

AI-Driven Interview Preparation Platform

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Abstract—It's a very competitive job market out there. Interview preparation for many candidates can be quite difficult. This "AI-powered interview preparation platform" will make that easier by digesting the most advanced technology available in an easy-to-consume format. Built with MERN (MongoDB, Express.js, React.js, Node.js) and using Next.js to be very user-friendly, GEMINI API to assist in designing specific career paths for each individual step-by-step towards his objectives.

The resumes of candidates are scanned and PDF-Parser enables one to see where their strengths can be aligned to meet the needs of employers' expectations. Enhance your non-verbal Communication skills; Learn how the app works; MediaPipe is one way of getting the best impression during interviews; this application provides the analysis of body posture (OpenCV), it is very informative, providing valuable feedback without oversharing information. Its emphasis lies on the actual actionables which make candidates confident and prepared to go for realisation. Thus, the bridge between preparation and success.

Index Terms— Introduction, Related Work, Literature Review, Objective, Purposed Methodology, Result, Discussion, Future Scope, Conclusion and Reference.

I. INTRODUCTION

The most important step of applying for a job is interview preparation. To many job seekers, especially those who are applying for the first time, the interview process is very daunting and intimidating.

Even though these modern provisions, like on-the-job training and training and development guides, are all readily available to candidates, most receive generic and useless feedback. A bridge to the gap between traditional job preparation tools and a modern, dynamic job market.

A responsive front-end built using Next.js and React.js provides a user-friendly interface that is optimized for easy interaction.

The back end uses Node.js and Express.js for data processing, API integration, and dynamic functionality to ensure seamless and responsive interaction.

The use of OCR technology enables candidates to upload resumes in PDF format. The system extracts information about their achievements, beliefs, experience, and skills. Data is analyzed against existing business models. Areas that need improvement can be identified. Users are then given strategic advice on how to tailor their resumes to specific job requirements, giving candidates a competitive edge on paper.

II. LITERATURE REVIEW

Face detection and recognition have developed with the usage of machine learning and deep learning techniques. High cascades gave birth to complex algorithms such as SVM and DNN. Face recognition relies mainly on OpenCV and DLIB, which basically focus on image processing and facial landmark detection. Security, healthcare, and aviation are the sectors utilizing face recognition. Image quality remains a problem yet. [1], [5], [9], [14] [2] Video contains dynamic conditions like motion, changing lighting, and obstacles, making faces difficult to detect and recognize. Early methods, such as the Viola-Jones algorithm, were unable to handle these factors in video streams.

Zhang (2008) proposed a new system based on three cascaded face verification modules: face skin, symmetry, and eye template verification, which remove non-face objects and backward-tilted heads. [1], [2], [5] [3] Video conferencing interviews would be a convenient and cost-effective way to optimize searches, although synchronizing through a virtual environment can be challenging; the level of answers may affect it. Problems of a technical nature such as connectivity have a tendency to reduce the quality of the data collected Confidentiality and voluntary consent is another ethical issue here; best practices should be ensured in all possible cases. Thus, as a result, integrity within the search is preserved. [11], [13], [15] [4] It focuses on automated personality recognition using machine learning to predict traits such as openness or extroversion from data sources such as speech, text, or behavior.

It places particular emphasis on challenges related to feature selection, data quality, and ethical concerns and has applications in human-computer interaction and even marketing and recruiting for more personalized experiences. [4], [7], [10], [8] [5] Online Interview Simulation: Online interview simulations to increase students' confidence and prepare them for personal interviews do not enhance their performance in a real life scenario. Although the concept is very promising, participants do not feel more confident and better prepared after using the simulation. [5], [11].

[6] This paper describes two of the most popular models in real-time object detection and classification, namely SSD (Single Shot Multibox Detector) and YOLO (You Only Look Once). [3], [6], [9], [12]

III. OBJECTIVE OF OUR RESEARCH

It aims to design and develop an AI-based interview preparation tool. This tool will help to create a whole system that helps users to better prepare and feel more confident during the interview. Advanced technology is used to overcome the shortcomings of such traditional preparation methods and tools currently available.

A. Comprehensive interview preparation

It will develop an integrated system that offers comprehensive resume evaluation, personalized career guidance, and interview study. Users will not have to rely on different tools because everything will be available on one integrated platform.

B. AI-based Resume Screening

The quality of most resumes is what decides who gets the interview. This paper seeks to create an AI module that would be able to pull the highest possible accuracy from using OCR and PDF-parsing techniques to extract and analyze resumes.

C. For individual career maps

It employs the GEMINI API to make customized career roadmaps for job roles, skills, and specific objectives. Roadmaps include steps for action which would encompass appropriate certifications, hands-on experience, and soft skill development.

D. Focus on body posture analysis.

This tool evaluates the way the candidates approach interviews by examining non-verbal communication, focusing majorly on body language.

The feature makes use of MediaPipe and OpenCV in the evaluation of candidates' body language in interviewing simulation tests.

IV. PURPOSED METHODOLOGY

This interview preparation platform is taking a diversified approach with cutting-edge technology to provide all-inclusive solutions for job seekers.

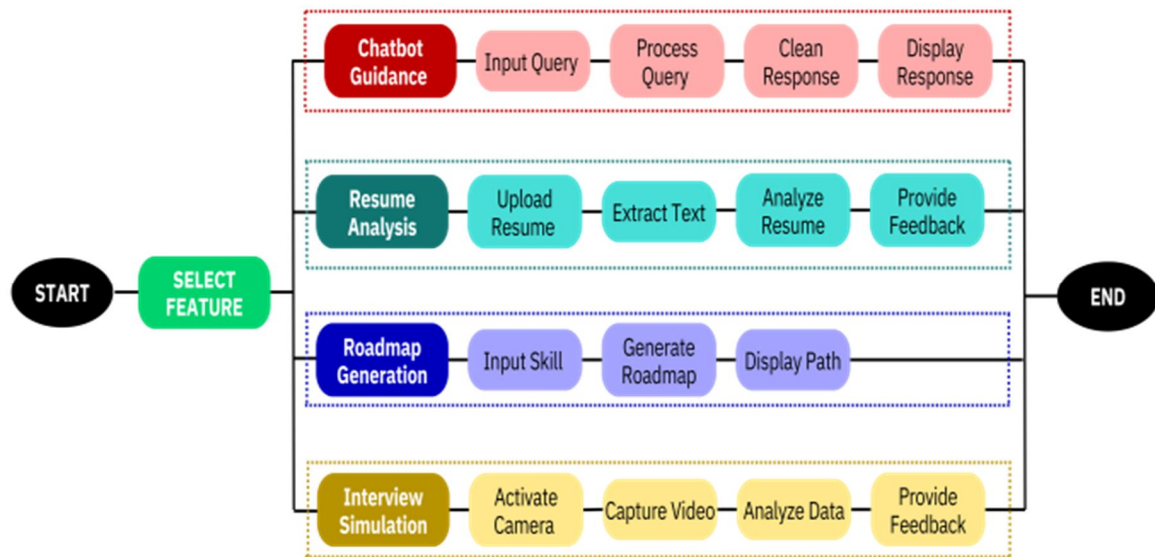


Figure 1: Work-flow of the Interview Preparation Platform

A. Resume Analysis using OCR and PDF-parsing with new methodology

OCR technology: Extracts text accurately from poorly formatted scanned resume documents.

Industry-specific parsing: The algorithm is designed to structure information such as skills and certifications as per industry requirements.

B. Interview simulation with body posture analysis

Body Pose Recognition: MediaPipe is a machine learning framework developed by Google, which recognizes the essential body landmarks such as head, shoulders, arms, and torso. The user is monitored periodically to determine the user's position during the simulation.

V. RESULT AND DISCUSSION



Figure 2: Resume Analysis Report

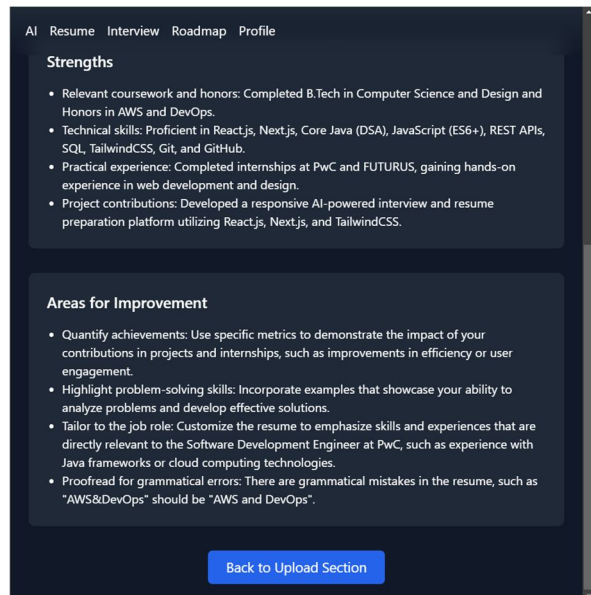


Figure 2.1: Resume Analysis Report

The CV uploaded by the user will be checked along with the job role and the skills from the job de-scription will be checked against the skills present in the CV, for which the analyst will grade.

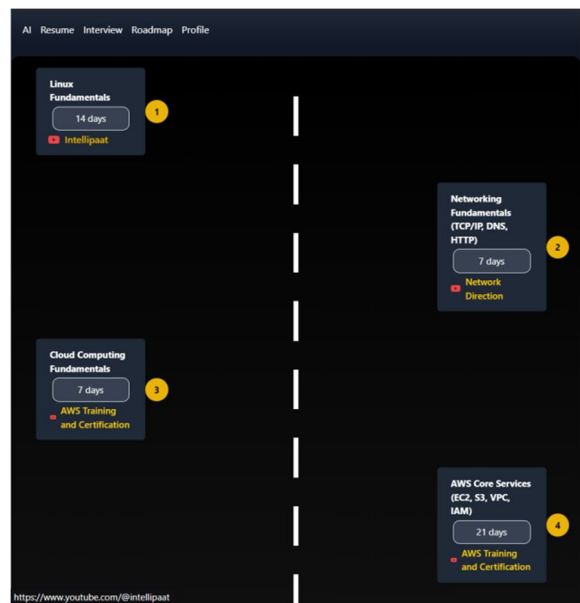


Figure 3: Generated Roadmap as per User's Skill Input

This overall performance section provides a particular and accurate evaluation of the candidate's areas of strength, such as focusing on relevant examples and proper sequence of their answers. Suggestions for Improvement offers guided action-based advise to help candidates improve their interview skills: clarity of presentation, tailoring their answers to job opportunities, and even mock interviews.

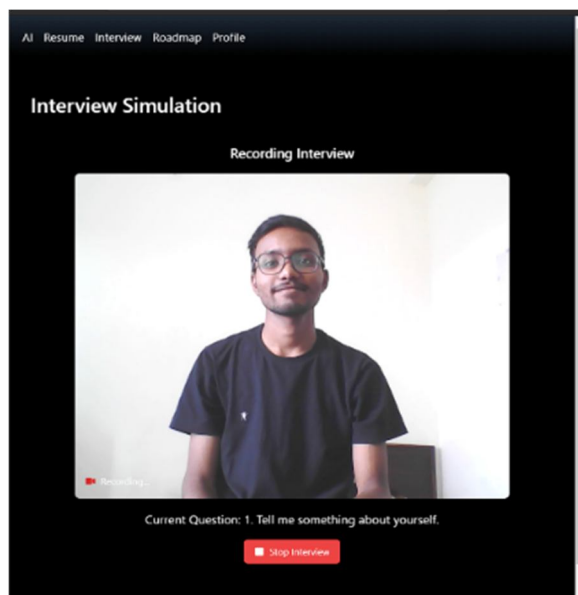


Figure 4: Interview Simulation

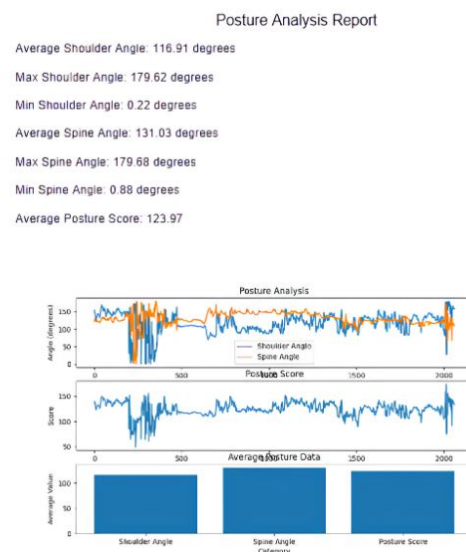


Figure 5: Posture Analysis Report

Its success, however, has a few drawbacks that will be very important to improve in future versions. An example would be OCR accuracy related to this unconventional layout font when handling resumes. Some other features to be improved could include the analysis of other forms of non-verbal cues such as eye contact and facial expressions, for which the platform could respond accordingly.

VI. CONCLUSION

The "AI-powered interview preparation platform" is designed to tackle the real challenges that a job seeker has while preparing for an interview. Most of the time, the search process is intimidating and confusing, and one

may not know how to put it into words. Therefore, this platform is both technologically sophisticated and simple. The users feel supported throughout the preparation process, developed using modern technologies such as the MERN. with a stack of GEMINI API, MediaPipe, and OpenCV, it ensures an interactive user experience that does not disappoint anyone.

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