International Journal of Scientific Research & Engineering Trends
Volume 12, Issue 2, Mar-Apr-2026, ISSN (Online): 2395-566X

Agentic AI-Based Interview Preparation Assistant

Shashank Tiwari, Amrutha Uppala , Manasa Aerragunta , Rishikar Ummadi
Dept. of CSE (AI & ML) ACE Engineering College Hyderabad, India

Abstract- — Interview preparation is an important process for students and job seekers, but traditional preparation methods often lack personalized feedback and real interview experience. In this paper, an Agentic AI–based Interview Preparation System is presented that simulates interview scenarios and evaluates candidate responses. The system generates role-based interview questions using a job role and skills dataset and evaluates answers using Natural Language Processing techniques. It also provides feedback and improvement suggestions to help candidates enhance their performance. By automating interview practice and evaluation, the system provides a structured and interactive way to prepare for interviews. Overall, this approach improves interview readiness, confidence, an d skill assessment in a cost-effective and accessible way.

Keywords – Agentic AI, Interview Preparation, Mock Interview, Natural Language Processing, Large Language Model, Skill Gap Analysis.

I. INTRODUCTION

Preparing for job interviews is a challenging task for many students and job seekers. Interviews require not only technical knowledge but also communication skills, confidence, and problem-solving ability. Traditional interview preparation methods such as reading questions, attending training sessions, or practicing with friends do not provide proper evaluation or personalized feedback.

Many existing online interview platforms provide practice questions, but they do not adapt to user performance or provide detailed feedback on answers. As a result, candidates are not able to identify their strengths and weaknesses effectively.

With advancements in Artificial Intelligence and Natural Language Processing, intelligent interview preparation systems can be developed to simulate interviews and evaluate responses. Agentic AI systems can autonomously manage tasks such as question generation, answer evaluation, and feedback.
In this paper, an Agentic AI–based Interview Preparation System is proposed. The system generates interview questions based on job role and skills, evaluates candidate responses using NLP techniques, and provides feedback to improve interview performance.

II. LITERATURE SURVEY

Many researchers have explored AI-based interview preparation systems, automated evaluation systems, and intelligent training platforms. The following studies provide insights into existing approaches and their limitations.

A. G. Shivaji Rao et al. (2025)
This paper proposed AI-powered virtual job interview simulator that utilizes Natural Language Processing to generate interview questions and evaluate candidate responses. The system designed to simulate real-world interview scenarios, helping users practice effectively. It analyzes user inputs and provides automated feedback based on correctness and relevance.

.B. S. Agarwal et al. (2025)
This proposed Generative AI-powered mock interview system that offers real-time multimodal feedback and skill matching. By integrating Large Language Models, the system generates context-aware questions tailored to job roles and evaluates responses dynamically.

C. T. T. H. Nguyen et al. (2025)
This paper reviews SimInterview, a multilingual interview training platform powered by large language models. The system enables users to practice interviews in multiple languages, making it suitable for a global audience. It generates context-based questions and provides intelligent feedback based on user responses.

D. D. Verma et al. (2025)
This research evaluates candidate responses and maps them to required job skills to provide structured feedback. It focuses on identifying strengths and weaknesses in user performance.The study emphasizes the importance of automated evaluation in reducing human effort and increasing efficiency.

E. Sridevi R et al. (2025)
This paper presents a proposed Virtual interview simulator that leverages AI/ML and vision technologies. It analyzes both

verbal and non-verbal cues such as facial expressions, gestures, and eye contact. The system aims to create a realistic interview environment for users.

III. SYSTEM ARCHITECTURE

The proposed system follows a structured architecture consisting of a user interface, Agentic AI Controller, Question Generation Module, Response Evaluation.

The user interface allows users to enter company name, job role, and required skills. These inputs are passed to the Agentic AI Controller, which manages the workflow of the system.

The Question Generation Module generates interview questions based on job role and skills using a dataset and language model. The user submits answers to the generated questions.

The Response Evaluation Module evaluates candidate answers using Natural Language Processing techniques and compares them with expected answers or keywords. The system identifies skill gaps and performance level. The Feedback Module generates personalized feedback and improvement suggestions based on the results This helps users understand their strengths and weaknesses and improve their interview performance.

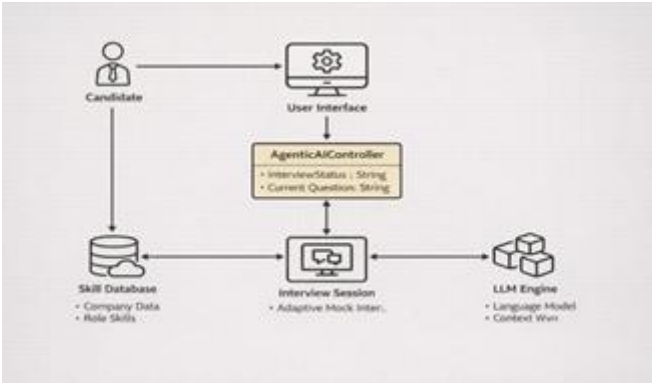

Fig 1: System Architecture for Agentic AI – Based Interview Preparation system

IV. PROPOSED METHODOLOGY

The proposed methodology consists of multiple stages for interview preparation and evaluation.

First, the user enters company name, job role, and skills. The system processes this input and retrieves relevant interview questions from the dataset.

Next, the system generates interview questions and presents them to the user. The user submits answers for the generated questions.

The system then evaluates the answers using Natural Language Processing techniques and analyzes answer quality, keywords, and relevance.

Finally, the system generates feedback, improvement . suggestions based on the evaluation results. This helps users improve their interview performance and prepare effectively.

V. EVACUATION ALGORITHM

- Input company name, job role, and skills.
- Generate interview questions from dataset.
- Display questions to the user.
- User submits answers.
- Process answers using NLP techniques.
- Compare answers with expected answers or keyword.
- Evaluate answer quality and skill level.
- Identify strengths and weaknesses.
- Generate feedback and improvement suggestions.
- Display results to the user.

VI. RESULTS AND DISCUSSION

The proposed Agentic AI Interview Preparation System was tested with different job roles and skills to evaluate its performance. The system successfully generated relevant interview questions based on user input and evaluated candidate responses using Natural Language Processing techniques.

The results show that the system can identify skill gaps and provide useful feedback to users. The feedback helps users understand areas where they need improvement and improve their interview performance.

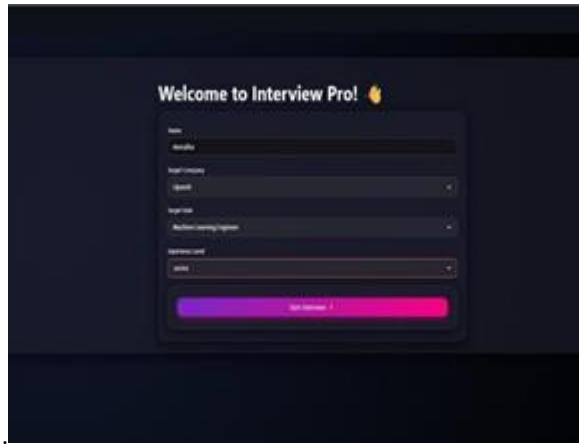

Fig 2: Initial User Interface Layout for Interview

Compared to traditional interview preparation methods, the proposed system provides automated evaluation, personalized feedback, and structured interview practice. This improves learning efficiency and interview readiness.

Fig 3: Interview complete and plan for improvement

VI. CONCLUSION

This paper presented an Agentic AI–based Interview Preparation System for improving interview practice and skill assessment. The system generates interview questions based on job roles and skills, evaluates candidate responses using Natural Language Processing, and provides feedback for improvement.

The proposed system helps candidates practice interviews in a structured and interactive way. It also helps users identify strengths and weaknesses and improve their performance. Compared to traditional interview preparation methods, the system provides automated evaluation and personalized feedback.

The Future work can focus on integrating speech analysis, resume analysis, and performance tracking to enhance system capabilities. Overall, the system demonstrates the potential of Agentic AI in interview preparation and training applications.

REFERENCES

1. G. Shivaji Rao, J. Mahalingam, M. Anas K., M. Asfaq Ali A., N.
2. R. & P. K. Parida, “AI Powered Virtual Job Interview Simulator Using Natural Language Processing,” Proc. 8th Int. Conf. Trends in Electronics and Informatics (ICOEI), 2025.
3. S. Agarwal, J. Gupta, A. Kulshrestha & A. Singhal, “Generative AI-Powered Mock Interview System with Real-Time Multimodal Feedback & Skill Matching,” IEEE/IC3 2025
4. T. T. H. Nguyen, T. D. Q. Nguyen, H. L. Cao et al., “SimInterview: Transforming Business Education through Large Language Model-Based Simulated Multilingual Interview Training System,” ICEFM, Aug. 2025.
5. D. Verma, R. Padwar, A. Chandrakar, K. Jaiswal, and P. Mishra,
6. “AI-Powered Mock Interview System for Automated Skill Assessment,” IJRASET, vol. 17, no. 3, 2025.
7. Sridevi R. and Nithyabharathi S., “Virtual Interview Simulator: Leveraging AIML and Vision Technology,” IJRASET, 2025.
8. V. Seedha Devi et al., “AI Powered Mock Interview Coach Utilizing CNN and NLP,” Int. J. Adv. Res. Educ. Technol., vol. 12, no. 3, 2025.
9. Tejaswini K. et al., “AI-Powered Mock Interview Platform with NLP And Speech Analysis,” Int. Res. J. Adv. Eng. Hub, Aug. 2025.
10. Z. Liu, “Interview AI-ssistant: Designing for Real-Time Human-AI Collaboration in Interview Preparation and Execution,” IUI, Mar. 2024.