

MOCK INTERVIEW SYSTEM

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Abstract -Sconti-AI is an innovative platform revolutionizing exam preparation and interview practice by harnessing advanced AI technology. It offers detailed feedback, scores, and explanations for mock tests, optimizing learning outcomes and improving performance. Its standout feature, a mock interview tool, uses Generative AI and image recognition to detect cheating, analyze emotional responses, and provide personalized insights for better interview preparation. Built with robust technologies like React, Python-Flask, and Gemini-AI, the platform ensures scalability, reliability, and user engagement.

Key Words: LLM, Media Pipe, Gemini AI, AI, ML and Image Processing.

I. INTRODUCTION

The mock interview system leveraging AI, ML, and image processing technologies aims to revolutionize interview preparation by providing a highly interactive and realistic simulation environment. Using AI, the system can simulate diverse interview scenarios tailored to various industries and roles, adapting questions based on the user's profile and desired practice areas. Machine learning algorithms analyze user responses in real-time, providing instant feedback on content, communication style, and confidence levels. This personalized feedback helps users identify strengths and areas needing improvement, enhancing their interview skills progressively over multiple sessions.

A mock interview system leveraging AI, machine learning (ML), and image processing represents a sophisticated approach to enhancing the interview process. This system aims to provide a realistic and insightful experience for candidates preparing for real-world job interviews. By integrating advanced technologies, the system not only simulates actual interview conditions but also offers detailed feedback to help candidates improve their performance. At its core, the mock interview system is designed to create a virtual environment where candidates can practice answering interview questions.

Unlike traditional methods, this system uses AI and ML to provide a more dynamic and interactive experience. It starts by recording video and audio data from the candidate as they answer a series of pre-set questions. Capturing both video and audio data is vital for analyzing verbal and non-verbal cues. Artificial Intelligence and Machine Learning are crucial in analyzing the collected data. ML algorithms are trained to

evaluate a range of performance metrics based on the candidate's responses.

II. LITERATURE REVIEW

In paper [1], It presents a system that simulates job interviews and provides real-time feedback using deep learning techniques. The system utilizes convolutional neural networks (CNNs) for facial expression recognition and recurrent neural networks (RNNs) for speech analysis. These algorithms help the system evaluate the candidate's verbal and non-verbal responses, providing insights into their communication skills and emotional states.

Paper [2], It introduces a platform that uses AI to analyze interview performance. The system creates interview questions and reviews responses through natural language processing (NLP) and machine learning algorithms. It provides answers with the help of natural language processing, delivery, and non-verbal cues. The platform aims to assist users in enhancing their interview skills through detailed, real-time feedback. Algorithms Used are NLP and Machine Learning.

Paper [3], It presents a project paper that generates mock interviews using NLP and machine learning. The system adapts questions based on the user's job role and experience level, and analyses responses in real-time. It provides feedback on communication skills, confidence, and emotional expressiveness, helping candidates improve their interview performance. Algorithms Used are Natural Language Processing (NLP) and Machine Learning.

In paper [4], Develop a system that evaluates interviewees by analysing their emotions and behaviour. The system employs deep learning algorithms to process video and audio data, assessing facial expressions, body language, and speech patterns. This multimodal approach provides comprehensive feedback on the candidate's performance. Algorithms Used are Deep Learning and Multimodal Data Analysis.

Finally, paper [5], It presents a model that evaluates mock interviews by classifying emotions and confidence levels. It makes use of algorithms to detect emotions from facial expressions and to assess confidence from speech patterns. This comprehensive feedback helps candidates improve their interview skills by understanding their emotional and confidence levels. Algorithms Used are Emotion Detection Algorithms and Confidence Classifiers.

III. METHODOLOGY

1. Requirements Analysis

Gather and analyze requirements to define functionalities for generating mock tests and interviews, ensuring alignment with user needs.

Collaborate with stakeholders to refine functionalities and ensure the system meets specific needs for exam preparation and interview practice.

Research current technologies and solutions in AI-driven education tools to identify best practices and innovation opportunities.

Adapt requirements based on ongoing feedback and evolving user needs to ensure the system remains relevant and effective.

LLM: A large language model is a type of artificial intelligence that can understand and craft text that feels authentically human-written. It acquires knowledge from extensive text data to achieve this. These models are built using advanced machine learning techniques, particularly deep learning, and the model is developed using large-scale datasets that include diverse text sources such as notebooks, and websites. The core of an LLM is its neural network architecture, often utilizing transformer models, which allows to process and generate text in a contextually relevant manner. Transformers use a method called self-attention to decide which forms sentences with each different word are most important. This helps the model understands and generates text that makes sense and is relevant.

Gemini AI: Gemini AI is an advanced artificial intelligence system created by Google DeepMind. It is able to handle a various of tasks involving comprehension and creation of natural language. Gemini AI combines state-of-the-art machine learning techniques with large-scale data processing to deliver accurate and contextually relevant responses. The primary use of Gemini AI is to enhance interactions in applications such as chatbots, digital assistants, and customer service platforms. It can understand and address user inquiries in a conversational manner, making it useful for providing information, answering questions, and facilitating human-computer interactions.

MediaPipe: MediaPipe is a powerful open-source framework developed by Google that focuses on real-time computer vision tasks. It provides pre-built models and tools for a variety of applications, such as face detection, hand tracking, and pose estimation. One of MediaPipe's primary uses is in developing applications that require tracking and analyzing human movements. For example, it can be used in fitness apps to monitor exercises, in augmented reality (AR) apps to overlay digital objects on users, or in virtual makeup applications to apply makeup in real-time. MediaPipe's strength lies in its efficiency and ease of integration. It uses optimized pipelines to process video and image data quickly, which is essential for real-time applications.

2. Design:

Develop Use Case Diagrams to map out user interactions with the AI-driven features, including question generation and interview analysis.

Utilize UML diagrams to document system architecture, ensuring clarity and coherence in the design process.

Focus on usability and accessibility, incorporating feedback from usability tests to refine the user interface and improve the user experience.

Conduct design reviews with cross-functional teams to integrate various perspectives and enhance the system's overall design.

3. Development:

Implement both frontend and backend components, ensuring seamless integration of generative AI for generating tests and analyzing interviews.

Develop and integrate robust validation mechanisms and security protocols to protect user data and ensure compliance with privacy regulations.

Design an intuitive interface for users to interact with mock tests and interviews, enhancing user engagement and functionality.

Ensure responsive design and cross-platform compatibility for a consistent experience across different devices.

Perform rigorous testing, including unit and integration tests, to resolve any issues before final deployment.

4. Testing:

Execute comprehensive testing to validate the functionality and performance of AI driven features, ensuring they meet user expectations.

- Verify the integration between different system components to maintain data consistency and smooth operation.

- Conduct user acceptance testing to gather feedback and make necessary adjustments to align with user requirements.

- Implement quality assurance practices, including iterative reviews and improvements, to enhance system reliability and user satisfaction. This methodology outlines the structured approach taken in developing Sconti-AI, emphasizing user-centered design, robust development practices, and thorough testing to deliver an effective solution for exam and interview preparation.

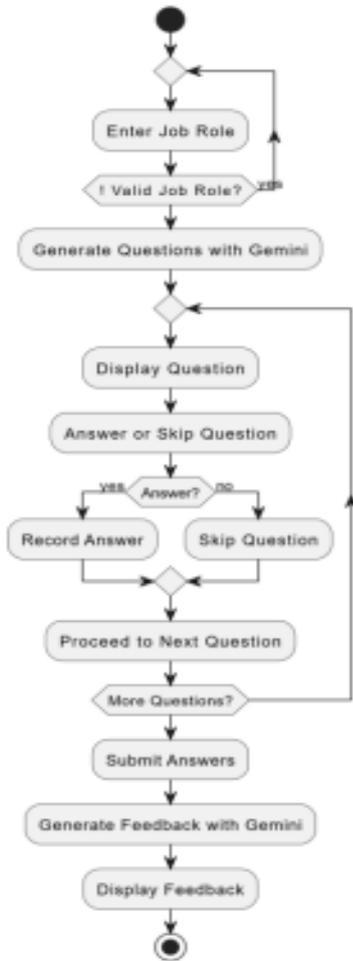


Figure 1: METHODOLOGY



Figure 2: INSERTION OF JOB TITLE

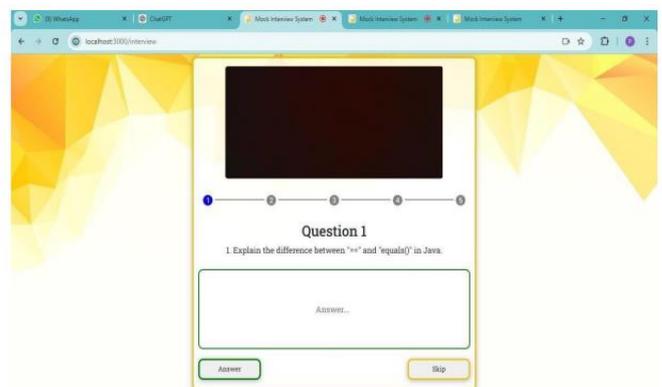


Figure 3: FACE RECOGNITION AND QUESTION GENERATION

IV. RESULTS:



Figure 1: HOME PAGE

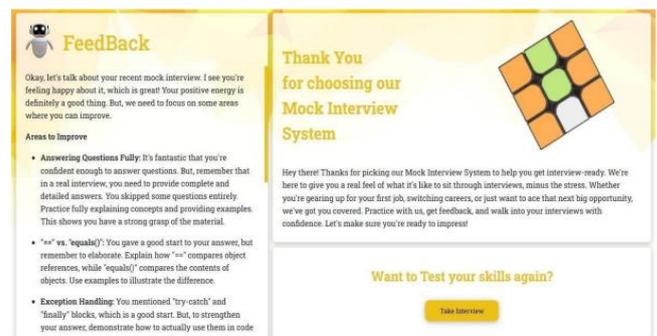


Figure 5 : FEEDBACK GENERATION

V. CONCLUSION

The development and implementation of a mock interview system utilizing AI, ML, and image processing represent a significant advancement in the field of training and assessment. This innovative system offers a comprehensive solution for enhancing interview preparedness through detailed analysis of both verbal and non-verbal cues. By integrating AI and ML models, the system can accurately analyze facial expressions, tone of voice, and speech content, providing users with nuanced feedback that is critical for improving their communication skills. The use of image processing algorithms enables precise facial landmark

detection, further enhancing the quality of feedback related to body language and facial expressions. Such a platform serves as an invaluable tool for job seekers, students, and professionals aiming to refine their interview skills in a simulated yet realistic environment. It allows for repeated practice, instant feedback, and targeted improvements, which are essential for building confidence and competence in real-world interview scenarios. Moreover, this technology-driven approach ensures scalability and consistency in the assessment process, making it accessible to a broader audience. The detailed analysis and personalized feedback provided by the system can significantly reduce the anxiety associated with interviews, leading to better performance outcomes.

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