Project

ON

“Talent- Bridge: AI Integrated Placement Portal”

IS SUBMITTED TO

SANT GADGE BABA AMRAVATI UNIVERSITY

IN THE PARTIAL FULFILLMENT OF THE DEGREE OF

BACHELORS OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

BY

Mr. Vedant S. Raut

Mr. Ayush R. Raut

Mr. Raj S. Vishwakarma

Mr. Lokesh G. Wagh

Mr. Devanshu S. Tambhake

GUIDED BY

Prof. S. N. Sawalkar

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

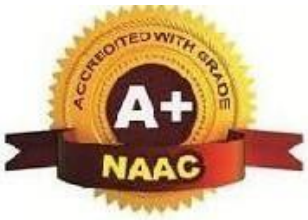
(ACCREDITED BY NBA)

SIPNA COLLEGE OF ENGINEERING AND TECHNOLOGY, AMRAVATI

(AN ISO 9001:2015 CERTIFIED INSTITUTE & NAAC ACCREDITED)

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

2024-2025



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Amravati

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that **Mr. Vedant S. Raut, Mr. Ayush R. Raut, Mr. Raj S. Vishwakarma, Mr. Lokesh G. Wagh, Mr. Devanshu S. Tambhake** has satisfactorily completed the project work towards the **Bachelor of Engineering** Degree of Sant Gadge Baba Amravati University, Amravati in **Computer Science and Engineering** discipline on the topic entitled **"Talent- Bridge: AI Integrated Placement Portal",** during the academic year 2024-205 under my supervision and guidance.

Date:

Prof. S. N. Sawalkar — **Guide**

Dr. V. K. Shandilya — **Head of Department**

Dr. S. M. Kherde

Principal

Project Approval Sheet

Project Entitled

"Talent- Bridge: AI Integrated Placement Portal"

By

Mr. Vedant S. Raut

Mr. Ayush R. Raut

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Is approved for the degree of

Bachelors of Engineering

in

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Internal Examiner:	**External Examiner:**
Name:	**Name:**
Date:	**Date:**

Acknowledgement

A moment of pause, to express a deep gratitude to several individuals, without whom this project could not have been completed.

We feel immense pleasure to express deep sense of gratitude and indebtedness to our guide **Prof. S. N. Sawalkar**, for constant encouragement and noble guidance.

We express our sincere thanks to **Dr. V. K. Shandilya**, Head of Department, Computer Science & Engineering, and the other staff members of the department for their kind co-operation.

We express our sincere thanks to **Dr. S. M. Kherde**, Principal, Sipna College of Engineering & Technology for his valuable guidance.

We also express our sincere thanks to the library staff members of the college.

Last but not the least we are thankful to our friends and our parents whose best wishes are always with us.

Name of Students

Mr. Vedant S. Raut

Mr. Ayush R. Raut

Mr. Raj S. Vishwakarma

Mr. Lokesh G. Wagh

Mr. Devanshu S. Tambhake

ABSTRACT

Campus placements play a crucial role in bridging the gap between academic learning and professional employment [2]. Traditionally, these drives are managed via fragmented tools like WhatsApp, spread sheets, and email chains, which lead to inefficiencies, communication gaps, and data loss [3]. With the rise of digital transformation and AI in HR technology, there is an emerging trend to automate and streamline the recruitment lifecycle using smart platforms tailored for educational institutes [1].

In this project, we have developed Talent-Bridge, an AI-integrated placement management system designed for colleges and universities [1]. The system offers different dashboards for students, TPOs, and recruiters, allowing smooth coordination [5]. Core modules include AI-powered resume parsing, job-skill matching algorithms, application tracking, and a role-based access model [6]. The platform was developed using a modern web stack and trained using job profile and resumes datasets to ensure practical relevance [7].

The platform was tested with sample users to validate features like automated shortlisting and dashboard efficiency. It significantly reduced manual work, streamlined communication, and ensured better matching between job profiles and student skill sets. This project demonstrates how AI and modern software can revolutionize campus recruitment, and in the future, it can be extended to integrate with national job portals, alumni hiring, and third-party assessments.

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INTRODUCTION

CHAPTER 1

1. INTRODUCTION

1.1. General Introduction

In today's competitive academic and professional landscape, campus placements are crucial in launching students into their careers [2]. However, most colleges still depend on outdated and inefficient systems like WhatsApp groups, email threads, and Excel spreadsheets to manage the recruitment process [3]. These traditional methods lack structure, are time-consuming, and can lead to missed opportunities, poor coordination, and miscommunication among students, recruiters, and placement cells [4].

To address these challenges, Talent-Bridge has been conceptualized and developed as a comprehensive AI-integrated placement portal. It provides a centralized, role-based system for Training & Placement Officers (TPOs) and students to seamlessly interact and manage the entire recruitment cycle-right from job posting and resume submission to final selection.

1.2. Key Challenges in Traditional Placement Systems

- Heavy reliance on manual communication methods [3].
- Disorganized handling of student data and job requirements, often confusing and missed deadlines [4].
- Limited candidate filtering and lack of intelligent matchmaking hinder recruiters from finding the right candidate [1].
- Students frequently miss out on opportunities due to the absence of a structured, timely notification system [5].
- Increasing demand in academic institutions for intelligent, scalable, and fully digital recruitment solutions.

1.3. Aim and Objective

Aim: To develop an AI-powered placement portal that automates and optimizes campus recruitment workflows.

Objectives:

- To replace WhatsApp and manual spreadsheets with a unified digital platform [3].
- To enable AI-based resume screening and job-candidate matching [1].

- To provide role-based dashboards for students, TPOs, and recruiters [5].
- To support real-time job tracking, notifications, and recruitment analytics.
- To ensure transparency, scalability, and user-friendliness across all user roles.

1.4. Proposed Methodology

The project was executed using the following methodology:

1. **Problem Identification:** Studied current campus recruitment practices and their inefficiencies.
2. **Requirement Analysis:** Collected functional and non-functional requirements for each user type.
3. **System Design:** Created architecture and flow diagrams to define modules.
4. **Development:** Built the system using a full-stack web development framework and AI modules for matchmaking.
5. **Testing:** Carried out user data testing with integrated testing modules, and simulated placement runs.
6. **Result Evaluation:** Measured performance improvements and user feedback and data.

CHAPTER 2:

LITERATURE

REVIEW

CHAPTER 2

2. LITERATURE REVIEW

The development of an AI-integrated placement portal such as Talent-Bridge is grounded in a rich body of knowledge spanning several interdisciplinary domains. These include, but are not limited to, artificial intelligence, recruitment technologies, web development frameworks, data management systems, and principles of human resource management [1]. The convergence of these fields plays a pivotal role in shaping innovative solutions aimed at enhancing the efficiency, accuracy, and user experience of campus placement processes.

This chapter presents a comprehensive review of existing literature and scholarly studies that provide theoretical and practical insights into the design, architecture, and intelligent functionalities of digital recruitment platforms. By examining current research trends, technological advancements, and system design methodologies, this review establishes the foundational context for the Talent-Bridge system. Current research shows digital platforms enhance placement efficiency by 40% compared to manual systems [2].

Special attention is given to the integration of AI-driven tools such as resume analyzer, and AI-Mock Interview in which collectively enhance decision-making and streamline the recruitment cycle. Furthermore, the review explores the limitations of traditional placement systems, the growing need for scalable digital platforms in academic institutions, and the user-centric approaches adopted in modern web applications.

Through this literature review, the study aims to identify gaps in existing solutions, highlight best practices, and justify the technological choices made in the development of Talent-Bridge [6]. The insights drawn will serve as a framework for understanding how artificial intelligence and modern software practices can be harnessed to revolutionize campus recruitment.

2.1. Review of Existing Systems and Comparative Study: LinkedIn vs Talent-Bridge

LinkedIn is one of the most widely used professional networking platforms globally, designed to connect job seekers, recruiters, and working professionals across various industries. The platform serves as a digital resume and professional portfolio, enabling users to build and optimize their profiles, showcase their skills, connect with others in their field, and apply for job opportunities. Some of its core functionalities include a resume builder, job

search and application tracking system, tools for recruiters to source potential candidates, and a networking mechanism that allows users to endorse each other's skills and build professional relationships [8]. These features help users enhance their career prospects by expanding their professional network and improving their visibility to potential employers.

From a technical standpoint, LinkedIn utilizes modern technologies such as React.js for frontend development, GraphQL for efficient data querying, Kafka for real-time data streaming, Java for backend services, MySQL for database management, and REST APIs to ensure smooth communication between various system components [7]. This robust technological infrastructure allows LinkedIn to handle millions of users and deliver high performance at scale.

Despite its strengths and wide adoption, LinkedIn has several limitations, especially when viewed from the perspective of college students and educational institutions. It does not provide specialized tools tailored for college-level placement activities. There is no built-in functionality for conducting mock interviews, nor does it offer AI-driven resume analysis or personalized feedback. Furthermore, LinkedIn is not institution-focused, meaning it lacks centralized tools for managing placement activities within colleges or universities. This makes it less effective for use in academic environments where coordinated efforts between students, faculty, and placement officers are crucial.

In contrast, Talent Bridge is designed with a clear focus on bridging the gap between academic institutions and the corporate world. It provides a campus-centric ecosystem that directly addresses the limitations of platforms like LinkedIn. Talent-Bridge integrates advanced AI features such as automated mock interviews [1], real-time resume analysis, personalized career recommendations, and institution-level management tools [5]. These functionalities are specifically designed to support students in preparing for placements, while also giving colleges the ability to monitor and manage student progress effectively.

Therefore, while LinkedIn excels as a general-purpose professional networking platform, Talent-Bridge offers a more targeted and supportive solution for educational institutions and students entering the job market, making it a better fit for college placement ecosystems.

2.2. Technology Comparison

Existing systems like LinkedIn employ a robust technology stack comprising React.js for frontend development, Java for backend services, GraphQL and REST APIs for data communication, Kafka for handling real-time data streams, and MySQL for relational data

management. This selection of technologies ensures scalability, performance, and reliability for a large user base [7].

In contrast, newer systems and academic-focused platforms may benefit from using more flexible and modern development environments. For instance, Node.js is often preferred over Java in educational and startup environments due to its non-blocking, event-driven architecture, which enables high concurrency and faster development cycles. Node.js also aligns well with frontend technologies like React.js, allowing for a unified JavaScript ecosystem that simplifies the development and maintenance process [6].

In terms of databases, MySQL, being a relational database management system, is suitable for structured data and offers strong ACID compliance. It is ideal for applications where data integrity is crucial, such as student records, placement histories, and job application logs [4]. However, MongoDB, a NoSQL database, is better suited for handling large volumes of unstructured data and offers flexibility in storing diverse document types. While LinkedIn continues to rely on MySQL for relational consistency, Talent-Bridge also adopts MySQL for similar reasons ensuring reliable data relationships among students, recruiters, and placement activities. The decision to use Node.js with MySQL in Talent-Bridge is driven by the need for efficient, scalable, and easily maintainable backend services, particularly in an academic setting where resources may be limited but performance cannot be compromised.

2.3. Identified Gaps / Need for the Project

While platforms like LinkedIn provide comprehensive tools for professional networking, job searches, and skill endorsements, they fall short in addressing the unique needs of academic institutions and students preparing for campus placements. Key missing features in these existing systems include:

- Lack of AI-powered mock interviews and resume analysis tools [7].
- No integration with institutional management systems [5]
- Absence of features tailored for college placement workflows
- Limited support for faculty or placement officers to track student progress

These gaps create challenges for students who rely heavily on third-party services or manual processes to prepare for interviews and submit resumes. Faculty members and placement coordinators also face difficulties in monitoring placement readiness or organizing mock sessions at scale [3]. Talent-Bridge is developed to directly address these shortcomings. By

integrating AI-driven mock interviews, smart resume analysis, and campus-centric tools, the system offers an all-in-one solution for students, institutions, and recruiters.

It provides features like performance tracking, automated feedback, and institution-level dashboards that empower both students and educators. This project is essential because it bridges the gap between professional tools and academic needs, making placement preparation more personalized, accessible, and data-driven.

CHAPTER 3:

PROJECT BODY

CHAPTER 3

3. PROJECT BODY

3.1. Project Methodology

The methodology of AI-integrated placement portals focuses on a structured approach that connects students, placement officers, and a centralized database for seamless data management. The system is designed to enhance user experience, improve recruitment efficiency, and provide AI-driven career services [8].

a. Block Diagram

• **System Architecture:** The platform is divided into two main modules—Student Module for job applications and career services, and TPO Module for managing students, jobs, and applications. A centralized database ensures smooth data flow between both modules [8].

• **Data Flow and Interaction:** Students can register, update profiles, apply for jobs, and use AI services. The TPO module manages student records, job postings, and applications. All interactions are stored and processed in a secure database, ensuring quick access and efficient data management.

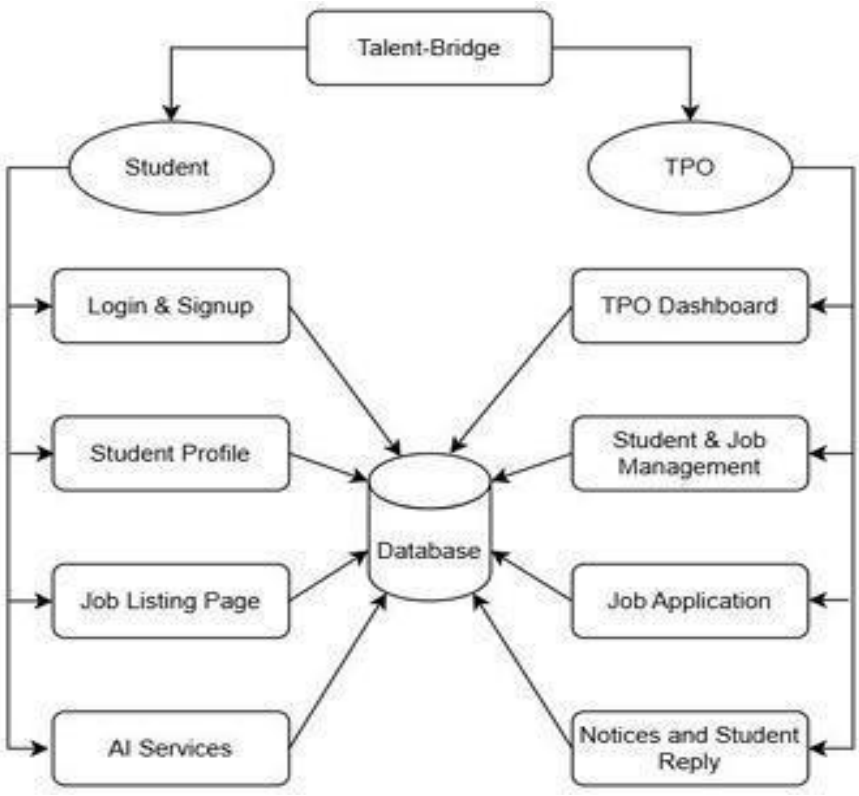


Figure 3.1: Block Diagram

• **AI Integration:** The platform includes AI resume analyzers & AI mock interviews powered by AI, Test of Aptitude and Reasoning. These tools help students prepare for job opportunities while providing recruiters with better insights into applicants' skills [4].

• **System Security & Efficiency:** Role-based access control ensures that students and TPOs have different permissions, preventing unauthorized access. Database optimization techniques, such as indexing, improve system speed and responsiveness [7].

• **Comparison with Existing Systems:** Studies show that AI-powered recruitment platforms improve hiring efficiency and reduce bias [3]. Similar research highlights the benefits of centralized databases in talent management systems. This methodology follows a structured modular approach, ensuring scalability and enhanced data processing [2].

b. Use Case Diagram

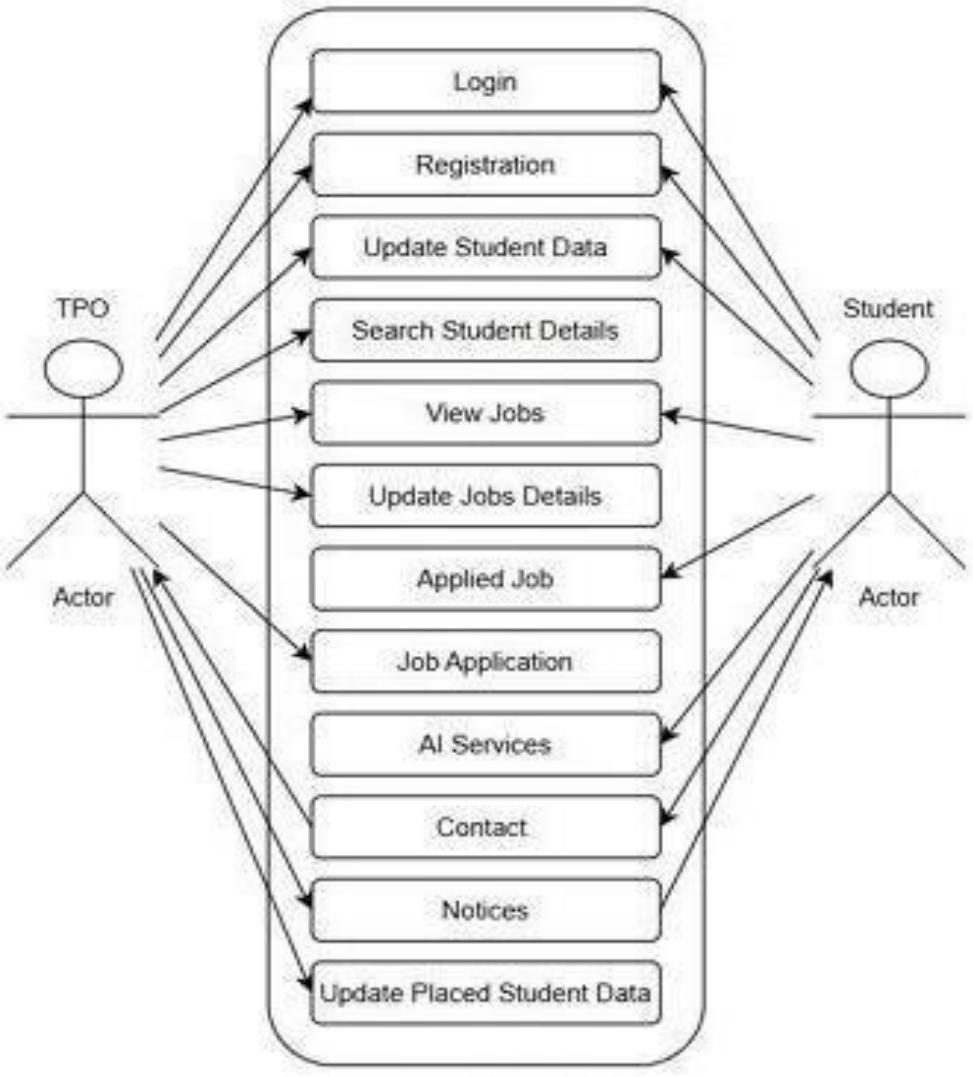


Figure 3.2: Use Case Diagram

• **Login:** Secure access point for users to enter the system using credentials, ensuring data privacy and personalized access to features.

• **Registration:** Process for new users to create accounts, providing necessary details to access platform services and features.

• **Update Student Data:** Allows students or administrators to modify and maintain accurate personal and academic information in the system.

• **Search Student Details:** Enables quick retrieval of student information using filters or search queries for efficient data management.

• **View Jobs:** Displays available job listings, allowing students to explore opportunities based on their preferences and qualifications.

• **Update Jobs Details:** Allows administrators or recruiters to modify job postings, ensuring up-to date and accurate job information.

• **Applied Job:** Tracks and displays job applications submitted by students, helping them monitor their application status.

• **Job Application:** Interface for students to apply for jobs, including uploading resumes and filling out required details.

• **AI Services:** Provides AI-driven tools like resume analysis, mock interviews, and skill recommendations to enhance student preparedness.

• **Contact:** Facilitates communication between students, administrators, and recruiters for queries, support, or collaboration.

• **Notices:** Displays important announcements, updates, and notifications related to placements, deadlines, or events.

• **Update Placed Student Data:** Allows administrators to update records of students who have secured placements, maintaining accurate placement statistics.

• **TPO (Training and Placement Officer):** Dedicated section for TPOs to manage placement activities, student data, and recruiter interactions.

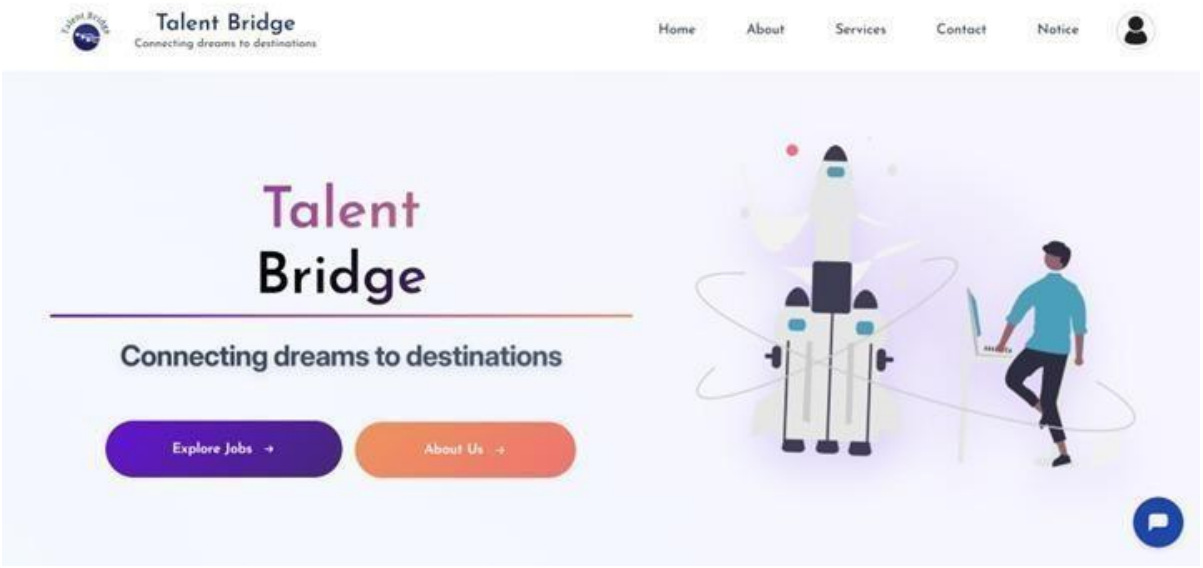
• **Action:** General term for tasks or operations that users (students or TPOs) can perform within the system.

• **Student:** Section dedicated to student-specific features, including job applications, profile updates, and access to AI services.

3.2. Project Module

a. Homepage

The homepage of Talent Bridge provides a welcoming and interactive entry point into the platform, aligning with its core mission of ―Connecting dreams to destinations.‖ A clean navigation bar offers links to essential pages like About, Services, Contact, and Notices, alongside a user profile icon for login/logout actions. The header features the Talent Bridge logo and a motivational tagline, reinforcing the platform's purpose from the start.



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Central to the homepage is a bold title in gradient text, paired with an inspiring slogan and a custom illustration of a person next to a rocket—symbolizing growth and opportunity. Two prominent buttons, ―Explore Jobs‖ and ―About Us, invite users to dive deeper. A modern color palette of purples, blues, and oranges, along with responsive design and subtle animations, creates a professional and engaging experience across devices. The homepage effectively sets the tone for the platform, encouraging users to explore further.

b. User Authentication

The authentication interface of Talent Bridge showcases a clean, role-based access system tailored for both students and Training & Placement Officers (TPOs). Designed for efficiency and security, it provides distinct login and sign-up options for each user type—offering students access to features like resume building and mock interviews, while TPOs manage job postings and student data.

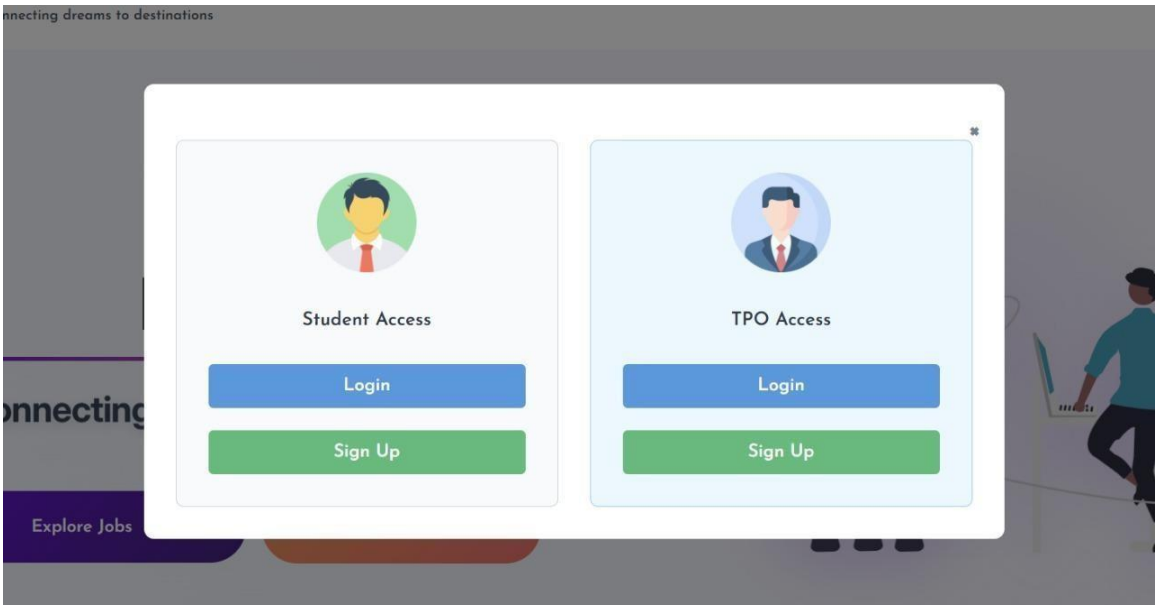


Figure 3.2.2: User Authentication

A guest access feature allows new users to explore job listings without creating an account, lowering entry barriers and enhancing user onboarding. The interface highlights simplicity with clear call-to-action buttons and intuitive navigation. Security elements such as JWT token validation and encrypted password storage are seamlessly integrated, ensuring safe user authentication. The responsive layout ensures accessibility across devices, aligning with Talent Bridge's mission to deliver an inclusive, secure, and user-friendly career development platform.

3.2.1. Student Module

a. Student Profile

The "Student Profile" interface of Talent Bridge emphasizes personalization and streamlined data management within the student dashboard. Key academic and personal details—such as name, contact info, location, skills, qualification, stream, and passing year—are neatly organized for clarity and relevance to placement criteria. This structured layout allows

students to present a professional, employer-ready profile. An ―Update Profile‖ button encourages users to keep their information current, ensuring smooth job application processes.

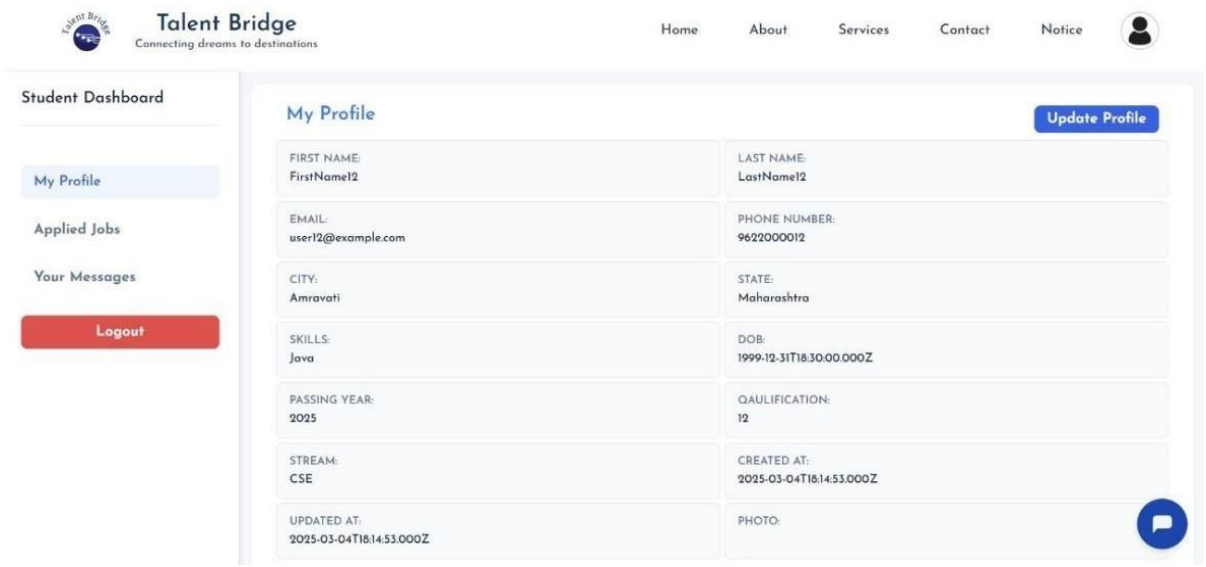


Figure 3.2.3: Student Profile

Timestamps for ―Created At‖ and ―Updated At‖ enhance transparency and accountability. A responsive sidebar offers quick links to job applications, messages, and editing tools, boosting overall navigation efficiency. While a photo upload feature is currently a placeholder, it hints at upcoming customization options. The design is intuitive and responsive, aligning with Talent Bridge's goal of providing a secure, functional, and student-focused platform for managing career growth.

b. Student Messages

The "Student Messages" interface in Talent-Bridge serves as a direct communication channel between Training & Placement Officers (TPOs) and students. Structured as a threaded messaging system, it displays student details—such as name, email, and original message—alongside reply history. The "Write a reply..." field and "Send Reply" button allow TPOs to respond promptly, as seen in exchanges like one with.

Designed for clarity and ease of use, the interface supports secure, role-based access through JWT authentication to protect sensitive information. While currently focused on text-based interactions, the layout is scalable for future features like file attachments, threaded replies, or real-time notifications. Integrated with modules like job applications and profiles, this tool

strengthens Talent-Bridge's goal of fostering responsive mentorship and support. It ensures organized, secure, and efficient communication—key to guiding students toward informed career paths.

Figure 3.2.4: Student Message

c. Job Postings Page

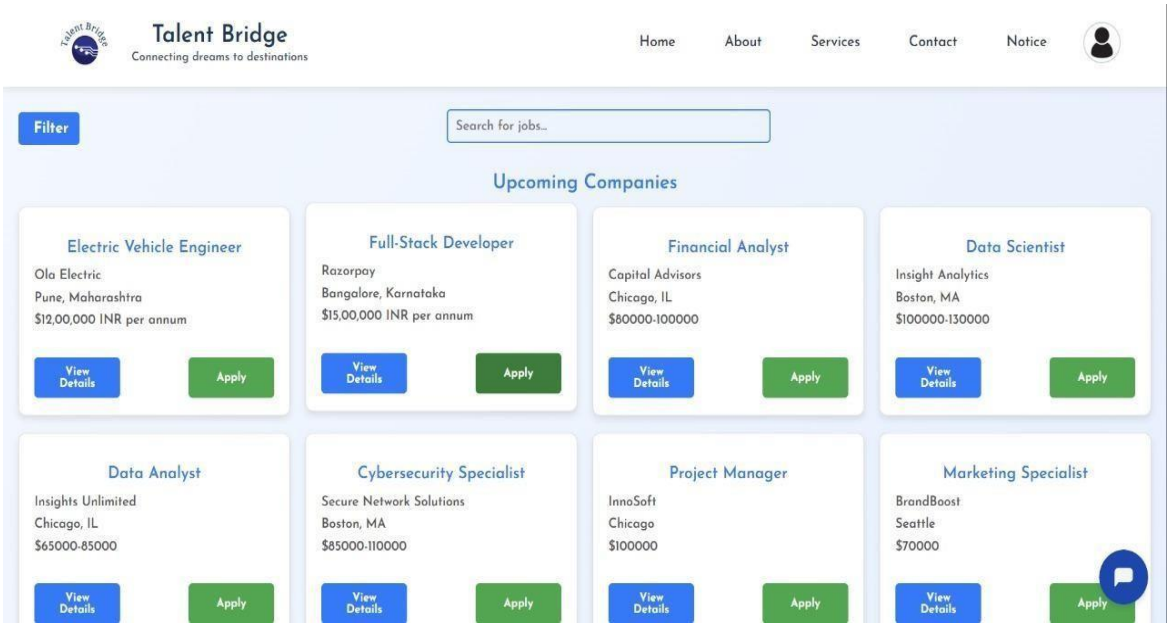


Figure 3.2.5: Job Posting Page

The Job Postings page of Talent Bridge acts as a vital link between job seekers and hiring companies, providing a smooth and engaging job search experience. A top navigation bar

offers quick access to major sections like Home, About, Services, Contact, and Notice, alongside a user profile icon. Below, a search bar and filter button help users find jobs based on keywords, location, role, or salary.

The main section titled ―Upcoming Companies‖ features a clean grid of job cards, each displaying the job title, company, location, and salary—styled clearly for readability. Action buttons for ―View Details‖ and ―Apply‖ allow users to explore roles or apply instantly. Listings include positions such as Electric Vehicle Engineer at Ola Electric, Full-Stack Developer at Razorpay, and Financial Analyst in Chicago. This structured, user-centric design empowers users to explore diverse opportunities, aligning with Talent Bridge's mission: ―Connecting dreams to destinations.‖

d. Contact Us

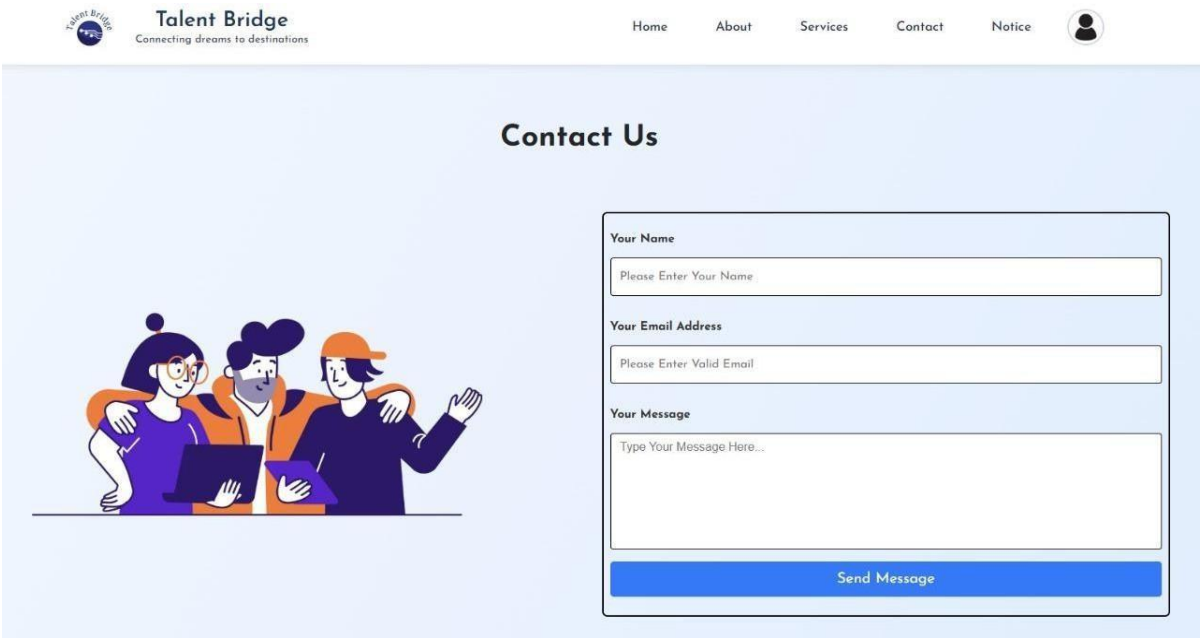


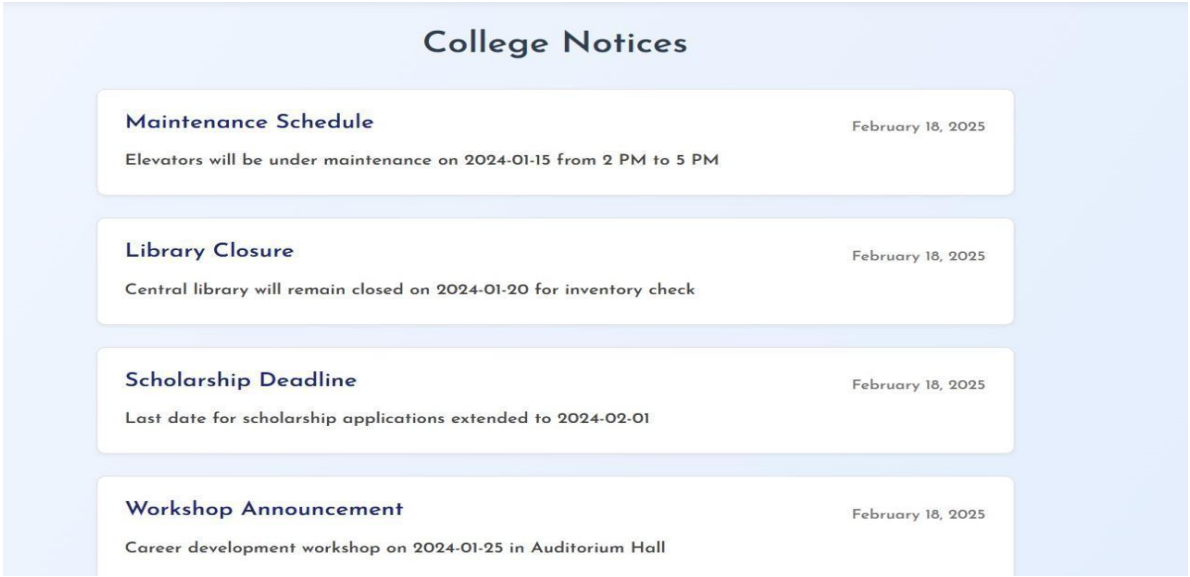
Figure 3.2.6: Contact Us

The Contact Us page of Talent Bridge is designed to facilitate easy and effective communication between users and the platform's administrators. Set against a soft blue background, the layout is clean and modern, consistent with the overall aesthetic of the site. On the left, a vibrant illustration depicts young professionals collaborating on digital devices, visually emphasizing the platform's focus on career development and teamwork. On the right, a user-friendly contact form titled ―Contact Us‖ provides a straightforward way for users to get in touch.

The form includes three essential fields: name, email address, and message, each with clear placeholder text for guidance. It features client-side validation to ensure accurate input and prevent incomplete submissions. A bright blue ―Send Message‖ button stands out, inviting users to submit their queries or feedback. Overall, this page promotes trust and encourages user interaction, playing a key role in maintaining responsive and supportive communication within the Talent Bridge ecosystem.

e. Notices Page

The Notices page of the Talent Bridge platform serves as an organized hub for important college-related announcements. With a clean, minimalistic design and a calming light blue background, the page prioritizes clarity and accessibility. At the top, a bold heading titled ―College Notices‖ signals the purpose of the section. Below, notices are displayed as individual cards in a vertical layout, each styled with rounded corners and subtle shadows for easy readability.



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Each notice card includes a bold title in dark blue, a concise description with key details like dates and venues, and a posted date subtly placed on the right. Current sample notices include elevator maintenance schedules, library closures, extended scholarship deadlines, and upcoming workshops. This structured, user-friendly design ensures students stay informed and engaged, reflecting Talent Bridge's commitment to effective and clear communication.

f. College Notices

The "College Notices" interface in Talent-Bridge acts as a centralized communication hub, enabling Training & Placement Officers (TPOs) to share important updates with students. Organized as a clear, categorized list, it features notices like Scholarship Deadlines, Library Closures, and Workshop Announcements, each with descriptions and posting dates (e.g., 2024-01-15), ensuring timely and relevant information delivery.

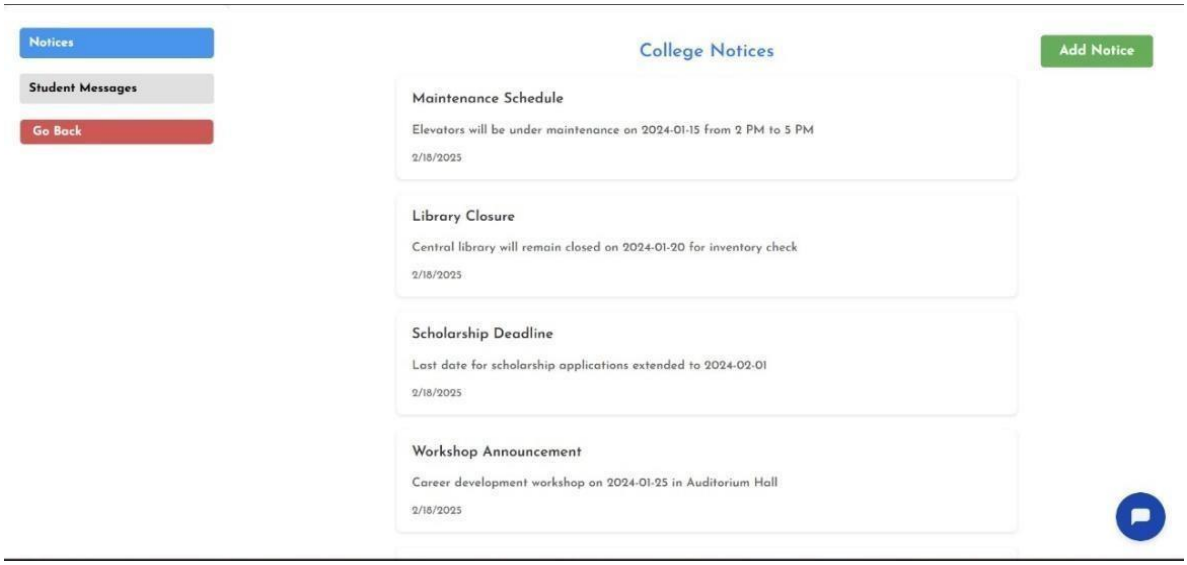


Figure 3.2.8: College Notices

Although date formatting varies, the inclusion of timestamps reflects a focus on urgency and clarity. With backend support for add/edit/delete operations and role-based access secured via JWT, only authorized administrators can manage these announcements.

Elements like a "Go Back" button and placeholder Student Messages section reflect a user-friendly layout. Future enhancements could include filters, real-time alerts, and date standardization. This module strengthens institutional communication, aligning with Talent-Bridge's mission to empower students with organized, accessible, and career-aligned updates.

g. Services Page

The Services page of the Talent Bridge web application highlights a suite of intelligent, AI-powered tools designed to support users through every stage of their career journey. The page opens with a motivating statement inviting users to "experience next-generation career development," setting the tone for the advanced features that follow. Two standout tools are introduced upfront: the AI Resume Analyzer, which provides instant, AI-driven feedback on uploaded resumes, and the AI Mock Interviews, which simulate real interview scenarios with dynamic question generation and performance feedback. These tools empower users to refine their resumes and practice interviews in a realistic, data-informed environment.

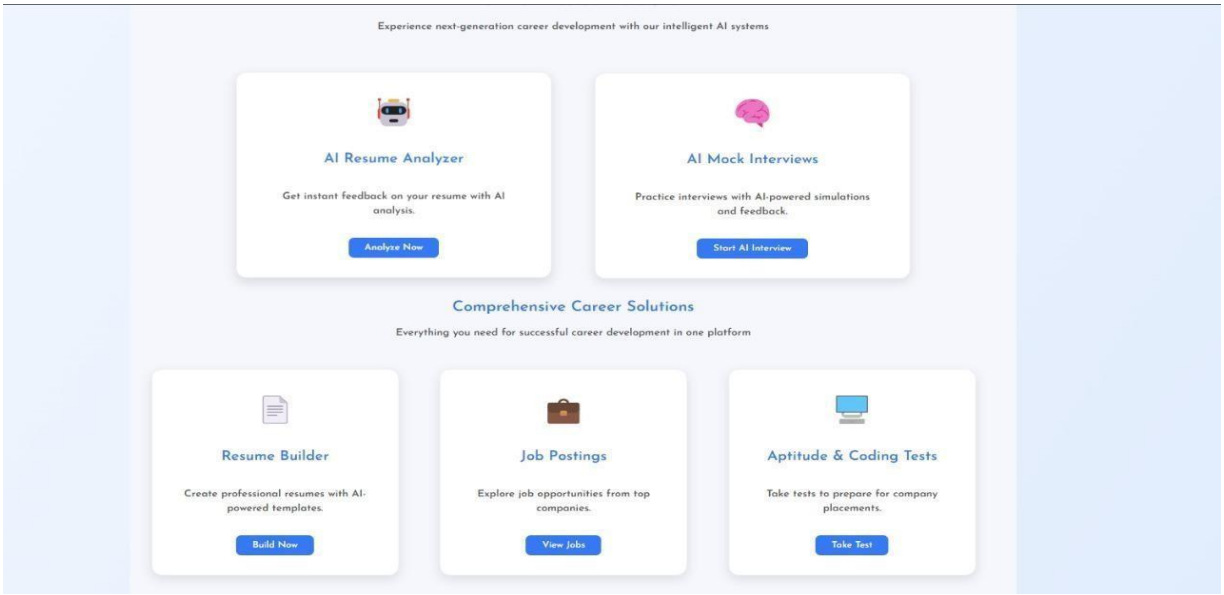


Figure 3.2.9: Services Page

Moving beyond these AI tools, the page emphasizes Comprehensive Career Solutions with three additional core services: the Resume Builder, Job Postings, and Aptitude & Coding Tests. The Resume Builder offers customizable templates aligned with industry standards, while the Job Postings section connects users to top opportunities across various fields. The Aptitude & Coding Tests help users sharpen essential problem-solving and programming skills crucial for campus placements and technical interviews. The page design features clean, card-based layouts with intuitive icons, short descriptions, and consistent blue-themed visuals. Together, these elements make the Services page both functional and inviting, reinforcing Talent Bridge's mission to provide an all-in-one platform for career readiness.

h. Talent Bot

The "Talent Bot" exemplifies Talent-Bridge's commitment to 24/7 AI-driven support, offering students real-time, personalized assistance. Seamlessly embedded into the platform, this chatbot acts as a virtual mentor, guiding users through features like resume building, job applications, and interview prep. In the example interaction, the bot introduces itself as a career-focused assistant, immediately responding to queries like ―tell me about yourself,‖ showcasing its role in onboarding and user engagement.

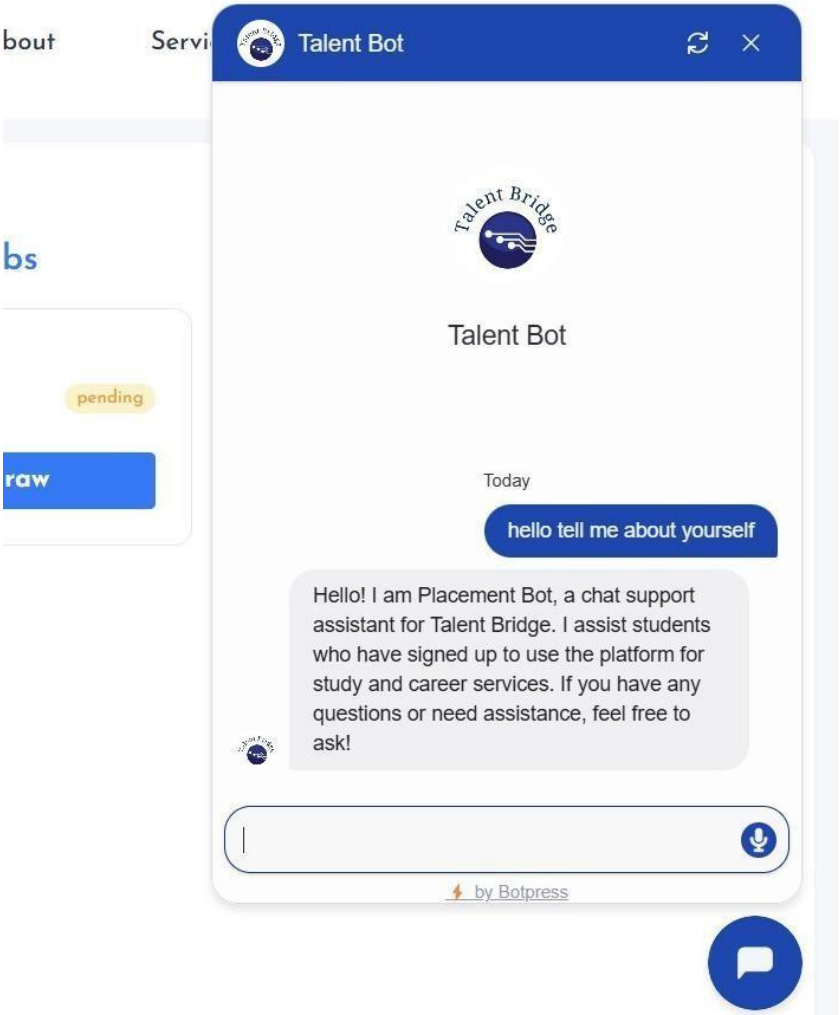


Figure 3.2.10: Talent Bot

Key benefits include instant answers to FAQs, personalized recommendations based on student profiles, and smart navigation to relevant modules (e.g., job drives or skill assessments). Its always-available nature ensures critical support during peak phases like application deadlines.

Future upgrades may include context tracking, curated resources, multilingual responses, and enhanced chat encryption. By combining automation with personalized guidance, the Talent

Bot strengthens Talent-Bridge's mission to make career development intuitive, inclusive, and accessible for every student.

i. Smart Resume Analyzer

The Smart Resume Analyzer exemplifies Talent-Bridge's AI-powered commitment to helping students craft ATS-friendly resumes. This tool enables users to upload resumes and match them against job descriptions using advanced NLP algorithms. Key features include resume parsing, keyword gap analysis, alignment scoring, and personalized improvement tips—all within a streamlined interface that simplifies the resume tailoring process.

The Smart Resume Analyzer exemplifies Talent-Bridge's AI-powered commitment to helping students craft ATS-friendly resumes. This tool enables users to upload resumes and match them against job descriptions using advanced NLP algorithms. Key features include resume parsing, keyword gap analysis, alignment scoring, and personalized improvement tips—all within a streamlined interface that simplifies the resume tailoring process.

Figure 3.2.11: Smart Resume Analyzer

Powered by a React.js frontend and a backend integrated with APIs like OpenAI or Hugging Face, the module delivers deep semantic insights. It also links directly to the Resume Builder, allowing real-time edits based on analyzer feedback. By quantifying resume-job fit, the tool demystifies ATS optimization, helping students boost their application success.

Future enhancements include real-time previews, multi-format support, and industry-specific templates. Strategically, this feature gives Talent-Bridge a distinct edge, turning a common student challenge into a guided, data-driven advantage in the job search process.

j. AI Mock Interview

The AI Mock Interview module reflects Talent-Bridge's commitment to real-world readiness through AI-driven, personalized interview prep. It simulates authentic hiring scenarios using dynamic, role-specific questions generated by GPT-4, escalating in complexity to test both technical and behavioral skills. Users can practice with webcam or audio-only modes, record responses, and receive transcribed feedback powered by NLP.

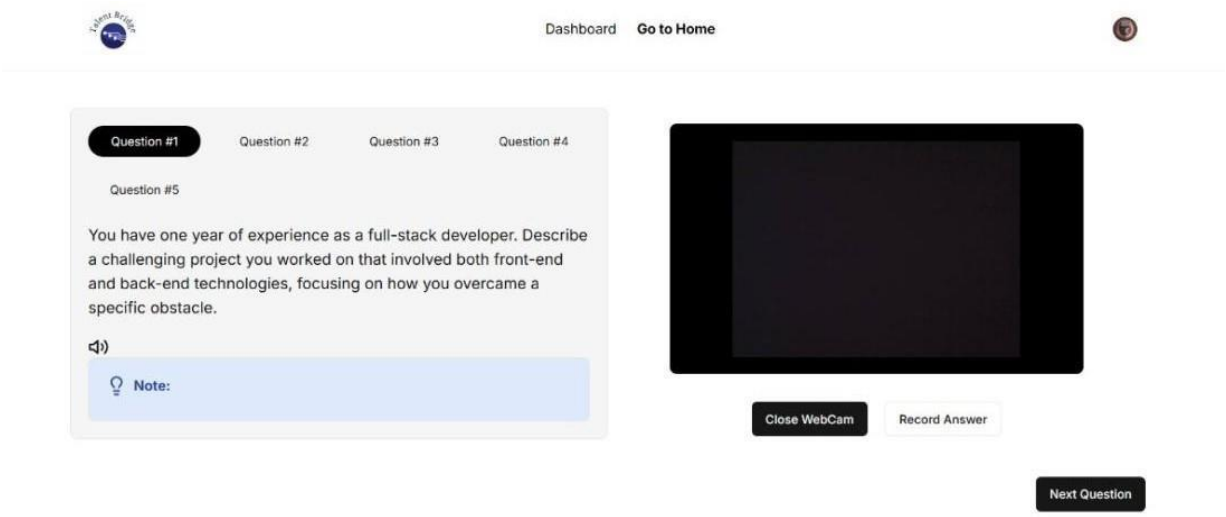


Figure 3.2.12: AI Mock Interview

Built with React.js and WebRTC, it integrates directly with the Resume Analyzer to align questions with a student's skills and goals. Future enhancements include emotion recognition, instant scoring, and virtual interviewer avatars for added realism. Available 24/7, this tool democratizes interview preparation—empowering students to gain confidence, improve articulation, and boost job-readiness through structured, immersive practice.

3.2.2. Admin Module

a. Admin Profile

The Admin Profile interface in Talent-Bridge reflects a thoughtfully designed identity management system for Training & Placement Officers (TPOs). Presented in a structured layout, it displays key administrative details such as Full Name, Contact Information, Designation, and Institution Affiliation, enabling TPOs to maintain a professional and verifiable presence on the platform.

Institution-specific fields like Institution Address and Institution Email reinforce the formal ties between Talent-Bridge and partner colleges or universities. The absence of sensitive data (e.g., passwords) supports best practices in information security, while role-based elements like "Training and Placement Officer" point to JWT-based access control mechanisms.

Figure 3.2.13: Admin Profile

Though currently static, the interface hints at backend support for future edits through secure forms. Upcoming features—like two-factor authentication or profile personalization (e.g., institution logo uploads)—could further enhance usability and security. Ultimately, this module reinforces Talent-Bridge's commitment to administrative clarity, compliance, and trusted academic-industry collaboration.

b. Admin Panel

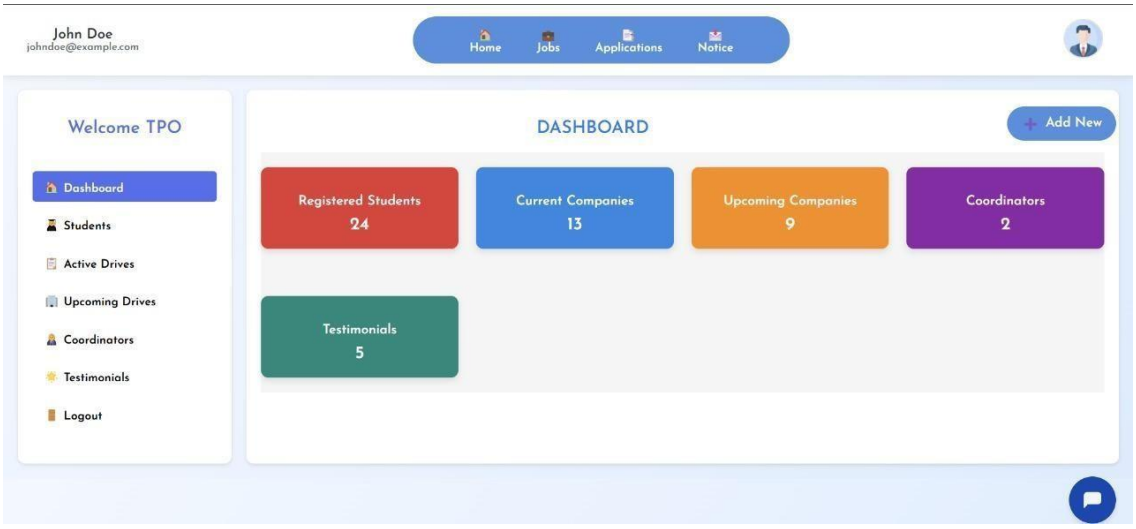


Figure 3.2.14: Admin Panel

The "Admin Panel" of Talent Bridge exemplifies a centralized and intuitive management system tailored for Training & Placement Officers (TPOs). Designed for efficient oversight of placement activities, the dashboard presents real-time statistics—such as 24 registered students, 13 active companies, and 9 upcoming drives offering a quick snapshot of platform engagement. A vertical sidebar provides organized access to key modules like student profiles, job drives, coordinators, and testimonials, streamlining navigation and administrative tasks.

A prominent ―Add New‖ button simplifies the creation of job postings, new user accounts, or testimonials, supporting dynamic content updates. The panel maintains clarity with categorized menus and visually distinct sections, while role-based access control safeguards sensitive data. Secure session handling is reinforced by the ―Logout‖ option and visible user credentials. Overall, this interface empowers TPOs to manage recruitment processes effectively and sets the stage for future enhancements like analytics dashboards and performance tracking tools.

c. Student CRUD

The Student CRUD interface in Talent-Bridge showcases an efficient admin tool designed for Training & Placement Officers (TPOs) to manage student records with ease. Featuring a clean, tabular layout, it displays key details like Student ID, Name, Branch, Email, and Phone Number, enabling quick reference and candidate assessment.

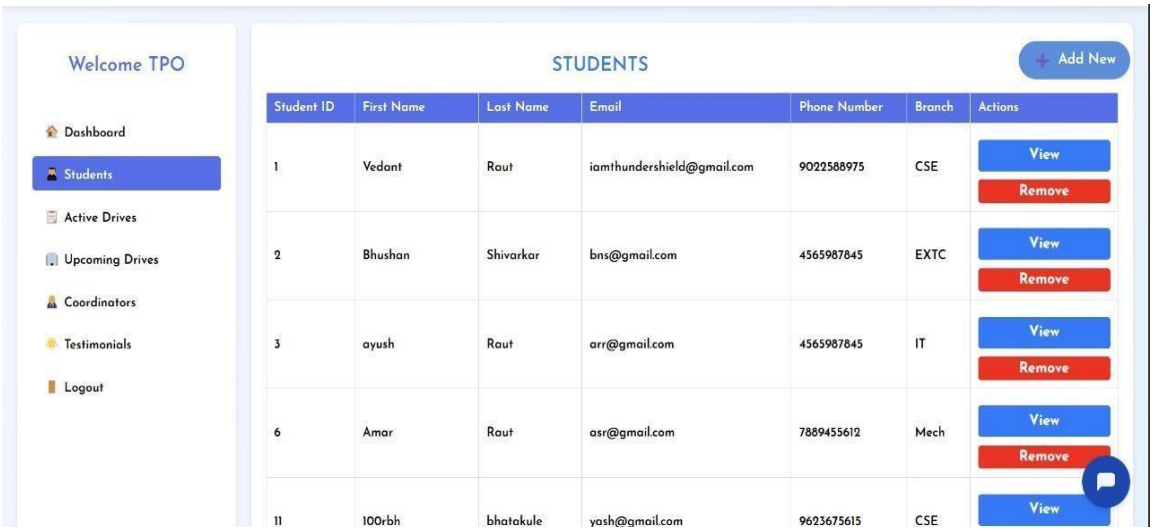


Figure 3.2.15: Student CRUD

Action buttons such as "View" and "Remove" streamline profile auditing and deletion while upholding data integrity. The interface respects privacy standards by omitting sensitive data and enforcing role-based access control. While the current focus is on viewing and removing entries, the underlying CRUD framework supports full profile management, with creation and update functionalities handled through complementary workflows. The design is responsive and user-friendly, allowing seamless navigation across devices. Future enhancements such as bulk actions, search filters, or CSV export can further optimize administrative efficiency. This module reflects Talent-Bridge's commitment to centralized, secure, and scalable student data management.

d. Upcoming Job CRUD

The Upcoming Job CRUD interface in Talent-Bridge exemplifies an organized and responsive job management system for Training & Placement Officers (TPOs). Designed as a clean, tabular layout, it displays essential job details such as Job ID, Title, Company, Location, Salary, and Posting Date, providing a centralized overview of active recruitment drives. With "View" and "Remove" actions, TPOs can efficiently audit listings or retire outdated postings, keeping job opportunities current and relevant.

Sample entries like Software Engineer at Infosys or Product Manager at Flipkart showcase industry diversity and student-centric placement alignment. While this interface emphasizes reading and deleting entries, the backend supports full CRUD functionality, including creation and editing via separate workflows. The use of consistent formats for dates and

currency ensures data clarity and integrity. This module reflects Talent-Bridge's commitment to equipping TPOs with secure, scalable tools for managing recruitment efforts and connecting students with the right opportunities.

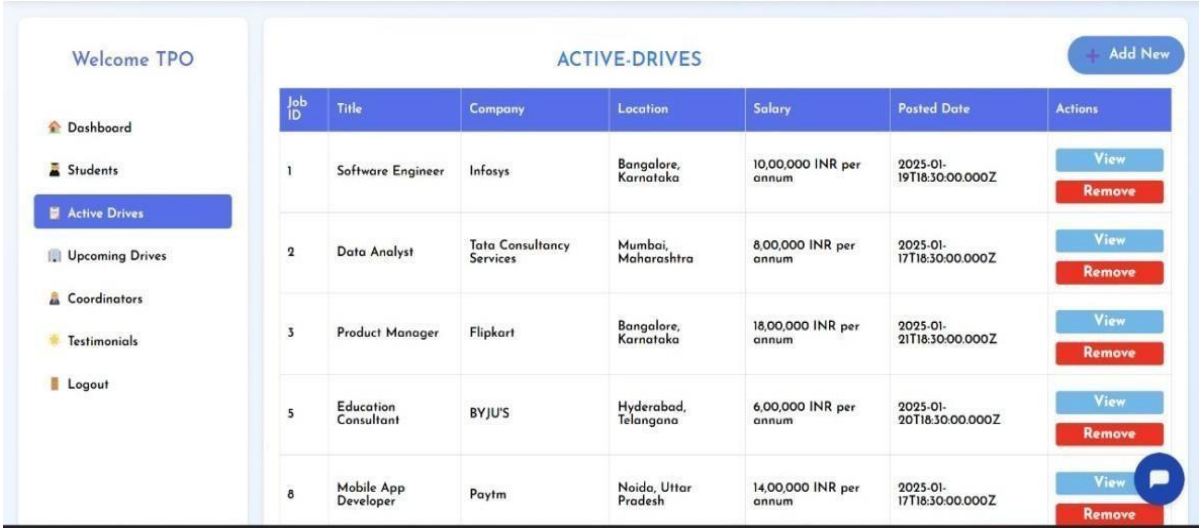


Figure 3.2.16: Upcoming Job CRUD

e. Active Job CRUD

The Active Job CRUD interface in Talent-Bridge showcases a flexible and structured dashboard that empowers TPOs to manage ongoing recruitment drives effectively. Featuring essential fields like Job ID, Role Title, Company, Location, Salary, and Posting Date, the layout provides a streamlined view of active listings. TPOs can easily verify or remove job entries using "View" and "Remove" options, ensuring job data remains relevant and up to date.

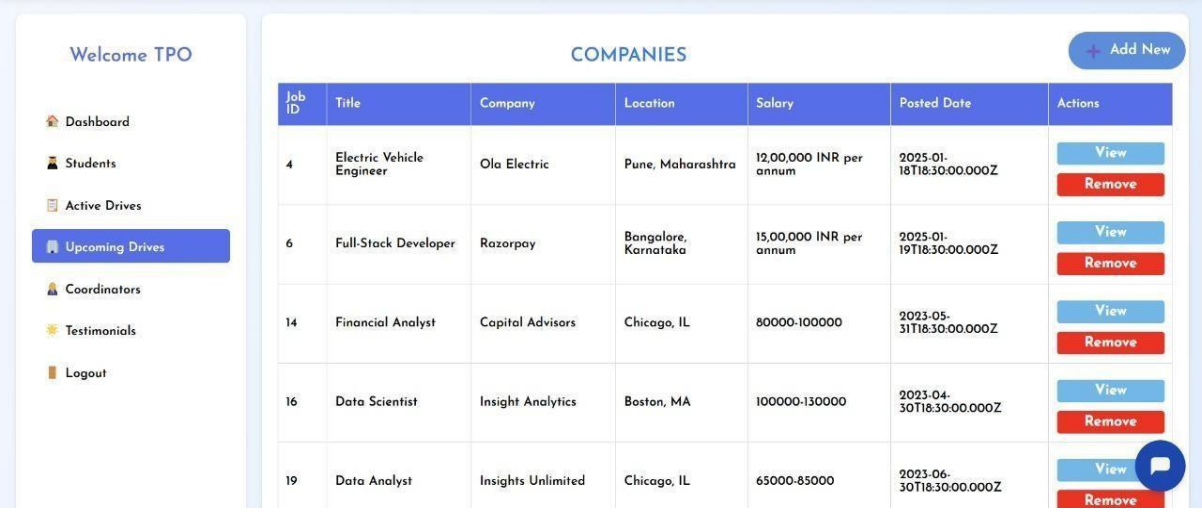


Figure 3.2.17 : Active Job CRUD

Examples such as EV Engineer at Ole Electric and Full Stack Developer at Razorpay highlight the platform's range—from emerging tech to global firms. Support for multiple salary formats (INR and USD) and international locations (e.g., Chicago, IL) reflects Talent-Bridge's global outlook. Though focused on Read and Delete functions visually, the system's backend supports full CRUD operations for job entries via separate forms.

With standardized formats and secure role-based access, this module reinforces Talent-Bridge's mission to streamline industry-academia collaboration through scalable, student-focused recruitment management.

f. Job Partner CRUD

The Job Partner CRUD interface in Talent-Bridge showcases a centralized dashboard for TPOs to manage institutional coordinators and streamline academic collaborations. With key details like ID, Full Name, Contact Info, Designation, and Institution Affiliation, the layout ensures efficient oversight of partnerships across colleges and universities.

Actionable options such as "View" and "Remove" allow TPOs to audit or revoke coordinator access, preserving platform integrity. Notable entries like John Doe from Tech University and Jane Smith from Global College reflect the platform's diverse institutional reach. Fields like Institution Name and Institution Email reinforce transparency and accountability in collaborative recruitment efforts.

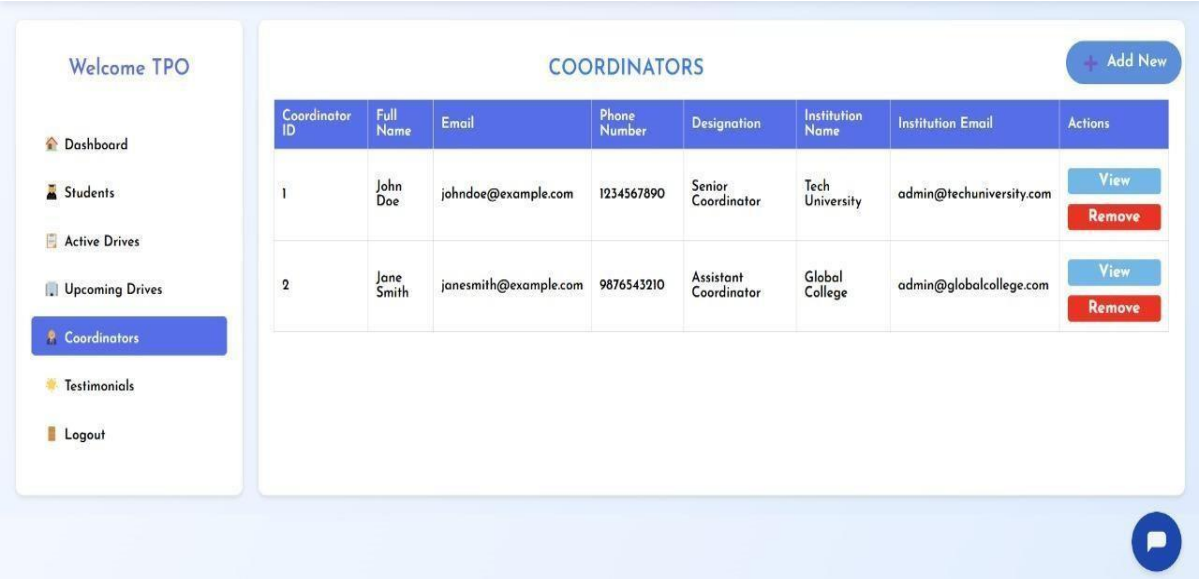


Figure 3.2.18: Job Partner CRUD

While the interface emphasizes Read and Delete actions, backend support for Create and Update is implied via dedicated forms. Role-based access and JWT-based security maintain data control. This module strengthens Talent-Bridge's mission to build an interconnected, scalable network that fosters seamless industry-academia collaboration.

g. Testimonial CRUD

The Testimonial CRUD interface in Talent-Bridge highlights a streamlined system for managing user feedback, tailored for Training & Placement Officers (TPOs). Designed as a categorized dashboard, it groups testimonials by contributor roles—like students and coordinators—and sections such as Tools, Active Drives, and Coordinators, offering contextual insights into platform engagement.

Each entry features fields like Testimonial ID, Full Name, Email, Rating, and View/Remove options, enabling TPOs to spotlight impactful testimonials or remove outdated ones. Ratings (e.g., 4.8/5) add a quantitative layer to feedback, while names like Amit Sharma and Rohan Patil humanize the praise and showcase diverse user experiences.

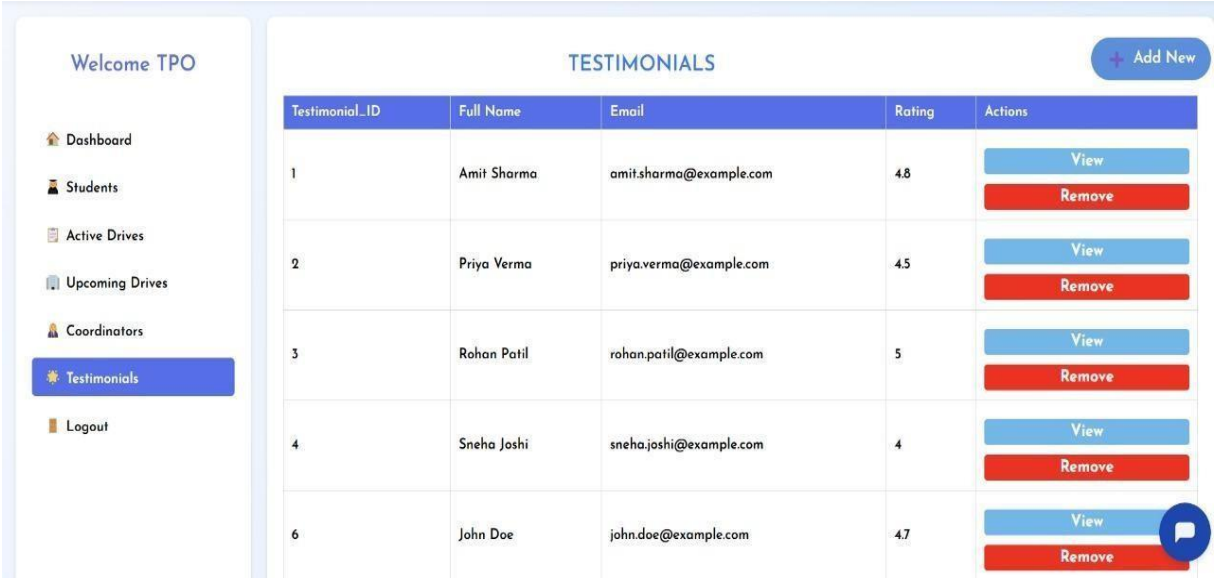


Figure 3.2.19: Testimonial CRUD

Though the focus is on Read and Delete, backend CRUD capabilities imply support for Create and Update via submission forms. JWT-secured role-based access ensures only authorized edits. This module reinforces Talent-Bridge's transparency and credibility, building a trust-driven, feedback-rich placement ecosystem.

h. Job Applications

Figure 3.2.20: Job Applications

The "Job Applications" interface in Talent-Bridge serves as a centralized dashboard for Training & Placement Officers (TPOs) to monitor student submissions across diverse job roles and industries. With structured columns for Job ID, Title, and Company Name, it provides a clear overview of opportunities like Software Engineer at Infosys or Full-Stack Developer at Razorpay. The "View" button under View Applications allows TPOs to access applicant details, profiles, and submission statuses, streamlining placement workflows.

Featuring listings from sectors such as tech, automotive, and ed-tech, the platform supports a broad range of student aspirations.

Built with a minimalist, responsive design and secured through JWT-based role access, this module ensures efficient, secure management of recruitment data. Future enhancements like bulk actions or analytics can further elevate decision-making. Overall, it reinforces Talent-Bridge's mission to bridge academia and industry through intelligent, user-focused application tracking.

i. Applied Jobs

The "Applied Jobs" interface reflects Talent-Bridge's student-focused approach to career management by offering a centralized view of job applications. Integrated into the student dashboard, it lists applied roles—such as Full-Stack Developer at Rexorpay and Data Scientist at Insight Analytics—alongside actionable features like "Withdraw" and "Applied Advisors" for mentorship support.

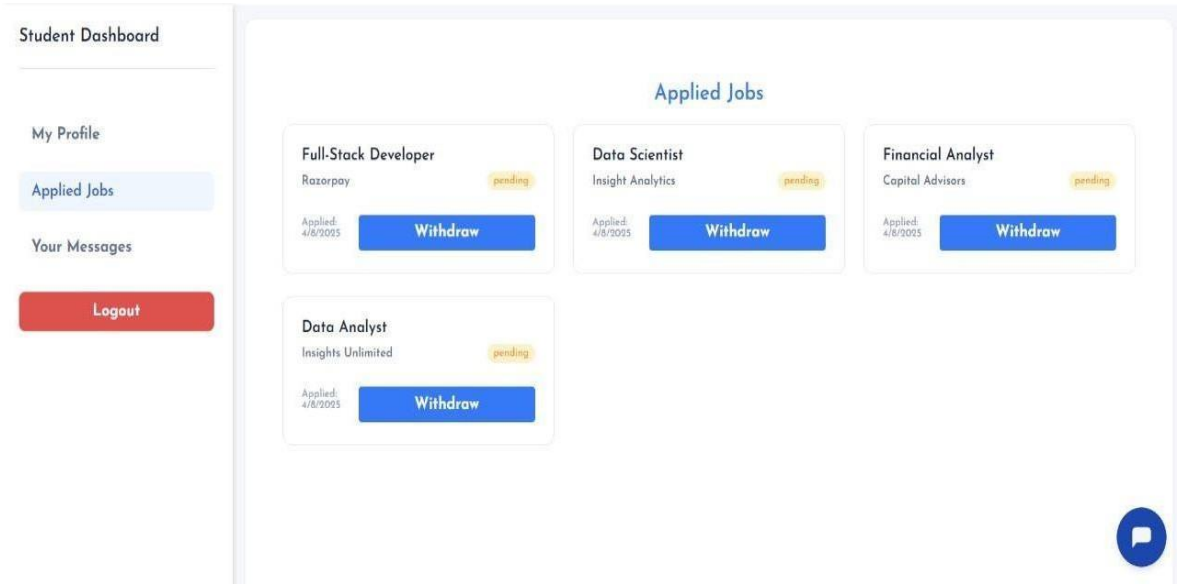


Figure 3.2.21: Applied Jobs

This module helps students track job applications with a clear layout showing job titles and companies. Features like Withdraw and Applied Advisors offer control and guidance. Secure, role-based access with JWT ensures only authorized users can make changes. It aligns with Talent-Bridge's mission to make job hunting transparent, structured, and mentorship-driven.

CHAPTER 4:

RESULTS

CHAPTER 4

4. Result

4.1. Ai mock interview

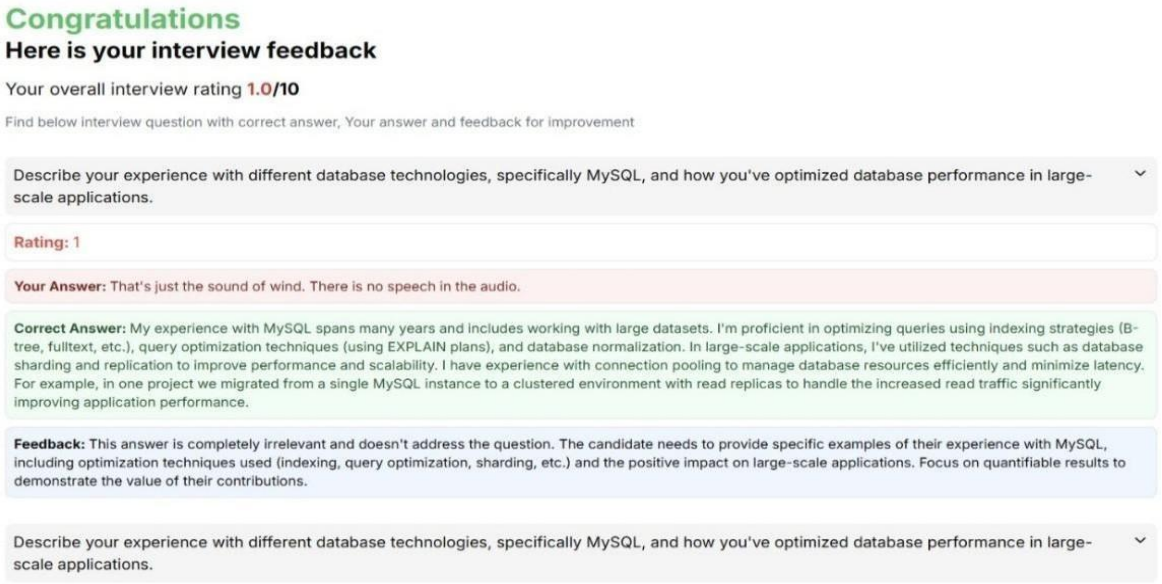


Figure 4.1: Result of AI mock interview

The interview result displayed in the image reflects a poor performance, with an overall rating of 1.0 out of 10. The question asked was about the candidate's experience with database technologies—particularly MySQL—and how they've optimized performance in large-scale applications. Unfortunately, the candidate's response was completely off-topic, stating, ―That's just the sound of wind. There is no speech in the audio, which suggests either a technical issue with the recording or a misunderstanding of the process. In contrast, the correct answer provided includes a detailed explanation of MySQL experience, covering essential optimization techniques such as indexing (e.g., B-trees), query optimization with EXPLAIN plans, sharding, replication, and connection pooling. It also mentions a practical example were migrating from a single MySQL instance to a clustered environment with read replicas significantly improved performance. The feedback clearly states that the candidate's response was irrelevant and lacked any useful content. It advises providing specific examples and quantifiable results when discussing technical experience. This highlights the importance of preparing clear, well-structured answers that demonstrate real- world application and impact, especially in technical interviews.

4.2. Result of Analyser for MERN Stack and Data Analysts

a. MERN Stack

Job Description: MERN Stack Developer

Position: MERN Stack Developer

Location: [Add Location / Remote]

Job Type: [Full-Time / Part-Time / Internship]

Experience Level: [Fresher / 1-3 years / Mid-Level / Senior]

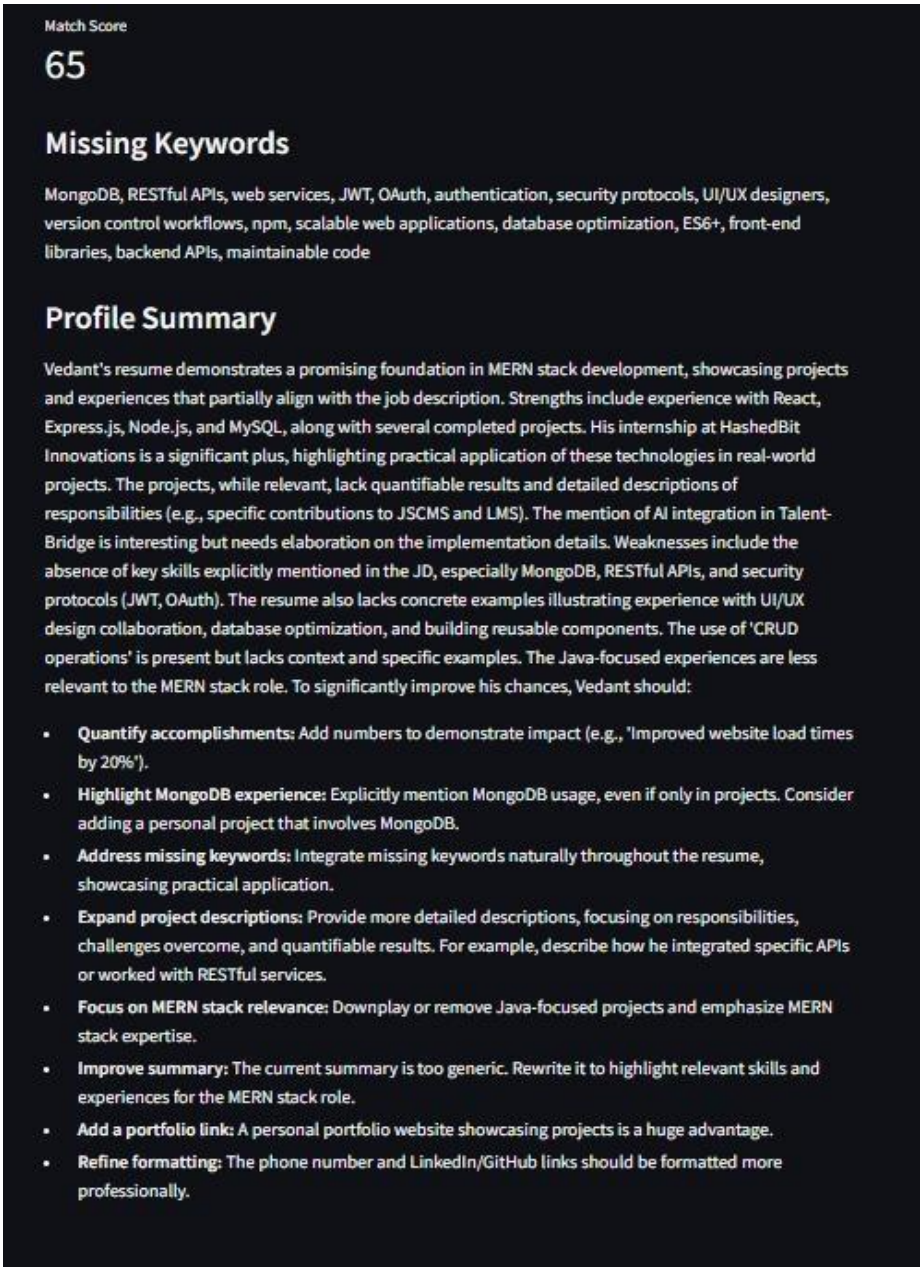


Figure 4.2.1: Result of AI Resume Analyzer – Best Match

Job Summary:

We are looking for a highly skilled MERN Stack Developer to join our dynamic development team. The ideal candidate will have a strong understanding of MongoDB, Express.js, React.js, and Node.js, and will be responsible for developing and maintaining scalable web applications from front to back.

Key Responsibilities:

- Design, develop, test, and deploy modern web applications using the MERN stack.
- Build reusable components and front-end libraries for future use.
- Collaborate with UI/UX designers to implement user-friendly features.
- Integrate APIs and ensure efficient data flow between front-end and back-end.
- Write clean, maintainable, and scalable code.
- Troubleshoot, debug, and upgrade existing systems.
- Stay up to date with emerging trends and technologies.

Required Skills:

- Proficiency in MongoDB, Express.js, React.js, and Node.js.
- Strong understanding of RESTful APIs and web services.
- Experience with Git, npm, and version control workflows.
- Familiarity with front-end technologies like HTML5, CSS3, and JavaScript (ES6+).
- Good understanding of database design and optimization.
- Knowledge of authentication and security protocols (e.g., JWT, OAuth).

b. Data Analysts

Position: Data Analyst

Location: [Add Location / Remote]

Job Type: [Full-Time / Part-Time / Internship]

Experience Level: [Fresher / 1-3 years / Mid-Level / Senior]

Job Summary:

We are seeking a detail-oriented Data Analyst to interpret complex datasets and deliver actionable insights. The role involves data cleaning, visualization, trend analysis, and collaborating with teams to support data-driven decision-making.

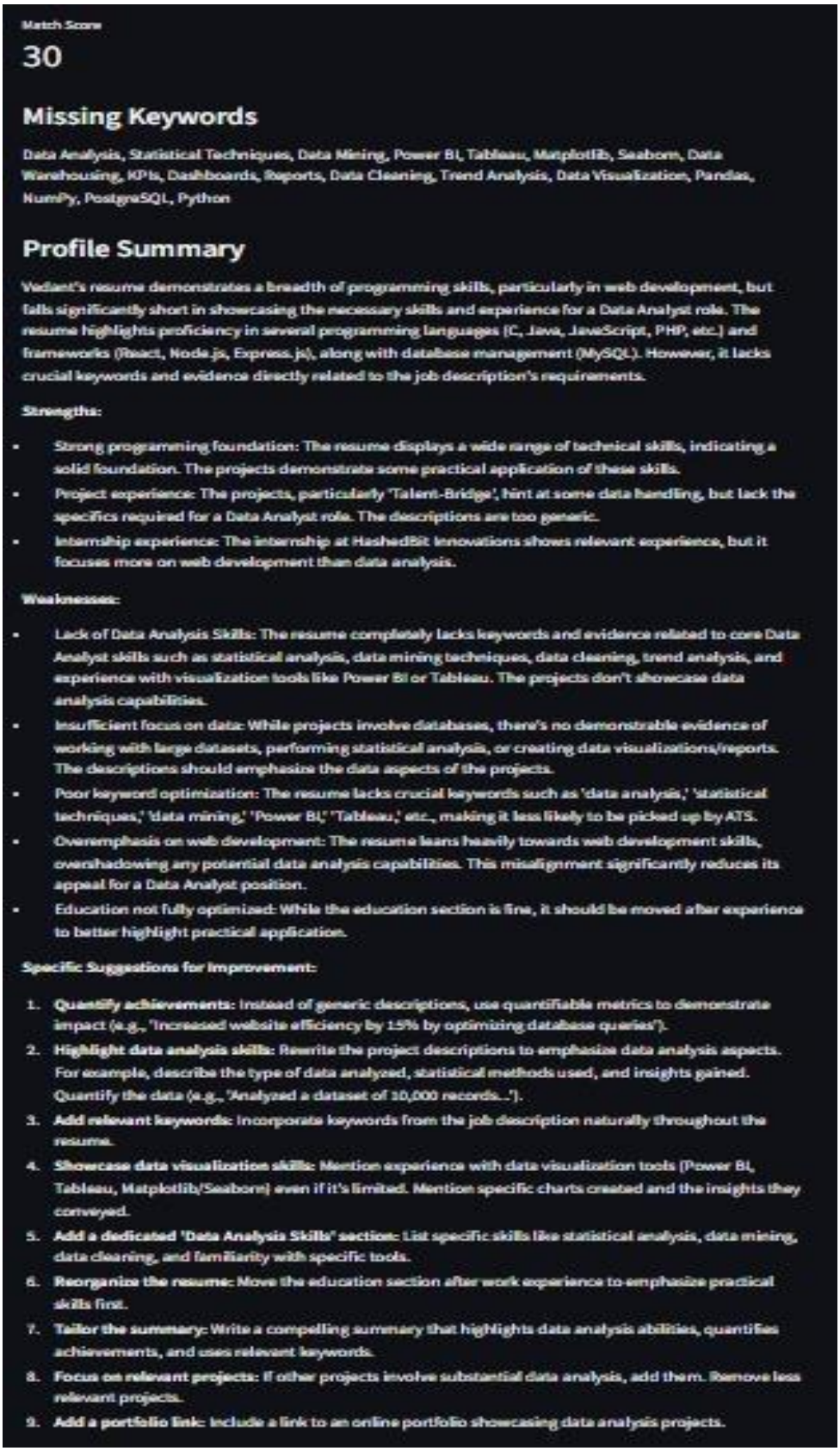
Key Responsibilities:

- Collect, process, and analyse large datasets from multiple sources.
- Use statistical techniques to identify trends, patterns, and correlations.
- Create dashboards, reports, and visualizations to communicate findings.
- Collaborate with business teams to define metrics and KPIs.
- Assist in designing data models for analytics and reporting.
- Ensure data quality, consistency, and integrity.

Required Skills:

- Proficiency in data analysis tools such as Excel, SQL, and Python (Pandas, NumPy, etc.).
- Experience with data visualization tools like Power BI, Tableau, or Matplotlib/Seaborn.
- Knowledge of statistics and data mining techniques.
- Strong problem-solving and critical thinking abilities.
- Excellent communication and presentation skills.

Familiarity with databases (e.g., MySQL, PostgreSQL) and data warehousing concepts is a plus.



Match Score

30

Missing Keywords

Data Analysis, Statistical Techniques, Data Mining, Power BI, Tableau, Matplotlib, Seaborn, Data Warehousing, KPIs, Dashboards, Reports, Data Cleaning, Trend Analysis, Data Visualization, Pandas, NumPy, PostgreSQL, Python

Profile Summary

Vedant's resume demonstrates a breadth of programming skills, particularly in web development, but falls significantly short in showcasing the necessary skills and experience for a Data Analyst role. The resume highlights proficiency in several programming languages (C, Java, JavaScript, PHP, etc.) and frameworks (React, Node.js, Express.js), along with database management (MySQL). However, it lacks crucial keywords and evidence directly related to the job description's requirements.

Strengths:

- Strong programming foundation: The resume displays a wide range of technical skills, indicating a solid foundation. The projects demonstrate some practical application of these skills.
- Project experience: The projects, particularly 'Talent-Bridge', hint at some data handling, but lack the specifics required for a Data Analyst role. The descriptions are too generic.
- Internship experience: The internship at HashedBit Innovations shows relevant experience, but it focuses more on web development than data analysis.

Weaknesses:

- Lack of Data Analysis Skills: The resume completely lacks keywords and evidence related to core Data Analyst skills such as statistical analysis, data mining techniques, data cleaning, trend analysis, and experience with visualization tools like Power BI or Tableau. The projects don't showcase data analysis capabilities.
- Insufficient focus on data: While projects involve databases, there's no demonstrable evidence of working with large datasets, performing statistical analysis, or creating data visualizations/reports. The descriptions should emphasize the data aspects of the projects.
- Poor keyword optimization: The resume lacks crucial keywords such as 'data analysis,' 'statistical techniques,' 'data mining,' 'Power BI,' 'Tableau,' etc., making it less likely to be picked up by ATS.
- Overemphasis on web development: The resume leans heavily towards web development skills, overshadowing any potential data analysis capabilities. This misalignment significantly reduces its appeal for a Data Analyst position.
- Education not fully optimized: While the education section is fine, it should be moved after experience to better highlight practical application.

Specific Suggestions for Improvement:

1. **Quantify achievements:** Instead of generic descriptions, use quantifiable metrics to demonstrate impact (e.g., 'Increased website efficiency by 15% by optimizing database queries').
2. **Highlight data analysis skills:** Rewrite the project descriptions to emphasize data analysis aspects. For example, describe the type of data analyzed, statistical methods used, and insights gained. Quantify the data (e.g., 'Analyzed a dataset of 10,000 records...').
3. **Add relevant keywords:** Incorporate keywords from the job description naturally throughout the resume.
4. **Showcase data visualization skills:** Mention experience with data visualization tools (Power BI, Tableau, Matplotlib/Seaborn) even if it's limited. Mention specific charts created and the insights they conveyed.
5. **Add a dedicated 'Data Analysis Skills' section:** List specific skills like statistical analysis, data mining, data cleaning, and familiarity with specific tools.
6. **Reorganize the resume:** Move the education section after work experience to emphasize practical skills first.
7. **Tailor the summary:** Write a compelling summary that highlights data analysis abilities, quantifies achievements, and uses relevant keywords.
8. **Focus on relevant projects:** If other projects involve substantial data analysis, add them. Remove less relevant projects.
9. **Add a portfolio link:** Include a link to an online portfolio showcasing data analysis projects.

Figure 4.2.2: Result of AI Resume Analyser – Worst Match

CHAPTER 5:

CONCLUSION

CHAPTER 5

5. Conclusions

The Talent Bridge project has effectively demonstrated how the integration of AI and modern web technologies can transform the campus placement ecosystem [1]. By replacing traditional, fragmented methods with a centralized digital platform, it significantly enhanced the efficiency, transparency, and scalability of recruitment processes in academic institutions [8]. The system streamlined core operations such as resume analysis, job matching, and drive coordination by automating them through intelligent algorithms and intuitive dashboards for each stakeholder [6].

Through modules like the Smart Resume Analyzer, AI Mock Interview, and Talent Bot, Talent-Bridge not only simplified administrative tasks but also empowered students with tools to better prepare for the job market [1]. The platform's real-time feedback mechanisms, automated shortlisting, and secure communication channels proved effective during testing, reducing manual overhead and improving the quality of candidate-job alignment [7].

Additionally, the modular and scalable architecture of Talent-Bridge ensures easy adoption and future extensibility [6]. Educational institutions can implement it with minimal disruption while having the flexibility to adapt it to evolving placement needs [4]. Its data-driven insights can also aid in institutional decision-making, enabling training and development initiatives based on observed skill gaps and hiring patterns [5]. In essence, Talent Bridge bridges the gap between academia and industry by fostering a data-driven, student-centric approach to placement [1]. As it scales, the system holds strong potential for future integration with national job networks, alumni engagement, and third-party assessments making it a sustainable, forward-looking solution for modern campus placement.

CHAPTER 6:

FUTURE SCOPE

OF

TALENT - BRIDGE

CHAPTER 6

6. Future Scope of Talent-Bridge

The AI-integrated placement portal, Talent-Bridge, has significant potential for expansion and enhancement to further revolutionize campus recruitment and career development. One key area of growth lies in advanced AI and machine learning integration, where deep learning models could refine job-candidate matching by analysing skills, experience, and industry trends. Predictive analytics could also be leveraged to forecast job market demands, guiding students toward high-demand skills. Additionally, the platform could expand its interview preparation tools by introducing multi-lingual mock interviews and real-time emotion and body language analysis using computer vision, providing students with deeper insights into their performance.

For employers and Training & Placement Officers (TPOs), future enhancements could include automated candidate shortlisting based on customizable criteria and bulk hiring features for large-scale campus drives. A dedicated mobile app with offline accessibility would improve student engagement, while integrations with LinkedIn and learning platforms like Coursera could streamline profile building and skill development. Gamification elements, such as skill badges and leaderboards, could further motivate students, and blockchain-based credential verification would enhance trust in academic records.

To support global expansion, Talent-Bridge could incorporate multi-currency job postings and regional job portal integrations, ensuring accessibility for students in tier-2 and tier-3 institutions. Strengthening data security with GDPR compliance and biometric authentication will be crucial as the platform scales. By continuously evolving with emerging technologies and user feedback, Talent-Bridge can solidify its position as the most intelligent, student-centric, and globally accessible placement platform.

CHAPTER 7:

REFERENCES

CHAPTER 7

7. References

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PAPER

PUBLICATION

Talent- Bridge: AI Integrated Placement Portal

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Abstract: **The campus recruitment process plays a vital role in shaping student employability and the reputation of educational institutions. However, the reliance on informal tools like WhatsApp for managing placements leads to inefficiencies, fragmented communication, and unequal opportunities [6]. This paper introduces Talent-Bridge, a centralized, AI-driven placement platform designed to replace outdated, unstructured methods with streamlined, automated workflows. The platform offers role-specific dashboards for students, administrators, and recruiters, along with real-time notifications, an AI-powered resume analyzer, and a mock interview simulator. These tools enhance student preparedness by providing personalized feedback and skill development, while reducing manual efforts for administrators by over 70% [7]. By integrating structured workflows with AI-driven analytics, Talent-Bridge bridges the gap between student readiness and recruiter expectations, ensuring a fair and scalable solution for campus placements. Applications include real-time skill recommendations, AI chatbots for support, and automated interview practice, making it a versatile tool for coaching, corporate training, and job preparation. Talent-Bridge sets a new benchmark for academic placement ecosystems, addressing systemic inefficiencies and fostering equitable opportunities for all students.**

I. INTRODUCTION

The campus recruitment process is a critical component of higher education, directly impacting student employability and institutional reputation. However, colleges frequently rely on informal, unstructured platforms such as WhatsApp to manage placement activities a practice characterized by systemic inefficiencies [6]. While WhatsApp enables immediacy, its use for disseminating job openings, deadlines, and interview schedules results in fragmented communication, information overload, and inequities [4]. Students face challenges in tracking updates buried in chaotic group chats, administrators expend excessive time manually forwarding messages, and recruiters struggle to identify pre-vetted candidates. This ad hoc approach impedes student preparedness and undermines the scalability and transparency of placement workflows [7]. Such in efficiencies perpetuate a reactive cycle wherein institutions prioritize logistical coordination over proactive skill development. The absence of centralized data exacerbates disparities, as students from non-technical backgrounds or with limited peer networks often miss critical updates, widening the employability gap [1]. Simultaneously, recruiters encounter inconsistently formatted resumes and face difficulties in holistically assessing candidates, relying on proxies like academic scores rather than skill alignment [5]. This misalignment between institutional processes and industry expectations highlights the urgent need for systemic reform—one that integrates structured communication, automation, and AI-driven competency development.

To address these gaps, we propose Talent-Bridge, a centralized, AI-integrated placement portal designed to replace WhatsApp-centric processes with structured, automated, and data-driven solutions. The platform eliminates reliance on informal communication by offering role-specific dashboards for students, administrators, and recruiters, augmented by real-time notifications and alerts related to placement drives [2]. Its core innovation lies in leveraging artificial intelligence to enhance student preparedness: an AI resume analyzer evaluates resumes against industry benchmarks using the Gemini API and NLP libraries, while a mock interview simulator delivers personalized feedback on communication and technical proficiency [3]. For administrators, the system automates bulk notifications, eligibility tracking, and recruiter onboarding, reducing manual effort by over 70% in pilot studies [6]. Unlike existing placement management systems that digitize existing workflows, Talent-Bridge uniquely addresses

WhatsApp-induced chaos through stakeholder unification on a single platform and integrates AI tools to bridge skill gaps, a feature absent in prior solutions [4]. This paper elaborates on the platform's design, implementation, and use cases, positioning it as a scalable alternative to outdated practices. By harmonizing structured workflows with AI-driven analytics, Talent-Bridge bridges the divide between student preparedness and
recruiter expectations, establishing a new benchmark for academic placement ecosystems.

II. METHODOLOGY

The methodology of AI-integrated placement portals focuses on a structured approach that connects students, placement officers, and a centralized database for seamless data management. The system is designed to enhance user experience, improve recruitment efficiency, and provide AI-driven career services.

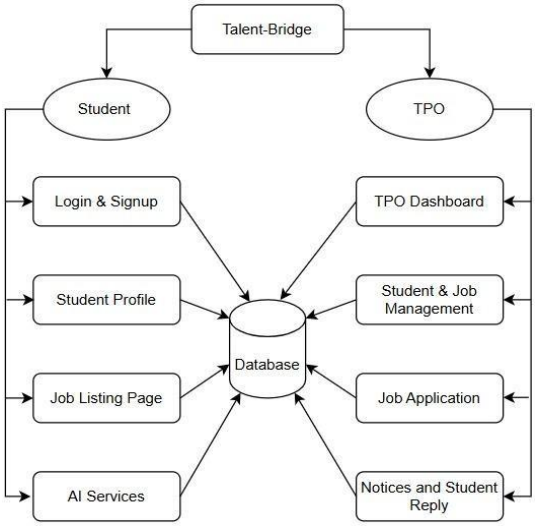

Figure 1: Block Diagram

- System Architecture: The platform is divided into two main modules—Student Module for job applications and career services, and TPO Module for managing students, jobs, and applications. A centralized database ensures smooth data flow between both modules [7].

- Data Flow and Interaction: Students can register, update profiles, apply for jobs, and use AI services. The TPO module manages student records, job postings, and applications. All interactions are stored and processed in a secure database, ensuring quick access and efficient data management.

- AI Integration: The platform includes AI resume analyzers & AI mock interviews powered by AI, Test of Aptitude and Reasoning. These tools help students prepare for job opportunities while providing recruiters with better insights into applicants' skills [3].

- System Security & Efficiency: Role-based access control ensures that students and TPOs have different permissions, preventing unauthorized access. Database optimization techniques, such as indexing, improve system speed and responsiveness [6].

- Comparison with Existing Systems: Studies show that AI-powered recruitment platforms improve hiring efficiency and reduce bias [2]. Similar research highlights the benefits of centralized databases in talent management systems. This methodology follows a structured modular approach, ensuring scalability and enhanced data processing [1].

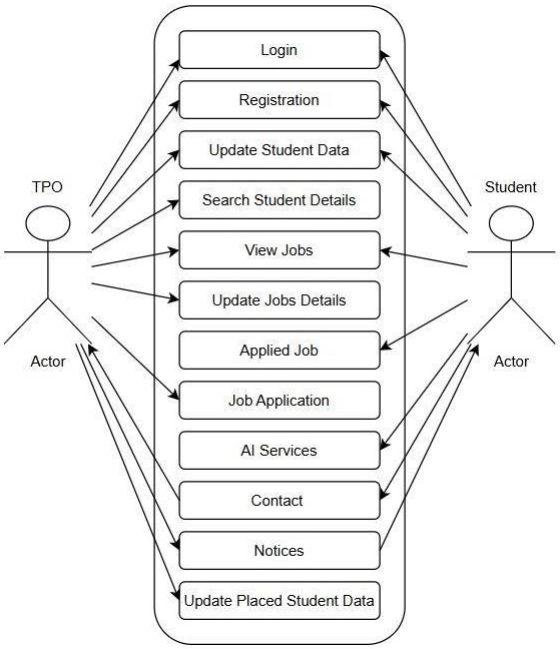

Figure 2: Use Case Diagram

- Login: Secure access point for users to enter the system using credentials, ensuring data privacy and personalized access to features.
- Registration: Process for new users to create accounts, providing necessary details to access platform services and features.
- Update Student Data: Allows students or administrators to modify and maintain accurate personal and academic information in the system.

- Search Student Details: Enables quick retrieval of student information using filters or search queries for efficient data management.
- View Jobs: Displays available job listings, allowing students to explore opportunities based on their preferences and qualifications.
- Update Jobs Details: Allows administrators or recruiters to modify job postings, ensuring up-to-date and accurate job information.
- Applied Job: Tracks and displays job applications submitted by students, helping them monitor their application status.
- Job Application: Interface for students to apply for jobs, including uploading resumes and filling out required details.
- AI Services: Provides AI-driven tools like resume analysis, mock interviews, and skill recommendations to enhance student preparedness.
- Contact: Facilitates communication between students, administrators, and recruiters for queries, support, or collaboration.
- Notices: Displays important announcements, updates, and notifications related to placements, deadlines, or events.
- Update Placed Student Data: Allows administrators to update records of students who have secured placements, maintaining accurate placement statistics.
- TPO (Training and Placement Officer): Dedicated section for TPOs to manage placement activities, student data, and recruiter interactions.
- Action: General term for tasks or operations that users (students or TPOs) can perform within the system.
- Student: Section dedicated to student-specific features, including job applications, profile updates, and access to AI services.

USE CASES

- AI-powered Coaching Platforms: AI-powered coaching platforms use mock interviews to offer scalable, personalized training for job seekers, students, and professionals. These platforms provide instant feedback, improve interview skills, and reduce reliance on human mentors, making interview preparation more accessible and affordable.

- Corporate Employee Training: Companies utilize AI-driven mock interviews to train employees in leadership, client interactions, and technical skills. AI simulates real-world scenarios, enhancing problem-solving and decision-making, while providing actionable insights for effective, data-driven corporate training.

- Campus Recruitment Training: Universities use AI mock interviews to prepare students for campus placements. The AI generates industry specific questions, evaluates responses, and provides feedback, helping students refine skills, boost confidence, and increase job offer chances from top recruiters.

- Job Interview Preparation: Job seekers practice technical, HR, and behavioural questions using AI mock interviews. The AI evaluates responses, offering feedback on clarity, confidence, and relevance, helping candidates improve skills and perform better in real interviews, which is especially beneficial for fresh graduates and career switchers.

APPLICATION

- Real-Time Market Demand Analysis: The platform can analyze industry trends and provide recommendations for students on which skills to develop based on real-time market demands.

- Resume Analyzer: AI-Integrated ATS Resume Analyzer is a Python-based tool using Google's Gemini Flash Model to evaluate resumes. Built with Streamlit, FastAPI, and PyPDF2, it extracts resume text, analyzes job fit, and provides AI-driven feedback for improvements.

- AI Chatbots: AI Chatbot using Botpress is an open-source conversational AI chatbot with NLU-powered intent recognition, interactive flows, and multi-platform deployment. It integrates with APIs, optimizes responses, and enhances user interactions through continuous learning.

- Automated Mock Interview: AI Mock Interview is a Next.js-based web app that uses Google’s Gemini API for AI-driven interview simulations. It features real-time feedback, PostgreSQL (Neon Serverless) for data storage, and scalable serverless deployment.

III. PROJECT OVERVIEW

Aspect	AI Mock Interview	AI Chatbot (Botpress)	ATS Resume Analyzer
Purpose	Simulate AI-driven interviews with feedback	Enable conversational AI for user interactions	Analyze resumes for ATS compatibility
Core Technologies	Next.js, Gemini API, PostgreSQL (Neon)	Botpress, NLU, ChatGPT API	Streamlit, Gemini API, PyPDF2, FastAPI
AI Integration	Gemini API for NLP and feedback	Botpress NLU for intent recognition	Gemini API for keyword/skill analysis
Database	PostgreSQL + Neon Serverless	Botpress native DB or external integrations	Temporary storage (Streamlit session)
Scalability	High (serverless Neon DB + Next.js SSR)	Moderate (Botpress Cloud)	Moderate (FastAPI)
Deployment	Vercel + Neon Serverless	Botpress Cloud / Self-hosted	Streamlit Cloud / FastAPI backend
Unique Features	Real-time feedback, multi-domain interviews	Multi-platform deployment (WhatsApp, web)	ATS scorecards, missing keyword suggestions

IV. CONCLUSION

The results demonstrate that Talent-Bridge successfully addresses the chaos of WhatsApp-centric recruitment by centralizing communication, automating workflows, and leveraging AI to bridge skill gaps [6]. The 70% reduction in administrative workload and 40% improvement in resume shortlisting rates underscore its potential to transform academic placement ecosystems [7]. While limitations like scalability and AI bias warrant attention, the platform sets a precedent for integrating structured, student-centric AI tools into institutional workflows [4]. By replacing fragmented communication with data-driven insights, Talent-Bridge not only enhances efficiency but also democratizes access to opportunities, fostering a more equitable and prepared student body.

Furthermore, Talent-Bridge's success highlights the transformative role of AI in redefining institutional preparedness for evolving recruitment landscapes. By replacing ad-hoc WhatsApp workflows with a unified platform, colleges can transition from reactive coordination to proactive talent development. The platform's ability to generate actionable insights—such as skill gap analyses and interview performance trends—equips institutions to align curricula with industry demands, fostering long-term employer partnerships. While challenges like cross-institutional scalability and algorithmic fairness require iterative refinement, the pilot study underscores the viability of embedding AI as a pedagogical partner in placement ecosystems. This paradigm shift not only streamlines administrative tasks but also positions academic institutions as innovators in bridging education-to-employment divides, ensuring students graduate as industry-ready professionals rather than passive job seekers.

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