MAPA – Mock AI Interview Platform with ATS System

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Abstract—In this article we'll go over how we intend to use an AI interview platform with an ATS that helps the user in securing the placement or gain skills or even change the resume according to the job description. It has 3 modules – ATS Module, Mock AI Interview Module and Admin module. The ATS module handles the resume evaluation and checks for the missing keywords in comparison with the job description. The Mock AI Interview Module handles all the interview departments such as HR, Technical, Coding, and an emotion detection system that measures a candidate's stress levels, confidence, and communication abilities by examining their voice and facial expressions. The admin module handles all the user data and backend parts of the platform**.**

Keywords— AI mock interview, interview practice platform, resume ATS checker, AI interview coach, job interview simulator, applicant tracking system, resume optimization tool, automated interview feedback, AI career assistant, interview preparation tool, resume screening software, mock interview app, AI-powered hiring tool, job seeker platform, smart resume analyzer.

I. INTRODUCTION

Artificial Intelligence is present everywhere and is being used by everyone with different varying age groups. Technology is rapidly growing and AI is expanding into various domains such as healthcare, add more, etc. As the days pass, more and more engineering graduates or freshers are not getting placed. The main reason remains to clearing the interview rounds or that of resume relevancy to the job description. MAPA is a tool that integrates AI and interviews together. MAPA is a platform that is used for resume relevancy and changes to be made to the resume or the missing keywords that can be added according to the job description. The user can also access the interview option where mock interviews are taken place in various rounds such as – HR round, Technical Round, Coding Round, etc. The trained database model is used for the automation of the AI. This AI agent, helps in dealing with real time prompts from the user by using auto-prompting. Auto-prompting refers to the creation of follow-up prompts based on the user's previous prompts. It dynamically creates all the responses so that it is easier for the users to feel as if they are talking to an actual person. This helps us in making it easier for the users to feel as if they are in an actual interview. Based on the user's answers, the AI agent gives up follow-up questions to make the

conversation in a flow. The platform has been optimized to keep server traffic minimal. The below diagram shows how auto prompting works using AI. The system is built in the same way as a chatbot so that the user can feel as if they are talking to a real person. A dataset is used to create a model to detect the emotions. Emotion Detection is another crucial component to MAPA. During simulated interviews, a model is trained on a dataset to identify candidates' emotions in real time. Happiness, anxiety, rage, sadness, and surprise are among the emotions that the system can identify by examining facial expressions recorded by a webcam. Candidates can learn a lot from this emotion analysis, which helps them better understand their emotions and conduct during interviews. It gives users more detailed information on how confident or anxious they came across, which helps them prepare for interviews even more successfully.

II. LITERATURE SURVEY

Job interviews can be nerve-wracking, and preparing for them effectively is a challenge for many candidates. In recent years, AI-powered mock interview systems have emerged as a game-changer, helping job seekers refine their skills and assisting recruiters in evaluating applicants more efficiently. These systems analyze video, speech, and text to assess a candidate's performance based on various factors, including emotions, body language, voice modulation, and personality traits. In [1], One such system, MIP, is designed for recruiters and provides an automated scoring mechanism, particularly in Chinese-language interviews. It evaluates candidates using visual, auditory, and textual cues, focusing on aspects like facial expressions, head movements, voice characteristics, and personality traits to offer a well-rounded assessment.

In [2], Researchers have also explored machine learning techniques to detect subtle non-verbal cues—such as eye movements, facial expressions, and head gestures—during an interview. These factors contribute to a more holistic personality evaluation. In [3], additionally, a specialized framework has been developed to help candidates practice for interviews through AI-driven mock sessions tailored to different difficulty levels, covering both aptitude tests and live interviews. In [4,5], A fascinating approach to understanding emotions during interviews involves electroencephalography (EEG), which tracks brain activity. Researchers have used the arousal-valence model to classify emotions as positive or negative, allowing AI models to assess candidate sentiment more accurately. In [6], AI-driven

interview systems have integrated customer satisfaction (CS) evaluations, using speech and sentiment analysis to provide better feedback on how candidates perform under different scenarios. Another critical area of AI-driven interviews is speech emotion classification—analyzing how a candidate's tone, pitch, and delivery convey emotions. Researchers rely on well-known datasets, such as IEMOCAP and the Ryerson Speech-Video Database, to refine AI models that improve human-computer interaction [7]. Virtual reality (VR) has also been introduced in mock interview training, helping candidates—especially those who are shy or introverted—gain confidence by simulating real interview scenarios in an immersive setting [8]. Beyond general interview performance, AI has been applied to detect speech communication disorders (SCDs). By studying eye movement patterns and facial expressions, researchers aim to identify communication challenges and improve AI-based speech recognition models [9]. In [10], another exciting innovation is the integration of EEG and speech signals to enhance AI's ability to interact with humans. Scientists have developed multi-modal emotion databases, such as MED4, and tested various classification techniques—like Probabilistic Linear Discriminant Analysis (PLDA) and Multi-Layer Perceptron (MLP) Networks—to improve emotion recognition in different environments

III. METHODOLOGY

In this section we are going to discuss about the software requirements, how we are planning to implement our system, system requirements. We are planning to implement a mock interview system with ATS (Applicant Tracking System). The mock interview section will consist of all the other options such as HR Round, Technical Round, Coding Round, etc. All of the mock interview component will be handled in the backend by a trained dataset that has been created for the prompts and on the frontend will be handled by Next.js framework. An intuitive UI will be placed so that it is easy for users to navigate. The interview will also give feedback based on the video interview or coding interviews that take place. This feedback will help them in correcting their mistakes and will help them gain a better understanding of the concept and gives them more confidence to excel in the interview. The ATS has been coded using Python and the prompts will be handled by the backend database which gives more optimal results. The ATS checks for any corrections to be done in the resume and responds with the corrections to be made

and the skills that can be added to the resume according to the job description (JD).

Steps:

- *Login / Signup*
  1. *Users can login into the platform and new users can sign in to use the platform.*

  2. *Once logged in, user can navigate either to the ATS or the Mock Interview System*

- *ATS (Applicant Tracking System)*
  1. *The ATS asks you to upload the resume and enter the job description.*

  2. *After entering the job description, the system will check and give 4 options – ATS Score, Key Words, Corrections, Adjustments.*
  3. *ATS Score – Shows how accurate the resume is to the job description and gives out a percentage of the accuracy.*

  4. *Key Words – Shows what all the keywords that match in the job description and the uploaded resume.*

  5. *Corrections – These are the specific changes to be made and the keywords that are missing in the resume but are present in the job description.*
  6. *Review – Shows all the changes that have to be made to the resume, the ATS score and the corrections to be made so that the resume is tailored to the job description.*
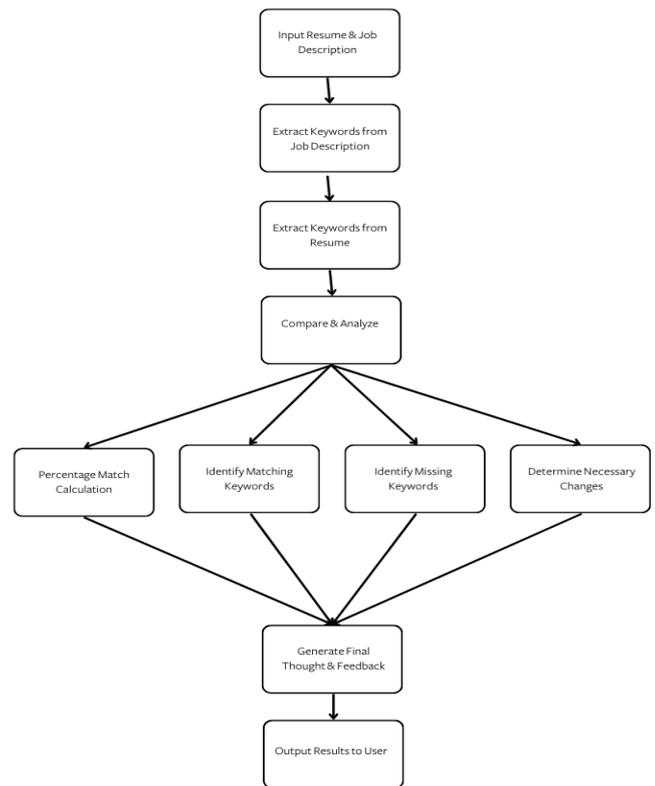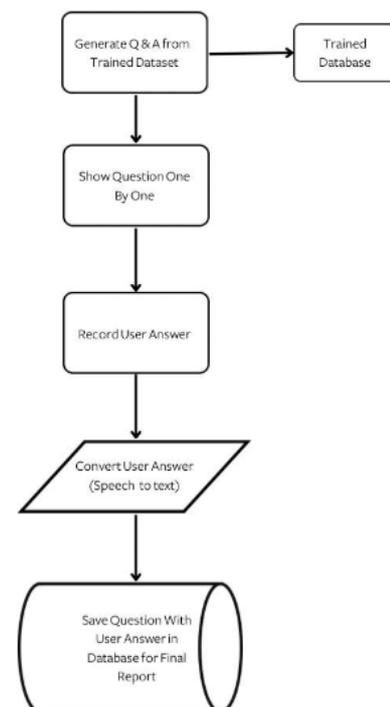

Fig 2. Working of the AT System

Fig 3. Flow Chart of Mock Interview System

- Mock Interview System

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1. *The user is now entered into the mock interview system.*
2. *Options are being shown such as – Technical Round, HR Round, Coding Round, etc.*
3. *Once the user selects one of them, the user is taken to that module and then the process of interview starts.*
4. *After the mock interview is done, the user gets a report on the performance in the mock interview. The changes that have to be made such as language corrections, facial patterns, fluency, etc.*
5. *With this report, the user can work on his/her skills and pave a way into building a career.*

IV. EXPERIMENTAL SETUP AND RESULT ANALYSIS

We built MAPA using a three-stage architecture and planned and created the system according to these three separate layers. This strategy ensures scalability, flexibility, and effective management, all layers are independent of each other and communicate with other

layers at the same time.

1. *Application Tier – In application layer, we have used Next JS along with Tailwind to enhance user experience and make MAPA user centric and easy to use at application level.*

2. *Business Tier – For developing all the business logic we have used Node.js and Express JS for the business logic along with Clerk for authentication purpose and trained AI model to make it work like an AI agent for MAPA.*

3. *Data Tier – In data tier we have used Drizzle ORM along with PostgreSQL to store user data which includes their resumes along with their past mock interview records*

4. *The emotion recognition technology improves the interview evaluation process in the context of the mock AI interview platform by instantly assessing the facial expressions of candidates. The FER-2013 dataset, which divides emotions into seven categories—angry, disgusted, afraid, pleased, neutral, sad, and surprised—was used to train the deep learning model that was used to construct this feature.*

How It Works in the Mock Interview Platform:

a) **Face Detection:** *The system uses OpenCV's Haar Cascade method to detect candidates' faces during the interview.*

b) **Preprocessing:** *Each detected face is resized to 48x48 pixels to match the input format of the deep learning model.*

c) **Emotion Classification:** *The processed face is fed into a Convolutional Neural Network (CNN), which predicts the most likely emotion.*

d) **Analysis & Insights:** *The platform can analyze emotional trends throughout the interview, helping assess confidence, nervousness, and engagement levels.*

e) **Integration with Evaluation Metrics:** *The detected emotions can be used alongside speech-to-text transcriptions and AI-driven answer validation to provide a more comprehensive candidate assessment.*
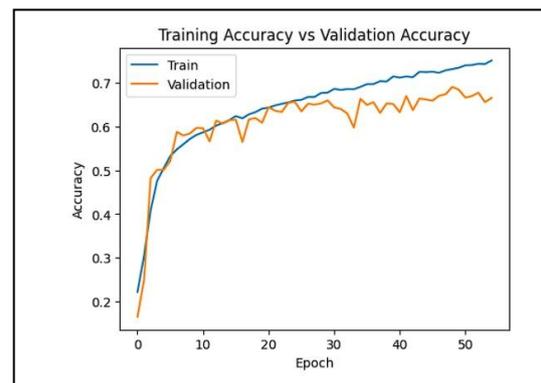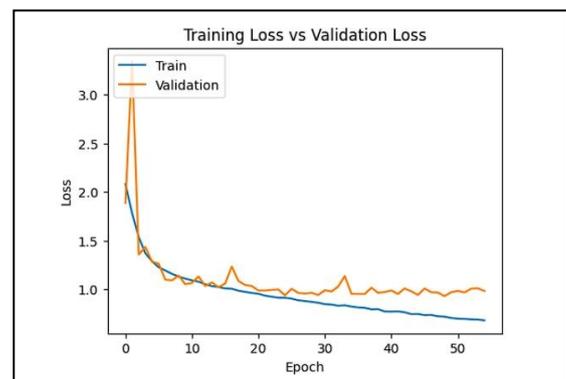

Fig 4. Accuracy Graph

V. OUTPUT

User Onboarding and Resume Processing. The interview process begins with user onboarding, where candidates are provided with two options:

1. Resume Upload – Resumes in PDF format can be uploaded by users. After that, the system retrieves pertinent information including name, contact details, employment history, abilities, credentials, and educational background. This procedure includes text extraction for machine-readable documents and optical character recognition (OCR) for scanned PDFs.

2. Manual Job Profile Selection – Users can manually choose a job profile and enter pertinent experience credentials if they choose not to upload a resume. This makes it possible for the system to leverage user input to produce relevant interview questions.

2. Resume Analysis and Job Role Matching

Once the resume data is extracted, it is structured into a standardized format and sent to the backend database for processing. The database analyzes the extracted data to:

• Determine the user's primary proficiencies and abilities.

• Compare the extracted information with the chosen job description and profile.

• Create customized interview questions based on technical specifications, industry norms, and experience.

Candidate Name	Experience (yrs)	Job Title Applied	Matching Keywords Found	Resume Score
A. Kumar	3	Data Analyst	Python, SQL, Data Viz	85
S. Rao	4	Backend Developer	Java, API, Spring Boot	78

Table 1. Sample Dataset for ATS module

3. AI-Driven Interview Process

The user then proceeds to the mock interview stage, where they are presented with AI-generated interview questions based on their profile. The interview format includes two modes:

• Video and Audio Interview – The system records both video and voice responses in real-time.

• Audio-Only Interview – Candidates can opt for an audio-based session where only their verbal responses are recorded.

The system ensures an interactive experience by dynamically adjusting the complexity of questions based on user responses.

4. Speech-to-Text Processing for Response Transcription

Following the interview, textual transcripts are produced by processing the recorded responses using speech-to-text (STT) technology. This task is performed using a high-accuracy STT API, like Microsoft Azure Speech Services, Google Speech-to-Text, or OpenAI Whisper. This phase involves:

• Noise Reduction and Preprocessing – Enhancing speech clarity for better transcription accuracy.

• Feature Extraction – Analyzing spoken words, intonation, and pauses.

• Text Cleaning and Structuring – Converting raw transcriptions into structured interview responses.

5. AI-Based Interview Evaluation and Assessment

The transcribed responses are then sent to the backend trained database for detailed assessment. The AI evaluates responses based on multiple parameters, including:

• Technical Accuracy – Evaluating correctness based on domain knowledge.

• Communication Skills – Assessing clarity, fluency, and coherence.

• Relevance and Completeness – Checking whether the responses adequately address the questions.

• Grammar and Tone – Identifying language proficiency and confidence level.

• Dataset: FER-2013, a widely used dataset for facial emotion recognition.

• Frameworks: TensorFlow, Keras, and OpenCV.

• Modes of Operation:

a) Training Mode: Allows refining the emotion detection model with additional data.

b) Live Emotion Detection Mode: Runs the pre-trained model in real-time during interviews.

The AI generates a comprehensive evaluation report summarizing performance metrics, strengths, and improvement areas.

Emotion Label	Pixel Data (Grayscale, 48x48)	Usage
Happy	70 80 82 72 58 …	Training
Sad	65 78 88 72 61 …	PublicTest
Angry	82 95 90 85 74 ...	Training
Neutral	66 68 70 69 65 …	PrivateTest

Table 2. Sample Entries from FER-2013(Facial Recognition)

6. Feedback and Recommendations

Upon completion of the assessment, the user receives a detailed feedback report, which includes:

- Performance Scores – A breakdown of the candidate's strengths and weaknesses in different aspects such as technical knowledge, communication, and confidence.

- AI-Suggested Improvements – Recommendations on how to refine answers for future interviews.

- Sample Ideal Responses – AI-generated examples of well-structured responses to enhance learning.

- Skill Enhancement Suggestions – Personalized recommendations for courses, books, or practice exercises

- Emotion Detection – Analysis provided on detection of emotions and analysis is provided based on whichever emotion is showed the most by percentage. Voice modulations are used to evaluate emotional states like bewilderment, happiness, anxiety, and confidence. Following the session, a thorough analysis is provided, displaying the percentage breakdown of every

emotion that was identified. Candidates receive tailored feedback to assist them understand how their emotions and voice tone affect their performance throughout the interview, along with highlighting of the prevailing emotion.

- Applicant Tracking System provides us with changes that can be made with the resume. It also shows how much the resume matches with the job description. The keywords that match and the words that can be added to the resume to make it better to fit to the job description. The trained dataset is used for this system.

Feature	MAPA	Other Projects
Deeper Architecture	Multiple convolutional blocks (with 32, 64, 128, 512, 512 filters)	2–3 convolutional layers only
ReLU(Rectified Linear Unit)	Uses Leaky ReLU	Normal models use ReLU activation
Batch Normalization After Activation	This model adds Batch Normalization after every Conv block	Normal models sometimes skip Batch Normalization
Callbacks: Early Stopping+ Reduce LR On Plateau	Automatically stops training when validation loss doesn't improve for 8 epochs. This saves time and avoids overfitting.	No use of callbacks.
Integrated ATS + Interview Platform	Yes	Either Partial or Non-existent
Resume Tailoring Suggestions	Customized suggestions per job	Basic keyword matching
Mock Interview Simulation	AI-powered (HR,Tech, Coding)	Done with real engineers or just AI driven practice.
Accuracy/Performance Metrics	Trained on labeled data (e.g. FER2013)	Undisclosed accuracy

Table 3. Comparison with other existing models

VI. RESULT

Finally, the MAPA (Mock AI Interview Platform with ATS System) initiative takes advantage of Artificial Intelligence to help candidates improve their job prospects by providing an integrated platform for resume optimization and mock interviews. This platform is unique because it combines the ATS module and the Mock AI Interview module, which not only tailors resume to job descriptions but also simulates real-time interview settings for multiple rounds such as HR, Technical, managerial, system design, discussion, scenario based. The system can produce detailed evaluation reports and dynamically generate individualized feedback by using advanced AI models, we have trained a model using a created database, for both resume analysis and interview automation. By identifying their strengths and shortcomings, these reports assist applicants in gradually improving their performance. By giving insightful information about candidates' emotional states, such as confidence or fear, the emotion detection technology enhances the mock interview process even further and offers a more comprehensive evaluation as even the candidates expressions are noted, it simulates a more real time interview experience.

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