

**CareerGo : An AI based smart interview preparation application**

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## **Abstract**

The CareerGo is an AI-based Smart Interview Prep Assistant, being developed as an innovative web application to help job seekers enhance their chances of securing employment. The project focuses on two key areas: resume evaluation and interview preparation. The system will incorporate AI-driven ATS (Applicant Tracking System) scoring to assess resumes based on job descriptions, suggest improvements, and identify missing skills. Additionally, the platform will offer technical interview preparation by providing domain-specific questions, evaluating audio and text-based responses, and offering model answers for comparison. Future enhancements will include behavioral and situational interview questions to ensure holistic preparation. The implementation leverages natural language processing (NLP), machine learning (ML), and prompt engineering to deliver accurate and personalized feedback. The project aims to bridge the gap between candidates and recruiters by optimizing resumes for ATS compliance and enhancing interview readiness.

# **Introduction**

## **Problem Statement**

Job seekers often face two major challenges in their employment journey: poor ATS resume optimization and inadequate interview preparation. Many resumes fail to pass ATS screenings due to incorrect formatting, lack of relevant keywords, and missing skills. Similarly, candidates struggle with technical and behavioral interview readiness, often lacking structured guidance on how to answer questions effectively. These obstacles reduce their chances of getting shortlisted for interviews and securing job offers.

## **Purpose**

This project aims to develop an AI-powered smart interview preparation assistant that helps job seekers overcome these challenges. The system will:

- Analyze and score resumes based on ATS criteria and job descriptions.
- Suggest improvements to enhance resume visibility in ATS systems.
- Generate domain-specific technical interview questions.
- Evaluate audio and video based answers using Gemini API [gemini-1.5-flash] and provide real time feedback.

## **Importance**

By integrating automated resume analysis and personalized interview coaching, this solution will streamline job preparation, helping candidates increase their chances of being shortlisted and performing well in interviews. The long-term vision is to create a comprehensive AI-driven career guidance platform that is accessible and effective for job seekers across various technical domains.

# **Literature Review**

The integration of Artificial Intelligence (AI) in recruitment enhances candidate preparation and employer selection through AI-driven interview simulations and ATS-optimized resume evaluation. This review analyzes key advancements based on three research studies.

## **1. AI in Interview Preparation**

AI-powered tools generate domain-specific questions, evaluate answers, and provide structured simulations. Ramu and Naik (2024) developed a GPT-4 and Zero-Shot Learning (ZSL)-based system that improved question relevance by 35% and job matching accuracy by 28% [\[5\]](#).

Similarly, Matin et al. (2024) introduced *InterviewPal*, an interactive AI bot using NLP and deep learning for real-time feedback and multimodal analysis, enhancing practical interview readiness [\[4\]](#).

## **2. AI-Powered Resume Evaluation**

Automated resume screening ensures ATS compliance and job-fit alignment. Suryavanshi et al. (2025) proposed an AI Resume Analyzer, ranking candidates based on skills and experience, improving recruitment efficiency by 40% [\[6\]](#). AI-driven models outperformed traditional ATS tools in optimizing resumes for better visibility.

## **3. Challenges and Limitations**

AI bias remains a concern if training data lacks diversity. Matin et al. (2024) noted that while NLP models assess answers well, they struggle with subjective elements like confidence [\[4\]](#). Suryavanshi et al. (2025) highlighted AI's limitations in analyzing unstructured resumes, leading to misinterpretations [\[6\]](#).

## **4. Conclusion**

AI-driven recruitment tools enhance job application success through tailored interview guidance and ATS-optimized resumes. Addressing AI bias, refining unstructured resume processing, and improving non-verbal analysis are essential for further advancements.

## **Proposed Methodology and Design**

The project will be implemented in the following phases:

### **1. Data Collection & Preprocessing:**

- Curating a dataset of resumes, job descriptions, and interview questions.
- Cleaning and structuring the data for AI training.

### **2. AI Model Development:**

- Training an NLP-based model to analyze resumes.
- Implementing AI-driven interview question generation and evaluation.

### **3. Feature Implementation:**

- **Resume Parser:** Extracts key resume components for ATS scoring.
- **Scoring Algorithm:** Matches job descriptions to resumes and suggests improvements.
- **Interview Question Module:** Generates and evaluates responses.

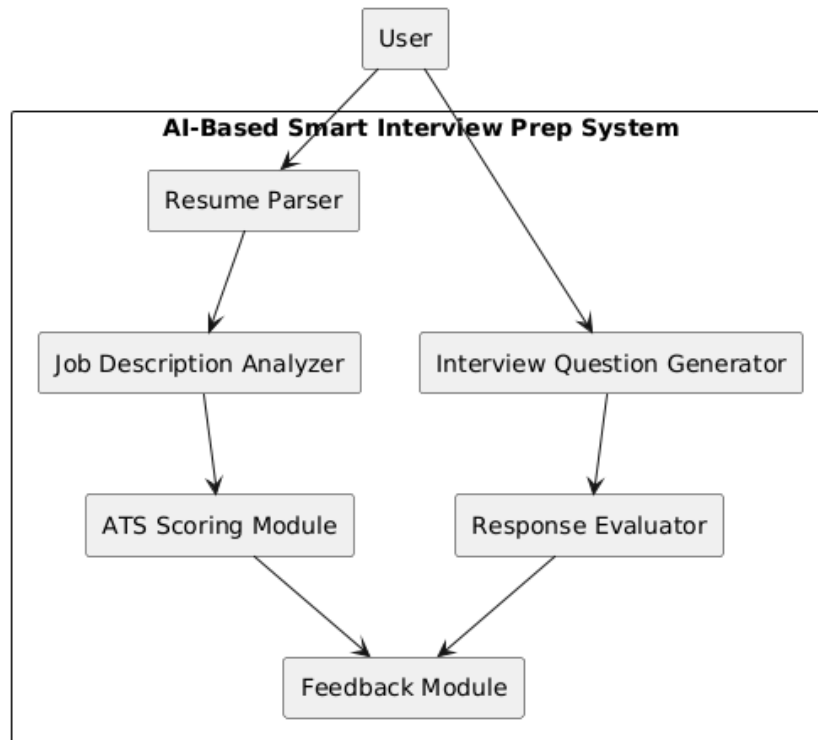
### **4. Web Application Development:**

- Designing an interactive UI for user-friendly interactions.
- Ensuring seamless integration of resume scoring and interview preparation features.

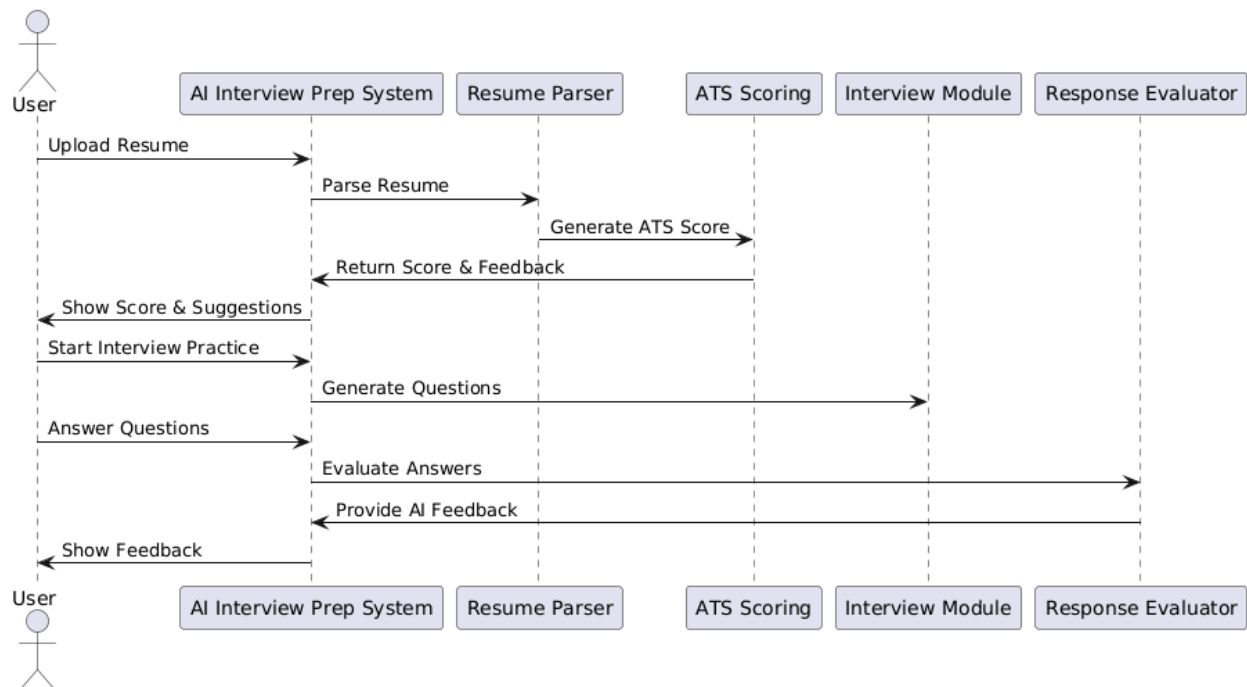
### **5. Testing & Deployment:**

- Conducting performance evaluations and user feedback iterations.
- Deploying the system for public access.

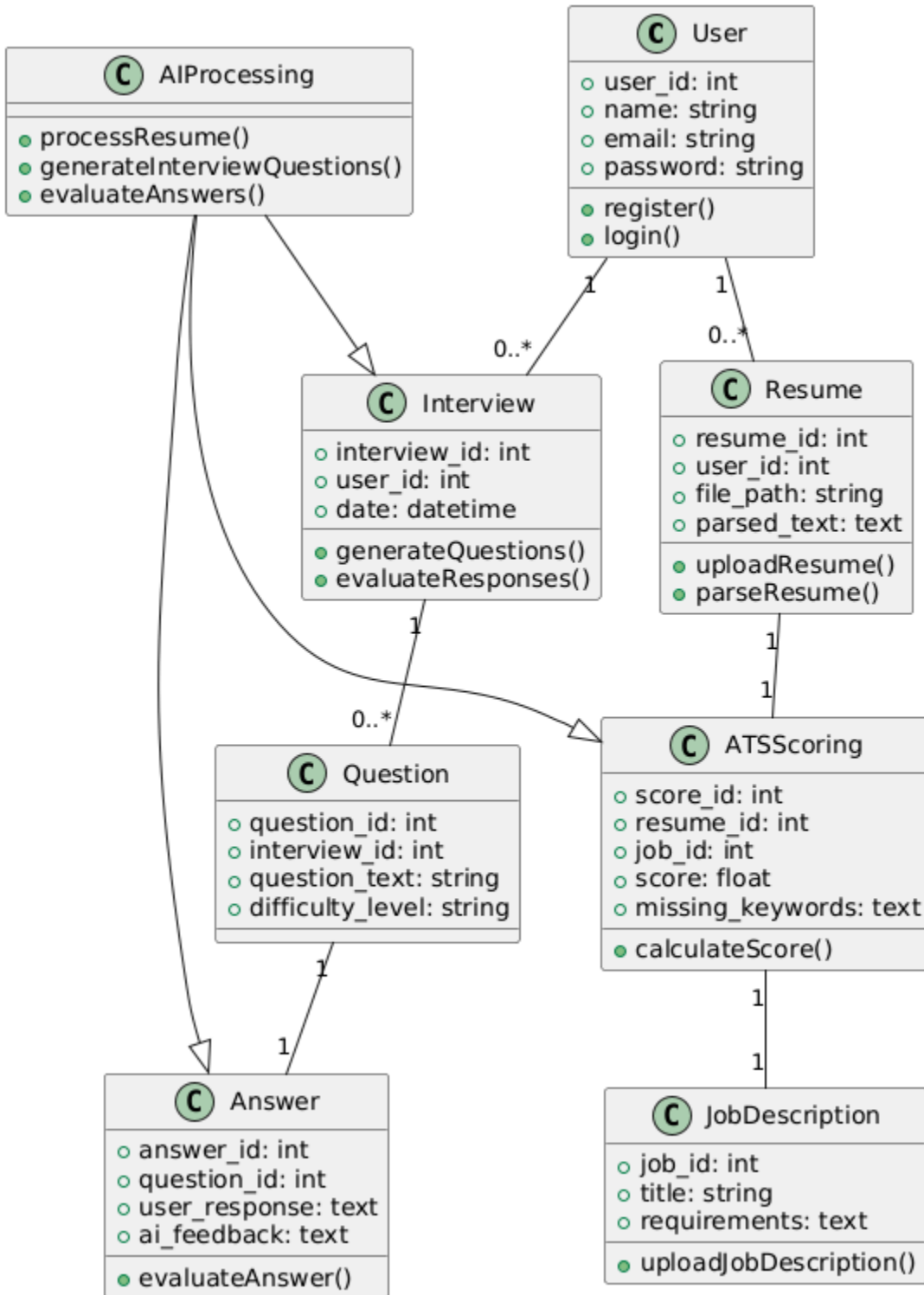
## System Architecture



## Sequence Diagram

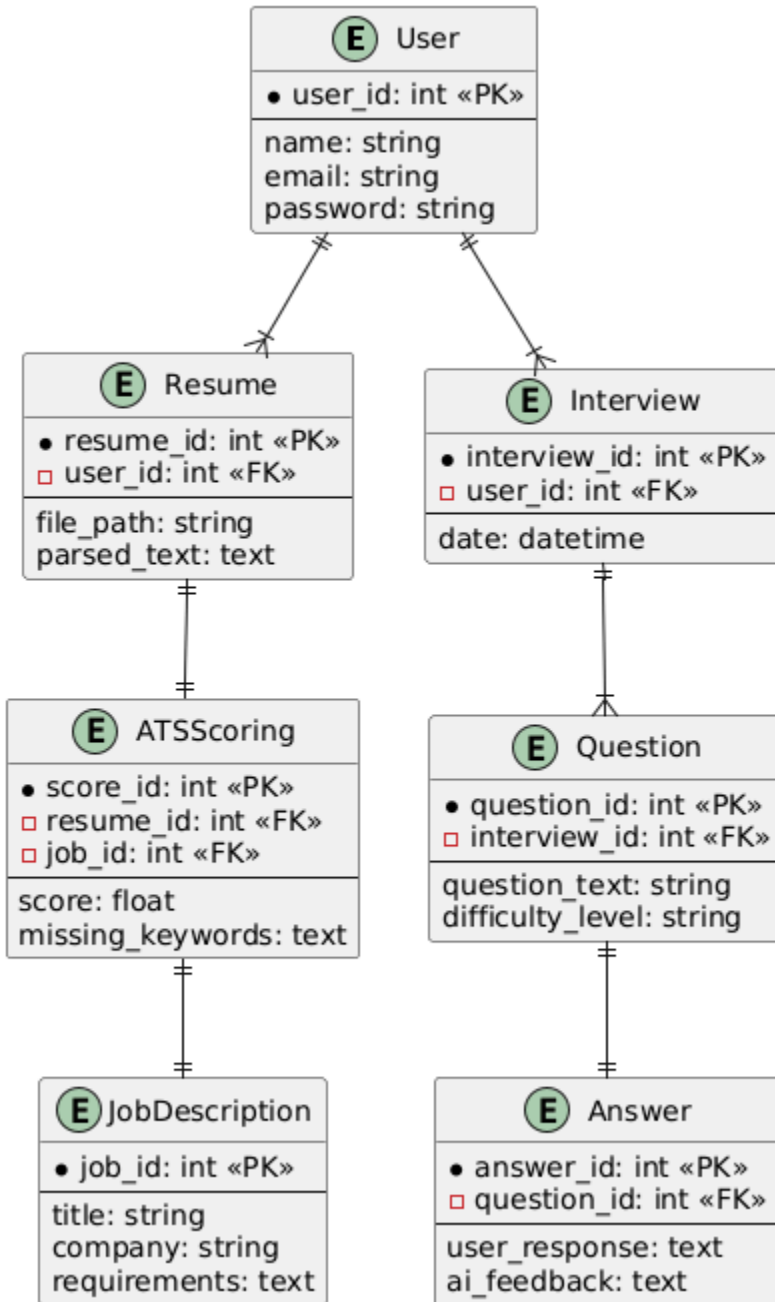


## Class Diagram





## ER Diagram



## **Tools and Technologies**

The development of the AI-based Smart Interview Prep Assistant will utilize the following tools and technologies:

- **Programming Languages:** JavaScript
- **Frameworks:** Next.js for frontend ,drizzle ORM for the backend, shadcn/ui for ui components, clerk next js for authentication
- **AI/ML Libraries:** Gemini API
- **Database:** Postgres neon database

### **Computer Science Theory Q&A Dataset ([Link](#)) [1]**

**Description:** This dataset consists of question-answer pairs related to various computer science theoretical topics, covering subjects such as data structures, algorithms, networking, and databases.

#### **Usage:**

- It is used to train the Gemini API's interview question generation module by providing structured question-answer pairs.
- Helps in fine-tuning NLP models to generate domain-specific technical questions and assess user responses based on relevant answers.

### **Resume Dataset ([Link](#)) [2]**

**Description:** This dataset contains real-world resumes in different formats, along with labeled information such as skills, experience, and education.

#### **Usage:**

- Used to train the resume evaluation module of the AI-driven system, helps in fine-tuning an NLP-based resume parser to extract key details.

- Improves ATS score prediction by analyzing formatting, keyword optimization, and missing skills.

## **References**

- [1] M. Matin, “Computer Science Theory Q&A Dataset,” Kaggle, 2023. [Online]. Available: <https://www.kaggle.com/datasets/mujtabamatin/computer-science-theory-qa-dataset/data>.
- [2] J. Jagadeesh, “Resume Dataset,” Kaggle, 2022. [Online]. Available: <https://www.kaggle.com/datasets/jithinjagadeesh/resume-dataset>.
- [3] “Gemini API Documentation,” Google AI, 2024. [Online]. Available: <https://ai.google.dev/gemini-api/docs>.
- [4] N. M., L. R., N. Srikanth, P. Bhat, and M. Gagan, “InterviewPal - Elevating Interview Automation with Deep Learning and Natural Language Processing Perspectives,” International Conference on Emerging Technologies in Computer Science for Interdisciplinary Applications (ICETCS), IEEE, 2024. DOI: 10.1109/ICETCS61022.2024.10543368. [Online]. Available: <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10543368>
- [5] T. Ramu and N. S. Naik, “Interview Preparation Guide Generation Leveraging GPT-4, ZSL and Hybrid Techniques,” International Conference on Intelligent Signal Processing and Effective Communication Technologies (INSPECT), IEEE, 2024. DOI: 10.1109/INSPECT63485.2024.10895997. [Online]. Available: <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10895997>
- [6] J. Suryavanshi, V. Bhaladhare, S. Meshram, D. Rahangdale, and P. Bopche, “Literature Review for AI Resume Analyzer,” International Research Journal of Modernization in Engineering Technology and Science (IRJMETS), vol. 7, no. 1, Jan. 2025. DOI: 10.56726/IRJMETS65943. [Online]. Available: [https://www.irjmets.com/uploadedfiles/paper//issue\\_1\\_january\\_2025/65943/final/fin\\_irjmets1736095787.pdf](https://www.irjmets.com/uploadedfiles/paper//issue_1_january_2025/65943/final/fin_irjmets1736095787.pdf)