

AI-Powered Interview Preparation Assistant with Integrated Adaptive Quiz Module

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Abstract - People are searching for individualised and efficient interview preparation methods in today's labour market. This project introduces an AI-powered assistant that replicates real-life interview scenarios to improve interview readiness. The assistant analyses each candidate's responses to questions and delivers tailored feedback. The system evaluates technical and behavioural reactions using speech recognition and Artificial Intelligence methods, and it may also generate detailed performance reports based on the user's target job position and skill level. The assistant's most significant features include its ability to identify emotions in speech, detect vital words and phrases, grade responses, have a dynamic question bank updated according to current recruitment needs, and include an integrated quiz module to keep the user interested and educated.

The assistant gives good advice on how to be clear and communicate well. It has tools that let users see how they are doing. The system also comes in languages so it can be used by many different people. This digital coach is powered by intelligence and it helps people get ready for interviews. The assistant is very useful for students and people looking for jobs because it helps them feel more confident and do better in interviews. The assistant is good for both students and job hunters as it helps them in ways including being able to speak clearly and answer questions well which is what the assistant is all about helping with interview preparation and communication and this is what the assistant does it helps people, with interviews.

Keywords: I want to talk about Mock Interview Simulation. This thing uses Artificial Intelligence. It also uses Speech Recognition to understand what I am saying. I get Adaptive Feedback which helps me to do. The system has Performance Analytics to track how I am doing. I like the Interactive Practice sessions. They have Technical and Behavioural Questions that I might face in an interview. The Adaptive Quizzes are really helpful. They have Question Generation which means I do not get the same questions again and again.

I. INTRODUCTION

The AI-Powered Interview Preparation Assistant with Integrated Adaptive Quiz Module was developed to overcome these limitations by providing a clever, engaging, and user-friendly platform that enhances interview readiness through automation and intelligent feedback systems.

The system helps people by creating situations that're like real job interviews. It looks at what they say. Finds things they can do better. The system does this by looking at how they do things over time so it can see what they need to work on. The system is really good at finding areas where the system can help users improve. It does this by looking at performance trends, for the users.

The assistant uses intelligence to figure out how well people answer technical, behavioural and HR-related questions. It also gives them quizzes that change based on how they're doing to help them learn. People can choose the type of interview they want to practice, such as HR, Technical or Behavioural interviews. The artificial intelligence system is easy to use. It helps people learn to speak and write in a way. The artificial intelligence system is a tool really.

The system is made up of a client-server system that uses question generation and evaluation methods, well as real-time analytics to give learning suggestions that are specific to each person. The artificial intelligence system looks at how people do. Helps find what they are good at and what they need to work on. It also helps build confidence through practice sessions that are repeated and based on data.

This project wants to make a solution that uses intelligence to help people evaluate themselves and get better and have a more personal experience. The artificial intelligence system will help close the gap between the way people usually get ready for interviews and what actually happens in an interview. The artificial intelligence system is good for students and people looking for jobs well, as companies that help people find jobs and get training because it can help them get better at interviews and get more people hired.

II. OBJECTIVES

1. **Automate Interview Practice:** We provide users with a space to practice their interview skills. This space utilizes computers to generate questions and assess answers. It is similar to an interview but it is not an actual job interview.
2. **Improve Communication Skills:** We evaluate how users communicate verbally and in writing. Then we inform them of their strengths and weaknesses. We consider how confident they appear how they express themselves and whether they are clear in their communication.
3. **Personalized Preparation:** We use computer programs to assist users in preparing for interviews. These programs take into account the users resume, the job they are applying for and their past performance. Then they provide the user with tailored questions and advice.
4. **Assess Technical and Soft Skills:** We want to ensure that users are well-prepared, for everything. So we assess their behavior and knowledge of their job. We refer to this as Interview Practice. Interview Practice helps users develop their Technical Skills and Soft Skills.

5. **Provide Performance Analytics:** We have to make reports and dashboards that are easy to look at and understand. These reports should show what the users are good at and what they are not so good at, and also point out areas where they need to improve.
6. **Provide Real-Time Feedback:** Users may enhance their technical, communicative, and problem-solving abilities right away by receiving prompt, actionable feedback on quizzes and mock interviews.
7. **Integrate Quiz Module:** We need a quiz module that tests the users' understanding and technical knowledge. This Quiz Module should then give the users their score. Provide extensive feedback to help them improve.

III. LITERATURE SURVEY

Researchers are working to create more sophisticated and engaging interview preparation tools by investigating multimodal and large language model-based approaches. To generate reference answers and provide rubric-based grading for non-coding technical responses, InterviewEdge proposes a Retrieval-Augmented Generation (RAG) pipeline in [1], which combines a vector store (ChromaDB) with an instruction-tuned LLM (meta-LLaMA/Llama-3.2). By highlighting limitations in vector-DB coverage and ASR/transcription noise, the study offers objective scoring for criteria such as technical accuracy and language-specific knowledge while noting constraints in comprehensive evaluations.

InterviewEase offers a three-modular architecture that better resembles end-to-end placement procedures, including skill-gap analysis, a mock interview (combining gesture detection + speech-emotion recognition + answer-similarity), and a question generator with adjustable complexity. Their implementation contains a scoring UI and an automated test/quiz generator (MCQs with difficulty control via ChatGPT APIs). According to internal test sets, their mock interview module achieves 98% gesture detection, 82% speech-emotion accuracy, and 92% answer similarity, demonstrating how quiz-module integration and multimodal feedback enable practice of both hard and soft skills. Practical limitations are also noted, such as the need for manual review of open-ended HR items, short ASR sample lengths, and lighting/sensor constraints for gesture models.

The key elements of Q&AI (Q&AI MockInterview Bot) are resume-aware question generation and multimodal confidence scoring. The system described in [3] uses transformer-based models (BERT/Roberta/ChatGPT APIs) to produce role-specific questions by extracting dominant themes from uploaded resumes. It then employs textual, audio (MFCCs/spectral features via librosa), and visual (EARblink, body-movement) cues using Bi-LSTM and CNN modules to generate confidence/sentiment scores for responses. The platform provides in-depth scorecards and session summarization to promote personalization and quiz-item recommendation based on observed gaps.

The soft skills foundations for interview assistants are explored in studies on multimodal behavior and emotion recognition (e.g., IJARCCCE, Chou et al.): Nonverbal indicators of confidence, engagement, and personality are typically derived using CNN/C3D/LSTM pipelines, OpenSMILE audio descriptors, facial Action Units, and head-pose estimation. For emotion/confidence prediction, these works demonstrate that late fusion or Bi-LSTM fusion of modalities performs better than single-modality baselines while also noting limitations in fairness, data biases, and calibration requirements for downstream decision-making.

IV. EXISTING MODELS

As described in [1], InterviewEdge is a RAG+LLM evaluation pipeline for objective grading of non-coding technical answers. The system retrieves domain-specific snippets via the retrieval-augmented generation (RAG) method, with a ChromaDB vector store and a meta-LLaMA-style (Llama-3.2-3B-Instruct) LLM synthesizing reference responses. Candidate replies are scored against references for technical accuracy, completeness, language-specific knowledge, clarity, and structure. Experiments with curated technical question sets of a programming theory flavor demonstrated strong performance for language-specific knowledge while uncovering limitations in completeness and clarity scoring, potentially caused by insufficient vector store coverage and ASR/transcription noise. The paper discusses LangChain orchestration, caching optimization, and regular vector DB refreshes to address knowledge drift.

As shown in [2], the resume-aware mock interview bot Q&AI uses transformer encoder models (BERT/Roberta/ChatGPT-style APIs) to generate resume-driven questions and parses an uploaded PDF resume into structured text features for the pipeline. The platform has text, audio, and video modules: a weighted average of modalities produces a 1–5 confidence score; sentiment analysis uses SVM + Word2Vec embeddings; and visual (EARblink, body-movement counts) + audio (MFCCs, chroma, spectral contrast via librosa) features are extracted and classified via Bi-LSTM for confidence estimation. The authors provide sample scorecards that highlight per-answer confidence, sentiment, and factuality checks, in addition to question relevance and module-wise metrics (e.g., SVM F1 $\approx$ 0.84 for sentiment).

As shown in [3], InterviewEase – a modular placement assistant – offers a three-modular design that includes (1) a skill-gap analyzer (resume $\leftrightarrow$ job description) grounded in ChatGPT; (2) a mock interview module featuring gesture detection, speech-emotion recognition, and answer-similarity scoring; and (3) a question generator that allows for difficulty adjustment. On their internal test sets, the mock interview module achieves 98% body-gesture detection, 82% speech emotion recognition, and 92% answer similarity. Implementation notes include the use of wav2vec2-style speech models for emotion estimation (with warnings about short-sample optimization), OCR/resume parsing for skill extraction, and ChatGPT (3.5) API calls for question difficulty adjustment. Practical limitations are highlighted, including the need for fine-tuning gesture models across poses, ASR sample-length sensitivity, and manual processing of open-ended HR questions.

Dashboard+Explainability prototypes (as described in multiple papers) emphasize presenting multimodal feedback in a transparent manner, including scorecards, timelines of confidence/emotion, transcript highlights, and RAG references, as shown in [6]. These works make the case for explainability being crucial when feedback may influence hiring decisions, highlight human-in-the-loop review for ambiguous judgements, and give examples of saliency/attention visualizations for nonverbal cues. Threshold alerts, per-metric confidence intervals, and channels for manual reviewer override are suggested design considerations.

As shown in [7], historical chatbots and lightweight ML baselines still have value in certain use cases. Older systems used to figure out what people meant by breaking down what they said into parts, called tokenization and then looking for important words or keyword matching or they used traditional ways to classify things like SVM, Decision Trees and Naïve Bayes. These older systems would then use these methods to put responses into groups based on how well they were done, which is called competency tiers.

Nowadays people are studying how to do this. They found out that using embeddings is really good for figuring out if a question is relevant and for mapping out what the question is asking, which is called rubric mapping. Contextual embeddings are better at this than using transformer-based similarity, like RoBERTa or SBERT embeddings and then comparing how similar they are which is called cosine similarity.

V. Proposed system

The system we are talking about is an interview helper that uses Artificial Intelligence to get people ready for interviews. It gives each person an interactive way to practice for interviews by using speech recognition and Artificial Intelligence. This system also has quizzes that change based on how the person's doing and it makes the person feel like they are really in an interview. It looks at what the person says. Gives them feedback that is just for them. Here is what the AI-Powered Interview Preparation Assistant does:

1. UserInterface(UI):

The system begins with a user-friendly interface where individuals can register or log in to access the application. This serves as the main point of interaction between the user and the system.

2. Interview Preparation Module:

When you log in you can take part in interview sessions. These sessions have HR questions, behavioural questions and technical questions. This module creates interview situations that help you feel more ready and confident for your interview.

3. Adaptive Quiz Module:

The quiz module has questions about topics. You will find choice and short answer questions. The questions get harder or easier depending on how you're doing. This means you will always be challenged to learn more.

4. AI Evaluation Engine:

The AI Evaluation Engine gives you a score for your answers. It checks if your answer is on topic if it makes sense if the tone is good and if you sound confident. You get feedback all the time so you know how you are doing.

5. Result and Recommendation Display:

After the AI Evaluation Engine checks your answers the system shows you the results. It also gives you advice on what to do.

This helps you see how you did and what you need to work on to improve.

6. Report Generation and Print Option:

At the end you can make a report of your performance download it or print it. You can use this report to look at later or share it with someone, like a teacher or a friend.

Proposed System Architecture

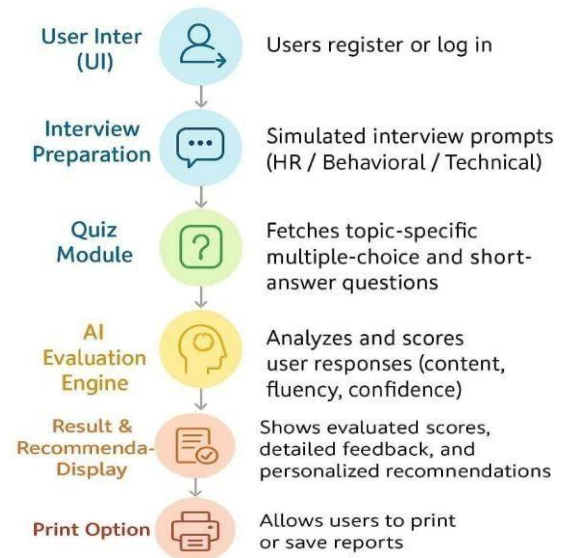


Fig 1: AI-Powered Interview Preparation Assistant with Integrated Adaptive Quiz Module architecture and functionality

VI. METHODOLOGY

To help you get ready for interviews in a way the system breaks it down into simple steps. It uses language and computer intelligence to pretend you are in a real interview and check what you know. This way you can see how your answers look. It helps make special tools just for you like quizzes with questions that change based on what you say. You also get feedback on how you're doing.

- 1. Interview Question Processing:** The system asks you questions like a human resources person would. These questions are about a topic. You answer them. The system writes down your response. If you spoke your answer out loud the system turns it into text. This way the system has a copy of what you said to look at closely. This question and answer part helps the system understand how you are doing. It also makes the evaluations more accurate. Getting ready for an interview is made easy for you. It is really interesting. The system makes the whole experience easy for you.

2. **Response. Keyword Extraction:** This part checks if you answered the interview question correctly. It also checks if you left out any information or talked about something that's not relevant to the question. The system is very good, at understanding what you say. It uses this to help you improve your interview answers. The system looks at the words and ideas you used to evaluate your response. It puts your response into a category related to the topic. This helps the system understand your response and extract keywords. Keyword Extraction is important because it helps the system know what you are talking about. Response Understanding is also important because it helps the system know if you answered the question correctly. The system uses Response Understanding and Keyword Extraction to make your interview practice better.

3. **Contextual Feedback and Generation:** Following the identification of the response's main ideas, the system generates either an enhanced version of the candidate's answer or a comprehensive explanation to aid in deeper understanding. The system uses language models to give long answers that help people understand things better. It corrects mistakes. Explains technical things in a way that is easy to understand. This helps people learn and get ready for interviews.

4. **Interview Simulation and Adaptive Question Generation:** The system has an interview simulator that asks follow-up questions based on how the person does. If the person has trouble with things like algorithms or talking to people the system makes custom questions to help them get better. This is like a practice interview where the person has to answer harder questions.

5. **Quiz Generation (Adaptive Quiz Module):** The system also has a quiz maker that uses models to make multiple-choice questions based on how the person does. These questions can be about things how people behave talking and writing or thinking and problem-solving. Each question is graded automatically. Gets harder or easier based on how the person does. This helps people get ready, for interviews by making quizzes that're just right for them.

6. **User Interface in Display and Interaction:** All the aforementioned modules' outputs will be consolidated within a unified interface that presents the feedback explanations, performance summarization, adaptive questions, and quiz elements. The candidates can view detailed feedback, take quizzes with automatic scoring, observe trends in their progress, and review past interview sessions through this interface.

The candidates can view detailed feedback, take quizzes with automatic scoring, observe trends in their progress, and review past interview sessions through this interface. This ensures a seamless and intuitive user experience by aggregating simulation, analysis, and assessment functionalities within a single space, thus enhancing accessibility and engagement while encouraging continuous improvement in the AI-based interview preparation system.

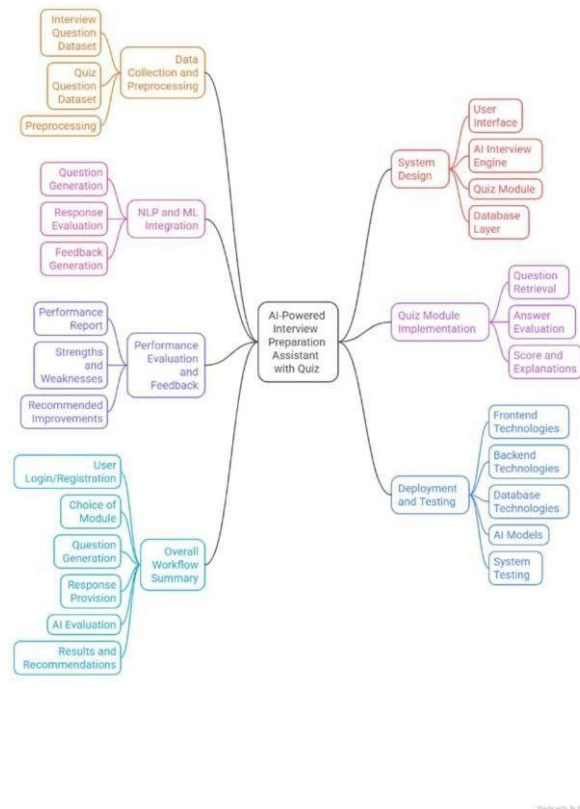


Fig 2: Workflow of the AI-Powered Interview Preparation Assistant with Integrated Adaptive Quiz Module

IX. CONCLUSION AND FUTURE SCOPE

The Interview Preparation Assistant uses thinking and language to help people get ready for interviews. It has a special quiz section that changes to fit each person's needs. This makes it a new way to prepare for interviews. The Interview Preparation Assistant is good at helping people because it uses thinking and language. The Interview Preparation Assistant has to understand what people are saying and adjust its questions.

It looks at what the user says and gives feedback that's just right for them. The platform helps people learn by having a quiz that changes based on what they're not good at. The Interview Preparation Assistant quiz helps people want to learn more and figure out what they need to work on. It also helps them remember what they learned. The Interview Preparation Assistant is good at helping users improve their communication skills.

The Interview Preparation Assistant gives scores and helpful feedback. Has dashboards so users can see how they are doing. This helps them keep going without needing a lot of help from others. To make the experience better, for each person the Interview Preparation Assistant could add things like recognizing emotions and looking at videos to see how people act and changing how hard the questions are. The Interview Preparation Assistant could also add analysis that happens right away predicting how well someone will do and support in many languages. With these changes the Interview Preparation Assistant could become a way to help people prepare for interviews. The Interview Preparation Assistant would help them get ready. Keep improving their skills and ability to find jobs.

REFERENCES

- [1] P. Kothari, P. Mehta, S. Patil, and V. Hole, "InterviewEase: AI-powered Interview Assistance," Research Square, Feb. 2024, doi: [10.21203/rs.3.rs-3964944/v1](https://doi.org/10.21203/rs.3.rs-3964944/v1).
- [2] D. Chavan, M. Lomate, P. Sutar, R. Mehtre, S. Ghayal, and A. M. Dyade, "InterPrep: Intelligent Mock Interview Platform for Professional Development," International Research Journal of Engineering and Technology (IRJET), vol. 11, no. 12, pp. 178–183, Dec. 2024.
<https://www.irjet.net/archives/V11/i12/IRJET-V11I1230.pdf>
- [3] F. S. Ghodichor, P. Dandage, A. Jadhav, A. Shahane, and P. Mohite, "AI-Powered Mock Interview Evaluator," Journal of Emerging Technologies and Innovative Research (JETIR), vol. 11, no. 11, pp. 931–933, Nov. 2024.
<https://www.jetir.org/papers/JETIR2411091.pdf>
- [4] P. Kumar, N. Kumar, P. Dutta, T. Ansary, and G. S. Reddy, "Artificial Intelligence Powered Mock Interview Generator: Revolutionizing Interview Preparation with Real-Time Feedback," International Research Journal of Engineering and Technology (IRJET), vol. 12, no. 3, pp. 765–770, Mar. 2025.
<https://www.irjet.net/archives/V12/i3/IRJET-V12I3118.pdf>
- [5] Uppalapati, P.J., Dabbiru, M. & Kasukurthi, V.R. "AI-driven mock interview assessment: leveraging generative language models for automated evaluation". Int. J. Mach. Learn. & Cyber. (2025).
doi: <https://doi.org/10.1007/s13042-025-02529-9>
- [6] Koshti, Harsh and Gosavi, Prathamesh and Pagar, Roshan and Khairnar, Prathamesh and Talekar, Sopan, "AI-Powered Interview Preparation System: Integrating Resume Analysis, HR Simulation, and Technical Skill Assessment" (April 01, 2024).
doi: <http://dx.doi.org/10.2139/ssrn.5238093>
- [7] Y. N. M. N., L. C. K., S. L., and G. D., "AI-Driven Mock Interview: A New Era in Candidate Preparation," International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE), vol. 13, no. 11, pp. 222–223, Nov. 2024, doi: [10.17148/IJARCCE.2024.131134](https://doi.org/10.17148/IJARCCE.2024.131134).
- [8] R. Nithya and V. Sukirtha, "Intelligent Job Interview Preparation and Career Advancement," International Journal of Computer Science (IJCS Journal), vol. 13, no. 1, pp. 11–21, 2025.
<https://ijcsjournal.com/images/books/IJCS-554.pdf>
- [9] J. R. Bhuva, T. V. Parmar, H. B. Prajapati, and V. K. Dabhi, "InterviewEdge: A Smart Interview Assistant," 2025 IEEE International Students' Conference on Electrical, Electronics, and Computer Science (SCEECS), pp. 1–7, 2025, doi: [10.1109/SCEECS64059.2025.10940590](https://doi.org/10.1109/SCEECS64059.2025.10940590)
- [19] Pramod Kumar Poladi; Sharanya Godishala; Lasya Thatikonda; 2026 9th(IEMETech)
<https://ieeexplore.ieee.org/document/11434365/>
- [11] Sajja, Ramteja, et al. "Artificial intelligence-enabled intelligent assistant for personalized and adaptive learning in higher education." Information 15.10 (2024): 596.
doi: <https://doi.org/10.3390/info15100596>
- [12] G. S. Rao, M. Jaiganesh, M. A. K, M. A. A. A, N. R and P. K. Parida, "AI Powered Virtual Job Interview Simulator Using Natural Language Processing," 2025 8th International Conference on Trends in Electronics and Informatics (ICOEI), Tirunelveli, India, 2025, pp. 1413–1421
doi: [10.1109/ICOEI65986.2025.11013504](https://doi.org/10.1109/ICOEI65986.2025.11013504)