

SARAHIRE- Skill Based Job Recommendation System For Alumni

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Abstract- Maintaining alumni engagement is a significant challenge for educational institutions due to the lack of effective networking tools and real-time communication. This disconnect hinders mentorship opportunities, career guidance, and job placements for students and graduates. Additionally, traditional job recommendation systems rely on keyword-based matching, often leading to irrelevant job suggestions and inefficient hiring processes. Sara Hire addresses these challenges by offering a Comprehensive Alumni Management and Intelligent Job Recommendation System that enhances alumni-student interactions and streamlines job matching through AI-driven techniques. The system integrates resume parsing, skill-based recommendations, real-time job postings, and LinkedIn integration to ensure precise job matches and industry-relevant career guidance. AI algorithms analyze user profiles to identify skill gaps, suggest career improvements, and connect job seekers with relevant opportunities. The platform ensures secure authentication, spam and fraud detection, and an intuitive admin dashboard for monitoring activities. Sara Hire also incorporates automated interview scheduling, structured job applications, and AI-based candidate screening, making the recruitment process seamless for both job seekers and employers. By fostering a strong alumni network and leveraging intelligent automation, Sara Hire transforms traditional alumni management and job search experiences, providing an efficient, secure, and data-driven solution to career development and professional networking.

Keywords- Alumni management, job recommendation system, AI recruitment, resume parsing, career guidance, LinkedIn integration, candidate screening

I. INTRODUCTION

In today's competitive job market, finding the right match between job seekers and employers remains a critical challenge. Traditional recruitment platforms often rely on keyword-based searches and manual screening, leading to irrelevant job recommendations, time-consuming processes, and missed opportunities. This gap becomes even more significant when it comes to alumni networks, where valuable talent pools remain underutilized due to a lack of structured engagement and intelligent job matching mechanisms. The

Skill-Based Job Recommendation System for Alumni is designed to address these challenges by creating a dynamic and intelligent platform that enhances both job discovery and recruitment efficiency. The system leverages artificial intelligence, automated resume parsing, and content-based filtering algorithms to match candidates with suitable job opportunities based on their skills, qualifications, and preferences rather than just keywords.

The platform caters to three primary stakeholders—job seekers, recruiters, and administrators. Job seekers can easily create profiles, upload resumes, and receive personalized job recommendations. Recruiters benefit from a streamlined hiring process with access to ranked candidates whose skills closely match job requirements. Administrators play a crucial role in maintaining the skill repository and monitoring platform usage through analytics dashboards. By integrating features like location-based search, automated notifications, real-time job postings, and cloud-based data management, the system aims to offer a seamless and scalable solution. It not only simplifies the recruitment process but also fosters continuous engagement within the alumni community, ultimately enhancing career development and professional networking.

This project represents a forward-thinking approach to modern recruitment—intelligent, skill-focused, and user-driven—paving the way for more efficient hiring and meaningful employment outcomes. This system bridges the gap between alumni and recruiters by enabling intelligent, skill-based job matching. It enhances hiring accuracy and fosters stronger professional connections within the alumni network.

II. EXISTING SYSTEM

The current landscape of job recommendation and alumni management systems integrates a variety of technologies and methodologies to enhance efficiency, accuracy, and engagement. Machine Learning (ML) and Artificial Intelligence (AI) play a crucial role in modern job recommendation platforms, utilizing techniques such as collaborative filtering, resume parsing, and Natural Language Processing (NLP) for precise job matching. Advanced models

like BERT, Fast Text embeddings, and Large Language Models (LLMs) improve job title representation and recommendation accuracy, while Generative Adversarial Networks (GANs) are employed to enhance low-quality resumes. Some systems leverage data clustering and AI-driven skill assessment to bridge skill gaps between job seekers, employers, and educational institutions, ensuring fairer hiring processes. Additionally, location-based job searches and automated email notifications are integrated to improve user experience. For alumni management, web-based platforms provide global accessibility and networking, with some systems incorporating Django, Python, HTML, CSS, and SQL for development. Features like event management, job postings, and mentoring opportunities facilitate communication between

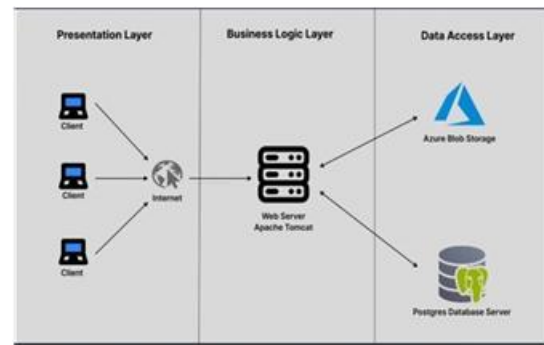
III. PROPOSED SYSTEM ENHANCED SKILL-BASED MATCHING SCHEME

In our proposed system, we introduce an Enhanced Skill- Based Matching Scheme that transforms traditional job recommendation methods by focusing on skills and qualifications rather than simple keyword searches. This intelligent scheme improves the connection between job seekers and recruiters, particularly within an alumni-focused platform.

The system uses automated resume parsing to extract key skills from the job seeker's uploaded profile. These skills are then matched against the requirements of available job postings using a dynamic filtering mechanism. To ensure broader and more accurate matching, the platform maintains a centralized skill repository enriched with synonyms and related terms, which is regularly updated by the administrator. Each job seeker is automatically recommended job opportunities based on their current skill set, experience level, location preference, and job mode (remote or onsite). For recruiters, the scheme highlights the most relevant candidates by ranking them according to how well their profiles align with the job requirements. The continuous learning feature of the system further enhances matching accuracy over time by adapting to user behavior, feedback, and application history. This results in a more effective and user-friendly platform for both alumni job seekers and recruiters.

IV. SYSTEM ARCHITECTURE

Description



alumni and institutions. However, challenges such as data privacy concerns, computational complexity, and industry-specific biases persist, requiring continuous advancements in automation, real-time skill updates, and enhanced security mechanisms.

Presentation Layer (Frontend):

This is the layer that interacts directly with the users. It comprises the user interface elements of the application, built using HTML, CSS, and JavaScript.

Thymeleaf is used as the template engine to render dynamic content.

Responsibilities:

1. Handles user interactions and displays data to the end-user.
2. Sends user requests to the business logic layer for processing.
3. Receives and displays responses from the business logic layer.
4. Technologies Used: HTML, CSS, JavaScript, Thymeleaf.

Business Logic Layer (Backend):

This layer handles the core functionality of the application, where all business rules and processing are executed. It is developed using Java with the Spring Boot framework, adhering to the MVC (Model-View-Controller) architecture.

Responsibilities:

1. Processes user requests from the presentation layer.
2. Applies business logic and performs data manipulation.

REFERENCES

- [1] Boswell, W.R. and Gardner, R.G. (2014) 'Employed job seekers and job-to-job search', Oxford Handbooks Online [Preprint]. doi:10.1093/oxfordhb/9780199764921.013.007.
- [2] Cockerham, A.O. (2020) 'Job searching on the World Wide Web', Career Planning and Job Searching in the Information Age, pp. 43–49. doi:10.1201/97810030753327.
- [3] Emary, E. (2022) 'A proposed emergent skill extraction methodology from unstructured text', Federated Africa and Middle East Conference on Software Engineering [Preprint]. doi:10.1145/3531056.3531071.
- [4] Lochovsky, F.H. (1990) Entity relationship approach to database design and querying proceedings of the 8th International Conference on entity-relationship approach, Toronto, Canada, 18 - 20 October 1989 ed. by Frederick H. Lochovsky. Amsterdam u.a.: North-Holland.
- [5] Mitali Ved, Hitakshi Tanna, Pratik Yeole, Pradnya Kamble, (2022) "Alumni Management System – Web Application," IRJET
- [6] Oussalah, M.C. (2014) Software architecture. Hoboken: Wiley.
- [7] Parth P. Sawai, Prajyot V. Chambhare, Aditya N. Jaysingpure, Atharav G. Karhe, Disha Rathod, Dr. V. S. Gulhane, (2024) "Alumni Connect Hub: A Comprehensive Alumni Management System," IJIRID
- [8] Radhika, A. and Shaik Mayraaj ,B. (2024) "Alumni Management System," IJESAT (International Journal of Engineering Science and Advanced Technology)
- [9] Tim Schlippe, Koen Bothmer, (2023) "Skill Scanner: An AI- Based Recommendation System for Employers, Job Seekers, and Educational Institutions," iJAC (International Journal of Advanced Corporate Learning)
- [10] Upadhyay, A. (2024) Haversine formula - calculate geographic distance on Earth, Haversine formula - Calculate geographic distance on earth. Available at: <https://www.igismap.com/haversine-formula-calculate-geographic-distance-earth/>
- [11] Yang, I., Jeon, W.H. and Moon, J. (2019) 'A study on a distance based coordinate calculation method using inverse haversine method', Journal of Digital Contents Society, 20(10),pp. 2097–2102. doi:10.9728/dcs.2019.20.10.2097
- [12] Yingpeng Du, Di Luo, Rui Yan, Hongzhi Liu, Yang Song, Hengshu Zhu, Jie Zhang, (2023) "Enhancing Job Recommendation through LLM-based Generative Adversarial Networks," IEEE Access
- [13] Zyl, J. van and Redmond, E. (2009) Documentation, Maven. Available : <https://maven.apache.org/guides/index.html>
- [14] Mualla K. , A Support System for Job Advertising against employer-defined skills. Available at: https://campus.cs.le.ac.uk/teaching/proposals/v10066.a_s_u_p_p_o_r_t_system_for_job_advertising_a
- [15] Documentation PostgreSQL. Available at: <https://www.postgresql.org/docs/>
- [16] Java documentation - get started (2023) Oracle HelpCenter. Available at: <https://docs.oracle.com/en/java/>
- [17] MozDevNet, HTML: Hypertext markup language: MDN, MDN Web Docs. Available at: <https://developer.mozilla.org/en-US/docs/Web/HTML>
- [18] openjsf.org, O.F.- JQuery.ajax(), jQuery.ajax() | jQuery API Documentation. Available at: <https://api.jquery.com/jQuery.ajax/>
- [19] Spring Boot, Spring Boot:: Spring Boot. Available at: <https://docs.spring.io/springboot/index.html>
- [20] Postgres, Documentation | pgJDBC. Available at: <https://jdbc.postgresql.org/documentation/>
- [21] Karl Erickson, Azure SDK for Java Documentation, Microsoft Learn. Available at: <https://learn.microsoft.com/en-us/azure/developer/java/sdk/>
- [22] Lombok features Stable. Available at: <https://projectlombok.org/features/>
- [23] Mark Otto, J.T., Introduction, Bootstrap. Available at: <https://getbootstrap.com/docs/4.1/gettingstarted/introduction/>
- [24] MozDevNet, CSS: Cascading style sheets: MDN, MDN Web Docs. Available at: <https://developer.mozilla.org/en-US/docs/Web/CSS>
- [25] MozDevNet, JavaScript: MDN, MDN Web Docs. Available at <https://developer.mozilla.org/en-US/docs/Web/JavaScript>
- [26] openjsf.org, JQuery API, jQuery API Documentation. Available at: <https://api.jquery.com/>
- [27] Thymeleaf Documentation, Thymeleaf. Available at: <https://www.thymeleaf.org/documentation.html>
- [28] Geocode API Documentation, Google. Available at: <https://developers.google.com/maps/documentation/geocoding/overview>
- [29] iText PDF (2018) API documentation, iText PDF. Available at: <https://itextpdf.com/resources/api-documentation>