

Avahire: An Ai-Based Recruitment System

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Abstract—AvaHire is proposed as an AI-based recruitment system planned to promote a fast, efficient and effective recruitment process. It aims at helping recruiters through screening resumes and evaluating candidate skills relevant for the target position for which the candidate has applied. The AvaHire proposes a personalized AI interview based on the candidate's resume and target role. It provides a detailed analysis of the technical skills, communication skills of candidate after interview to HR. The system has an anti-cheating AI which monitors candidate activities like tab switching, multiple people detection and multiple-voice detection/voice-related anomalies. The main objective of this system is to reduce the manual work of the HR as well as enhance recruitment process by providing relevant and readable report to HR for decision making of candidates.

Index Terms—Resume Screening, AI Interview, Anti-Cheating, Natural Language Processing, Large Language Model (LLM), Speech to Text (STT), Candidate Evaluation.

I. INTRODUCTION

Recruitment is an important part of every organization because selecting the right person for a job can directly affect the performance of a company. In the traditional recruitment process, HR professionals have to go through a large number of resumes and check whether the candidates have the required skills, qualifications, and experience. When hundreds or even thousands of applications are received for a single position, manually reviewing every resume becomes difficult and time-consuming. It can also make the screening process inconsistent because different resumes may be evaluated differently.

The growth of Artificial Intelligence (AI) and Natural Language Processing (NLP) has created new possibilities for improving the recruitment process. AI

can help recruiters handle repetitive tasks such as resume screening and candidate comparison. NLP techniques can be used to understand the information present in resumes and job descriptions. Instead of checking only for exact keywords, semantic matching techniques can identify similarities between the meaning of a candidate's profile and the requirements of a particular job. This can help recruiters identify potentially suitable candidates more efficiently.

To address these challenges, Avahire is proposed as an AI-based recruitment and hiring management system. The main purpose of AvaHire is to assist HR professionals during the initial stages of the recruitment process. In the system, the recruiter can upload a job description and candidate resumes. The system analyzes the information in the resumes and compares it with the requirements mentioned in the job description. Based on the level of similarity and relevance candidates are ranked accordingly.

AvaHire is not limited to resume screening. It also brings different recruitment activities together on a single platform. The system provides an interface for HR professionals to manage job descriptions and candidates, while candidates can use a separate interface to interact with the recruitment process. The platform can also support interview scheduling and email communication, making it easier for recruiters to coordinate with shortlisted candidates. Bringing these activities together can reduce the amount of manual work involved in managing the hiring process. The proposed system is designed to assist recruiters rather than completely replace human decision-making. The final decision about whether a candidate should be selected should remain with the recruiter or hiring team. This is important because resumes may not always contain complete information, and an automated system may not understand every aspect of

a candidate's abilities or potential. Human supervision is therefore necessary when using AI in recruitment. The main focus of this research is to explore how AI and NLP techniques can be applied to make the recruitment process more organized and efficient. AvaHire attempts to reduce the effort required for initial resume screening, provide a systematic way of comparing candidates with job requirements, and simplify interview coordination. The research also considers the importance of maintaining fairness, transparency, and appropriate handling of candidate information while developing an AI-assisted recruitment system.

II. LITERATURE

The use of Artificial Intelligence (AI) in recruitment has increased significantly in recent years. Researchers have explored different ways of using Natural Language Processing (NLP), machine learning, semantic similarity, and more recently transformer-based models to make candidate screening faster and more systematic. The existing research mainly focuses on resume analysis, job-candidate matching, candidate ranking, and the fairness of automated recruitment systems.

2.1. Resume screening

Strengths: The system supports multiple stages of the hiring process, including registration, resume scanning, proctoring, and AI-based assessment, rather than focusing on a single screening task.

Limitations: Resume screening appears to rely on keyword mapping, which can miss relevant candidates whose experience is expressed differently.

Implication: Useful as a workflow automation prototype for repetitive screening tasks Supports data-structured decisions, but should not be treated as proven superior hiring evidence

2.2. Real Time AI Interview

Strengths: The system integrates resume screening, AI assessments, and AI-based interview analysis into one recruitment workflow. Automated and remote assessments make the hiring process more efficient and scalable.

Limitations: The main limitation is that the system is not validated using real hiring outcomes such as job performance, employee retention, or hiring quality.

Implications: The system can help recruiters shortlist and evaluate candidates, but the final hiring decision should still be made by humans. Human review is important to verify the AI results and ensure fair and reliable decisions.

2.3. Proctoring Toolkits (Camera Monitoring, Liveness Checks)

Strengths: Camera-based proctoring helps detect impersonation and unfair practices during assessments. It also keeps assessment records, making the process easier to review and verify.

Limitations: Proctoring can create privacy concerns because it may require camera access and continuous monitoring.

Implications: Overall, the paper suggests that proctoring can help maintain the integrity of assessments, but it should be used carefully. It should respect candidates' privacy, accessibility needs, and fairness instead of relying on excessive monitoring.

2.4. Semantic Matching Between Resumes and Job Descriptions

Strengths: SBERT helps match resumes based on their meaning and context rather than only matching keywords. The system combines resume screening with, interview and behavioral assessments in one workflow. This integrated approach can make candidate evaluation faster, more structured, and more consistent.

Limitations: The studies do not provide detailed measures such as precision, recall, ranking accuracy, or error analysis for resume-job matching. The approach may also face challenges with domain differences, multilingual use, and bias in training data, which can affect its performance in wider applications.

Implications: For AvaHire, semantic matching can make resume screening faster and more relevant than simple keyword matching. However, its accuracy and fairness should be evaluated using real candidate data and proper performance measures before relying on it for final hiring decisions.

2.5. Automated Reporting and Dashboards

Strengths: Automated reports bring candidate assessment results together in one place, making it easier for recruiters to review and compare candidates. Dashboards reduce manual work by

presenting important results and shortlisting information in a clear format.

Limitations: The accuracy of reports and dashboards depends on the quality of the data and scoring used by the system. Complex dashboards and unclear scoring can make results difficult to understand and reduce recruiter trust.

Implications: For AvaHire, automated reports and dashboards can help recruiters view candidate results in one place and reduce manual work. The system should also provide clear, simple, and explainable results so recruiters can easily understand and trust the recommendations.

2.6. Automated Email

Strengths: Automated emails save recruiters time by sending interview invites, application updates, and other notifications without manual effort. They also help keep candidates informed throughout the hiring process, reducing the chances of candidates being left without a response.

Limitations: Automated notifications may lack transparency when candidates cannot clearly understand how their scores or decisions were generated. AI-generated feedback may sometimes be inaccurate or biased, while network or technical issues can delay notifications and affect data collection.

Implications: AvaHire addresses the need for a single platform that combines technical, cognitive, and interview assessments with clear candidate feedback. The system also emphasizes fair, secure, and candidate-friendly recruitment.

III. METHODOLOGY

The proposed system is an AI-based resume screening and recruitment system that aims to improve the process of recruitment. The system receives the job description and candidate resumes as the input, and the main objective is to assist the HR team in recruitment starting from creating the job description to interviews and communicating with the candidates. First, the process starts with the creation of the job description (JD) by the HR. The JD includes information about the necessary skills, degrees, experience, and other requirements. The created JD is uploaded to the system, and the system allows adding the assessment or questions if needed. The next step is for potential candidates to apply for the job. The candidate's

resume is checked by the ATS system, and the system matches the candidate's information with the requirements identified in the job description. The system ensures that only applicable candidates are shortlisted for the interview. Thus, the system automatically rejects the candidates that do not meet the requirements and selects those that do. For the selected candidates, an interview is scheduled, and an invitation is sent to the candidate, on their g-mail via the system. The candidate either accepts or declines the invitation. For the candidates that accepted the invitation, the system makes it easier, the interviewing process that could be recorded in case of a video interview. Once the interview is over, the system creates a transcript of the video interview so that the HR team could have a records summary of the candidate's answers. Finally, by analyzing the interview results and all other candidate information, the HR conducts the final decision about the candidate's hiring. Then, based on the decision, the system could send an automated email to the candidate with the result of the interview. In general, the proposed methodology integrates several stages of the recruitment process and automates the tasks that are traditionally handled by a human recruiter

Technologies Used

1. Frontend: React.js and Tailwind CSS
2. Backend: Node.js and Express.js, FastAPI
3. Database: PostgreSQL
4. Artificial Intelligence: Python, Large Language Model, and Natural Language Processing (NLP)
5. Computer Vision: OpenCV and Face Detection
6. Speech Processing: Speech-to-Text API
7. Version Control: Git and GitHub

IV. SYSTEM IMPLEMENTATION

AvaHire is developed as a web-based recruitment platform that helps organizations simplify and speed up the early stages of the hiring process. The system combines modern web technologies with Artificial Intelligence (AI) to reduce manual effort and support recruiters in selecting suitable candidates. AvaHire is implemented as an AI-based recruitment system designed to simplify and manage the hiring process through a single platform. The HR team can upload job descriptions and candidate resumes, allowing the system to screen and rank candidates based on the job

requirements. Shortlisted candidates can then be managed through interview scheduling and automated notifications.

The system brings different recruitment activities together, including resume screening, candidate assessment, and interview management. The HR dashboard displays candidate details and assessment results, helping recruiters compare applicants and make informed decisions. Human review remains important for verifying AI-generated results and making final hiring decisions.

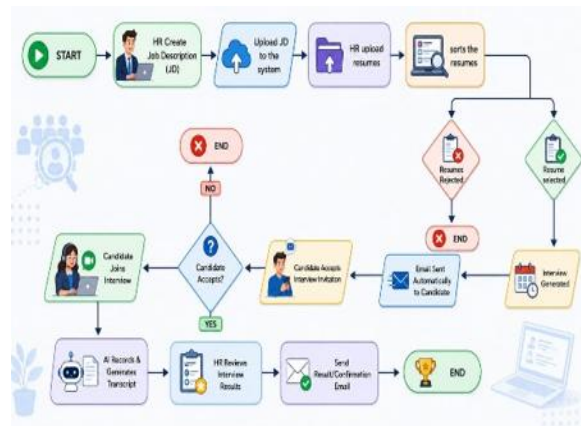


Fig. 1. AvaHire Flowchart

The process begins with HR registration and login, where recruiters create an account and securely access the system. After logging in, the recruiter creates a Job Description (JD) by entering details such as the required skills, educational qualifications, work experience, and job responsibilities. Candidates can then register on the platform, log in, and upload their resumes in PDF or DOCX format. The system uses Natural Language Processing (NLP) to read and extract important information from each resume, including educational qualifications, technical skills, work experience, certifications, and projects. This information is compared with the job description, and a matching score is calculated for every candidate. Based on these scores, the candidates are ranked automatically. Candidates who meet the required criteria are invited to participate in an AI-assisted interview. The interview questions are generated according to the candidate's resume and the selected job role. During the interview, the system evaluates the candidate's technical knowledge, communication skills, and aptitude while recording the responses for further analysis. To improve the reliability of the

interview process, AvaHire includes an AI-based anti-cheating module. Using computer vision and monitoring techniques, the system identifies activities such as the presence of multiple people, mobile phone usage, frequent tab switching, unusual eye movements, or voice irregularities. Any suspicious activity detected during the interview is recorded and included in the candidate's evaluation. After the interview is completed, the system automatically prepares an interview Transcript along with a candidate performance report. The report summarizes the resume matching score, interview performance, communication skills, technical assessment, aptitude score, and any suspicious activities detected during the interview.

Finally, recruiters can view all candidate information through the HR Dashboard. The dashboard allows them to compare candidate profiles, review evaluation reports, and make the final hiring decision. Although AvaHire automates many tasks involved in recruitment, the final selection is always made by the HR team, ensuring that human judgment remains an important part of the hiring process.

V. RESULT AND DISCUSSION

The AvaHire system was developed as an AI-based recruitment and interview platform designed to simplify and automate important stages of the hiring process. The system integrates job description processing, resume screening, interview scheduling, real-time AI interviews, candidate evaluation, and result management into a single platform.

The developed system was tested using different recruitment scenarios to verify the functionality. The results show that AvaHire can successfully support the recruitment workflow from candidate resume submission to interview evaluation.

1. Job Description Management

The Job Description module allows HR users to create and upload job descriptions containing information such as job title, required skills, department, location, job level, employment type, experience, responsibilities.

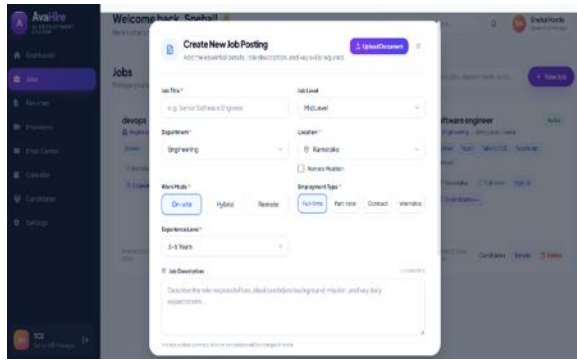


Fig. 2. Job Description Management

The system successfully stores and processes the job description and uses the extracted requirements for candidate screening. AvaHire automatically helps HR compare resumes with the job requirements, reducing the amount of manual screening work.

2. Resume Upload and Screening

AvaHire supports uploading candidate resumes and processing them according to the selected job description. The system extracts relevant information from resumes, including:

- Candidate name
- Educational qualification
- Technical skills
- Work experience
- Projects
- Certifications
- Other relevant information

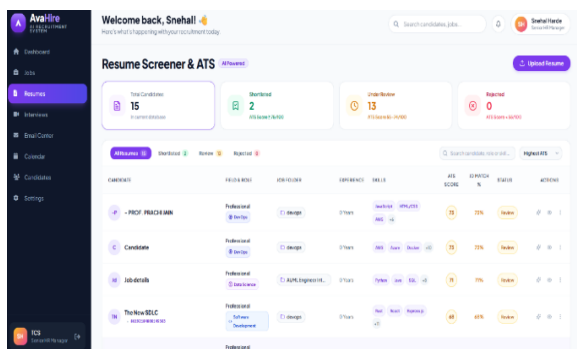


Fig. 3. Resume Screening

The extracted information is compared with the requirements of the selected job. Candidates can then be ranked or shortlisted based on their relevance to the job description.

This helps reduce the time required for manual resume screening and provides HR personnel with a more structured candidate selection process.

3. Interview Scheduling

The interview scheduling module allows HR users to select shortlisted candidates and define the interview date, time, and duration.

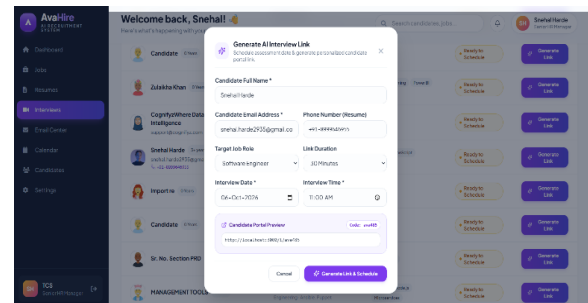


Fig. 4. Interview Scheduler and Link Generator

After scheduling, the system generates an interview link that can be sent to the candidate through email. The candidate can access the interview through the generated link without requiring the HR user to manually conduct the interview. This provides a more organized and automated interview scheduling process.

4. Real-Time AI Interview

One of the major outcomes of AvaHire is the implementation of a real-time AI interview environment.

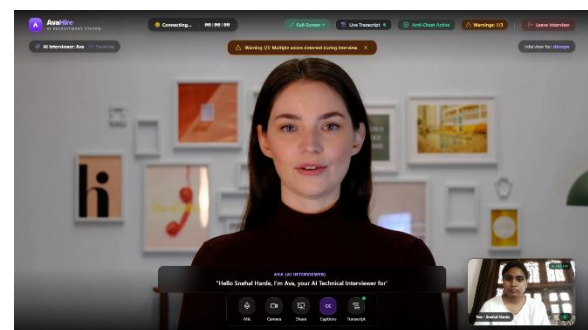


Fig. 5. AI Interview

The candidate enters the interview using the generated interview link. The system provides the interview interface with the AI interviewer/avatar. The AI interviewer communicates with the candidate in real time and asks questions related to the candidate's resume and job requirements.

5. Anti-Cheating system

AvaHire also provides interview monitoring capabilities to improve the reliability of the online interview process.

Depending on the enabled monitoring features, the system can identify events such as:

- Multiple-person presence
- Tab switching
- Face-related events
- Suspicious movements
- Voice-relay
- Voice-related events

AvaHire's anti-cheating system helps maintain the integrity of online assessments by monitoring candidate activities and identifying suspicious behaviour during tests. It supports fair evaluation by flagging potential malpractice, while allowing HR professionals to review the results before making final hiring decisions.

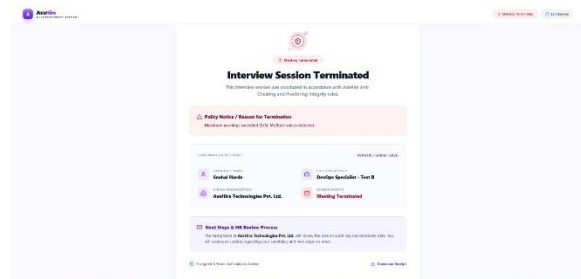


Fig. 6. Anti-Cheating Detected

These observations can be considered during the overall candidate evaluation process. The purpose of monitoring is not only to detect suspicious behavior but also to provide HR personnel with additional information about the interview environment.

VI. CONCLUSION

Recruitment has become more difficult because organizations receive a large number of job applications for every vacancy. Reviewing resumes, conducting interviews, and evaluating candidates manually takes a significant amount of time and effort. This creates delays in the hiring process and increases the workload of HR professionals.

To overcome these challenges, this paper presents AvaHire an AI-powered recruitment platform designed to support the early stages of hiring. The system combines technologies such as Artificial

Intelligence (AI), Natural Language Processing (NLP) and Computer Vision to automate resume screening, rank candidates based on job requirements, conduct AI-assisted interviews, detect possible cheating during interviews, and generate detailed evaluation reports. These features help make the recruitment process faster, more organized, and more efficient.

A key feature of AvaHire is that it does not replace human recruiters. Instead, it acts as a decision-support system by providing useful insights and evaluations, while the final hiring decision always remains with the HR manager. This ensures that human judgment is maintained throughout the recruitment process.

In conclusion, AvaHire demonstrates how modern AI technologies can improve recruitment by reducing repetitive tasks, saving time, and helping recruiters identify suitable candidates more effectively. The proposed system has the potential to make the hiring process more transparent, reliable, and beneficial for both organizations and job applicants.

VII. FUTURE SCOPE

AvaHire provides an effective solution for improving the recruitment process; however, there is still significant scope for further development. In the future, several advanced features can be added to make the platform more intelligent, user-friendly, and suitable for large-scale recruitment.



Fig.7. Future Roadmap of AvaHire

The system can be enhanced by integrating Large Language Models (LLMs) to enable more natural and interactive AI interviews. Personalized interview feedback and suggestions for skill improvement can also be provided to help candidates prepare for future opportunities.

To support organizations operating across different regions, multilingual capabilities can be introduced. Features such as emotion and sentiment analysis based on facial expressions and voice can further improve candidate assessment. In addition, Explainable AI (XAI) techniques can be incorporated to make candidate rankings and recommendations more transparent and easier for recruiters to understand. Future versions of AvaHire can also be integrated with popular recruitment platforms such as LinkedIn, Naukri, indeed, and Human Resource Management Systems (HRMS) to simplify the hiring workflow. Deploying the system on the cloud with stronger security measures and better scalability will make it more suitable for enterprise use.

Other possible enhancements include an AI-powered chatbot for answering candidate queries and scheduling interviews automatically, predictive analytics to estimate candidate performance and long-term retention, and

AvaHire's landing page introduces an AI-powered recruitment and interview platform that helps HR teams streamline hiring. It highlights AI-based resume screening, automated interview scheduling, real-time AI interviews, and candidate evaluation in one platform.

2. Registration and Login

Fig. 9. Registration and Login

The AvaHire Registration Page allows HR users to create a new account by entering details such as name, company information, email, and password. After successful registration, the user can securely log in and access the AvaHire recruitment dashboard to manage jobs, resumes, and interviews.

3. Candidate Login

Fig. 10. Candidate Login

IX. APPENDIX

The AvaHire platform is designed to simplify and improve the recruitment process by integrating Artificial Intelligence into different stages of hiring. The system consists of several modules that work together to provide an efficient and transparent recruitment experience.

A. System Modules

1. AvaHire Landing Page

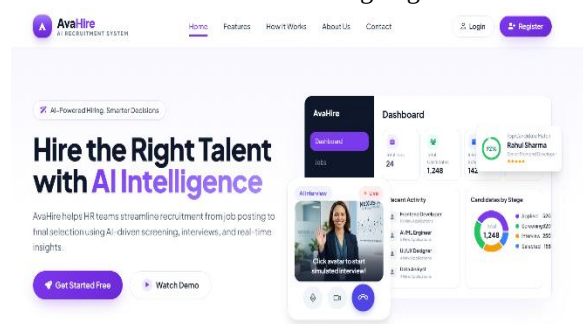


Fig.8. Landing Page

The AvaHire Candidate Login Page allows candidates to securely log in to the interview system using the email ID and details provided in the resume uploaded by the HR. After successful verification, the candidate can access their scheduled interview and related information. It ensures that only the candidate whose details match the uploaded resume can enter the interview system.

4. HR Dashboard



Fig. 11. HR Dashboard

AvaHire's HR dashboard provides a centralized view of job openings, candidate applications, resume screening results, and interview schedules. It helps HR manage the recruitment process efficiently and track candidate progress from a single interface.

The AvaHire HR Dashboard provides recruiters with a centralized view of candidate applications, resume screening results, assessment scores, and shortlisted candidates. It helps HR professionals manage recruitment activities efficiently, track candidate progress, and make informed hiring decisions with the support of AI-based insights and human review.

5. Job Uploading

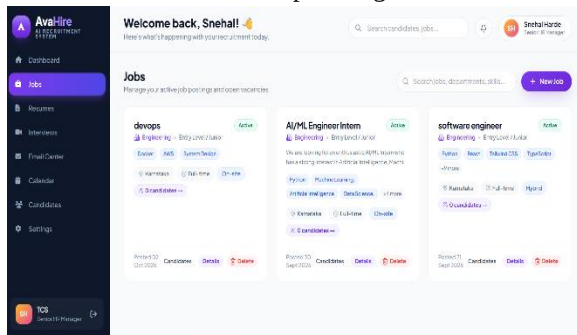


Fig. 12. Job Description Page

The Job Description page allows HR professionals to create and manage job postings by entering details such as job title, department, experience, location, description, and required skills. It helps define clear job requirements that are later used for ATS-based resume matching and candidate shortlisting.

6. Resume screening

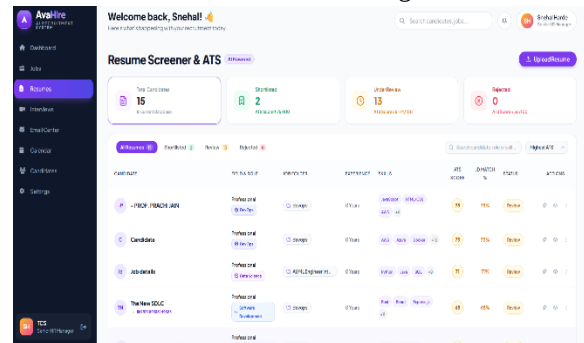


Fig.13. Resume Screening

The Resume Screening page automatically analyzes and screens candidate resumes based on the selected job description. It uses ATS-based matching to rank candidates according to their skills, experience, qualifications, and overall job suitability, helping HR quickly identify the most relevant candidates.

7. Interview Transcript

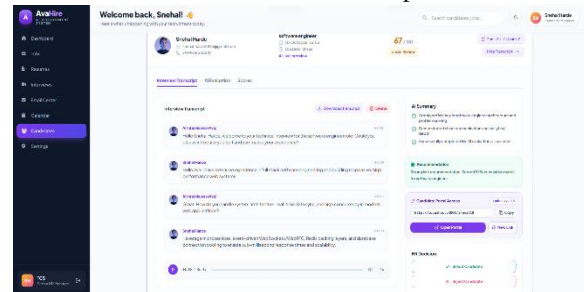


Fig. 14. Candidate Page

The Candidate Page allows HR to review the candidate's AI interview, including live transcription and audio recording of the interview. HR can evaluate the candidate's performance and make the final decision to Select (Hire) or reject the candidate.

B. Technologies Used

Technologies	Names
Frontend	React.js, Tailwind CSS
Backend	Node.js, Express.js, FastAPI
Database	PostgreSQL
Version Control	Git & GitHub
Speech Processing	Speech-to-text API
Artificial Intelligence	Python, Large Language Model, Natural Language Processing (NLP)

C. Functional Workflow

1. HR creates a job description.
2. Candidates register and upload their resumes.
3. The system analyzes resumes and matches them with job requirements.
4. Shortlisted candidates receive an AI interview invitation.
5. The AI interview evaluates technical knowledge, communication skills, and aptitude.
6. The anti-cheating module monitors suspicious activities during the interview.
7. The system generates an interview Transcript and evaluation report.
8. HR reviews the report and makes the final hiring decision.

D. Future Enhancements

1. Large Language Model (LLM)-based conversational interviews.
2. Multilingual interview support.
3. Emotion and sentiment analysis.
4. Explainable AI (XAI) for transparent candidate ranking.
5. Integration with LinkedIn, Naukri, and HRMS platforms.
6. Cloud deployment with enhanced security and scalability.

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