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AI-BASED MOCK INTERVIEW EVALUATOR: AN EMOTION AND CONFIDENCE CLASSIFIER MODEL

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ABSTRACT

The "AI-Based Mock Interview Evaluator" is an innovative project aiming to enhance interview preparation by incorporating an emotion and confidence classifier model. Traditional mock interviews often lack nuanced feedback on non-verbal cues such as emotion and confidence, critical aspects in professional interactions. The proposed system employs artificial intelligence to analyze facial expressions, tone, and language patterns during a mock interview, providing comprehensive insights into the interviewee's emotional state and confidence levels. This intelligent evaluator is designed to mimic real-world interview scenarios, facilitating a more authentic practice environment.

1. INTRODUCTION

In the realm of professional development, mock interviews serve as invaluable tools for candidates to hone their interview skills. However, providing constructive feedback in such scenarios can be subjective and time-consuming for interviewers. To address this challenge, the proposed system, "AIBased Mock Interview Evaluator," leverages artificial intelligence (AI) to assess candidates' emotions and confidence levels during mock interviews, providing objective feedback and aiding in skill improvement.

1.1 Motivation

The motivation behind developing the AI-Based Mock Interview Evaluator stems from the need to enhance the effectiveness of mock interviews as a learning tool. By incorporating AIdriven emotion and confidence analysis, the system aims to offer candidates personalized feedback, helping

them identify areas for improvement and build confidence in their interview skills. Additionally, the system aims to streamline the evaluation process for interviewers, saving time and ensuring consistency in feedback delivery.

1.2 Problem Statement

Conducting mock interviews and providing meaningful feedback to candidates can be challenging for interviewers, as it requires expertise in assessing both technical skills and soft skills such as communication and confidence. Subjective evaluation methods may lead to inconsistency in feedback, hindering candidates' ability to gauge their performance accurately. The problem addressed by the AI-Based Mock Interview Evaluator is to provide objective and insightful feedback to candidates based on their emotions and confidence levels during mock interviews.

Objective:

The main objective of the AI-Based Mock Interview Evaluator is to develop a robust AI model capable of analyzing candidates' emotions and confidence levels during mock interviews and providing constructive feedback based on the assessment. Specific objectives include:

• Collecting a diverse dataset of mock interviews, including video recordings and corresponding self-assessment scores provided by candidates.

• Implementing an AI model trained on machine learning algorithms such as deep learning and natural language processing to analyze facial expressions, vocal cues, and language patterns indicative of emotions and confidence levels.

• Developing a user-friendly interface that allows candidates to upload video recordings of mock interviews and receive personalized feedback in real-time.

• Validating the performance of the AI model using metrics such as accuracy, precision, recall, and F1-score, and iterating on the model to improve its accuracy and reliability.

• Deploying the AI-Based Mock Interview Evaluator as a web application or mobile app, making it accessible to candidates and interviewers worldwide.

2. LITERATURE SURVEY

In recent years, the employment landscape has witnessed a significant shift towards utilizing advanced technologies to enhance the interview process. One such innovation

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gaining traction is the development of AI-based systems designed to evaluate candidates' performance in mock interviews. These systems leverage sophisticated algorithms to analyze candidates' emotional expressions and confidence levels, providing valuable feedback for professional development. This literature review explores existing research and studies in the field of AI-based mock interview evaluation, focusing on emotion recognition and confidence assessment techniques.

Emotion Recognition:

Emotion recognition plays a pivotal role in assessing candidates' suitability for various roles and positions. Researchers have extensively investigated computer vision techniques and machine learning algorithms for accurately detecting and interpreting facial expressions. Classic approaches, such as the use of feature extraction methods and classification algorithms, have paved the way for more sophisticated deep learning models. For instance, convolutional neural networks (CNNs) have demonstrated remarkable success in capturing subtle nuances in facial expressions, enabling precise recognition of emotions such as happiness, sadness, anger, surprise, and more. Speech Analysis for Confidence Assessment: In addition to facial expressions, speech analysis serves as a valuable tool for assessing candidates' confidence levels during mock interviews. Natural language processing (NLP) techniques enable the extraction of key features from speech data, such as pitch, intensity, speech rate, pauses, and linguistic cues. These features offer valuable insights into candidates' demeanor, communication skills, and overall confidence. Researchers have explored various machine learning and deep learning approaches to analyze speech signals, with recurrent neural networks (RNNs) and long short-term memory (LSTM) networks emerging as popular choices for modeling temporal dependencies in speech data.

Mock Interview Evaluation Techniques:

The evaluation of mock interviews encompasses a holistic assessment of candidates' performance, encompassing technical proficiency, communication abilities, problem-solving skills, and confidence levels. Traditional evaluation methods rely heavily on subjective judgments by interviewers, which can introduce biases and inconsistencies. AI-based evaluation systems offer a more objective and standardized approach, leveraging multimodal data fusion

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techniques to integrate information from facial expressions, speech signals, and interview transcripts. These systems provide actionable feedback to candidates, highlighting strengths and areas for improvement, thus facilitating targeted skill development and enhancement.

State-of-the-Art Models and Technologies:

Advancements in deep learning models and machine learning frameworks have significantly propelled the development of AI-based mock interview evaluation systems. State-of-the-art models, such as deep convolutional neural networks (DCNNs) and transformer-based architectures, offer superior performance in emotion recognition and confidence assessment tasks. Additionally, the integration of multimodal fusion techniques, ensemble learning methods, and transfer learning strategies further enhances the robustness and generalization capabilities of these systems. Benchmark datasets, such as the AffectNet, EmotioNet, and IEMOCAP datasets, facilitate standardized evaluation and comparison of different models and approaches.

Applications and Case Studies:

Real-world applications of AI-based mock interview evaluators span various domains, including recruitment, education, and talent development. Employers utilize these systems to screen job candidates, assess soft skills, and identify top talent effectively. Educational institutions leverage mock interview evaluators to prepare students for the job market, imparting valuable interview skills and boosting confidence levels. Case studies and user feedback highlight the positive impact of AIbased evaluation systems on candidate performance, interview outcomes, and overall user satisfaction.

In summary, the literature review underscores the significance of AI-based mock interview evaluators in revolutionizing the interview process. By leveraging advanced technologies in emotion recognition and confidence assessment, these systems offer a data-driven approach to evaluating candidates' performance, providing valuable insights for professional growth and career advancement. Ongoing research and innovation in this field promise further advancements in AIbased mock interview evaluation, paving the way for more efficient, objective, and insightful interview experiences.

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3. SYSTEM DESIGN

3.1 System Architecture:

System architecture is a conceptual model that describes the structure and behavior of multiple components and subsystems.

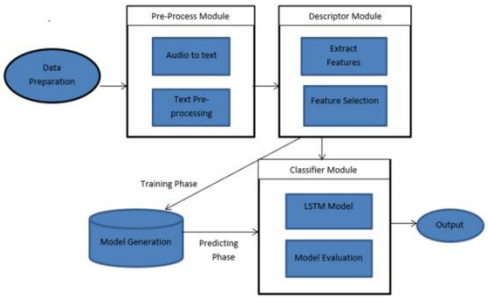


Fig. 3.1 System Architecture Diagram

3.2 Activity Diagram:

An activity diagram is a type of behavioral diagram defined in the Unified Modeling Language (UML), which is used to illustrate the flow of control within a system. It's particularly useful for modeling the workflow of a system, business process, or a specific algorithm. In an activity diagram, activities are represented by rounded rectangles, and arrows depict the flow of control between these activities. Decision points, represented by diamonds, allow for branching based on conditions. Activities can also be nested within other activities to show hierarchy.

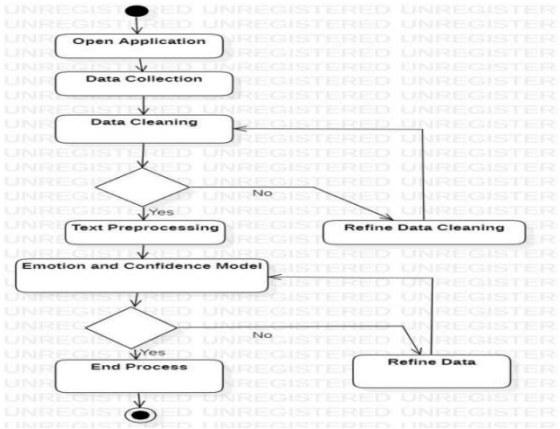
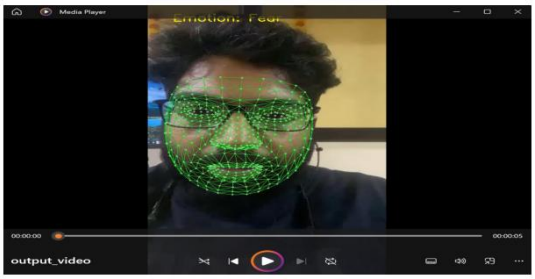
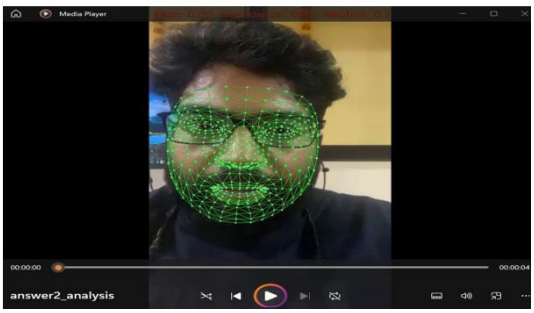


Fig 3.2 Activity Diagram

4. OUTPUT SCREENS

UI Screenshots:





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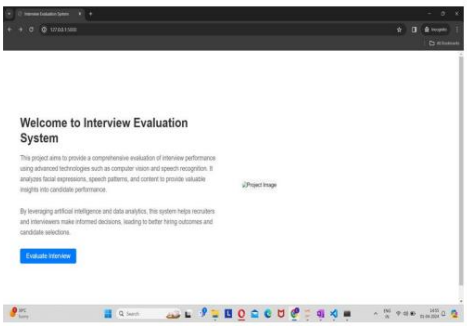

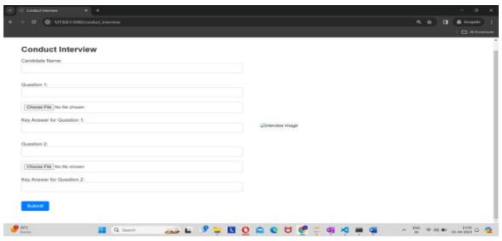

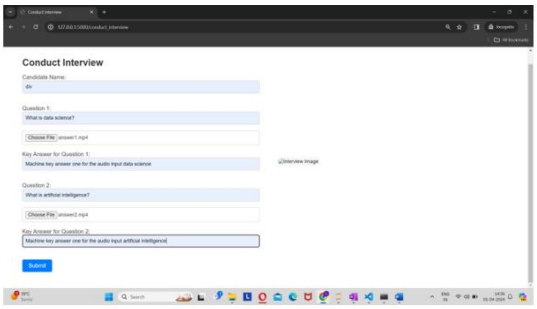

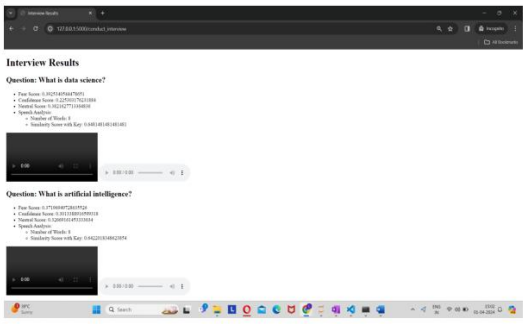

5. CONCLUSION

The "AI-Based Mock Interview Evaluator" project concludes with the successful development of a sophisticated system designed to provide candidates with personalized feedback on their emotional expressions and confidence levels during mock interviews. Through the integration of advanced artificial intelligence techniques, including computer vision and natural language processing, the system accurately analyzes candidates' facial expressions and speech patterns. Key highlights include emotion recognition, confidence assessment, a user-friendly interface, and performance optimization. The project demonstrates its effectiveness in empowering candidates to enhance their interview skills and offers invaluable support to educators and interviewers. In conclusion, the "AI-Based Mock Interview Evaluator" represents a groundbreaking advancement in interview preparation, serving as a valuable tool for professional development and confidence building.

6. FUTURE ENHANCEMENT

- Multi-Modal Analysis: Integrating additional modalities such as speech, gesture, and body language can provide a more comprehensive assessment of interviewee performance. Analysing speech patterns, hand gestures, and posture alongside facial expressions can offer deeper insights into

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the interviewee's emotional state, confidence level, and communication skills.

• Real-Time Feedback: Implementing real-time feedback during mock interviews can enhance the learning experience for interviewees. Providing immediate feedback on facial expressions, tone of voice, and overall performance can help candidates identify areas for improvement and adjust their behaviour accordingly.

• Personalized Recommendations: Developing a personalized recommendation system based on interview performance can guide candidates in areas for skill development and improvement. Tailored suggestions for enhancing communication skills, managing nerves, and projecting confidence can empower candidates to succeed in future interviews.

• Adaptive Learning: Incorporating adaptive learning algorithms can customize the evaluation process based on individual interviewee preferences and learning styles. The system can adapt its feedback and coaching strategies to better meet the needs of each candidate, maximizing the effectiveness of the training experience.

• Integration with Learning Management Systems (LMS): Integrating the mock interview evaluator with existing learning management systems used by educational institutions and training programs can streamline the evaluation process and facilitate tracking of candidate progress over time. Seamless integration with LMS platforms can also enable educators to monitor student performance and provide targeted interventions as needed.

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