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AI Powered Job Search Platform: Skill-Based Job Matching & Generative-AI Driven Resume Tailoring

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Abstract

Finding a job today is a huge challenge because there is not one central place to manage everything, which forces candidates to jump between different sites while sending out the same generic resume for every role. Research shows that job seekers are spending over 10 hours every week just on these manual tasks, often without getting much real guidance. Moreover, a preliminary survey conducted as part of this study show 61% of candidates fail to customize their resume and submit generic resumes for each job role and don't have enough preparation for interview rounds. These practices often result in tedious and repetitive work, missed opportunities and low acceptance rates. This paper introduces a centralized job seeking solution utilizing Artificial Intelligence (AI) to address these challenges such as job alerts and matching, AI-driven resume tailoring and AI-powered mock interviews. The proposed system aims to have a unified environment leveraging the efficient use of AI, such as Generative AI, to simplify job search process. The system integrates the core functionalities: 1) Smart Job Matching, finds most relevant job using vector embeddings and cosine similarity. 2) GenAI-driven resume tailoring generates resume drafts aligning to specific job description and optimized for ATS compatibility. 3) AI-powered mock interview simulates an interview scenario for a candidate to prepare for a role-based interview to enhance candidate performance and readiness by providing real-time feedback. The existing systems offer only one aspect of job search process whereas the proposed system delivers an integrated, intelligent and user-focused workflow starting from job discovery and profile-based matching to personalized resume customization and mock interviews, all these functions are consolidated into a single unit easing manual tasks and improve career outcomes.

Introduction

There has been a tremendous transformation in the process of job searching in recent years, mainly driven by rapid technological advancements and the growing dependence on digital platforms [6], [17]. Traditional job search methods such as newspaper advertisements, word-of-mouth referrals, and job fairs have gradually been replaced by online job portals and professional networking platforms. However, the

massive volume of job listings available online makes it increasingly difficult for candidates to identify opportunities that align with their skills and career goals [6].

Recruitment has always relied heavily on evaluating candidates' qualifications through resumes, where employers assess suitability based on skills, experience, and education [2], [3]. Historically, this evaluation was performed manually by human recruiters, which is not only time-consuming but also prone to inconsistencies and bias [4], [5]. With the emergence of artificial intelligence (AI) and natural language processing (NLP), automated systems have been developed to extract, parse, and match information between resumes and job descriptions efficiently [3], [12].

AI-powered recruitment tools are increasingly being adopted due to their ability to reduce hiring time and improve efficiency. Studies indicate that such systems significantly enhance response time and user experience during hiring processes [1], [5]. Techniques such as cosine similarity and machine learning-based ranking algorithms have been widely used to match resumes with job descriptions, achieving accuracy levels as high as 92% [4], [12]. Additionally, transformer-based models and sentence embeddings, such as all-MiniLM-L6-v2, have demonstrated strong performance in semantic matching tasks, achieving Top-500 accuracy of over 81% [8].

Furthermore, recent advancements in generative AI have introduced dynamic resume tailoring capabilities. Models inspired by large language models (LLMs) can adapt resumes according to specific job descriptions, going beyond traditional keyword-based or heuristic approaches [10], [11]. These systems enhance personalization by emphasizing relevant skills and experiences, thereby improving candidate visibility and selection chances.

Despite these advancements, existing job preparation systems often lack personalized feedback and adaptive interaction. Many platforms rely on static question banks or basic chatbot systems that fail to simulate real-world interview scenarios [6], [14] [15]. Modern AI systems, however, are moving towards intelligent, multi-agent frameworks capable of conducting interactive assessments, evaluating communication skills, and adapting questions dynamically based on candidate responses [1], [6]. Such systems improve candidate confidence, communication, and adaptability—key factors in successful interviews.

In addition, emerging technologies such as intelligent agents, IoT-based systems, and secure data transmission frameworks contribute to building scalable and secure recruitment ecosystems [7], [9], [13], [20]. Data-driven approaches, including predictive analytics and machine learning models like LSTM, are also being explored for forecasting trends and improving decision-making in employment markets [25] [22].

To further validate the need for such systems, a survey was conducted involving 112 participants. The findings revealed that a significant number of job seekers spend over 10 hours per week applying manually, while 61% do not customize their resumes for each application. Additionally, around 70% of respondents expressed strong interest in AI-driven job search tools, and 76% showed a positive inclination toward adopting such platforms [10]. These insights highlight the growing demand for intelligent, automated, and personalized job search solutions.

Therefore, this paper proposes an **AI-powered job search platform** that integrates skill-based job matching using cosine similarity, generative AI-driven resume tailoring, and interactive interview preparation. The platform aims to streamline the job search process, enhance matching accuracy, and provide a personalized experience for candidates.

Literature Review

The integration of artificial intelligence in recruitment systems has been widely studied, highlighting both its advantages and limitations. A study by Horodyski [5] examined user perceptions of AI in recruitment across multiple countries, revealing that while 69% of users experienced reduced hiring time and 63% found AI tools easy to use, concerns regarding lack of transparency (34.8%) and reduced human judgment (67.4%) were significant.

Rojas-Galeano et al. [3] conducted a comprehensive bibliometric analysis of 113 research publications focusing on job-resume matching systems. Their work categorized various approaches, including content-based filtering, collaborative filtering, and hybrid models, emphasizing the importance of similarity measures and ranking techniques in improving matching efficiency.

Traditional job recommendation systems relied heavily on historical data and predefined rules, which limited their adaptability to new job roles and evolving skill requirements [8]. To overcome these limitations, zero-shot learning models and transformer-based architectures have been introduced, enabling semantic understanding and better generalization across domains [8], [11]. These models generate high-dimensional embeddings that improve matching accuracy

when combined with similarity metrics such as cosine similarity [5].

Machine learning-based resume ranking systems have also been explored extensively. Tejaswini K et al. [12] developed a system using K-Nearest Neighbors (KNN) and cosine similarity, achieving approximately 85% parsing accuracy and 92% ranking accuracy. These systems highlight the importance of structured data extraction and skill-based matching.

Generative AI has further enhanced resume processing by enabling contextual understanding and dynamic content generation. Systems like ResumeMatch [10] leverage AI to tailor resumes according to job descriptions, improving alignment between candidate profiles and employer expectations. Transformer-based frameworks have also been applied in other domains, demonstrating their robustness in handling complex data patterns [11].

Intelligent agent-based job search systems focus on personalization and user-centric design. These systems maintain dynamic user profiles and utilize contextual data to provide tailored job recommendations, improving user engagement and reducing bias [14] [16]. Additionally, AI-based interview preparation platforms simulate real-world interview scenarios by integrating resume analysis, HR simulations, and technical assessments [1], [6].

Beyond recruitment, supporting technologies such as cloud computing [2], IoT systems [4], [13], and secure communication frameworks [7], [20] contribute to building scalable and reliable AI-driven platforms. Data mining techniques like the Apriori algorithm have been used to analyze user behavior and preferences, enhancing recommendation systems [18]. Similarly, digital platforms promoting user engagement and literacy demonstrate the broader impact of technology in transforming user-centric services [17].

Recent research also explores AI-driven skill gap analysis systems that identify missing competencies and suggest improvements for job seekers [19]. Advanced machine learning models, such as improved inductive learning algorithms [24] and predictive LSTM-based systems [25], further enhance decision-making capabilities in recruitment platforms.

In addition, interdisciplinary studies and diverse technological advancements—from biomedical systems [23] to biometric authentication [21]—highlight the expanding role of AI and data-driven technologies across domains, reinforcing their applicability in intelligent job search platforms.

Overall, the literature indicates a clear shift toward AI-driven, personalized, and intelligent recruitment systems. However, challenges such as transparency, adaptability, and user trust remain key areas for improvement. The proposed system addresses these gaps by combining advanced matching algorithms, generative AI capabilities, and interactive interview preparation into a unified platform. The following survey report presents a detailed analysis of struggle in manual job search and higher user demands for AI driven career tools. In the survey we asked following questions and aggregated the responses to find out the overall sentiment of people towards AI platforms in job search:

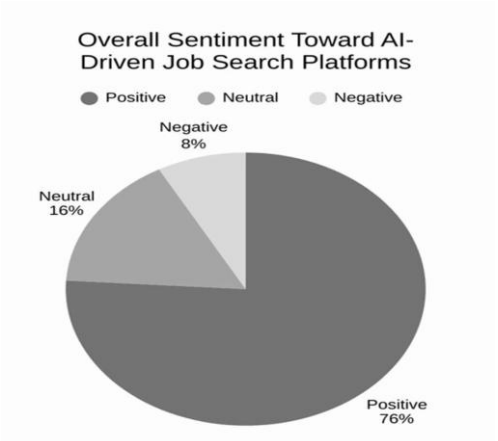

Fig 1: Overall Sentiment Toward AI-Driven Job Platforms.

1] What is your current job search status?

2] How much time do you spend per week searching and applying for jobs?

3] When applying, how frequently do you customize your application for each company?

4] How strongly you believe an AI-driven platform can significantly improve my job search experience compared to traditional job portals?

5] what are the biggest challenges you face while searching for jobs?

To understand survey results, the responses from several questions were combined to reflect the overall feelings of participants regarding AI-based job search platforms. The combined analysis reveals that around 76% of participants had a positive view on incorporating AI technologies into the job search process, demonstrating their approval of features like smart job recommendations, automated resume modifications, and tools for interview preparation. Approximately 16% of participants expressed neutrality, indicating a willingness towards AI systems but with minimal previous experience. Around 8% of participants voiced doubts or worries about AI-driven recruitment systems.

The findings clearly indicate a significant

favourable tendency toward AI-enhanced job search platforms, confirming the rationale for the suggested system.

Methodology

The proposed AI-Powered Intelligent Job Search and Recommendation System seek to optimize job search, resume optimization and interview preparation. The system utilizes a modular architecture that is made up of many intelligent parts that work in sync to offer personalized job recommendation. The whole system is created in a layered manner so that it allows maintainability, scalability and efficient processing of user data.

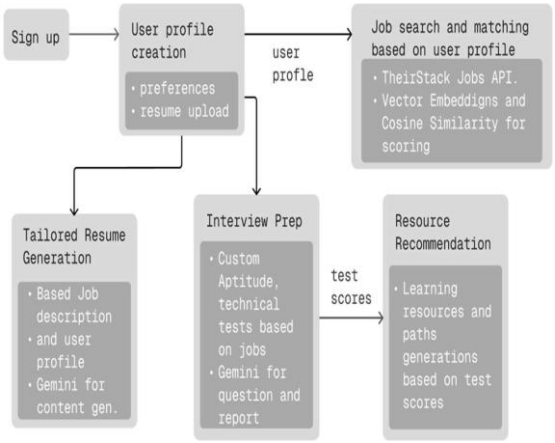

Fig 2: System Block Diagram

1) Presentation Layer*:* This layer gives the interface where users communicate or interact with the platform. Users can upload resumes, perform job search, view job recommendations, create customized resumes and interview preparation. The interface is intuitive and simple.

2) Application Layer: The application layer controls system logic and facilitates communication between backend services and the user interface. It manages API calls to AI services, recommendation requests, job search queries, and authentication

3) Artificial Intelligence Layer: This layer contains the core intelligence of the system. It includes modules for job matching, resume generation, interview simulation, and skill gap analysis. Machine learning models and Natural Language Processing techniques are used to analyze resumes and job descriptions.

4) Data Layer: The data layer stores structured and unstructured data including user profiles, resumes, job listings, skills and interaction logs. Databases and vector storage systems are used to enable fast similarity searches.

5) Learning Layer: The learning layer improves recommendation quality over time by analyzing user behavior, job application outcomes, and feedback data.

Figure 2 shows the high-level block diagram, providing a clear overview of the system architecture, overall functionality, and the core features. The core functionalities include user profile creation, job search and matching based on the user profile, tailored resume generation and interview preparation. Furthermore, the system is designed with intelligent scoring and analysis that helps in evaluating the performance of the user with respect to the aptitude and technical tests that they undertake. On the basis of this, the system offers recommendations that help in improving the skills of the user, thus creating a feedback loop that is aligned with the relevant jobs.

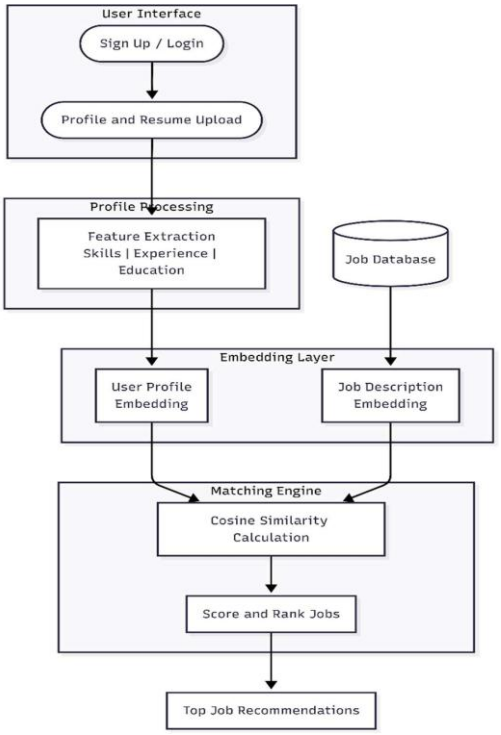

Fig 3: Job Matching Pipeline Using Embedding-Based Cosine Similarity

1. Intelligent Job Matching

By examining job descriptions and resume content, the intelligent job matching module determines which positions are most appropriate for a candidate.

Step 1: Resume Parsing The uploaded resume's structured data is extracted by the system and it includes:

- Keywords related to skills
- Work experience
- Educational qualification
- Certifications

Unstructured text is transformed into machine-readable data using natural language processing techniques.

Step 2: Processing Job Descriptions NLP is also used to process job listings in order to determine the necessary skills, experience level, job role, and pertinent keywords. Step 3: Generation of Embedding Transformer-based models are used to convert resumes and job descriptions into vector embeddings shown in fig 3(b). Semantic meaning is captured by these embeddings beyond simple. Gemini embeddings 001 model is being used to generate high-dimensional vector representations of user profiles and job descriptions.
Step 4: Similarity Calculation The similarity between a resume vector R and job description vector J is calculated using cosine similarity.

$$Similarity(R, J) = \frac{R \cdot J}{|R| \times |J|}$$

A higher similarity score indicates a stronger match between candidate qualifications and job requirements.

2. Tailored Resume Generation

The tailored resume generation module enables efficient job applications by mapping the content of the resume to the description of the targeted job.
Process Flow:

- Select a job posting.
- Analyze the description of the selected job posting and generate the required keywords and skills.
- The generative AI model will rewrite the content of the resume accordingly.

Finally, the optimized content will be formatted in the best way.
This module enables the candidate to increase the chances of clearing the automated screening tools.

3. AI interview

The interview readiness module enables the candidate to practice the interview questions.
Step 1: Generation of Interview Questions
The system generates interview questions based on the selected job role and the required technologies.
Step 2: Evaluation of the Candidate's Response
The candidate's responses are analyzed based on the following factors:

- Technical accuracy
- Relevance
- Communication clarity
- Answer completeness

Step 3: Generation of Feedback
The system provides detailed feedback and improvement suggestions. The evaluation score is calculated using the following function:

InterviewScore=f(TechnicalAccuracy,Relevance, CommunicationClarity)

4. Skill Gap Analysis And Learning Recommendation

Skill Gap Analysis and Learning Recommendation
The skill gap analysis module helps in identifying the skill gaps required for a target job role and provides suggestions for learning resources to bridge the skill gaps.
Process Steps:

- Candidate skills are extracted from the resume.
- Required skills are extracted from the job description.
- The skill gaps are calculated by comparing both sets of skills.
- The skill gaps are calculated using the following formula:

Skill Gap = Required Skills – Candidate Skills
Based on the skill gaps, the system provides suggestions for learning skills improvisation such as Online courses, Certification programs, and Tutorials and learning materials.

Results & Discussions

The AI based Job search platform was successfully developed and tested to help candidates find the jobs they were looking for easily. The system comprises of some key features such as Personalized Job filtering, Resume enhancer to tailor your current resume, and the profile which contains all your data, to provide a smart and personalized job searching environment. Unlike traditional job portals that mainly rely on manual filtering and static job listing methods the proposed software uses machine learning techniques to analyze the information of the user and match it with the most relevant job postings. The implemented platform shows how the information obtained from the candidate and their job requirements can be analyzed to generate and recommend relevant job recommendations. By analyzing the uploaded resumes, the software calculates a compatibility score that represent the relevance between candidate profile and the job posting details. In addition, the system allows the candidate to generate and customize its resumes for specific job roles making sure your resume actually matches the specific job you are going after. These results show that using AI along with your own info can make job hunting a lot better while cutting down on the boring work of a normal job search. We have also done comparative study of existing systems as given below in table 1. It gives a comprehensive view of the present available systems and highlights their features and limitations.

Table 1: Existing Systems Feature and Limitations

Platform	Features	Limitations
JobRight.ai	Automates job searching and applying, AI-powered resume optimization, job matching	Possible ATS detection risk due to full automation; limited personalization in cover letters.
LazyApply	Automates job searching and applying, AI-powered resume optimization, job matching	Lacks customization and candidate engagement features; risks flagged as spam by employers.
JobCopilot.com	AI-generated resumes, interview preparation tools, job search filters	Limited tracking and feedback loops; no advanced learning or improvement suggestions.
Loopcv.pro	AI resume builder, job alerts, application tracking	Mostly focused on resume and alerts, lacks auto apply and interview readiness features.

The system is built to serve different aspect of job search process. It comprises of different sections for specific features, for example landing page, profile creation, job listings etc. The following results of the system are presented below along with snapshots.

1. Candidate Preference Setup Workflow

The workflow that appears when the candidate first accesses the platform. Like in stage 1 users specify the various job roles they are looking for and press the add button, next in stage 2 they can select the type of employment they are looking for such as fulltime part-time or internship, next in stage 3 the type of work format is decided and the place where the candidate is seeking the job, lastly they upload their resume and the process starts analyzing it to start finding job postings for the user.

2. Resume Management Dashboard

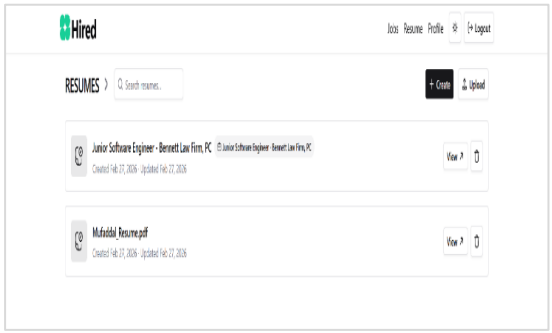

Figure 4: Resume Dashboard

Fig 4 shows resume management dashboard where all the candidates can manage their resumes on the platform. It provides many options such as uploading resume from the device one is using or to create a new resume that is tailored to a specific job role. This feature lets you keep different versions of a resume so you can use it for different types of jobs. The dashboard is where you can manage everything and make and select the resume you need for specific job roles.

3. AI-Assisted Resume Generation for Targeted Job Role

This feature shows the AI helps people build resumes that match the jobs they are going after. Instead of starting from zero, you just put in the "Job Title" and "Job Description" you are looking at. The system then tweaks your info to make a version of your resume that hits the right requirements for that specific role. This makes the whole process way faster since you are not stuck doing manual edits for every single application.

4. AI-Based Job Recommendation with Match Scoring

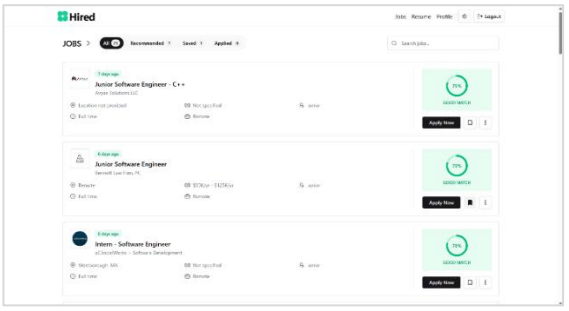

Figure 5: Job dashboard

Figure 5 shows the job recommendation interface where the platform presents job opportunity recommended to the user or the candidate. Each job listing is evaluated using an AI based techniques that matches the candidate's profile with the requirement of the job posting as shown above. The system shows the "Job matching score" to show how much does the candidates features match to the job requirements and then it can choose from them which role to apply. This

feature helps them to identify most relevant job postings matching to their skill sets and then they can choose from the list and apply accordingly.

5. Candidate Profile Information Interface

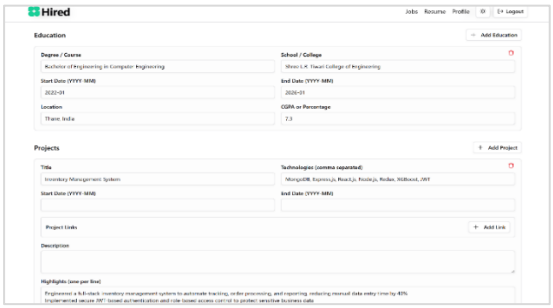

Figure 6: Candidate Profile

Figure 6 shows the user profile interface where candidates can provide their detailed information about their profession and their background. It also auto extracts this information for the first time when you login and follow the first steps, it does this by getting the details from you resume which you add at the start that is when you first sign up, you can edit the details from going to the profile section and making the changes there. This information allows the system to understand the candidates interests and type of job it is looking for. This data is then used by the system match job recommendation, create new resumes, etc.

6. System Performance Evaluation

In the table below system performance is evaluated and it is evident that job matching and resume parsing have reliable accuracy. The system also has a decent response time which is essential in applications. The system also offers consistency in interviews to maintain the flow of conversations.

Table 2: Systems Performance Evaluation

Metric	Value
Job Matching Accuracy	88–92%
Resume Parsing Accuracy	~85%
Average Response Time	< 2 seconds
Resume Tailoring Time	5–10 seconds
Interview Evaluation Consistency	~80%

7. Traditional vs AI powered job search

In the table below we have summarized the impact of the system highlighting the reduction in time spent per week and better preparation for interviews along with other advantages.

Table 3: Traditional vs AI powered job search

Parameter	Traditional Job Search	Proposed AI-Based System
Time Spent per Week	10+ hours	3–5 hours
Resume Customization	Manual and infrequent	Automated and job-specific
Job Recommendation Accuracy	Low	High (AI-based matching)
Interview Preparation	Static question banks	Dynamic AI-driven feedback
User Engagement	Low	High with personalized experience

Conclusion

This research paper presented the development of an AI Powered Job Search Platform which is designed to improve the efficiency in searching for jobs for candidates. The proposed system integrates many features such as AI job recommendation, resume management, AI resume generator, profile-based job matching, etc. to help the candidates find job opportunity based on their skills which match them perfectly. By analyzing the resume and profile information of the candidate the platform recommend job posting based on the skills and the preferences of the candidates. The implementation of the job matching feature also helps the candidates identify which of the posting better match with their interests. Overall, the developed system shows how the AI can improve or optimize the traditional job search experience. Future improvements will include some interview preparation tools, skill gap analysis to further enhance the platforms capabilities and use cases.

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