

Interactive AI Portal for Alumni-Student Networking

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Abstract—Higher education institutions increasingly recognize the importance of maintaining strong relationships with their alumni. Alumni serve as valuable resources for career mentorship, knowledge transfer, and institutional development. A survey conducted with 108 senior undergraduate students examined their expectations regarding alumni engagement and institutional support. Results indicated that students strongly value access to alumni expertise for professional guidance and industry insights. This paper proposes an Interactive AI Portal for Alumni-Student Networking that integrates artificial intelligence technologies with institutional networks. The proposed system utilizes recommendation algorithms, natural language processing, and intelligent matchmaking techniques to connect students with relevant alumni mentors. By strengthening industry-academia collaboration, the platform aims to enhance curriculum relevance, improve employability outcomes, and foster lifelong professional learning.

Index Terms—Alumni Networking, Artificial Intelligence, Higher Education, Recommendation Systems, Professional Development

I. INTRODUCTION

Alumni networks represent a valuable asset for higher education institutions. Graduates who have entered professional industries possess practical knowledge, career insights, and technical expertise that can benefit current students. Effective alumni engagement can support mentoring programs, knowledge sharing, research collaborations, and industry partnerships. However, traditional alumni engagement methods such as occasional seminars, alumni meet, or newsletters often fail to create continuous interaction between students and alumni. Students frequently struggle to obtain practical career guidance and industry exposure during their academic journey. With the advancement of artificial intelligence technologies, it is now possible to design intelligent platforms that automate networking processes and provide personalized recommendations. An AI-

powered alumni portal can connect students with relevant mentors based on career interests, academic specialization, and professional goals. Such platforms can facilitate real-time communication, mentorship opportunities, and knowledge exchange between alumni and students.

This paper proposes an Interactive AI Portal for Alumni Student Networking that leverages artificial intelligence techniques to strengthen alumni engagement and bridge the gap between academic learning and professional industry requirements.

II. LITERATURE REVIEW

Several studies have explored the role of alumni engagement in improving student career outcomes and institutional development. Brown and Davis [1] highlighted that structured alumni mentoring programs significantly enhance student career readiness and professional networking opportunities. Similarly, Smith et al. [2] demonstrated that alumni mentors play a crucial role in bridging the gap between academic knowledge and industry expectations.

Recent research has also focused on the integration of artificial intelligence technologies in educational platforms. Patel and Gupta [3] proposed AI-driven systems that facilitate collaboration between academic institutions and industry professionals. These platforms utilize recommendation algorithms and intelligent networking mechanisms to match students with relevant mentors.

Furthermore, Williams [4] examined emerging technologies used in alumni networking systems and emphasized the importance of digital platforms in maintaining continuous alumni engagement.

III. PROBLEM STATEMENT

The rapid advancement of technology has created a significant gap between academic curricula and evolving industry requirements. Educational institutions often struggle to update course structures

at the same pace as technological innovation. As a result, many graduates enter the workforce lacking practical industry knowledge and professional networking opportunities.

In addition to curriculum limitations, students frequently lack structured access to professionals who can guide them regarding career development, industry expectations, and emerging technologies. Alumni represent a valuable bridge between academia and industry because they possess both institutional familiarity and professional experience.

However, traditional alumni engagement mechanisms are often limited in scale and frequency. Occasional guest lectures or networking events do not provide continuous support to large student populations. Furthermore, manually connecting students with appropriate mentors can be time-consuming and inefficient.

Artificial intelligence provides a promising solution to this challenge. AI-based recommendation systems can analyze user profiles and automatically match students with relevant alumni mentors based on shared interests, academic background, and career objectives. Natural language processing can also facilitate intelligent communication and query handling within the platform.

Therefore, the development of an AI-enabled alumni networking portal offers a scalable and technologically advanced solution to strengthen alumni engagement, enhance industry-academia collaboration, and improve student career outcomes.

IV. OBJECTIVES

The proposed Interactive AI Portal aims to achieve the following objectives:

- 1) Enhance curriculum relevance through alumni feedback and industry insights.
- 2) Provide students with accessible mentorship opportunities from alumni professionals.
- 3) Utilize artificial intelligence techniques to automate mentor-student matching.
- 4) Facilitate knowledge sharing and professional networking between alumni and students.
- 5) Improve employability by connecting students with industry experts.
- 6) Promote collaborative learning and research opportunities within the academic community.

V. METHODOLOGY

The study adopted a mixed-methods research approach to evaluate student perspectives regarding alumni engagement. A structured survey was conducted among 108 senior undergraduate students. The questionnaire consisted of multiple questions designed to measure student expectations regarding alumni mentorship, networking opportunities, and career guidance.

Responses were collected using a five-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree.” The collected data were analyzed using descriptive statistical methods including frequency distribution and percentage analysis to identify key trends in student responses.

To ensure reliability of the survey instrument, Cronbach’s Alpha reliability testing was applied. The results indicated acceptable internal consistency among the survey responses. These statistical insights were then used to inform the design and functional requirements of the proposed AI-powered alumni networking platform.

Survey findings revealed that a majority of students expressed strong interest in accessing alumni mentorship and professional networking resources through a digital platform.

Sr.no.	Module	Description
1	User Registration & Login	Alumni and students can register and log in. Admin verifies accounts.
2	Dashboard Implementation	Dashboards for alumni, students, and admin roles.
3	Alumni Content Upload	Job postings, internships, notes, videos, images.
4	Student Search & Communication	Search by skill/company, view alumni profile, post comments.
5	Chatbot Integration	Google Gemini API for career guidance and interview support.
6	Admin Control Panel	Approve/reject accounts, manage users.

Fig. 1. Methodology of the AI-Powered Alumni and Student Communication Portal

VI. PROPOSED SOLUTION

Ragged2e the proposed Interactive AI Portal is designed as a cloud-based system that facilitates communication and collaboration between students and alumni through intelligent automation.

The system architecture consists of three primary layers:

Data Layer: Stores alumni profiles, student information, career interests, and interaction records in a secure database. **AI Processing Layer:** Implements machine learning algorithms and natural language processing techniques to analyze user data and generate personalized recommendations.

User Interface Layer: Provides an interactive dashboard where students, alumni, and administrators can access system features.

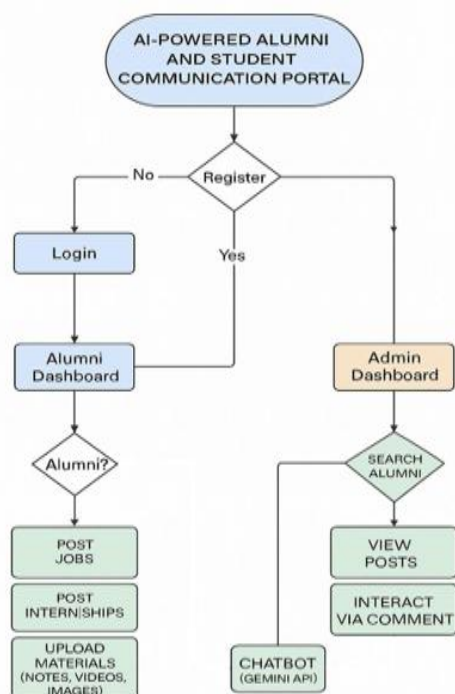


Fig. 2. Block Diagram of the AI-Powered Alumni and Student Communication Portal

A. AI Algorithms

The platform incorporates recommendation systems based on collaborative filtering techniques to match students with alumni mentors who share similar academic backgrounds, career interests, or professional fields.

Natural Language Processing (NLP) techniques are used to analyze user queries and extract relevant keywords. Semantic similarity algorithms compare student profiles with alumni professional profiles to identify optimal mentor matches.

A cosine similarity model is applied to measure similarity between user profiles and recommend appropriate mentors. Additionally, machine learning

models continuously improve recommendation accuracy by learning from user interactions such as mentorship requests, discussion participation, and profile engagement.

B. System Implementation

The proposed portal can be implemented as a web-based platform using modern software technologies. The front-end interface may be developed using frameworks such as ReactJS or Angular to provide a responsive and interactive user experience.

The back-end system can be implemented using Python frameworks such as Django or Flask, which allow integration with machine learning libraries including Scikit-learn and TensorFlow. The system database may utilize relational database management systems such as MySQL or PostgreSQL to store user profiles, interaction logs, and mentorship records.

Deployment on cloud infrastructure enables scalability, allowing the system to support large numbers of users from multiple institutions.

Students also highlighted the difficulty of connecting with alumni through traditional institutional mechanisms. These findings demonstrate the need for a digital platform that can facilitate structured alumni-student interaction.

The proposed AI portal addresses this challenge by automating alumni discovery, enabling personalized mentor recommendations, and providing interactive communication tools. By leveraging artificial intelligence technologies, the system can efficiently scale mentorship opportunities across large student populations.

Previous studies have also shown that strong alumni engagement improves institutional reputation, graduate employability, and long-term professional development.

VIII. DATA PRIVACY AND SECURITY

Ensuring data privacy and security is a critical requirement for the proposed alumni networking platform. The system incorporates secure authentication mechanisms to protect user accounts and prevent unauthorized access.

User passwords are stored using encrypted hashing techniques, and communication between the client interface and server is protected through Secure Socket Layer (SSL) encryption. Role-based access control

mechanisms ensure that users can only access information relevant to their designated roles within the system.

Sensitive personal data such as contact information and employment details are stored in encrypted databases to protect user privacy. These security measures help establish trust among users and ensure compliance with institutional data protection policies.

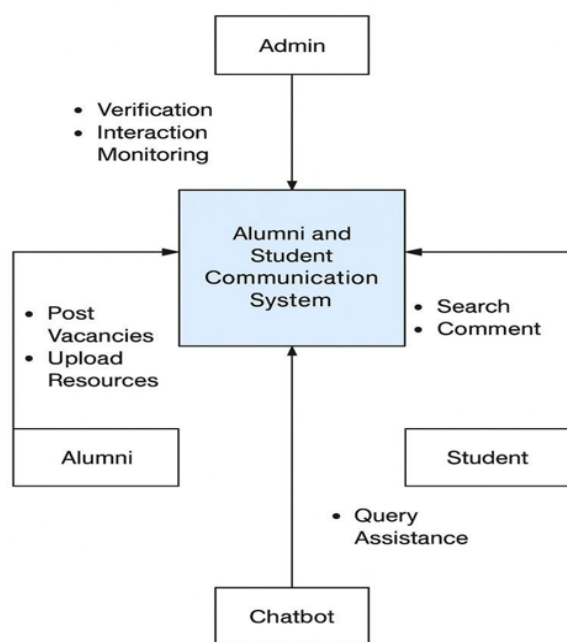


Fig. 3. Flowchart of the AI-Powered Alumni and Student Communication Portal

XIII. RESULTS AND DISCUSSION

Survey analysis indicated that more than 70% of students considered alumni engagement essential for career development and professional networking. Approximately 72% of respondents strongly agreed that access to alumni mentorship would significantly improve career readiness.

IX. CONCLUSION

This paper presented the design and conceptual framework of an Interactive AI Portal for Alumni-Student Networking. The proposed platform leverages artificial intelligence technologies to facilitate mentorship, professional networking, and knowledge exchange between students and alumni.

Survey results highlighted the strong demand for improved alumni engagement mechanisms among

students. By integrating recommendation systems, natural language processing, and cloud-based infrastructure, the proposed system can efficiently connect students with relevant alumni mentors and industry resources.

Future work will involve implementing a prototype version of the system and conducting pilot deployments across educational institutions to evaluate its effectiveness in improving career outcomes and strengthening industry-academia collaboration.

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