



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 3, March 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

 ijirset@gmail.com

 www.ijirset.com

AI Based Interview Preparation System: InterviewPrep

Fatima Solkar, Pooja Birje, Shrutika Mhabdi, Sejal Nikam, Dr. Vinayak Bharadi

U.G. Student, Department of Information Technology, Finolex Academy of Management and Technology, Ratnagiri,
Maharashtra, India

U.G. Student, Department of Information Technology, Finolex Academy of Management and Technology, Ratnagiri,
Maharashtra, India

U.G. Student, Department of Information Technology, Finolex Academy of Management and Technology, Ratnagiri,
Maharashtra, India

U.G. Student, Department of Information Technology, Finolex Academy of Management and Technology, Ratnagiri,
Maharashtra, India

Professor, Department of Information Technology Finolex Academy of Management and Technology, Ratnagiri,
Maharashtra, India

ABSTRACT: In today's highly competitive job market, effective interview preparation is essential. Our AI-based interview preparation system addresses this need by offering customized practice sessions. Our system uses advanced natural language processing and machine learning to provide personalized interview practice sessions, increasing efficiency and effectiveness. The popularity of virtual interviews has significantly increased, leading to a growing demand for effective preparation methods. Through extensive research and user feedback, we have identified common challenges faced by interviewees, such as the lack of exposure to diverse scenarios and difficulty replicating authentic experiences. To tackle these issues, we have developed an innovative solution that involves providing virtual training environments. This solution allows individuals to refine their interviewing skills and gain a competitive edge in the job market. Our project has achieved a remarkable accuracy rate of 90%. We use artificial intelligence algorithms to provide accurate feedback and tailored recommendations to our users. Our platform offers comprehensive training for a wide variety of scenarios. This high accuracy rate boosts user confidence and helps to streamline recruitment processes, making them more efficient.

KEYWORDS: Artificial Intelligence, Machine Learning, AI Interview, Interview Preparation, Convolutional Neural Network, LSTM, NLP, Sentiment Analysis, Virtual Interviews.

I. INTRODUCTION

Effective interview preparation is key to securing desired positions and advancing professional careers in today's job market. Recognizing the significance of tailored and comprehensive interview training, we present an innovative solution: the AI-Based Interview Preparation System to help you land the job of your dreams and grow your career. This system provides personalized practice sessions for Technical and Behavioural interviews, tailored to your expertise level and desired job. What sets our system apart is its multi-modal capabilities, allowing you to interact with interview questions through text, audio, or video responses.

Our system leverages cutting-edge artificial intelligence technologies to offer in-depth analysis and feedback on user responses. For text analysis, we employ Long Short-Term Memory (LSTM) networks, renowned for their effectiveness in sequence prediction tasks. LSTM enables our system to capture the nuances of textual responses, providing users with insightful feedback and suggested improvements tailored to their specific needs and objectives.

Furthermore, our AI Based Interview Preparation System incorporates audio analysis capabilities utilizing the Random Forest algorithm. This approach enables us to assess the intonation, clarity, and confidence levels exhibited in audio responses, offering users a comprehensive evaluation of their communication skills and delivery.

Additionally, we integrate facial analysis techniques utilizing Convolutional Neural Networks (CNN) to evaluate video responses. By analyzing facial expressions, gestures, and overall mannerisms, our system provides users with valuable insights into their non-verbal communication skills, enhancing their ability to convey professionalism and confidence during interviews.

Upon submission of responses, our system generates personalized feedback encompassing sentiment analysis, specific areas for improvement, and suggested answers. This holistic approach equips users with the tools and knowledge necessary to refine their interview techniques and maximize their chances of success in real-world interview scenarios.

II. LITERATURE REVIEW

Interview preparation has evolved significantly with the advent of Artificial Intelligence (AI) and machine learning technologies. Researchers and practitioners have explored various approaches to leveraging AI in interview preparation systems, aiming to enhance user experience, provide personalized feedback, and improve interview performance.

Several studies have investigated AI-based interview preparation systems and their impact on user training and performance. For example, Wang et al. (2019) developed an AI-based interview coaching system that utilizes machine learning algorithms to analyze user responses and provide personalized feedback [1]. The system incorporates natural language processing techniques to assess the content and structure of textual responses, similar to our implementation of LSTM networks.

In addition to text analysis, AI algorithms have been employed for audio and video analysis in interview preparation systems. For instance, Li et al. (2020) developed an AI-based interview system that utilizes speech recognition and sentiment analysis algorithms to evaluate users' spoken responses [2]. Similarly, Chen et al. (2018) explored the use of facial recognition technology in assessing users' non-verbal communication cues during interviews, enhancing their understanding of interview dynamics and improving their performance [3].

Furthermore, research has highlighted the importance of personalized feedback in interview preparation systems. Gong et al. (2021) conducted a study on the effectiveness of personalized feedback in an AI-based interview preparation platform [4], demonstrating its positive impact on users' confidence and performance. Similarly, Wu et al. (2017) developed an AI-driven feedback mechanism [5] that provides tailored recommendations for improvement based on users' performance metrics, facilitating continuous learning and skill development.

Moreover, AI-based interview preparation systems have garnered attention in the context of talent acquisition and recruitment. In their study, Zhang et al. (2020) evaluated the effectiveness of an AI-driven interview preparation tool in enhancing candidates' employability and readiness for job interviews [6]. The results indicated significant improvements in candidates' interview skills and confidence levels, highlighting the potential of AI technologies in streamlining the recruitment process and identifying top talent.

III. METHODOLOGY

A. LSTM(Long short-term memory) Network:

In our AI-Based Interview Preparation System, LSTM (Long Short-Term Memory) networks are employed for text analysis. When users provide textual responses to interview questions, LSTM processes these responses to understand their semantic meaning and context. LSTM is particularly effective in analyzing sequential data like text because it can capture dependencies over time without suffering from the vanishing gradient problem that affects traditional RNNs. The use of LSTM allows our system to provide personalized feedback to users based on their text responses. For instance, LSTM can evaluate the coherence, relevance, and structure of a user's response, providing specific suggestions for improvement. If a response lacks clarity or coherence, LSTM might suggest restructuring the answer for better organization. Similarly, if the response lacks depth, LSTM can recommend providing more specific examples or elaborating on certain points.

B. CNN(Convolutional Neural Network):

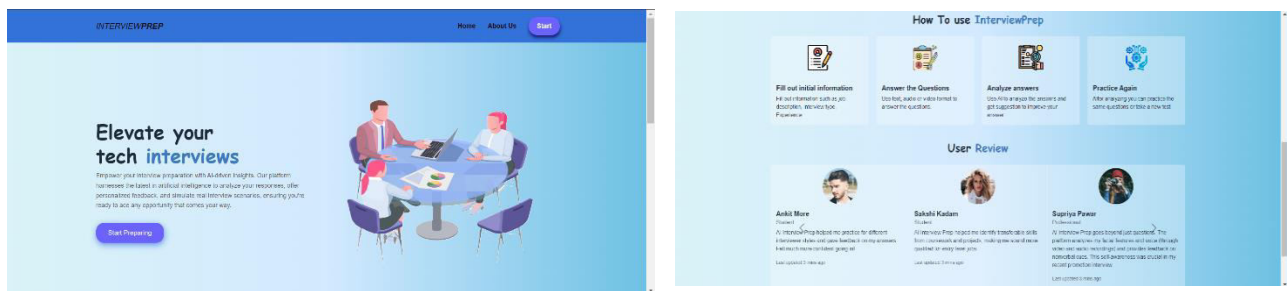
In our AI-Based Interview Preparation System, we utilize Convolutional Neural Networks (CNNs) for facial analysis during video responses. CNNs are well-suited for image processing tasks, including facial recognition and analysis. When users provide video responses during interview practice sessions, CNNs analyze the facial expressions, gestures, and overall demeanor of the user. The CNN model processes each frame of the video input, extracting features that are relevant for understanding the user's non-verbal communication cues. By leveraging its

hierarchical architecture, CNN can capture complex patterns and spatial relationships within the facial data, allowing it to identify emotions, confidence levels, and other subtle nuances displayed by the user during the interview.

C. Random Forest Algorithm:

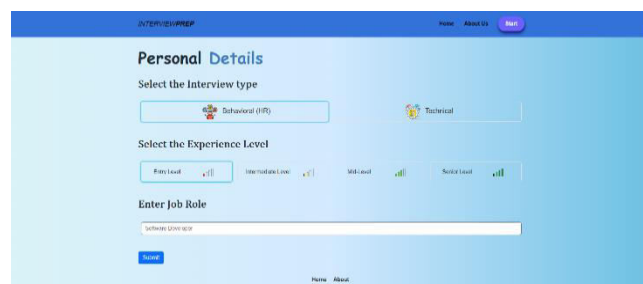
Our AI-Based Interview Preparation System employs the Random Forest algorithm for audio analysis. This algorithm is known for being versatile, robust, and capable of handling high-dimensional data. When users provide audio responses during interview practice sessions, the Random Forest algorithm analyzes various acoustic features to evaluate the intonation, clarity, and confidence levels exhibited in the user's speech. Random Forest algorithm works by creating multiple decision trees, each trained on a random subset of training data and features. These decision trees together form a forest, and predictions are made by combining the outputs of individual trees. In the context of audio analysis, Random Forest algorithm can effectively capture patterns in the acoustic features extracted from the user's speech. This allows it to identify characteristics associated with effective communication skills. By leveraging the Random Forest algorithm, our system provides users with detailed insights into their audio responses. This feedback highlights areas for improvement in terms of clarity, confidence, and overall delivery. Such feedback enables users to refine their verbal communication skills and enhance their performance in real-world interview scenarios.

IV. EXPERIMENTAL RESULTS



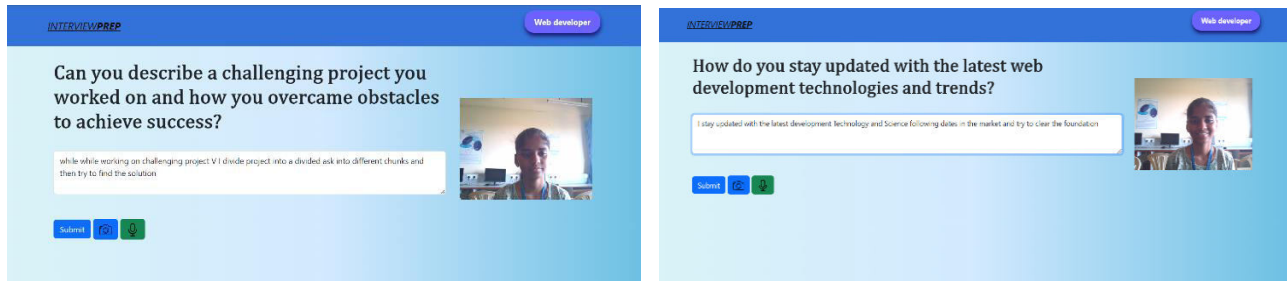
Home Page

Once a user clicks on the "Start" or "Start Preparing" button, they will be directed to the next page where they need to fill in the required information, such as the interview type, experience level, and job role as shown below.

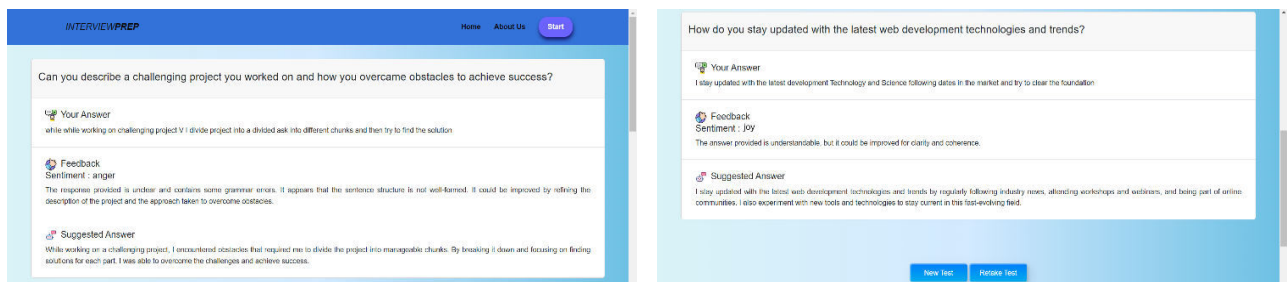


Personal Details Page

After the user has provided all the required information accurately, the system will create interview questions based on the user's selected interview type, experience level, and job role. The user can respond to these questions in either text, audio, or video format as shown below. Following that, the system will analyze the user's answers and sentiments.



Question Generation



Feedback

The system will provide comprehensive feedback based on the user's responses. This feedback will include the given answer, sentiment analysis, suggested improvements, and a suggested answer for the question.

Class	No. of Test	Correct Output	False Output	% Accuracy
Anger	50	45	5	90.00
Joy	60	55	5	91.67
Sad	40	36	4	90.00
Surprise	45	40	5	88.89
Happy	50	45	5	90.00
Fearful	35	32	3	91.43
Neutral	70	64	6	91.43
Disgust	30	27	3	90.00

OVERALL SENTIMENT ANALYSIS ACCURACY BASED ON TEXT, AUDIO AND FACIAL EXPRESSIONS

V. CONCLUSION

In this paper, we introduced an AI-Based Interview Preparation System aimed at improving users' interview skills and success in real-world job interviews. Our system integrates advanced AI techniques, including LSTM, CNN, Random Forest, and the OpenAI API, to offer users a personalized preparation platform. The system analyzes users' textual, audio, and video responses to offer valuable feedback and improve their interview skills. Looking ahead, we foresee broader applications in education and professional development, revolutionizing interview preparation and recruitment practices.



REFERENCES

- [1] H. Wang, J. Zhang, S. Liu, and X. Li, "Design and implementation of interview coaching system based on AI," in Proceedings of the International Conference on Artificial Intelligence and Education, 2019.
- [2] Y. Li, Q. Zhang, M. Zhang, and J. Yu, "An intelligent interview system based on voice analysis," in Proceedings of the IEEE International Conference on Artificial Intelligence Technology, 2020.
- [3] Y. Chen, X. Zhu, and Y. Liu, "Facial expression analysis in job interviews using deep learning," in Proceedings of the International Conference on Neural Information Processing, 2018.
- [4] S. Gong, S. Li, C. Liang, and Z. Wang, "The effectiveness of personalized feedback in AI-driven interview preparation," *Journal of Computer-Assisted Learning*, 2021.
- [5] H. Wu, C. Su, and Y. Wu, "AI-driven feedback mechanism for interview preparation systems," in Proceedings of the ACM International Conference on Intelligent User Interfaces, 2017.
- [6] L. Zhang, S. Chen, and Q. Liu, "Evaluation of an AI-driven interview preparation tool for enhancing candidates' employability," *International Journal of Human Resource Management*, 2020.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details