

Smart Virtual Interviewer Bot

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Abstract - Interviews are an essential part of the recruitment process, used to assess a candidate's knowledge, communication skills, confidence, and suitability for a role. However, conducting large-scale interviews manually is time-consuming, inconsistent, and requires significant human effort. This project presents a **Smart Virtual Interviewer Bot**, an AI-powered system that automates the interview process using **Natural Language Processing (NLP)**, **Speech Recognition**, **Deep Learning**, and **Emotion Detection**.

The system allows candidates to **upload their resume**, from which it extracts key details such as skills, experience, and education using AI-based resume parsing. Based on this extracted information, the bot generates **domain-specific and skill-based interview questions** using a GPT-like question generation engine. The interview is conducted through **voice interaction**, where the bot asks questions using Text-to-Speech (TTS) and evaluates answers using Speech-to-Text (STT) and NLP scoring models.

Key Words: Virtual Interview, Resume Parsing, Question Generation, NLP, Emotion Detection, AI Interview Bot

1. INTRODUCTION

Interviews play a vital role in selecting qualified candidates for academic, corporate, and technical roles. Traditional interviews require human interviewers, scheduling, infrastructure, and subjective judgment. With the advancement of Artificial Intelligence, automated interview systems can now simulate a real interviewer with high accuracy.

This project, **Smart Virtual Interviewer Bot**, aims to automate mock and preliminary interviews using AI. The system allows the user to register, upload their

resume, select domain, and attend a fully automated interview. The bot analyzes the resume, generates domain-based questions, listens to the user's answers, evaluates them using NLP, and finally produces a detailed performance report.

2. BODY OF PROJRCT

The Smart Virtual Interviewer Bot is designed to automate the interview process using AI, NLP, and computer vision. The system extracts skills from the candidate's resume, generates domain-specific questions, and conducts the interview through voice interaction using STT/TTS. During the interview, the bot evaluates answers using NLP techniques and analyzes facial expressions for confidence and emotion detection. Finally, it generates a detailed performance report including domain score, communication skill, and overall feedback.

3. PURPOSE OF PROJECT

The primary purpose of this project is to create an automated, unbiased, and intelligent interview system that:

- Helps students prepare through realistic mock interviews
- Assists recruiters by automating initial screening
- Provides instant evaluation and feedback
- Reduces cost, time, and human involvement
- Generates consistent and objective assessments

This system is valuable for HR departments, educational institutions, online learning platforms, and job seekers.

4. WHY WE NEED THIS PROJECT

- Manual interviews are time-consuming and expensive
- Human interviewers may show bias
- Candidates need personalized mock interview practice
- Recruiters handle increasing volumes of applicants
- Automated systems offer faster, consistent evaluations
- Emotion detection helps assess confidence and communication
- AI-generated reports improve candidate preparation

This system boosts efficiency, transparency, and accessibility.

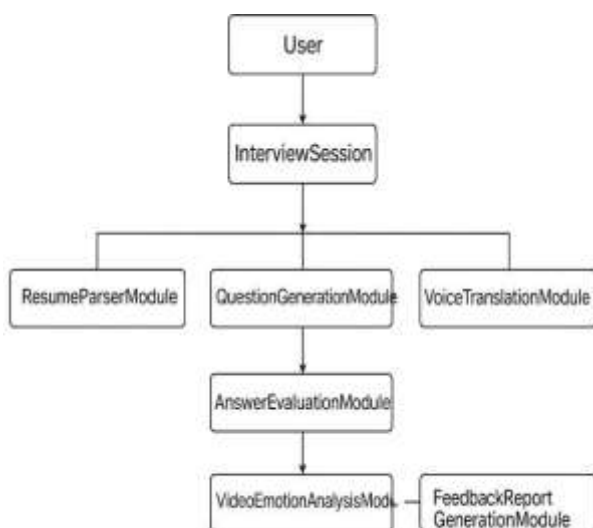


Fig. 1: Class Diagram of the Smart Virtual Interviewer Bot

5. CONCLUSION

The Smart Virtual Interviewer Bot successfully integrates multiple AI technologies such as NLP, speech processing, resume parsing, and emotion recognition to create a realistic automated interview system. This project eliminates human dependency in preliminary interviews and provides students and job seekers with advanced mock interview training. It also supports organizations in shortlisting candidates efficiently and objectively.

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