

# AI Driven Interview Preparation Platform with Personalized Skills

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## ABSTRACT:

*An AI-driven interview preparation platform with personalized skills was developed to assist job seekers in preparing for technical and HR interviews using artificial intelligence services. The platform integrates the Gemini AI API to analyze user resumes, skills, and job preferences and generate personalized interview questions, skill evaluations, and improvement suggestions. The system provides features such as ATS resume scoring, role-based interview question generation, mock interview assistance, and performance feedback. Based on the user's current skill level, the platform highlights strengths, identifies skill gaps, and recommends areas for further improvement. All AI-based analyses and recommendations were obtained through real-time interactions with the Gemini API without implementing custom machine learning or NLP models. This platform aims to simplify interview preparation by offering an intelligent, personalized, and user-friendly solution that aligns with current recruitment processes, thereby improving candidate confidence and their readiness for interviews.*

**Keywords:** *AI-Driven Interview Preparation, Gemini API, Resume Analysis, ATS Scoring, Personalized Skill Assessment, Mock Interviews.*

## I. INTRODUCTION

The rapid growth of the information technology sector has intensified competition in the job market, making interview preparation a critical challenge for graduates and job seekers alike. While candidates may possess the required academic knowledge, many struggle to present their skills effectively during recruitment processes owing to inadequate preparation, lack of personalized guidance, and limited exposure to real interview scenarios. Conventional preparation methods, such as static question banks and generic

mock interviews, often fail to address individual skill gaps and role-specific requirements.

Simultaneously, modern recruitment processes increasingly rely on automation, including Applicant Tracking Systems (ATS) and AI-assisted screening tools, to evaluate resumes and shortlist candidates. These systems assess resumes based on their structure, relevance, and alignment with job requirements, often rejecting candidates before human review. However, most applicants lack awareness of ATS evaluation criteria and do not receive actionable feedback to improve their readiness for interviews.

This paper proposes an **AI-Driven Interview Preparation Platform with Personalized Skill** that integrates the **Gemini AI API** to support candidates throughout their interview preparation journey. The platform analyzes user-provided resumes and inputs to generate ATS compatibility scores, personalized interview questions, and skill-based feedback. Rather than developing custom machine learning or natural language processing models, the system leverages the capabilities of the Gemini API to deliver intelligent analyses and real-time recommendations.

The proposed solution offers a structured and adaptive preparation environment that helps users identify their strengths, recognize skill gaps, and improve interview performance. By combining AI-powered insights with an intuitive user interface, the platform aims to enhance interview readiness, improve candidate confidence, and align preparation strategies with current industry-recruitment practices.

## II. LITERATURE SURVEY

Szandala et al. [1] examined the application of ChatGPT in the context of IT recruitment and published their work in *Expert Systems with Applications* (2025). This study compared the performance of Large Language Models (LLMs),

particularly ChatGPT and Gemini, with that of human experts using a 2-to-2 evaluation scale. The results indicate that ChatGPT demonstrated competitive expert-level reasoning in recruitment-related decision-making. However, the authors highlighted limitations such as the lack of local task consistency, repeated responses to similar prompts, and variations in decision outcomes. Additionally, the study noted that even human reviewers are not always perfectly aligned in their judgments, which affects the benchmarking accuracy.

Wei Shi and Dong Wang [2] conducted an empirical study on the application of AI mock interviews to enhance graduate employability, published in *Education and Information Technologies* (2025). Using a quasi-experimental research design with 42 participants, this study demonstrated that AI-driven mock interviews significantly improved graduates' perceived employability and helped optimize performance in real interview scenarios. Despite these positive findings, the authors pointed out that the study was limited by a small sample size and that empirical research on this topic remains scarce, particularly in the Chinese educational context.

Alagöz and Hamzai [3] explored the acceptance of Generative AI for automated recruitment, focusing on personality and behavioral insights, and published their findings in *Education and Information Technologies* (2025). This mixed-methods study, conducted using data from 476 teacher candidates, revealed a moderate level of acceptance of Gen-AI technologies. Higher acceptance levels were observed among individuals who were agreeable, conscientious, and open to new experiences. Nevertheless, the study reported participants' concerns regarding over-dependency on AI systems, potential erosion of critical thinking skills, and gaps in G-AI literacy.

Hasan et al. [4] proposed an AI-driven approach for enhancing personalized learning by identifying learning styles and recommending suitable learning modification strategies. This study was published in the *International Journal of Cognitive Computing in Engineering* (2024). An ensemble machine learning technique was employed for learning style detection, achieving an accuracy of 97.56%. The Named Entity Recognition (NER) model used in this study achieved an accuracy of 94.16%. The experiments were conducted using a custom dataset of 50 samples.

However, the study does not explicitly mention any limitations or disadvantages of the proposed approach.

Omar Ali and Layal Kallach [5] presented a study on Artificial Intelligence-enabled Human Resources recruitment functionalities, published in *Procedia Computer Science* (2024). This research adopted a scoping review methodology, aggregating 35 academic articles from a total of 653 sources to analyze AI applications in HR recruitment processes. This study proposes a classification framework that highlights various AI-driven recruitment functionalities. Although the review provides insights into challenges and identifies future research directions, it does not present a specific metric or clearly define the limitations related to the individual studies analyzed.

Sridevi et al. [6] developed an AI-based suitability measurement and prediction model to assess the match between job descriptions and job seeker profiles. This study was published in the *International Journal of Information Management Data Insights* (2022). The proposed system achieved a maximum average accuracy of 95.14% using the XGBoost classifier. Additionally, the Jaccard similarity measure was used to evaluate the suitability of job requirements and candidate profiles. Despite its promising performance, this study does not explicitly state the limitations or drawbacks of the proposed model.

Mohammadreza Tavakoli et al. [7] proposed an AI-based open recommender system designed to support personalized labour market-driven education and published their work in *Advanced Engineering Informatics* (2022). The proposed system derives skill requirements directly from online job vacancy announcements and maps them to educational recommendations, enabling alignment between labor market demands and the learning pathways. However, the study reported that no support was found for the hypothesis that personalized recommendations significantly outperform non-personalized recommendations, as both approaches yielded similar outcomes.

Tusquellas et al. [8] conducted a systematic literature review to analyze the potential of artificial intelligence for professional development and talent management. This study was published in the *International Journal of Information Management Data Insights* (2024). A structured review methodology based on the PRISMA

2020 reporting criteria was adopted to analyze the existing research in this domain. The findings emphasize the need for automated talent management systems while highlighting the challenges related to minimizing bias and ensuring fairness in AI-driven decision-making processes.

Nacimiento-Garcia et al. [9] investigated the role of automatic captions in video calls and their importance for older adults. This study was published in Universal Access in the Information Society (2024). The usability of the proposed system was evaluated using the System Usability Scale (SUS), which yielded a score of 94.32, indicating a very high usability. The tool was validated in two stages using a sample of older adults to assess its accessibility and effectiveness. However, owing to the COVID-19 pandemic, the study was constrained to a reduced number of verification tests involving older participants.

Hasan et al. [10] presented an AI-driven personalized learning framework aimed at identifying learning styles and recommending appropriate content modification strategies. This study was published in the International Journal of Cognitive Computing in Engineering (2024). A blended ensemble machine learning approach was employed for learning style detection, achieving an accuracy of 97.56%. Additionally, a Named Entity Recognition (NER) model was utilized, obtaining an F1-score of 94.16%. The experimental evaluation was conducted using a custom dataset consisting of 50 samples. This study does not explicitly state any demerits or limitations of the proposed approach.

### III. PROPOSED SYSTEM DESIGN AND IMPLEMENTATION

The proposed system is an AI-driven interview preparation platform developed to assist job seekers in improving their interview readiness through personalized skills assessment and guidance. The system was implemented as a web-based application that allows users to upload their resumes and interact with the platform through an intuitive user interface. Once a resume is uploaded, the application logic validates and processes the resume content and sends it to the Gemini AI API for further analysis. The Gemini API was used to generate ATS compatibility scores, identify relevant skills, highlight strengths and

weaknesses, and produce role-based interview questions with improvement suggestions. The AI-generated responses are then structured and displayed to the user using visual elements, such as scorecards, progress indicators, and charts, to ensure easy understanding. All analysis results are stored for future reference, enabling users to track their progress. The system does not involve the development of custom machine learning or natural language processing models, but instead relies on the Gemini API for intelligent analysis, thereby ensuring scalability, real-time feedback, and simplified implementation suitable for practical interview preparation.

#### Architecture Design



## IV METHODOLOGY

### 1. User Login and Profile Setup

The first module of the system provides a secure user login and registration. Users create an account by entering basic details, such as their name, email address, and password. This module establishes a unique user identity and enables personalized interactions with the platform. The collected information was stored securely and used only for authentication and progress tracking throughout the interview preparation process.

### 2. Resume Upload and Preprocessing

After successful registration, users upload their resumes in supported formats, such as PDF or DOCX, through the resume upload interface. The system performs basic validation checks to ensure the file integrity, readability, and format compatibility. Once validated, relevant information, including educational qualifications, technical skills, work experience, certifications, and project details, was extracted. This preprocessing stage organizes the resume data into a structured format, making them suitable for accurate

AI-based analysis while ensuring that the original resume content remains unchanged.

### 3. Resume Analysis Using Gemini API

The structured resume data were securely transmitted to the Gemini AI API for intelligent evaluation. The API analyzes the resume to assess ATS compatibility, identify key skills, and evaluate the alignment with selected job roles. It also highlights the missing or underrepresented competencies required for industry-standard roles. This analysis provides users with a clear understanding of their current interview readiness and areas where improvement is required, without modifying or rewriting the uploaded resume.

### 4. Skill Gap Identification

Based on the insights generated by the Gemini API, the system identifies gaps between the user's existing skills and the skills required for the targeted job role. This module focuses on identifying weak or missing technical and soft skills that could affect interview performance. The identified gaps form the basis for personalized interview preparation and skill-enhancement strategies.

### 5. Personalized Skill Development Roadmap

Using the identified skill gaps, the platform generates a personalized skill-development roadmap for each user. The roadmap outlines the recommended skills to be improved, along with a logical sequence for learning. This structured guidance helps users focus on priority areas, ensuring systematic preparation for both technical and HR interview rounds.

### 6. Interview Question Generation

In this phase, the Gemini AI API generates role-specific interview questions covering technical, behavioral, and human resource-related topics. The questions are tailored according to the user's resume content, skill level, and selected job role. This personalization ensures that the generated questions closely reflect real-world interview scenarios relevant to the user's career aspirations.

### 7. Mock Interview Sessions

Users participate in interactive mock interview sessions in which they respond to AI-generated questions through the platform. This module simulates a real interview environment, allowing users to practice answering questions in a structured format. Mock sessions help improve communication skills, problem-solving abilities, and overall confidence.

### 8. AI-Based Feedback and Evaluation

User responses from the mock interview sessions were evaluated using the Gemini AI API. The system provides detailed feedback on response quality, technical accuracy, the clarity of explanation, and communication effectiveness. Performance scores and improvement suggestions are generated, helping users understand their strengths and areas that require further practice.

### 9. Performance Tracking and Progress Analysis

All mock interview results, feedback, and performance scores were securely stored and presented through visual dashboards. This module enables users to track their improvement over time and evaluate their progress across multiple interview sessions. A visual representation of performance data helps users identify consistent weaknesses and measure growth effectively.

### 10. Continuous Improvement Loop

Based on performance analysis and feedback, users were encouraged to revisit skill development areas and participate in additional mock interview sessions. The system continuously updates the recommendations and questions according to the user's progress. This iterative improvement loop ensures consistent learning and enhanced interview readiness without the need for custom NLP or machine learning model development.

## V. ALGORITHM

### Input:

UU U : User credentials

RR R : Uploaded resume

JJ J : Selected job role

## Output:

SS S : Strengths  
WW W : Weak skill areas  
MM M : Job match score  
RMRM RM : Skill roadmap  
FF F : Mock interview feedback

### I. Registration Phase

The user registers using the basic details UUU.  
The system validates the user login.

### II. Resume Processing Phase

The user uploads their resume RRR.  
The system validates the resume format.  
Extracted resume text using predefined rules.  
segment was resumed into skills, education, and The experience.

### III. Job Matching Phase

The user selects the target job role JJJ.  
Load-rule-based skill checklist for job role JJJ.  
Compare resume skills with job role skills.  
If the skill is matched → add to SSS.  
If a skill is missing, add it to the WWW.

### IV. Job Suitability Evaluation Phase

Compute the job match score:  
 $M = |S| / (|S| + |W|) \times 100$ .  
Classify the job fit level based on the MMM score.

### V. Skill Roadmap Generation Phase

Generate a learning roadmap RMRMRM based on weak skills WWW.  
Arrange skills in the order of beginner → intermediate → advanced.

### VI. Mock Interview Phase

Generate interview questions using a predefined question bank for role JJJ.  
Conduct a mock interview session.  
Record user responses.

### VII. Mock Evaluation Phase

Responses were evaluated using rule-based answer matching.  
Scores were assigned for correctness, clarity, and completeness.  
Generate feedback FFF.

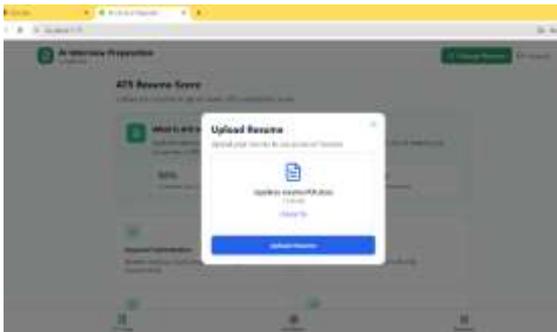
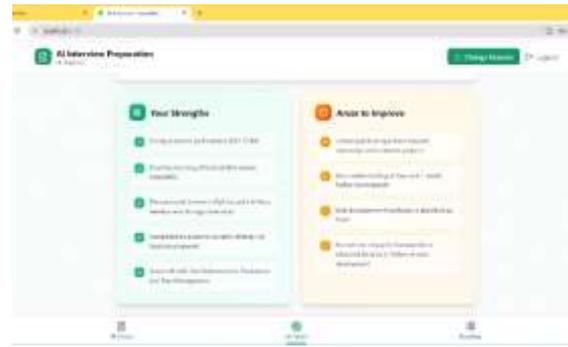
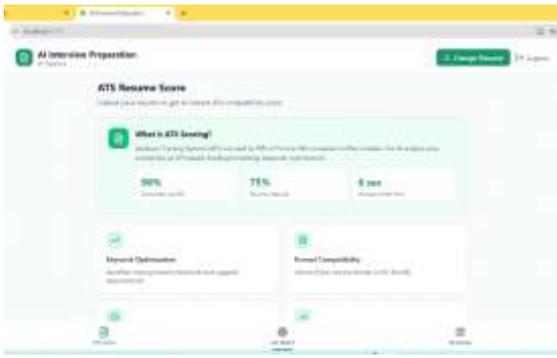
### VIII. Final Output Phase

Display strengths SSS.  
Display weak areas WWW.  
Display job match score, MMM.  
Display skill roadmap: RMRMRM.  
Display mock interview feedback.  
End.

## VI.IMPLEMENTATION RESULT

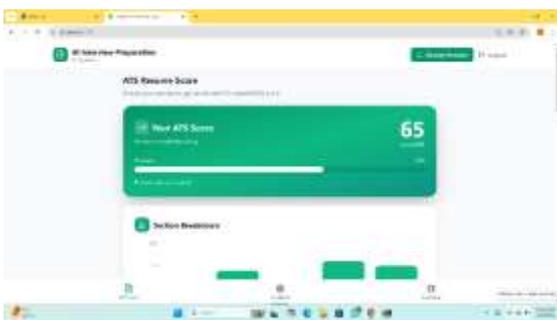
The implemented system demonstrated stable and consistent functional performances across all modules. Resume upload and preprocessing were executed smoothly, allowing for effective interaction with the Gemini API. Resume analysis outputs successfully highlighted user strengths and areas for improvement without altering the resume content. The job relevance and roadmap modules produced coherent and meaningful guidance aligned with the selected job roles. The mock interview module supported structured interview practice by enabling question generation and response evaluation using API-based processing. Overall system testing confirmed seamless module integration, responsive interactions, and suitability for real-time interview preparation applications.





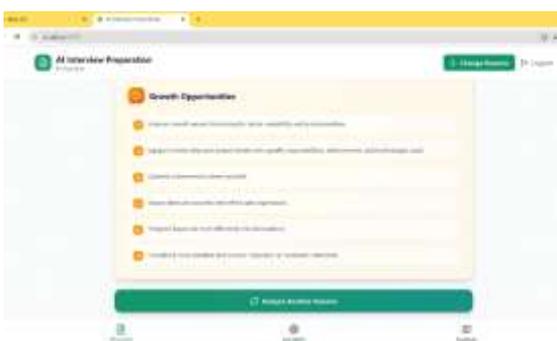
## VII. FUTURE WORK AND CONCLUSION

Future enhancements should focus on improving system adaptability and realism. Advanced voice analytics, such as tone, fluency, and pause analysis, can be incorporated to provide deeper communication feedback. Multilingual voice interview support can be added to assist users from diverse linguistic backgrounds. Integrating company-specific interview frameworks and real-time interview coaching features may further enhance personalization. Additionally, expanded analytics dashboards and adaptive difficulty levels can be explored to deliver a more immersive and intelligent interview-preparation experience.



## CONCLUSION

This study presents an AI-driven interview preparation platform that integrates the Gemini AI API to support resume analysis, personalized skill assessment, and both text- and voice-based mock interview sessions. The system allows users to upload resumes for intelligent evaluation, identifying strengths, weak areas, and job role relevance without modifying the original document. Personalized skill development roadmaps were generated to guide users in improving the identified gaps. The voice-based mock interview module enables realistic interview simulations by allowing users to respond verbally, thereby enhancing their communication skills and interview confidence. By avoiding custom machine learning models, datasets, and rule-based logic, the platform is lightweight, scalable, and easy to deploy. Experimental validation confirmed that the system provides meaningful insights, structured preparation, and an effective interview-readiness environment suitable for real-world applications.



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