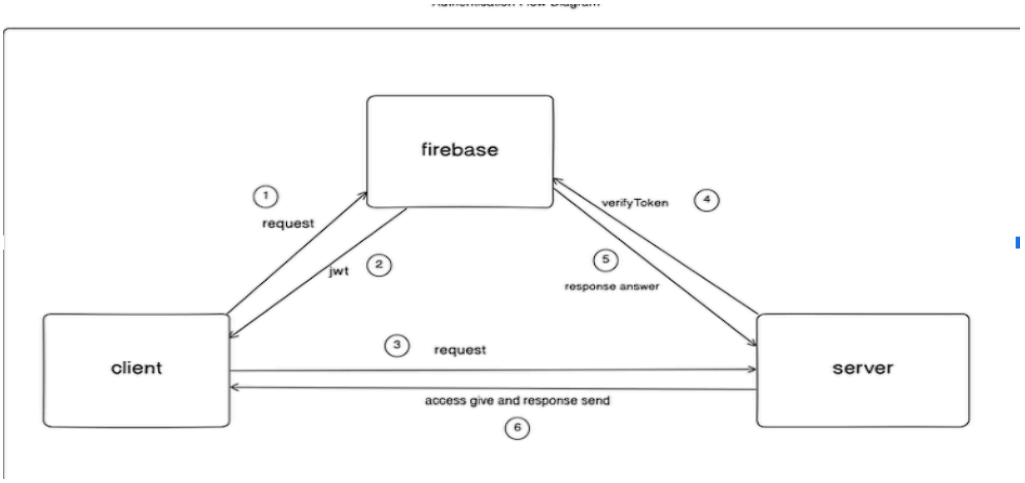

Fig 3.4.1 Client-Server Interaction with Firebase Token Authentication

This diagram illustrates a basic interaction where the client requests authentication from Firebase (Step 1), receives a JWT token (Step 2), and then forwards a request to the server with the token (Step 3). The server verifies the token with Firebase (Step 4) before responding to the client with the requested data or access (Steps 5 and 6).

3.5 Hardware & Software Specifications:

Hardware	Software
Web: Stable Internet Connection App: Android : Minimum 4GB RAM IOS : Minimum IOS 12 Windows : Requires at least 4GB of RAM and a 2GHz processor, Requires approximately 200MB of free storage. Mac : Intel : Mac 2017 and later , Requires approximately 200MB of free storage. Apple Silicon : any	Web: Latest Browser App: Flutter : 3.10 and above Node : 20 and above VS Code (IDE) : 1.92 Android : Minimum Android version 12 iOS : iOS 12.0 or later Windows : Windows 10 or later macOS : macOS 11 (Big Sur) or later
Tools: Git, Github	

3.4Experiment and Results for Validation and Verification:

The validation and verification process for the proposed **Campus Placement Management System** was conducted through a series of experiments aimed at ensuring functionality, usability, and performance.

1. Validation (Functionality Testing)

- **Objective:** To confirm that the system meets the specified requirements and performs as expected.
- **Method:** Unit testing, integration testing, and system testing were conducted on each module (student registration, job postings, resume submission, interview scheduling, etc.).
- **Results:**

1. **Student Registration:** Successfully handled data inputs, validation, and profile creation with no errors.
2. **Job Posting Module:** Verified that TPOs and companies could easily post jobs and manage them. Jobs were properly displayed in the student dashboard.
3. **Resume and Application Tracking:** Validated that students could upload resumes and apply to jobs, with real-time updates visible to the TPO.
4. **Interview Scheduling:** Confirmed that the interview scheduling module worked seamlessly, allowing TPOs to schedule interviews and notify students.

3.5Result Analysis and Discussion :

The implementation of "PlaceNext: A Gateway to Career Opportunities" has significantly improved the placement process by centralizing student data, automating candidate filtering, and reducing manual efforts for TPOs and faculty. The notification system ensured timely reminders, increasing student participation and minimizing missed opportunities. Real-time dashboards provided valuable insights for both TPOs and students to monitor progress and outcomes.

However, feedback highlighted areas for improvement, such as the need for a calendar system for schedule management, interview preparation resources, and alumni connections for mentorship. Users also requested deeper statistical insights to track trends more effectively.

Moving forward, integrating these features along with mobile app support will make PlaceNext: A Gateway to Career Opportunities an even more efficient and user-friendly platform, further enhancing placement outcomes.

Student Pages

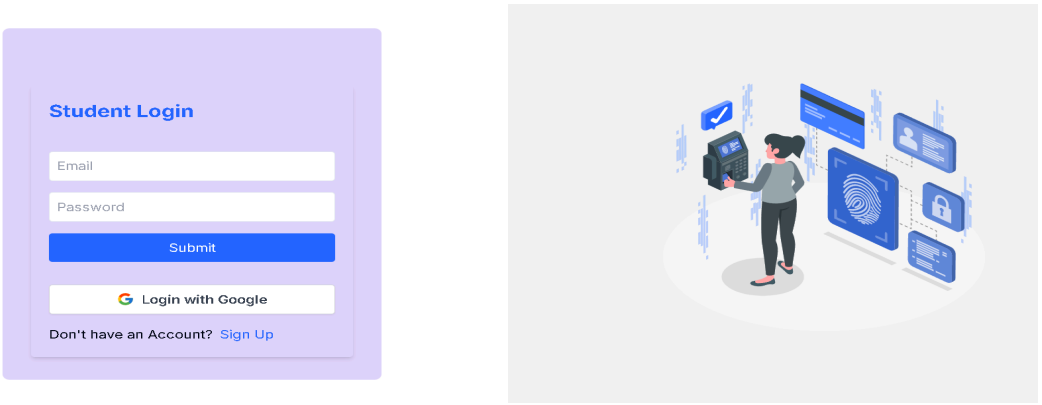

Fig 3.5.1 Student Login page

This is the student login page where students can register themselves in our app/web.

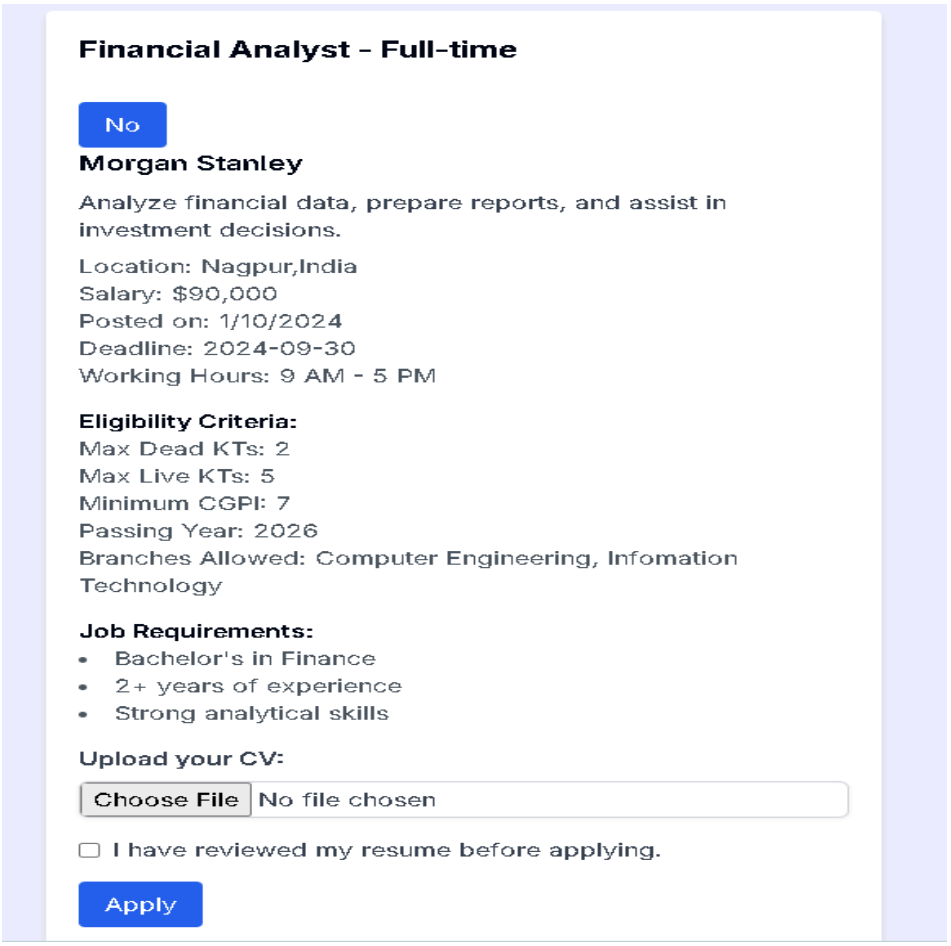

Fig 3.5.3 Job Post Details and apply option

Students can apply to the jobs visible on this page on uploading their cv and verifying the details.

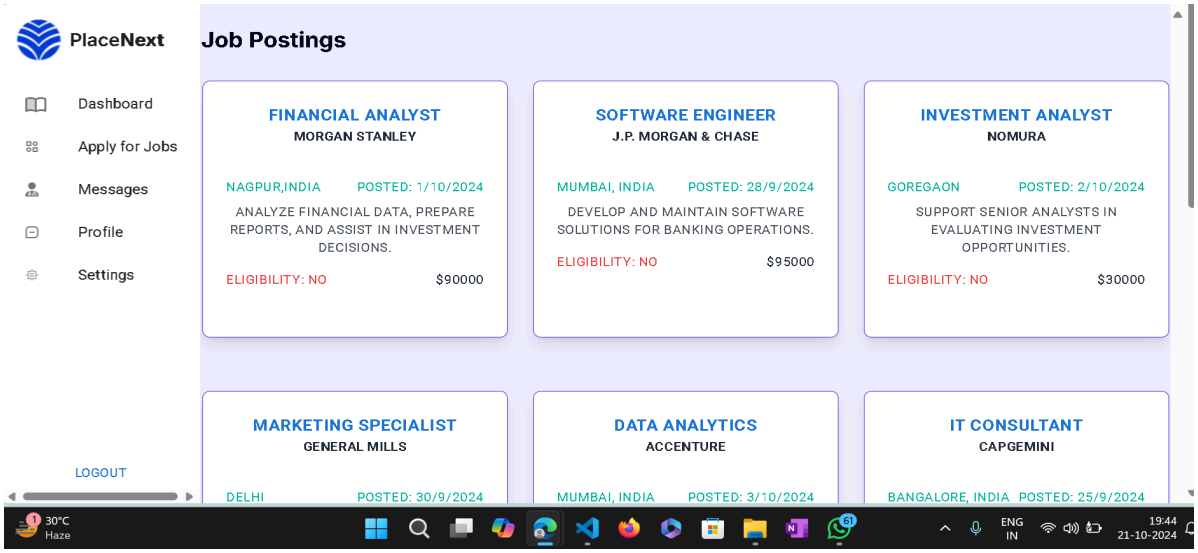

Fig 3.5.3 Job Postings Page

On this page students can view the job postings uploaded by the tpo.

TPO pages :

Fig 3.5.4 TPO Dashboard

Data is displayed in the form of charts for statistics and analysis pupose

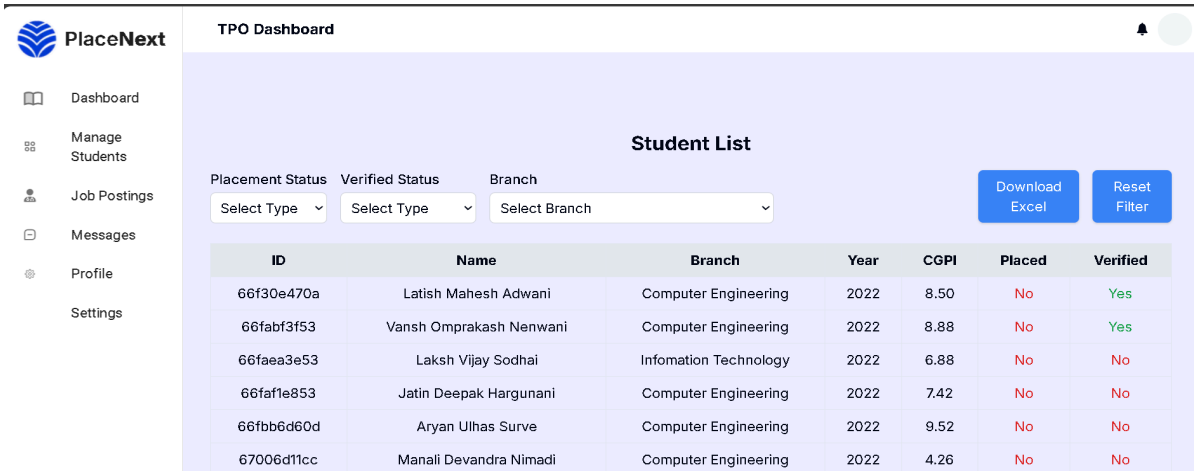

Fig 3.5.5 Manage Students Page

All the student details are visible to the TPO on this page

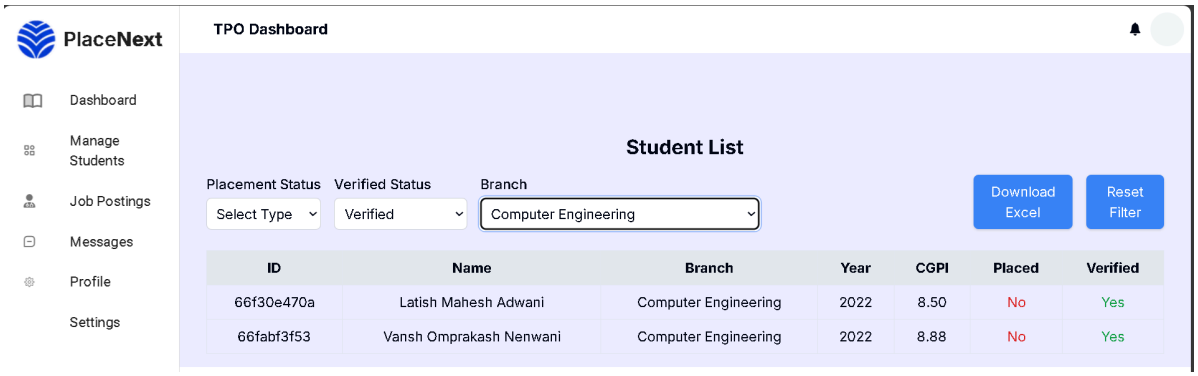

Fig 3.5.6 Student list after filtering

you can apply filtering options to get specific data of students using this

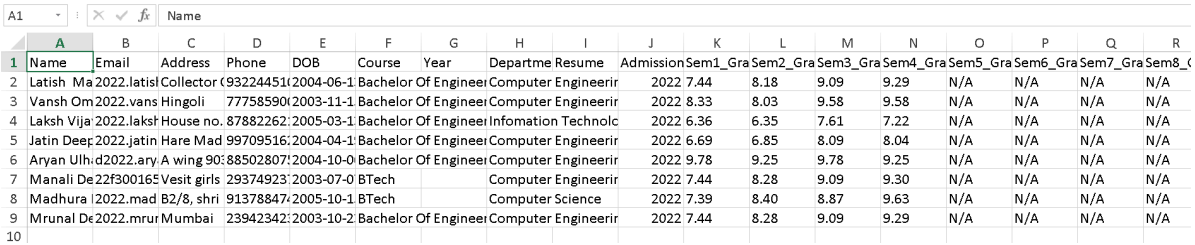

Fig 3.5.6 Downloading the student data in excel

The Student data can be downloaded to excel for further analysis and sharing.

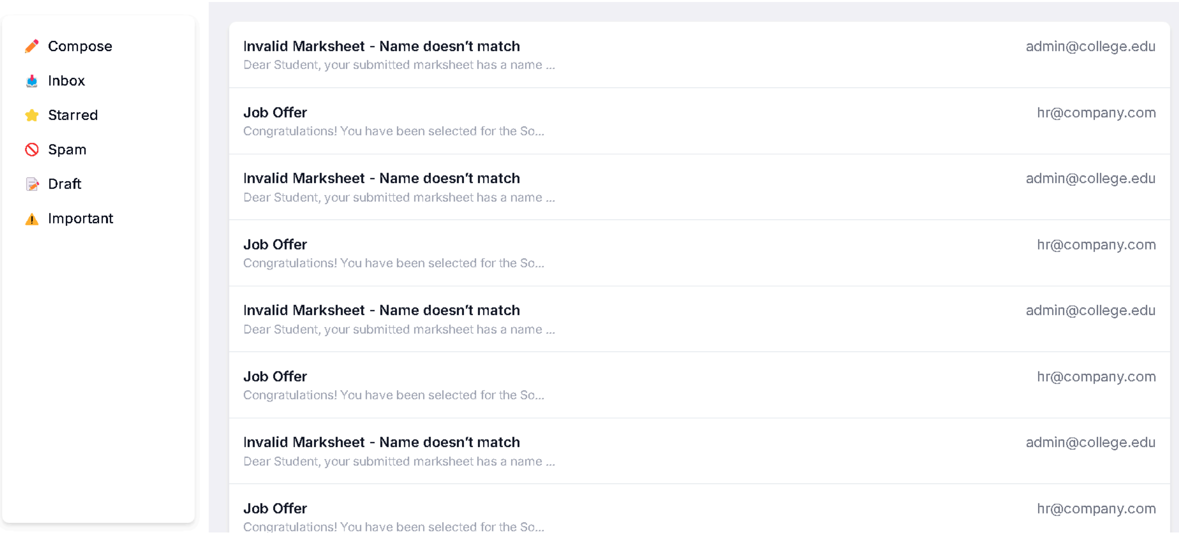

Fig 3.5.2 Email/Message Page

Students, the TPO (Training and Placement Officer), and companies will communicate with each other through this email page, utilizing an email server.

3.6 Conclusion and Future work :

PlaceNext: A Gateway to Career Opportunities provides a robust and streamlined solution to the challenges in campus placements by centralizing student data, automating candidate filtering, and ensuring timely communication. It alleviates the workload of TPOs and faculty while improving the chances for students by reducing missed applications. With real-time dashboards offering placement statistics and automated reminders, PlaceNext: A Gateway to Career Opportunities ensures better management and transparency in the entire placement process, benefiting all stakeholders involved. Future development of PlaceNext: A Gateway to Career Opportunities will focus on expanding its accessibility across all devices, including Android, iOS, and web platforms, to ensure seamless use. Additional functionalities will be integrated, such as a built-in calendar feature to help students and faculty manage schedules and track interview dates efficiently. The platform will also include interview preparation resources like mock tests, tips, and company-specific materials to enhance student readiness. A feature to connect alumni working in particular companies will be introduced to provide mentorship and guidance. The statistics dashboard will be enhanced to offer more detailed insights into placement trends, company performance, and student success rates. These updates aim to create a comprehensive ecosystem, making PlaceNext: A Gateway to Career Opportunities a one-stop solution for managing and optimizing campus placements.

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