

InterviewAI: An Intelligent Virtual Interview Platform with Real-Time Voice, Video, and AI-Based Performance Evaluation

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Abstract:

This paper presents InterviewAI, a Software-as-a-Service (SaaS) platform that conducts live mock interviews using artificial intelligence. Candidates often lack access to affordable and realistic interview practice, and existing systems either rely on static question banks or cover only parts of the interview experience. In InterviewAI, a user signs in with Google Authentication and uploads a resume in PDF format. The system extracts skills, education and experience, generates personalised questions, conducts the interview through real-time voice and video conversation with an AI interviewer, and produces a performance report covering strengths, weaknesses, communication skills and suggestions for improvement. A credit-based usage model with Razorpay payment integration makes the platform suitable for production use. The system is built on React.js, Node.js, Express.js and MongoDB, with Firebase authentication, Razorpay payments and OpenRouter for AI model access, and is deployed on Render. The platform was tried end to end with a few users to check its working, and all core modules, from sign-in to feedback report and payment, worked as intended.

Keywords — AI interview, virtual interviewer, resume parsing, mock interview, real-time voice and video, automated feedback, SaaS, OpenRouter.

I. INTRODUCTION

Interviews are a decisive step in almost every hiring process, yet many students, fresh graduates and professionals have little opportunity to practise under realistic conditions. Human mock interviews require a willing and qualified interviewer, and coaching services can be expensive. Online resources are widely available but are largely limited to fixed question lists with no interaction and no personalised feedback.

Advances in large language models, speech technologies and real-time web communication make it possible to simulate an interviewer who reads a candidate's resume, asks relevant questions, listens to the answers and evaluates them. This research proposes and describes InterviewAI, an end-to-end platform that combines these capabilities into a single workflow: resume upload, personalised

question generation, a live voice and video interview, automated evaluation and a feedback report. The platform is delivered as a cloud-hosted web application with secure sign-in and a credit-based payment model.

II. PROBLEM STATEMENT

Many candidates lack access to affordable and realistic interview practice. Existing interview preparation websites generally offer static question banks without personalised interaction or real-time evaluation. Prior AI-based interview systems address individual parts of the problem, but few combine resume-based personalisation, a live voice and video conversation, and structured performance feedback in one deployable product.

There is therefore a need for an accessible platform that can simulate an interview, analyse the responses and give instant feedback. My

InterviewAI is proposed to solve all of these problems in one platform, and this paper investigates its design and implementation.

III. OBJECTIVES

- To develop an AI-based virtual interview platform.
- To allow users to upload resumes for personalised question generation.
- To conduct live mock interviews using voice and video.
- To evaluate candidate responses and generate structured feedback.
- To provide secure login using Google Authentication.
- To implement a credit-based SaaS model with online payment.
- To deploy the application as a cloud-based web platform.

IV. LITERATURE REVIEW

Recent studies show that AI can be used to support interview preparation, but each covers only part of the experience. Koshti et al. [1] presents an AI-powered interview preparation system that can ask questions and analyse the candidate's answers. However, it does not provide a complete live voice and video AI interview.

Chavan and Jadhav [2] develop an AI-based mock interview system and show that AI can provide personalised interview practice. Their work does not focus on a complete real-time voice and video AI interviewer. Gomez et al. [3] reports that students found AI interviews helpful for improving confidence, communication and interview preparation. The study also notes that the AI conversation was sometimes not smooth, with problems in timing, conversation flow and natural interaction. Table I compares these studies with the proposed system.

TABLE I
FEATURE COMPARISON OF RELATED WORK AND THE PROPOSED SYSTEM

Study	Resume	AI Questions	Voice	Video	Evaluation
Koshti et al. [1]	Yes	Yes	No	No	Yes
Chavan and Jadhav [2]	Yes	Yes	No	No	Yes
Gomez et al. [3]	No	Yes	Yes	Yes	Yes
InterviewAI (proposed)	Yes	Yes	Yes	Yes	Yes

Overall, prior research confirms the value of AI-based interview practice, but existing work covers resume-based questions, or live voice and video, or evaluation, and rarely all of them together. Conversational smoothness also remains an open problem. This study addresses the gap by joining the full pipeline of resume, questions, live voice and video interview, evaluation and feedback in a single platform, and by focusing on a more interactive and conversational AI interviewer.

V. METHODOLOGY

The system follows a client-server architecture. The user interacts with a React.js front end, which communicates with a Node.js and Express.js back end. User data, interview sessions, reports and credit balances are stored in MongoDB. Authentication is handled by Firebase [4], payments by Razorpay [5], and all AI model requests are routed through OpenRouter [6]. The workflow has eight stages:

1. The user signs in using Firebase Google Authentication.
2. The user uploads a resume in PDF format.
3. My InterviewAI extracts details such as skills, education and experience.
4. Personalised interview questions are generated automatically.
5. My InterviewAI conducts a live voice and video interview.
6. The user's responses are analysed by my InterviewAI.
7. A feedback report with scores and suggestions is generated.
8. Credits are deducted after each session, and the user can buy more credits using Razorpay.

Fig. 1 shows the overall system architecture, and Fig. 2 shows the eight-stage workflow of my InterviewAI.

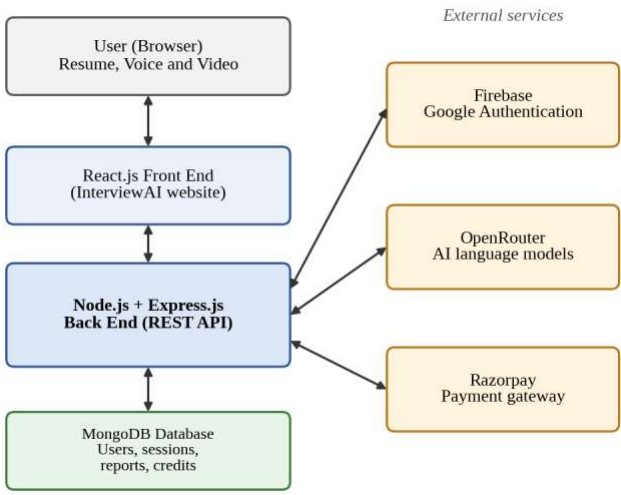


Fig. 1 System architecture of my InterviewAI.

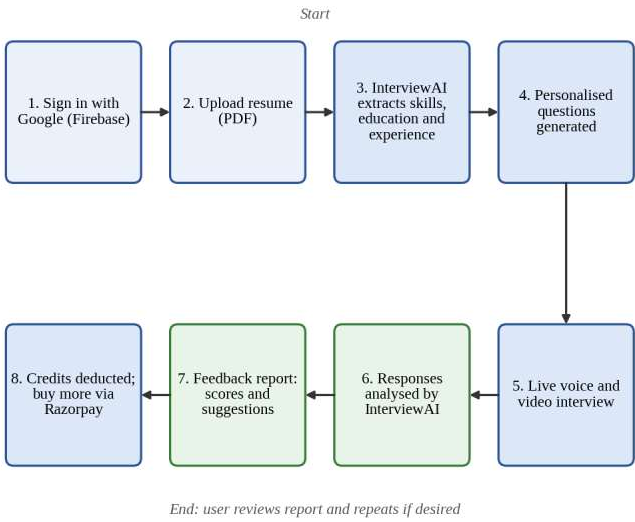


Fig. 2 Workflow of my InterviewAI.

A. Resume Analysis and Question Generation

The uploaded PDF is parsed on the server, and the extracted text is cleaned and passed to my InterviewAI, which returns the candidate's skills, education and work experience in a structured form. These details are then used to generate questions tailored to the individual candidate, rather than drawn from a generic bank. OpenRouter is a unified API gateway that gives access to multiple language models through a single interface, which keeps the back end independent of any one model provider.

B. Live Voice and Video Interview

The interview is conducted as a real-time conversation. The candidate's speech is captured and converted to text, my InterviewAI produces its next

question or follow-up, and the reply is returned as speech while the candidate's video is shown on screen.

C. Performance Evaluation

After the session, the candidate's answers are analysed against a fixed rubric covering criteria such as relevance, clarity, depth and communication, and a report is produced. The report includes an overall score, strengths, weaknesses, an assessment of communication skills and suggestions for improvement.

D. Authentication, Credits and Payments

Google Authentication through Firebase provides secure sign-in without the platform storing passwords. Each interview session consumes credits, and users purchase additional credits through Razorpay. This turns the product into a sustainable SaaS model rather than a one-off demonstration.

E. Technology Stack

Table II lists the technologies used to build the platform.

TABLE II
TECHNOLOGY STACK OF INTERVIEWAI

Layer	Technology
Frontend	React.js, HTML, CSS, JavaScript, Framer Motion
Backend	Node.js, Express.js
Database	MongoDB
Authentication	Firebase Google Authentication
Payment gateway	Razorpay
AI model access	OpenRouter
Deployment	Render
Artificial intelligence	Resume analysis, question generation, real-time voice and video interview, AI-based performance evaluation

F. Privacy, Consent and Data Protection

Resumes and interview recordings contain personal information, so my InterviewAI treats them as personal data. The few users who tried the platform took part voluntarily and were informed that their resumes and interview responses would be processed by the platform. Access is protected by Firebase ID token verification on every protected route, each resume and report is linked to and visible only to its owning user, and all API keys and secrets are stored in server-side environment variables. These practices are intended to be consistent with the

principles of India's Digital Personal Data Protection Act, 2023 [7], namely consent, purpose limitation and security safeguards.

VI. PROBLEMS ENCOUNTERED AND SOLUTIONS

Table III records the main technical problems met during development and how my InterviewAI solves each of them.

TABLE III
PROBLEMS ENCOUNTERED AND THEIR SOLUTIONS

No.	Problem	Solution implemented
1	Resumes are PDFs with inconsistent layouts (columns, tables, varied headings), so plain text extraction is unreliable.	My InterviewAI parses the PDF on the server and cleans and normalises the text. The website then converts it into structured data (skills, education, experience), so it does not depend on any fixed resume layout.
2	Questions generated from a resume can be generic or repetitive.	My InterviewAI injects the structured resume data into a carefully designed prompt that asks for a mix of technical, project-based and behavioural questions. The questions already asked are passed back as context so they are not repeated, and follow-up questions are generated from the candidate's previous answers.
3	Delay and awkward turn-taking make a voice conversation feel unnatural, a weakness noted in earlier studies [3].	My InterviewAI gives short, conversational replies, streams responses instead of waiting for a full completion, and detects the end of the candidate's speech before replying so that it does not interrupt. Fast models are selected through OpenRouter.
4	AI scoring can be inconsistent between sessions and feedback can be vague.	My InterviewAI evaluates answers using a fixed rubric with defined criteria and a scoring scale, a low-randomness model setting, and a structured output format. The output is validated on the server before the report is saved and shown.
5	Credits must be deducted reliably, and payments must not be trusted from the client side.	My InterviewAI creates Razorpay orders on the server and verifies the payment signature on the back end before any credits are added. Credit balance is checked and deducted on the server, so a session cannot start without sufficient credits and a balance cannot be altered from the browser.
6	Uploaded resumes and user sessions contain personal information and must be protected.	My InterviewAI verifies Firebase ID tokens on every protected API route. Resumes and reports are linked to the owning user and accessible only to that user, and all API keys and secrets are kept in server-side environment variables, never in the front end.

No.	Problem	Solution implemented
7	Depending on a single AI provider risks outages and ties the system to one model.	My InterviewAI routes all model calls through OpenRouter, which provides one interface to multiple models. A model can be changed or replaced by configuration without rewriting the application logic.
8	Deployment and configuration issues when moving from local development to the cloud.	My InterviewAI's front end and back end were configured on Render with environment variables, correct CORS settings and the right build and start commands. HTTPS, which browsers require for camera and microphone access, is provided by the hosting platform, and the database connection was configured for the cloud environment.

VII. RESULTS AND ANALYSIS

A. Overview

The platform was tried with a few users to check that it works. Each user completed the full workflow: signing in with Google, uploading a resume, taking an AI-led voice and video interview, receiving the feedback report, and using the credit system. All core modules worked as intended during testing, as summarised in Table IV.

TABLE IV
OUTCOME OF MODULE-WISE TESTING WITH A FEW USERS

Module	Observed outcome
Google sign-in (Firebase)	Worked as expected
Resume upload and analysis	Worked as expected
Personalised question generation	Worked as expected
Live voice and video interview	Worked as expected
Performance report and feedback	Worked as expected
Credit deduction and Razorpay payment	Worked as expected

B. Outcomes

The testing confirmed that the platform delivers:

- Personalised interview questions based on resumes.
- Real-time interview practice using voice and video.
- Automated performance scoring and feedback.
- Secure user authentication and management.
- A credit-based subscription model with payment support.
- A scalable SaaS platform accessible from anywhere.

C. System Snapshots

Figs. 3 to 7 show the working platform.

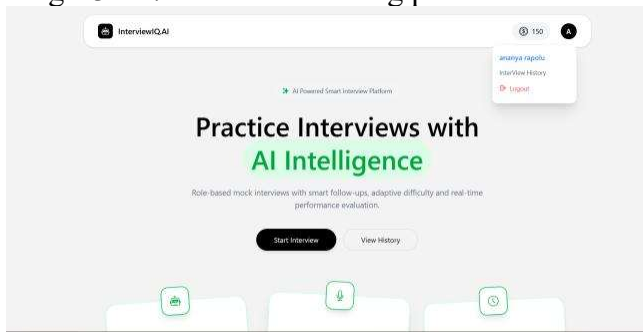


Fig. 3 Landing page and Google sign-in.

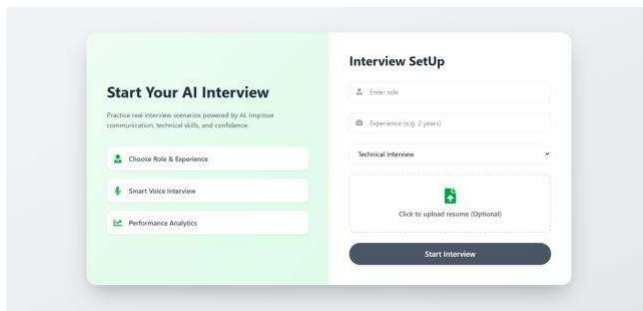


Fig. 4 Resume upload screen.

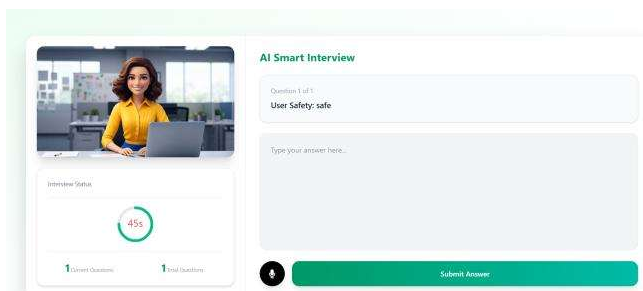


Fig. 5 Live AI voice and video interview screen.

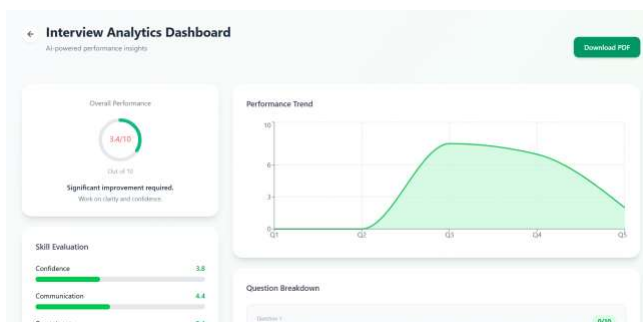


Fig. 6 Performance report with scores, strengths, weaknesses and suggestions.

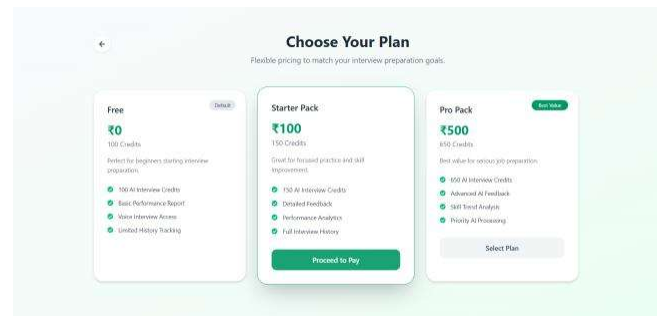


Fig. 7 Credits and Razorpay payment screen.

VIII. FUTURE SCOPE

InterviewAI provides a working foundation that can be extended in several directions, from deeper interview intelligence to wider reach and institutional use:

- **Multi-language and accent-aware interviews:** conducting interviews in regional Indian languages and other global languages, with speech recognition tuned for different accents.
- **Company-specific and role-specific simulations:** interview modes that mirror the style and question patterns of particular companies, as well as role tracks such as software development, data science, HR, finance and management.
- **AI-generated coding challenges:** an in-browser code editor with automatically generated problems, multi-language support (Python, Java, C++, JavaScript and others), and automated evaluation of correctness and approach.
- **Behavioural and emotion analysis:** analysis of facial expressions, eye contact, posture, speaking pace and filler words from the video and audio stream, with explicit user consent, to give feedback on body language and confidence.
- **Progress tracking and personalised learning paths:** a dashboard showing score history across sessions, recurring weak areas and improvement trends, with recommended practice topics and resources.
- **Recruiter and institution dashboard:** tools for colleges, placement cells and recruiters to run batch assessments, compare candidates and shortlist using structured evaluation reports.

- **Resume feedback:** suggestions to improve the resume itself, including keyword gaps and applicant tracking system compatibility.
 - **Mobile applications:** native Android and iOS apps for practice anywhere.
 - **Data retention controls:** configurable retention periods for resumes and interview data, and user-controlled deletion of stored data.
 - **Larger-scale validation:** wider user studies, comparison of AI scores with human interviewer ratings, and measurement of improvement in real interview outcomes.
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IX. CONCLUSION

InterviewAI provides a modern approach to interview preparation by combining artificial intelligence, real-time communication and cloud deployment. Compared with the systems reviewed, it joins resume-based personalisation, a live voice and video AI interviewer, automated evaluation and feedback in one platform, with secure authentication and online payment support. Trying the platform with a few users showed that the complete workflow worked as intended. The platform can help students, fresh graduates and professionals improve their confidence and interview performance in an affordable and accessible way.

X. DISCLAIMER

This study is for academic research purposes only. The results reflect observations of the system under the specific test conditions described and do not constitute a claim of performance in all environments.

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