

INTELLIPREP: AI Powered Interview Preparation and Resume Evaluator

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ABSTRACT—In today’s highly competitive job market, students face significant challenges in resume preparation and interview readiness due to the lack of structured tools and personalized feedback. Traditional methods are often time-consuming, inefficient, and fail to meet modern hiring expectations. Recruiters also encounter difficulties in resume screening, evaluation consistency, and interview scheduling.

To address these challenges, IntelliPrep offers an AI-powered solution that automates key aspects of the interview preparation process. The platform integrates resume parsing and evaluation, utilizing AI to assess skills, experience, and educational qualifications while generating an ATS score to optimize candidate profiles. It also provides a versatile virtual interview platform that supports live and pre-recorded video interviews, text-based interactions, and voice-based assessments.

IntelliPrep enhances preparation through NLP- driven response analysis, aptitude test modules, and real-time coding challenges, ensuring a holistic approach to interview readiness. Additional features such as group discussion analysis, AI- powered speech evaluation, and detailed progress tracking provide comprehensive insights to improve candidates' communication and technical skills.

By leveraging advanced AI and gamified learning, IntelliPrep offers a structured, interactive, and personalized approach to job preparation. The platform empowers students with the tools needed to excel in recruitment processes, ultimately bridging the gap between traditional methods and modern hiring expectations.

Keywords- *Applicant Tracking System (ATS), Virtual Interview Platform, NLP-based Response Analysis, Leetcode Scraping, Gamified Learning & Assessment*

I. INTRODUCTION

Securing a job in today’s competitive market requires students to present well-structured resumes and perform confidently in interviews. However, traditional methods of resume preparation and interview practice often fail to meet modern hiring demands. Many students struggle with optimizing their resumes for applicant tracking systems (ATS), receiving personalized feedback, and preparing for diverse interview formats. Similarly, recruiters face inefficiencies in resume screening, evaluation consistency, and interview scheduling.

To bridge this gap, IntelliPrep provides an AI-powered platform that streamlines the job preparation process. By leveraging artificial intelligence, IntelliPrep automates resume parsing and evaluation, ensuring accurate skill assessment and job-role alignment. Additionally, it offers a virtual interview platform supporting live and pre- recorded video interviews, text-based and voice-based interactions, and a comprehensive question database tailored to various industries.

Beyond basic interview practice, IntelliPrep enhances preparation through AI-driven response analysis, real-time coding challenges, group discussion evaluation, and speech fluency assessment. The platform also includes smart aptitude tests with gamified elements, offering a structured approach to mastering quantitative, logical, and verbal reasoning skills.

With detailed analytics and personalized feedback, IntelliPrep empowers students to refine their resumes, improve communication skills, and gain confidence in tackling real-world interview scenarios.

II. AI IN RECRUITMENT AND HIRING

Artificial Intelligence (AI) has transformed the recruitment landscape by streamlining hiring processes, improving candidate evaluation, and enhancing decision-making for recruiters. Traditional recruitment methods often involve time-consuming manual resume screening, unstructured interviews, and subjective decision-making. AI-driven solutions, such as Applicant Tracking Systems (ATS), resume parsing, automated interview analysis, and job-matching algorithms, address these inefficiencies, making the hiring process more efficient and data-driven.

- **Role of AI in Modern Recruitment:** AI optimizes various recruitment stages, including resume screening, job matching, interview scheduling, and behavioral analysis.
- **AI-Powered Resume Evaluation:** AI extracts key details from resumes, assigns ATS scores, and ranks candidates objectively.
- **AI in Interview Analysis:** AI-driven assessments evaluate speech patterns, sentiment, body language, and confidence levels.
- **Benefits of AI in Hiring:** AI enhances efficiency, reduces biases, scales hiring processes, and lowers recruitment costs.
- **Ethical Challenges:** AI in hiring raises concerns about bias, lack of human touch, and data privacy.
- **Future Prospects:** AI-driven career counseling, game-based assessments, and multilingual interviews will shape future hiring processes.

III. LITERATURE SURVEY

The research paper, "Automate Traditional Interviewing Process Using Natural Language Processing and Machine Learning," presents an AI-powered approach to transforming conventional recruitment methods. It introduces a Smart Interviewing System (SIS) that leverages Natural Language Processing (NLP) and Machine Learning (ML) to evaluate candidates' responses in real time. The system employs speech recognition technologies, such as Hidden Markov Models (HMMs) and the Google Cloud API, to transcribe spoken responses into text. It then utilizes semantic analysis, keyword matching, and similarity detection techniques,

including the Levenshtein Distance algorithm, to assess the accuracy and relevance of answers. By integrating these advanced techniques, the system aims to reduce human bias, improve decision-making, and enhance the efficiency of the hiring process.

The study highlights the growing demand for AI-driven recruitment solutions, particularly in competitive job markets like Sri Lanka's IT sector. With an increasing number of applicants and the limitations of manual interviews, automated systems provide a scalable and unbiased alternative. The ML-based scoring mechanism refines the evaluation process, ensuring fair and data-driven candidate assessments. Additionally, the system reduces the workload of HR professionals by automating repetitive tasks, allowing them to focus on higher-value aspects of recruitment. By streamlining candidate evaluation and minimizing subjectivity, the proposed solution enhances the efficiency and fairness of hiring, making it a valuable innovation in modern recruitment practices.

IV. PROPOSED SYSTEM

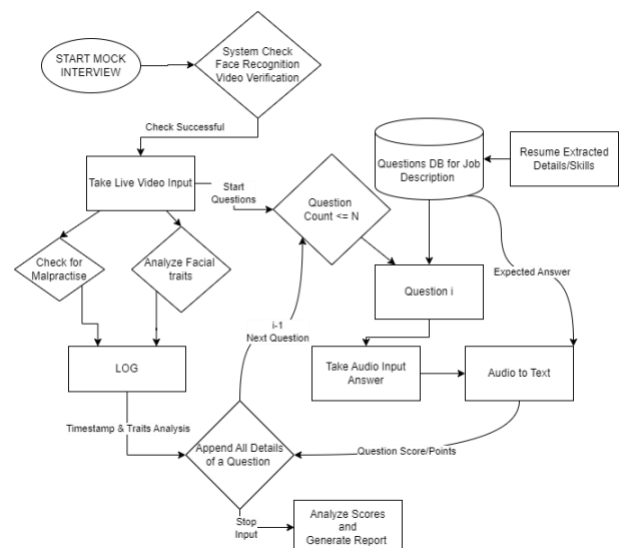


Fig 1. System Architecture

1. User Registration & Profile Setup

Students begin by creating an account on IntelliPrep, providing details such as their

education, skills, experience, and job preferences. This information helps tailor the preparation process to their specific needs, ensuring personalized recommendations and relevant assessments.

2. Resume Upload & Evaluation

Users upload their resumes, which are processed by an AI-powered resume parsing engine. The system extracts key details such as skills, experience, education, certifications, and projects. An Applicant Tracking System (ATS) score is generated based on job role alignment, and users receive personalized feedback on how to improve their resumes for better chances of success.

3. Virtual Interview Simulation

Students can choose from live or pre-recorded interviews tailored to their desired job roles. The system provides industry-specific questions and evaluates responses using speech-to-text conversion and NLP-based sentiment analysis. Feedback is given on relevance, clarity, and confidence, helping candidates refine their interview skills.

4. Advanced Response Evaluation

AI-driven analysis is used to assess responses from interviews. The system evaluates fluency, pronunciation, coherence, and sentiment, offering detailed insights and improvement suggestions. This ensures candidates can enhance their communication and articulation skills effectively.

5. Aptitude Test Module

The platform provides quantitative, logical, and verbal reasoning tests with adaptive difficulty levels (Easy, Medium, Hard). Users take timed tests and receive instant feedback, performance analytics, and gamified rewards, encouraging structured and effective practice.

6. Real-Time Coding Challenges

Students can participate in real-time coding battles with up to four participants. The system generates AI-powered problem sets, supports multiple programming languages, and provides instant feedback. A leaderboard and timer enhance competition, motivating users to improve their coding skills.

7. Group Discussion Analysis

Candidates engage in AI-driven group discussions on selected industry topics. The system analyzes communication effectiveness, relevance, teamwork, and confidence, providing detailed feedback. This feature helps students develop strong team collaboration and critical thinking skills.

8. SpeakSmart – AI Speaking Test

The SpeakSmart module evaluates fluency, pronunciation, and content clarity. Using speech-to-text and AI-driven analysis, users receive real-time feedback on their spoken communication skills. This feature is especially useful for improving spoken English proficiency and interview confidence.

9. Progress Tracking & Analytics

Users can access detailed reports on their resume quality, interview performance, aptitude results, and coding skills. Personalized growth charts, feedback history, and peer performance comparisons help students track their progress, identify strengths, and focus on areas for improvement.

10. Continuous Improvement & Feedback Loop

The system ensures continuous learning by allowing students to revisit past assessments, track their progress over time, and implement feedback. Regular AI updates and personalized insights help them stay prepared for evolving industry trends and hiring expectations.

V. METHODOLOGY

1. Research & Requirement Analysis

We conducted research to identify challenges in resume evaluation and interview preparation. Traditional methods lack personalized feedback, making improvement difficult. Recruiters face inefficiencies in resume screening and evaluation. Surveys and industry trends helped define key functionalities like resume parsing, virtual interviews, aptitude tests, and AI-powered analytics.

2. System Design & Architecture

The system was designed with Flask/Django for the backend and React.js for the frontend. MongoDB stores user data and evaluation metrics. The Resume Parsing Module uses spaCy and NLP for skill extraction and ATS scoring. The Virtual Interview Module supports text, voice, and video interviews with speech-to-text and NLP analysis. The Aptitude & Coding Module includes real-time coding challenges, automated grading, and gamification.

3. Implementation Phase

The Resume Parsing & ATS Scoring system extracts skills and matches resumes with job descriptions using TF-IDF and cosine similarity. The Interview Module selects questions dynamically and evaluates responses with BERT-based NLP models. The Speech Analysis Feature uses Google Speech API for fluency and

pronunciation evaluation. The Coding & Aptitude Module integrates a real-time compiler for skill assessment, enhanced with leaderboards and rewards.

4. Testing & Validation

Each module underwent unit and integration testing to ensure smooth functionality. Beta testing was conducted with students to gather feedback. AI models were validated using precision, recall, and F1-score metrics. Model inconsistencies were fine-tuned for improved accuracy.

5. Deployment & Optimization

The platform was deployed on AWS/GCP for scalability. MongoDB indexing improved data retrieval. Security features like data encryption and OAuth authentication ensured privacy. Performance monitoring tools helped maintain smooth operations.

6. Continuous Improvement & Maintenance

Regular updates and user feedback drive improvements. AI models are retrained to enhance accuracy in resume analysis and interview evaluation. The coding module is expanded with new challenges. Continuous monitoring ensures a seamless user experience.

VI. LEETCODE SCRAPPING

I IntelliPrep integrates Leetcode scraping to provide a structured coding practice experience. The system extracts coding problems from platforms like Leetcode, Codeforces, and HackerRank and categorizes them based on algorithm type, difficulty level, and job role.

Once scraped, these problems are presented in an interactive dashboard where users can:

- View problems based on relevance to their target roles.
- Track their progress, including solved problems and success rates.
- Receive AI-generated insights on coding performance.

The AI evaluates submissions for efficiency, correctness, and complexity, offering feedback on optimization,

common mistakes, and alternative approaches. The dashboard helps users identify weak areas and refine their problem-solving skills, ensuring they are well-prepared for technical interviews



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1 // http://127.0.0.1:5000/scrape?url=https://leetcode.com/u/nisthaagarwal/
2
3 {
4   "badges": {
5     "top_badges": {
6       "100 Days Badge 2024": "https://assets.leetcode.com/static_assets/marketing/2024-100-1g.png",
7       "50 Days Badge 2023": "https://assets.leetcode.com/static_assets/marketing/1g50.png",
8       "50 Days Badge 2024": "https://assets.leetcode.com/static_assets/marketing/2024-50-1g.png"
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15    "java": "639"
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52      "Tree": "67"
53    }
54  }
55 }

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Fig 3. Leetcode Scrapping

VII. CONCLUSION

IntelliPrep offers a comprehensive AI-driven solution to bridge the gap in traditional resume evaluation and interview preparation methods. By automating key processes such as resume parsing, virtual interviews, aptitude assessments, and coding challenges, the platform ensures a seamless and efficient preparation experience for students. It eliminates manual inefficiencies, provides personalized feedback, and helps candidates improve their profiles to align with industry expectations.

The platform's AI-powered analytics, speech-to-text evaluation, and NLP-driven interview response analysis enhance user engagement and provide actionable insights. Gamification elements like leaderboards, badges, and rewards encourage continuous learning and skill improvement. Additionally, IntelliPrep equips students with real-world interview scenarios,

refining both their technical and communication skills through structured practice.

By leveraging cutting-edge AI models and cloud-based deployment, IntelliPrep ensures scalability, accuracy, and security. The system continuously evolves through user feedback and AI model enhancements, making it a future-ready solution for job seekers. In today's competitive job market, IntelliPrep empowers students with the right tools and insights to boost their confidence and secure their desired roles.

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