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AI-Powered Interviewer Platform

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Abstract
The hiring process within an organization is a time-consuming and often inconsistent process. Additionally, it involves a lot of human bias, which leads to a problem in the efficient evaluation of candidates. The paper proposes an interview evaluation platform using Artificial Intelligence (AI) tools such as Natural Language Processing (NLP), Machine Learning (ML), and behavioral analysis. The proposed platform will be able to generate resume-based adaptive questions, perform semantic evaluation of candidate answers, and perform multi-dimensional evaluation of candidates based on technical, communication, and behavioral skills. In addition, it will include anti-cheating features such as webcam monitoring, tab switching, and activity tracking. The proposed platform is efficient and accurate compared to traditional and online interview evaluations. The proposed platform has shown promising results and can be used for real-time evaluation.

Keywords: Artificial Intelligence, NLP, Interview Automation, Recruitment System, Machine Learning, Behavioral Analysis

1. Introduction

Hiring people is crucial for any business since it has a direct impact on the productivity and performance of the business. The usual way of interview procedure is laborious, repetitive, and susceptible to bias, which can produce unfair or inconsistent outcomes. It is difficult to maintain efficiency and fairness because recruiters interview a large number of candidates.

The need for an automated, intelligent interview system has grown dramatically as the number of job applicants has increased. Because it can automate interviews and assist individuals in making data-driven decisions, artificial intelligence (AI) is a good substitute for the conventional interview process.

Most traditional interview systems don't have adaptive questioning, evaluation, or anti-cheating features. They also don't look at behavioral and communication skills during the interview process. Additionally, maintaining an anti-cheating system in online interview systems is challenging, which lowers the evaluation process's accuracy.

The goal is to create an AI-based interview system that automates the interview process and offers a just, effective, and efficient alternative to the traditional interview process by utilizing NLP, ML, and behavioral analysis.

2. Literature Review

Researchers have been looking into using AI to make hiring systems more effective in recent years. An

artificial intelligence (AI) and natural language processing (NLP) mock interview system was developed by Patil et al. (2023). Although efficiency was increased, there were no safeguards against cheating. Zhang et al. (2023) created an AI-based interview system which concentrates on question creation. However, personalization was limited. Roy et al. (2023) developed a machine learning-based assessment system. Although it increased efficiency, behavioral analysis was not included. Lee and Kim (2021) created an AI-based interview system that had problems with bias. Also, Sumathi et al. (2024) developed a conversational AI-based interview system. However, real-time monitoring was lacking in all such systems. Most of the existing systems are based on automation but fail to address challenges such as personalization, fairness, and security. Most of the existing systems are based on pre-defined questions but lack adaptive questions. Also, most of the existing systems lack adequate monitoring features, which affects the credibility of virtual interviews. This paper addresses all such limitations by incorporating adaptive questions, multi-dimensional evaluation, and real-time anti-cheating features.

3. Proposed System

This AI-powered interview platform uses sophisticated algorithms and organized workflows which automates the hiring process. The system is used to communicate with recruiters and candidates, which ensures smooth conduction and assessment of interviews.

3.1 System Components

- Resume-based Question Generation
- Adaptive Interview System
- NLP-based Answer Evaluation
- Behavioral and Communication Analysis
- Anti-Cheating System
- Report Generation System

Table 1: System Modules and Description

Module	Description
Question Generation	Generates questions based on resume
Answer Evaluation	Evaluates responses using NLP
Behavior Analysis	Analyzes communication skills
Anti-Cheating System	Detects suspicious activities
Report Generation	Generates final score and report

3.2 Working Flow

The process starts with the user accessing the system and either opting for a login or registration. The system has two types of users: candidates and recruiters.

If the user is a candidate, then the candidate logs in, and gets verified. After getting verified, the user is then redirected to the candidate's dashboard where the candidate then uploads his/her resume and proceeds to attend the interview. If the user fails to get verified, an error message is displayed.

Similarly, the recruiter logs in and then gets verified. After getting verified, the recruiter is then redirected

to the recruiter's dashboard where recruiter creates an interview based on a particular skill or a particular role. Then the recruiter sends a link for the interview to the candidate.

During the interview process, two major components operate simultaneously. The first is the anti-cheating system, which continuously monitors the candidate through a microphone, camera, Tab switch detection, and identity verification. If any suspicious activity is detected, the system either issues a warning or disqualifies the candidate.

The second component is the question answer model. This module generates questions based on the interview resume and job role. Questions are sequentially using a speech model, and the candidate's responses are analyzed by an AI performance analyzer.

Once the interview is completed,a report is generated by the system which contains the metrics, rankings, and insights of the recruiter, whereas the candidate receives their own feedback on their performance. This is a system where a structured, secure, and automated interview is done with minimal human intervention.

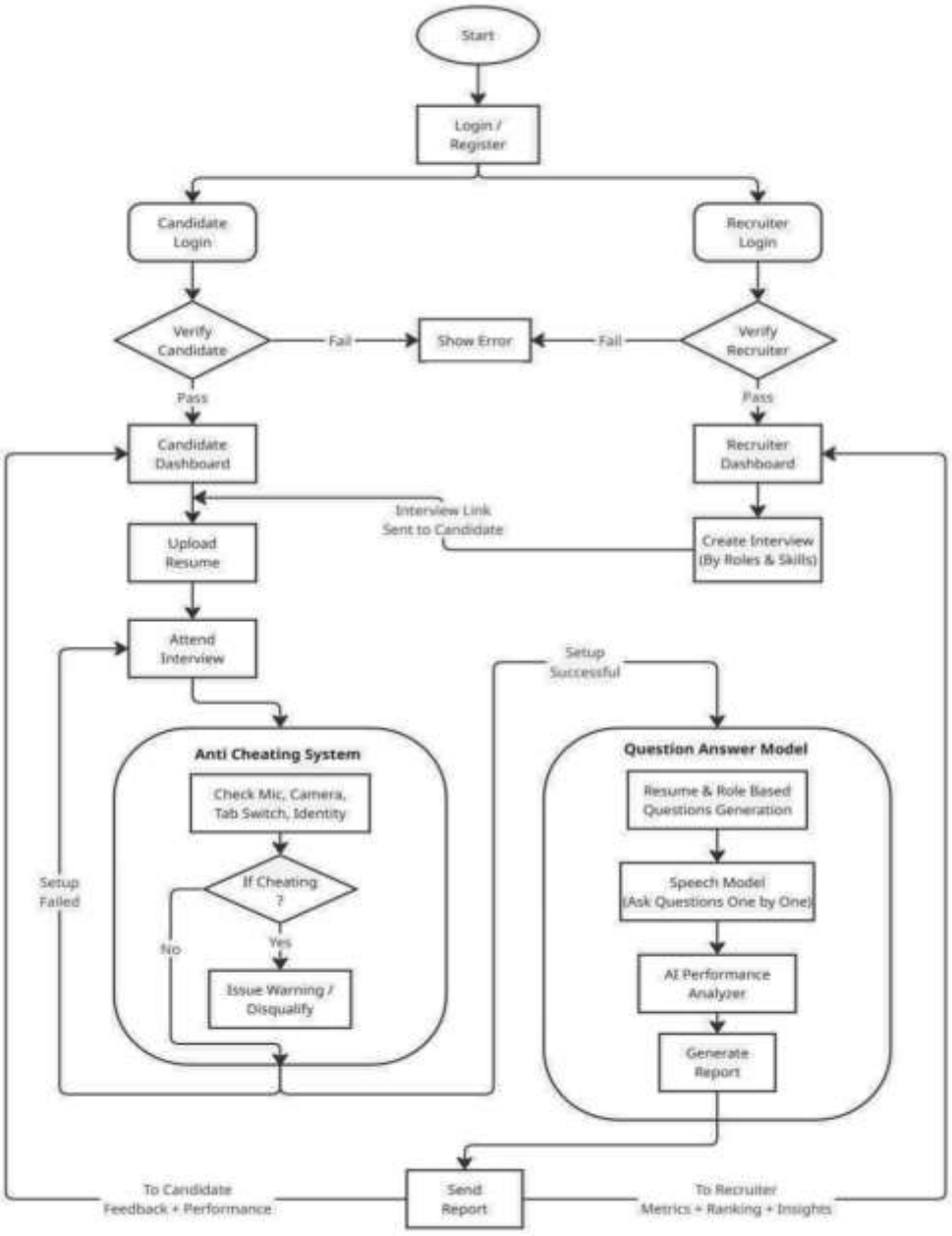

Figure 1: System Architecture of AI Interview Platform

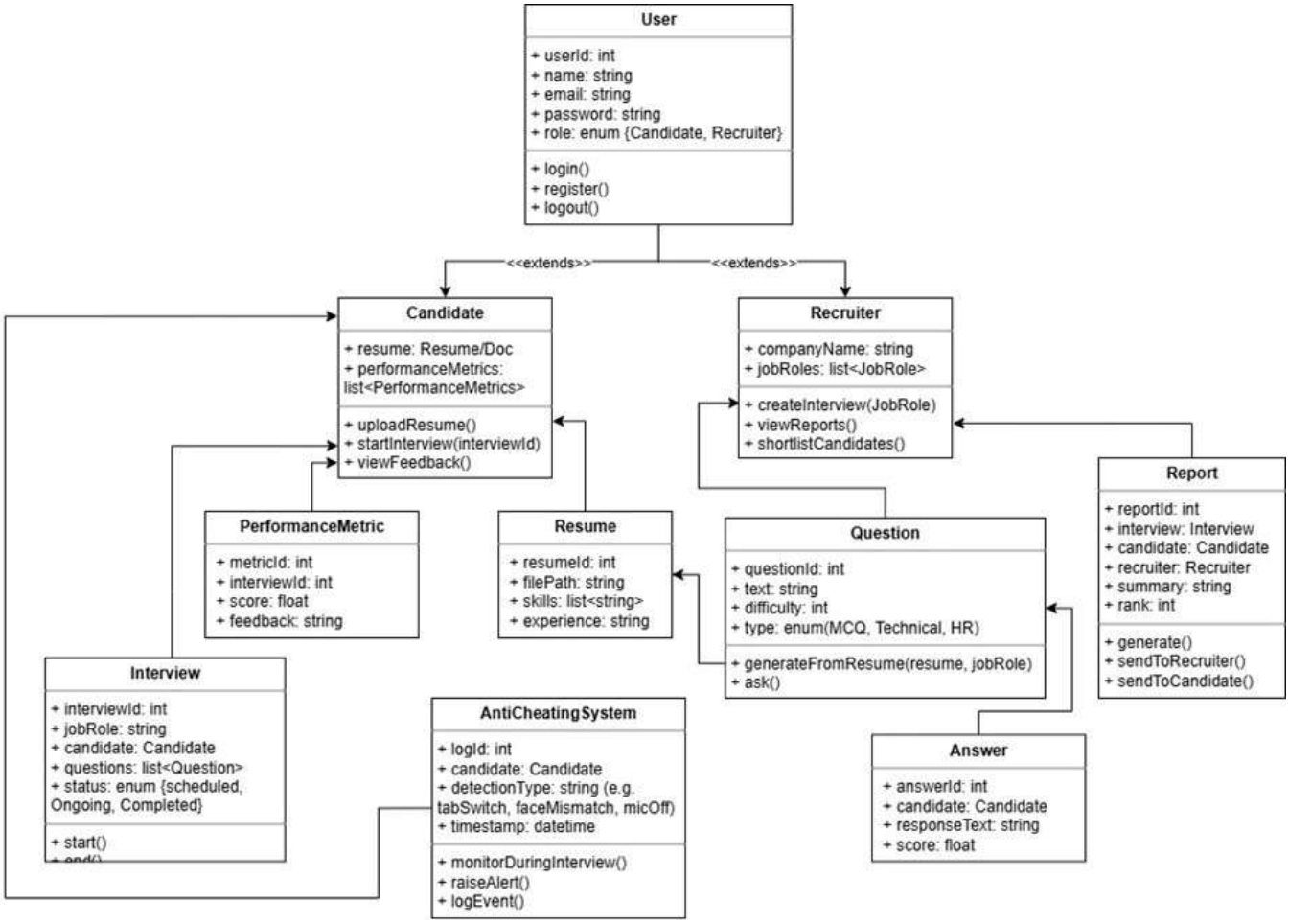

Figure 2: Use case diagram of AI Interview Platform

3.3 System Advantages

- The proposed system has several advantages:
- Less workload for recruiters
- More accurate evaluation
- Fairness and consistency
- Suitable for large candidate pools
- Better security with the inclusion of a monitoring system

4. Methodology

4.1 NLP-Based Evaluation

The system process the candidate response using NLP techniques such as keyword matching, tokenization, and semantic similarity analysis.

4.2 Scoring Model

Score = $w_1(T) + w_2(C) + w_3(B)$ where:

T = Technical Score

C = Communication Score

B = Behavioral Score

Table 2: Evaluation Parameters

Parameter	Description	Weight
Technical Score	Knowledge of subject	High
Communication	Clarity of answers	Medium
Behavioral Score	Confidence & attitude	Medium

4.3 Similarity Calculation

Similarity = $(A \cdot B) \div (|A| \times |B|)$

4.4 Anti-Cheating Mechanism

The system ensures fairness using:

- Tab-switch detection
- Webcam-based monitoring
- Noise detection
- Device activity tracking

5. Results

Table 3: Comparison of Interview Methods Based on Accuracy and Time Efficiency

Method	Accuracy (%)	Time Efficiency
Traditional Interview	65	Low
Online Interview	72	Medium
AI Interview Platform	85	High

The above table proves that the system has an impact on the accuracy and time efficiency of the evaluation process. The traditional interview process is long and in most cases, inconsistent in its results due to human bias factors. The online interview process lacks an evaluation system.

On the other hand, the proposed system has an automated evaluation system using NLP and machine learning concepts. The proposed scoring system evaluates the candidates objectively on various parameters.

Additionally, the implementation of the anti-cheating system increases the accuracy of the evaluation process which makes the system more efficient and applicable in real-world scenarios.

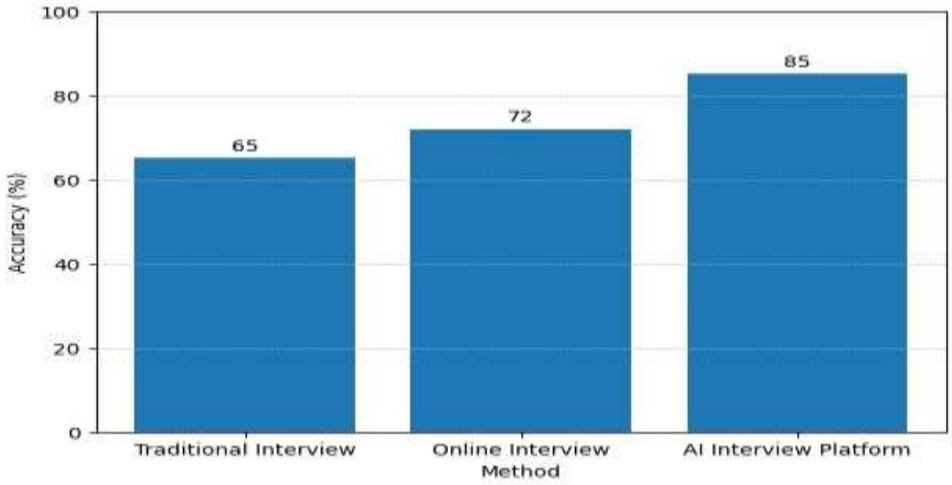

Figure 3: Accuracy Analysis of Interview Methods

6. Discussion

The proposed system that conducts an interview using AI has various advantages over the conventional system of conducting interviews for recruitment. For example, it reduces the workload and makes the system efficient.

The system also takes advantage of NLP, enabling a better understanding of the answers provided by the candidates in an interview. Furthermore, the system is able to offer fairness in the interview, as depicted by the proposed scoring system.

The system also enables interviewing several candidates simultaneously, giving it an edge in terms of scalability.

There are various disadvantages of the proposed system of conducting an interview with an AI system. For example, the accuracy of an AI system is based on the data provided to it during training. There is also a possibility of infringing on people's privacy by monitoring them.

The system is, however, able to offer a good platform for developing a future system of conducting interviews with an AI system

7. Conclusion and Future Work

The interview evaluation system based on AI enables the resolution of the recruitment challenges faced in the present era in an efficient manner. The interview evaluation system makes use of NLP, ML, and behavioral analysis for the automation of the interview and the evaluation process.

The AI-based interview evaluation system enables the reduction of the workload of the recruiter, removes recruiter bias, and enables the evaluation of the candidate. Moreover, the anti-cheating feature makes the evaluation system more reliable.

The future work includes the inclusion of emotion detection, voice analysis, and language support for enhancing the functionality of the interview evaluation system.

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