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PREPMATE: Nail Every Interview with AI

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ABSTRACT: With increasing demand for intelligent, secure, and scalable evaluation systems in recruitment and education, traditional interview methods are proving inefficient and vulnerable. This research presents PREPMATE, an AI-powered virtual interview simulator that uses GPT-4 for resume parsing and dynamic questioning, alongside real-time facial recognition to ensure secure and personalized candidate evaluations. The system generates tailored questions, provides instant feedback, and authenticates candidates through biometric verification, offering a comprehensive and fraud-resistant assessment environment. The platform aims to bridge gaps in traditional interviews by offering fairness, engagement, and technological reliability.

KEYWORDS: GPT-4, Resume Parsing, Facial Recognition, Dynamic Questioning, AI Interview, Candidate Evaluation, Biometric Verification, Adaptive Assessment

I. INTRODUCTION

Conventional candidate assessments are often manual, static, and susceptible to bias or impersonation, especially in remote settings. PREPMATE revolutionizes this by leveraging artificial intelligence and biometric technologies to automate resume analysis and interview question generation. GPT-4 enables intelligent parsing and real-time questioning, while facial recognition ensures the legitimacy of participants.

Key limitations of traditional systems include:

- Inconsistent interviewer judgment and question irrelevance
- Lack of real-time candidate engagement and feedback
- Vulnerability to impersonation and cheating
- Inability to scale across large applicant pools

PREPMATE provides a unified solution that offers dynamic, personalized, and secure evaluations ideal for recruiters, educators, and certifying authorities.

II. PROPOSED METHODOLOGY

A. Resume Parsing and Skill Extraction

- Candidates upload resumes in PDF format.
- GPT-4 processes and extracts structured data: skills, education, work history, certifications, and achievements.
- Key skills are prioritized based on frequency, relevance, and domain-specific importance.
- Parsed data is stored for interview question generation and analytics.





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Figure1.1 Resume Parsing and Skill Extraction

B. Dynamic Question Generation and Feedback

- GPT-4 generates multiple personalized questions per skill, avoiding redundancy.
- Questions vary in difficulty based on candidate profile and previous responses.
- Follow-up questions are formulated dynamically to simulate real-world interviews.
- Instant feedback includes ratings on clarity, depth, and confidence.
- Feedback is stored for candidate review and system learning.





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INPUT TEXT PROCESSINGG Analyze input text to identfy key concepts and information TEMPLATE MATCHING Utilize predefined templates to structure questions **QUESTION GENERATION** Formulate questions and answer choices accordingly FEEDBACK Provide feedback on generated questions

Figure 1.2 Question Generation and Feedback

C. Biometric Identity Verification

- Real-time facial recognition using deep learning algorithms (OpenCV, dlib).
- Continuous tracking ensures the same candidate is present throughout.
- Multiple faces, screen-switching, or suspicious behavior triggers system alerts.
- Facial metrics can also provide soft skill cues (e.g., attentiveness, stress).
- Secure data logging prevents tampering or fraud.

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Facial Recognition Processs

Figure 1.3 Identity Verification

D. Secure Interview Management

- Flask-based web application manages user registration, uploads, and sessions.
- Interview state is preserved using backend Python logic with session control.
- Chat interface allows natural interaction with the AI engine.
- Scalable backend supports multiple concurrent interviews.
- Logs and results are securely stored with access control for recruiters.





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D. Assessment and Adaptation

Figure 1.4 Secure Interview Management

III. RESULTS AND PERFORMANCE EVALUATION

A. Performance Metrics

| Metric | Traditional Interviews | PREPMATE |
|-----------------------|---------------------------|--------------------------------|
| Personalization | Low | High (GPT-4 based) |
| Identity Security | Low | High (Biometric) |
| Question Adaptability | Static | Real-time Adaptive |
| Feedback | Delayed/None | Instant |
| Candidate Engagement | Low | High (Conversational & Visual) |
| Evaluation Time | High | Reduced by 40–60% |





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B. Observations

- Improved match between questions and candidate expertise.
- Increased candidate satisfaction due to personalized feedback.
- Enhanced recruiter confidence in decisions through transparent metrics.
- Reduced bias and improved diversity in evaluations.
- Biometric alerts flagged several test cases of impersonation or dual presence.

C. Testing Environment

- Processor: Intel Core i9 14900K
- RAM: 16GB DDR4
- Frontend: HTML5, CSS3, Bootstrap
- Backend: Python 3.11, Flask
- NLP: GPT-4 (OpenAI API)
- Biometric Stack: OpenCV, TensorFlow, Dlib
- Database: SQLite for credentials and logs

IV. CONCLUSION AND FUTURE ENHANCEMENTS

PREPMATE demonstrates the power of integrating AI and biometrics in modern candidate evaluation. It automates resume parsing, personalizes questioning, and ensures secure assessments through facial recognition. The platform enhances fairness, efficiency, and candidate engagement, and is adaptable for recruitment, educational assessments, and certifications.

Future Enhancements:

- Emotion and voice tone detection for deeper soft skill evaluation
- Multilingual support to cater to global users
- Blockchain-based result storage to ensure tamper-proof logs
- Recruiter analytics dashboards for performance insights
- Personalized course recommendations post-evaluation
- Integration with job portals or LMS platforms
- Mobile application with camera and microphone access for remote interviews

V. AUTHORS AND AFFILIATIONS

Krishna P, Aswin P, Aswin G, Sabarieswaran G are final-year UG students at Sir Issac Newton College of Engineering and Technology, Nagapattinam. Their expertise includes artificial intelligence, machine learning, and secure systems. The PREPMATE project is a product of their capstone initiative to transform digital candidate evaluation.

Mrs. Gowri K is Assistant Professor in the Department of CSE Sir Issac Newton College of Engineering and Technology. Her contributions in architecture design, research direction, and AI model integration were key to the project's success.

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