K.Balaji, 2026, 14:2
ISSN (Online): 2348-4098
ISSN (Print): 2395-4752

International Journal of Science, Engineering and Technology
An Open Access Journal

AI Based Interview Preparation Platform

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Abstract: The AI-Based Interview Preparation Platform is also created to facilitate a holistic, interactive and safe medium to candidates undergoing a job interview preparation. The site uses AI-powered simulation to create realistic interview experiences, providing real-time feedback and custom suggestions to users. The chatbot feature will allow users to train on a large set of interview questions, as well as to receive live and artificial intelligence-based answers, improving their training process. Also, the site uses a resume analysis which ultimately examines resumes according to Applicant Tracking System (ATS) standards by applying Natural Language Processing (NLP). This feature creates an ATS score and offers a lot of feedback so users can maximize their resumes and enhance their probability of attention by employers. The users are able to post their resumes, provide an understanding of the points that they need to improve, and adjust their content to the needs of a particular industry. The system also monitors user progress and suggests personalized interview questions according to their profile and the job specifications. It allows candidates to perfect their speaking and improve the answers and overall performance during simulated interviews as AI-derived feedback on the response assists them in honing their skills and improving their response. Moreover, the platform provides secure and confidential data to users, as well as uncomplicated navigation and scheduling of mock interviews. Combining NLP-driven resume analysis and AI-driven chatbot functionality, the platform provides an interactive and data-driven experience, helping job seekers to prepare for interviews better and shine in a competitive job market.

Keywords: Preparation of an interview, AI Chatbot, Resume ATS Score, NLP, Job Interview Simulation, Resume Analysis, AI Proctoring, Job Seekers.

I. INTRODUCTION

With the current competitive job market, an applicant is required to show excellent communication skills, technical knowledge, and confidence in interviews. But there are numerous candidates on the job market who cannot train effectively and use realistic practice settings. Conventional means may not offer instant feedback, and thus candidates may not be able to identify areas that are not very strong and work towards these to enhance their work.

In order to solve these problems, AI-Based Interview Preparation Platform offers an interactive interview-preparation platform. The platform replicates the real-life interview situations and provides real-time feedback and personalized advice. The method aids users to know their strengths, undertake their answers better, and gain courage.

The system also has a resume analysis which provides a resume appreciation based on Applicant Tracking Systems (ATS) standards. Users have the ability to leave resumes, score on the ATS, and get the resumes to be improved based on the industry needs.

The platform also follows the performance of the users and suggests personalized questions to the users depending on resumes and the nature of the position. Feedback-based on AI enhances clarity of conversation and overall performance in an interview. Integrating interview simulation, resume analysis, and personalized feedback, the platform aids job seekers to improve their preparation and win in the competitive job interviews.

Motivation

Competition on the job market is increasing, thus making interview preparation a crucial process of job seekers. Candidates who have the necessary academic knowledge are usually at loss of certain positions because of lack of confidence, knowledge and practice and some constructive feedback. The conventional ways of preparing do not offer reality-driven interview environment and personalized advice and guidance and thus it is hard to find out and smarten up on ones weaknesses. The second major motivation is the rising popularity of Applicant Tracking Systems (ATS) among employers to screen resumes prior to interviews. A large number of eligible persons are eliminated in this first screening exercise due to the fact that their resumes are not ATS compliant. This has brought out the importance of having a system that assists users to optimize their resumes and have high probabilities of short listing.

Also, it is required that a platform, which would provide the possibility to work continuously, monitor the progress of the users and suggest interview questions, depending on a certain job position. Individual responses may be useful to allow applicants to work on their communication abilities, organize their answers and gain confidence with time. As such, the incentive to develop the AI-Based Interview Preparation Platform is to offer a smart and user-friendly tool that enables job seekers to succeed better during the interview process, write a better resume, and achieve better job market results because of the competitive employment market.

Problem Statement

The absence of available and customized preparation tools presents a challenge to a number of job market candidates as they struggle to prepare well to attend a job interview in the highly competitive job market. Conventional approaches to interview preparation e.g. studying fixed sets of questions or a small scale simulation in a small clockwork does not execute any live feedback and also it does not replicate any real situation in an interview. Due to this, the candidates have a hard time trying to pinpoint their own weaknesses, learning how to improve their communication, and developing confidence.

More so, Applicant Tracking Systems (ATS) does not consider the methods of resume evaluation by many job seekers. Inadequately designed resumes with non-ATS requirements might result in the rejection of qualified people in the first screening procedure. This brings about the necessity of a system that can critique the resumes, give feedback as well as assist users to match their materials with the industry standards. Moreover, the available preparation platforms tend to have no customized interview questions, performance monitoring, and ongoing guidance. And without these features, candidates will not be able to monitor their progress or to work on areas they need enhancement.

Thus, an intelligent tool conducting a realistic interview simulation, resume evaluation with ATS score, personal examination, and advancement monitors are necessary to help job seekers enhance their abilities to escalate their chances of success at a job interview.

Objective

The AI-Based Interview Preparation Platform aims to be an interactive and intelligent platform, which facilitates job seekers to increase readiness and their employability in the interview room. The system will mimic real life interview environments in which the users will be able to practice asking questions and receive feedback on the quality of answers and their level of confidence to improve their communication effectiveness, confidence and quality of responses. The site provides organized practice, so the candidates are able to find areas they need to work on or their strength. The another important goal is to evaluate resumes in terms of Applicant Tracking System (ATS) standards and produce an ATS score. The system offers informative recommendations on how users can enhance the structure, content, and relevance of their resume based on industry standards. This will help candidates to maximize their resumes and stand better chances of passing the first screening process undertaken by employers.

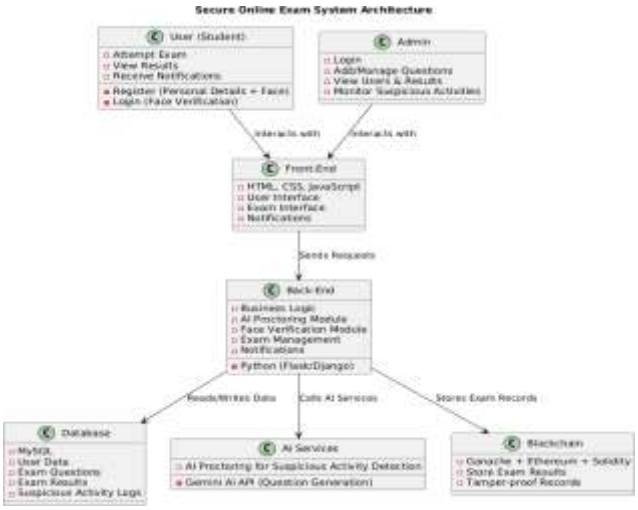

Figure 1 Architecture Diagram

II. LITERATURE SURVEY

The increased rate of technological advancement has been an influential factor in the swiftness of the recruitment process, which resulted in the emergence of smart systems to prepare job interviews and examine resumes [1]. Researchers have delved into a number of methods on how to aid job seekers to prepare a better job interview and a better resume. These systems will give their candidates the opportunity to practice in realistic environments, automatic feedback and personalized guidance [2].

This is emphasized in several studies that have indicated a significance in interview preparation tools that act as a replica of what happens in real life. Conventional agree-or-disagree methods of interview preparation can be confined to an inert set of questions and the manual feedback, which might not be effective in correcting personal weaknesses [3]. Contemporary systems emphasize the interactive platforms on which users can train responses and achieve instant feedback. These platforms assist candidates to be more confident, communication enhancement and organization of answers [4].

A study on the topics of chatbot-based interview systems demonstrates that conversational interfaces may produce active and interactive learning settings. Chatbots can present interview questions, reply to them, and give feedback [5]. These systems enable the users to rehearse without involving human interviewers. Research shows conversational agents may enhance user interaction and robust assessment, which makes it a fit in interview preparation applications [6].

The topic of resumes screening has also received a lot of attention considering the growing application of Applicant Tracking Systems (ATS) in the recruiting process [7]. A large percentage of institutions use automated systems to sift through resumes and then shortlist. It has been noted in studies that resumes that are not optimized to the ATS can be rejected despite the candidates having the relevant skills. Robotic resume analysis software checks the correlation of keywords, formatting, content. The systems assist the candidates in matching their resumes to job specifications and also enhance their likelihood of getting selections [8].

Interview rating and resume analysis have been carried out using Natural Language Processing (NLP) methods. NLP-based systems are able to retrieve textual data as well as to determine the appropriate skills, and the quality of the responses [9]. Research indicates that NLP enhances resume scoring accuracy and can be used to produce detailed feedback. The method assists customers to learn about optimising their resumes and improving their interviews [10].

Individual learning systems have been used in the research on interview preparation, as well [11]. These systems measure the performance of the user and alter the difficulty of the question according to the progress. Candidates are offered personalized practice based on their career objectives by offering them specific recommendations. Studies have shown that feedbacks that are personalized enhance better learning and user participation [12].

Online preparation platforms also feature literature covering security and privacy concerns [13]. As data is uploaded by users including personal information like resumes, it is necessary to secure the data. Safe platforms earn users confidence and promote more people to use these systems [14].

In general, the current literature proves the necessity of a comprehensive product that would integrate interview simulation and resume analysis, chatbot, and personalized feedback [15]. Some systems have addressed only resume assessment whereas others have addressed interview practice, however, there is a missing link to offering a comprehensive resolution. The AI-Based Interview Preparation Platform will eliminate these restrictions and implement various options into a single platform so that job applicants can develop their skills, prepare better resumes, and become better prepared to the interviewing process [15].

Proposed System

The system suggested is founded on Natural Language Processing (NLP) to offer an automated and smart interview preparation system. It is a framework that is meant to take user inputs, resume assessment, and provide meaningful feedback, using NLP. The platform uses text data to convey customized interview practice and resume analysis efficiently and structured. Under the designed system, one may post their resumes, which are processed with NLP-based algorithms that are utilized to find valuable data about the skills, experience, education, and keywords.

The system juxtaposes the harvested content against industry-related needs and tolates an ATS score. Using this analysis, the platform generates recommendations on how to enhance the quality of resumes, relevance in the key words and structure. Simulation of interviews is also enabled by the system using chatbot interaction. Users are interviewed through the application of NLP to decode their responses and assess them in terms of clarity, relevance and completeness during mock interviews.

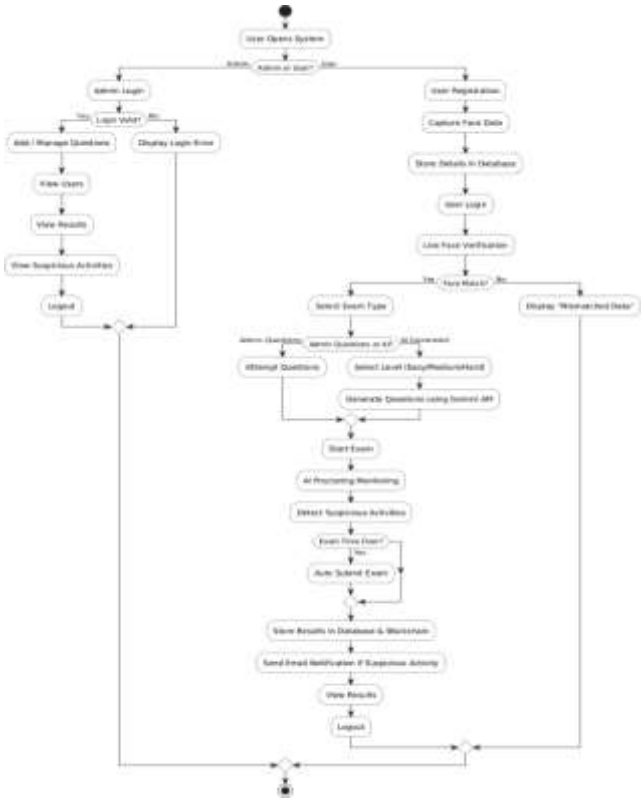

Figure 2 Work Flow

The site dynamically generates interview questions and gives feedback on the questions to enable the user to weed out answers. This enables the candidates to rehearse and through the process, they are able to improve on their performance. Also, the suggested system monitors the status of the user and provides interview questions to the individual users, depending on their profile and target job titles. NLP allows the platform to comprehend inputs by the users efficiently and give feedback that can be context-independent. The system allows the user to have a friendly experience, yet data security and privacy are upheld.

The proposed system will positively impact job seekers by giving them a better chance of succeeding, improving their resume efficiency through NLP, and conducting analysis of their resumes and response to interview questions through NLP, as one of the best approaches to interview preparation.

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III. METHODOLOGY

1. Natural Language Processing (NLP):

Natural Language Processing (NLP) is used in the proposed system to analyse resumes and evaluate interview responses. NLP helps the system to comprehend textual information and retrieve meaningful data and give feedback to users. The use of NLP is done in the context of the resume parsing and key words extraction, ATS scoring and response assessment in an interview simulation based project. The paradigm is centred on how to process user input text and produce the appropriate outputs that would enhance interview preparation.

Mathematical Working Process of NLP-based System
Step 1: Input Collection

The user provides textual input to the system in two forms:

- Resume upload (text document)
- Interview response (typed or chatbot input) Let the input text be represented as:
- $T = \{w1, w2, w3, \dots, wn\}$

Where $w_1, w_2, \dots, w_n$ are words in the document.

Step 2: Text Preprocessing
Unwanted characters, punctuations and stop words are eliminated to clean and normalize the input text. The concept of tokenization is used to divide up text into individual words.

Tokenization:

$$Tokens = Tokenize(T)$$

Stop word removal:

$$FilteredTokens = Tokens - StopWords$$

This step improves accuracy of further analysis.

Step 3: Feature Extraction
Significant terms like skills, qualification and job related terms are extracted.

$$Features = Extract(FilteredTokens)$$

This produces a set of meaningful words:

$$F = \{f1, f2, f3, \dots, fk\}$$

Step 4: Keyword Matching with Job Role
The features that are extracted are compared to pre-defined job role keywords.

$$J = \{j1, j2, j3, \dots, jm\}$$

Matching score:

$$Match\ Score = | J || F \cap J |$$

This calculates how well the resume or response matches the job role.
Step 5: ATS Score Calculation

The ATS score is calculated based on keyword matching.

$$ATS = \left(\frac{|F \cap J|}{|J|}\right) \times 100$$

This is a score that reflects relevance of resume.
Step 6: Response Evaluation

The responses of user interviews are analyzed by way of the similarity measurement.

Let:

- R = user response
- Q = expected answer keywords

Step 7: Feedback Generation
Feedback is generated based on ATS score, and similarity value:
If ATS < threshold → Suggest adding keywords
If Similarity < threshold → Suggest improving answer

$$Feedback = Generate(ATS, Similarity)$$

Step 8: Final Concept

$$Output = NLP(T)$$

$$Output = \{ATS\ Score,\ Feedback,\ Suggestions\}$$

The system takes text as input and provides evaluation results.

V. COMPARISION

Comparison of the current system and proposed NLP based interview preparation system would provide the benefits brought about to get rid of the constraints of the traditional interview preparation techniques. The current systems usually offer fixed interview queries, scanty resume suggestions, and little response which is not effective in assisting the candidates to refine their abilities. These methods are often assessed manually and not personalized whereby the user is not able to detect his weaknesses and monitor his or her progress.

However, the suggested system employs Natural Language Processing (NLP), which deals with Robotizing resume analysis and definitions of interview responses. The site provides interactive interview simulations and real-time feedback as well as ATS resume scoring. It also offers user-based/addressing profile-based interview questions, tailored to the desired job positions. Also, the system measures user performance and provides specific recommendations on how to improve. This unified solution is more efficient, more accurate and user-friendly than the current ones.

In general the recommended system illustrates a more thorough and smart answer, integrating both the use of resumes, interviewing simulation and personalized responses into a cohesive platform, enhancing interview preparation and enhancing the likelihood of success in job applicants.

The responses of user interviews are analyzed by way of the similarity measurement.

Table 1: Algorithms Comparison

Feature	Existing System	Proposed NLP-Based System
Interview Practice	Limited to static question lists	Dynamic interview simulation using AI chatbot
Feedback	Manual or no feedback	Automated NLP-based real-time feedback
Resume Analysis	Basic formatting checks	NLP-based content analysis with ATS scoring
Personalization	Same content for all users	Customized questions based on user profile
Response Evaluation	Not available	NLP-based answer evaluation
Progress Tracking	Not supported	Tracks user performance over time
Keyword Matching	Manual checking	Automatic keyword extraction using NLP
ATS Compatibility	Not ensured	Resume evaluated based on ATS standards

III. RESULTS AND DISCUSSIONS

NLP working performance:

The NLP working performance graph indicates that the performance of the system will increase at different stages of the processing process beginning with the input text to the input feedback. The performance is increasing gradually following preprocessing, feature extraction and key words matching, which imply a better understanding and analysis of textual data. The maximal performance during the feedback step indicates that the NLP-based system is an effective one in considering resumes and interview responses to offer relevant and fruitful recommendations.

Figure 3 NLP working performance

Comparison graph:

The comparison graph shows the difference in the performance of the current system to the proposed NLP-based system with respect to different features. Higher performance in terms of interview simulation, resume analysis, real time feedback, personalization, ATS scoring, and tracking progress is continuously attained by the proposed system. This proves that NLP-based strategy is more accurate, detects more feedback, and produces better preparation of the interview as a whole, than the traditional technique.

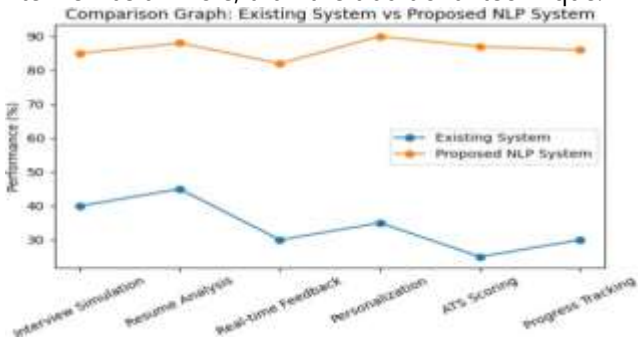

Figure 4 Comparison graph

C. chatbot working process:

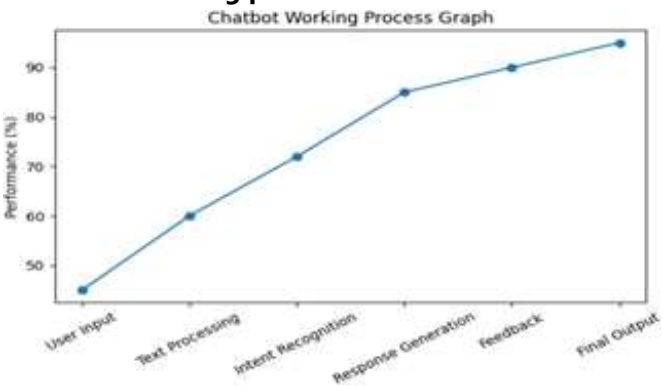

Figure 5 chatbot working process

Chatterbot working process graph demonstrates how system performance is enhanced with each phase in the process of interaction beginning with the user input and concluding with the production of the final output. With the text processing, user intent identification, and the creation of the relevant responses, the performance rises. The peak of the performance at the ultimate output level signals that the chatbot is capable of effectively analyzing queries and giving meaningful feedback that is accurate and practical to aid in interview preparations.

VII. CONCLUSION

AI-Based Interview Preparation Platform can offer a strong solution to enabling jobseekers to become better prepared to attend an interview with the help of intelligent and interactive options. The system provides personalized feedback, ATS scoring, and answered interview questions by analyzing the resumes using Natural Language Processing and simulating a job interview using chatbots. These features allow users to boost their communication, perfect their resumes and gain confidence due to practice.

The graphical demonstrations of the performance and comparison indicate that the developed NLP-based system is much more efficient, accurate, and engages the users than standard approaches. The working process of the chatbot also underscores the fact that the system progressively analyses user input and comes up with meaningful responses. Altogether, the platform provides a holistic and convenient atmosphere, which assists candidates in enhancing their preparation and raising their opportunities to succeed in a competitive job market.

Feature Scope

Several advanced functionalities could be added to the AI-Based Interview Preparation Platform to facilitate functionality and user experience. To enhance verbal communication abilities in future, voice-based interview simulation may be incorporated in the system, enabling the user to rehearse verbal responses and develop skill in verbal communication. This would better equip the candidates in preparation of real-time interviews.

Video-based practice of interview could be another option of the betterment because the user could record

his/her answers and the gained information could give feedback on the body language, facial expression, and confidence. This will give a realistic interviewing experience and users will have an opportunity to gain professional presentation skills.

It is also possible to incorporate several job domains with role-specific question banks in the platform. It would enable users of various disciplines like technical, management and non technical users to get more specific preparation. Further, the integration of sophisticated analytics might present a comprehensive report on the performance and reveal the aspects that require improvement.

Additional improvements can be made such as multilingual support to support users who may have a different language so that they can practice interviews in other languages. Job recommendation features could also be offered through the system based on the capabilities of the user and content of a resume. As levels of improvement are observed and scalability is realised, the platform can further develop into an all-inclusive career preparation package to serve the needs of job seekers during the job search process.

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