

Virtual Interviewers, Real Results: Exploring AI-Driven Mock Technical Interviews on Student Readiness and Confidence



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Abstract

Technical interviews are a stressful step for computer science graduates, made harder by limited access to practice opportunities. This study ($N = 20$) explores whether a multimodal AI system can realistically simulate interviews and support confidence-building. Participants used an AI-driven mock interview tool with whiteboarding tasks and real-time feedback. Many described the experience as realistic and helpful, reporting greater confidence and better articulation of problem-solving. Challenges with conversational flow and timing were noted. Overall, findings show the promise of AI-driven mock interviews as scalable, realistic preparation tools and highlight directions for improving design and future research.

Research Questions

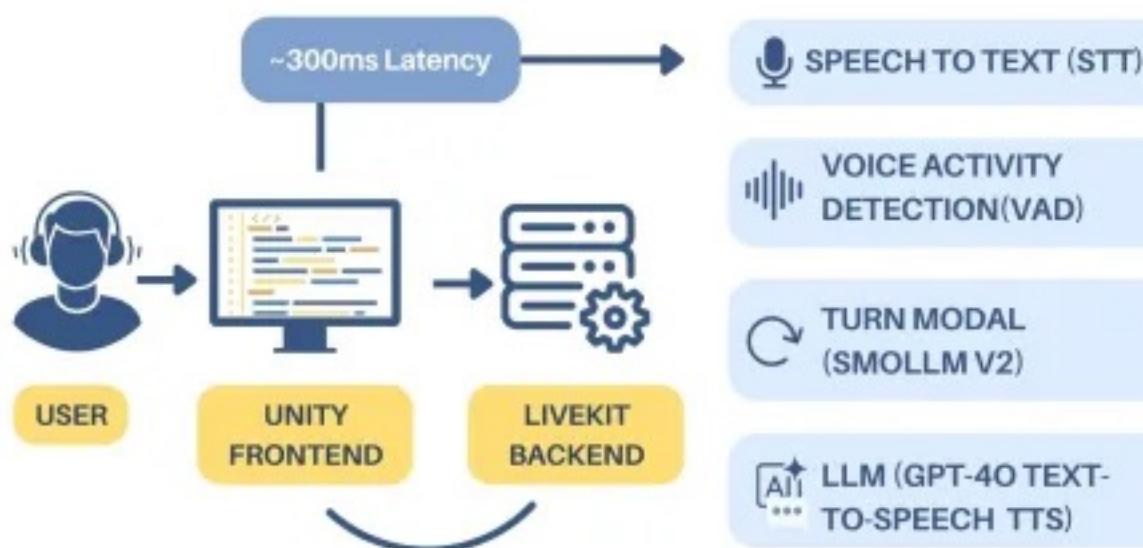
- RQ1: Can an AI-driven mock interview realistically simulate a technical interview?
- RQ2: How does interacting with an AI interviewer impact student confidence and perceived readiness?
- RQ3: What are the benefits and limitations compared to traditional prep methods?

System Overview

We built an AI-powered mock interview system combining generative models with multimodal interaction to simulate realistic technical interviews. It features:

- A Unity-based frontend with a whiteboarding-style code editor
- GPT-4o for dynamic interviewer dialogue and feedback
- Deepgram (speech-to-text) and Silero (voice activity detection) for spoken input
- Real-time code tracking and smooth verbal turn-taking (~300ms latency)

The interface mimics real interview conditions, minimalist by design, with only syntax highlighting and auto-indentation. Code and dialogue are continuously logged, enabling a structured yet low-pressure experience.



Methodology

Participants: 20 students (12 men, 8 women) from a U.S. university's College of Computing & Informatics (juniors, seniors, graduate students).

Session: 50 minutes, IRB-approved.

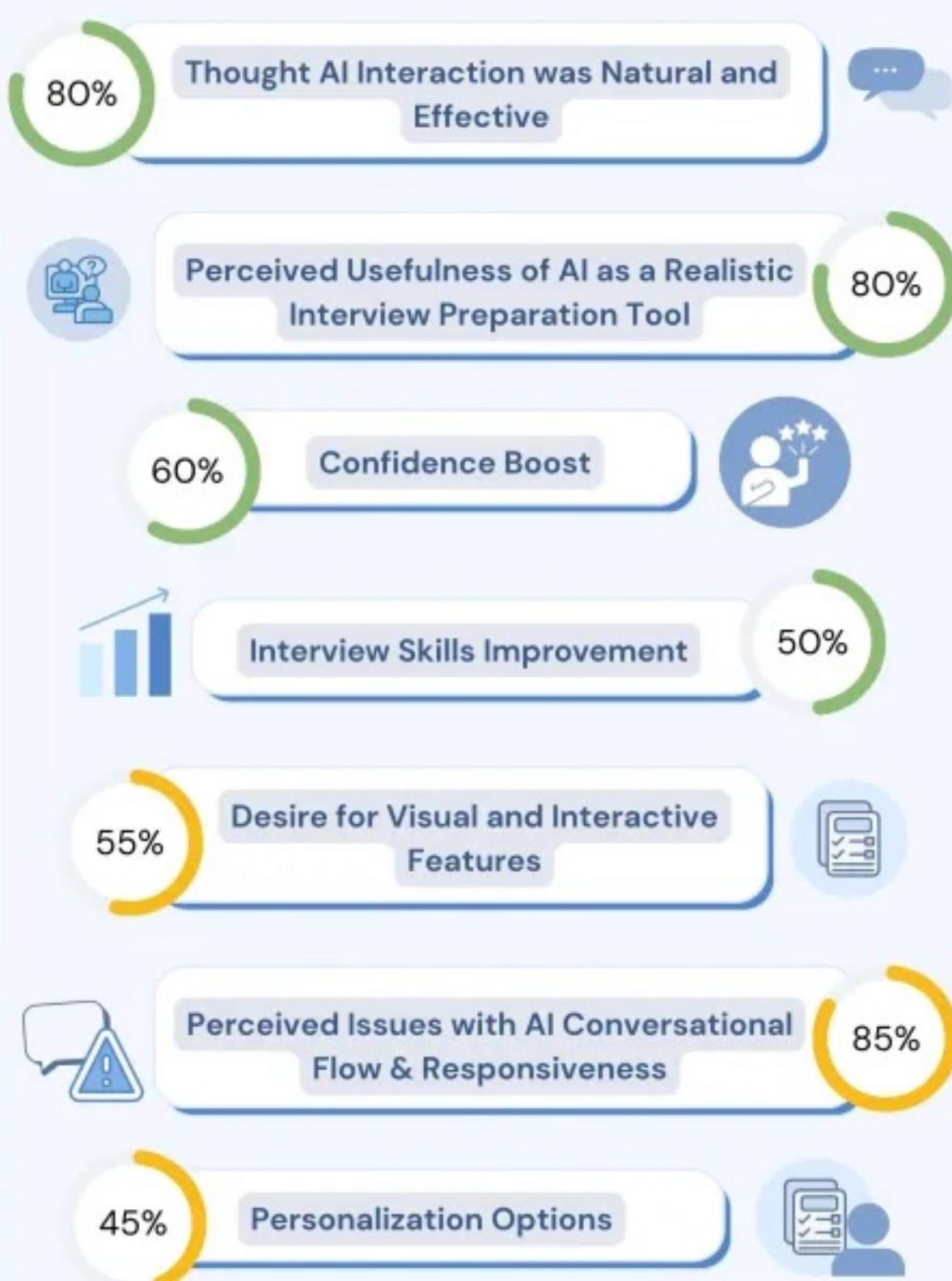
Setup: Headphones provided for comfort and privacy.

Procedure:

- Pre-survey captured demographics and prior interview experience.
- Participants completed a whiteboarding-style mock interview with an AI agent, using a "Medium"-level LeetCode problem (same for all).
- Post-interview, participants completed a semi-structured interview reflecting on realism, experience, and confidence.

Results & Discussion

We conducted a grounded thematic analysis following Braun and Clarke's six-phase framework, systematically reviewing and coding semi-structured interview transcripts to identify key themes.



Future Work

We plan to evolve the system with adaptive personalization—letting users set difficulty levels, interviewer tone, and guidance intensity. Future iterations will integrate embodied AI agents to simulate nonverbal cues and presence. We will also evaluate long-term impact through repeated-use studies and controlled comparisons against peer-led and solo prep, with broader recruitment to ensure inclusivity and external validity.