Ravi M B

[Email address]

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hIGH Level DESIGN (HLD)

Interview Question Creator

# **Document Version Control**

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# **Abstract**

The Interview Question Creator application uses advanced AI technology to automatically generate interview questions tailored to specific job roles and requirements. This tool helps recruiters and hiring managers quickly create relevant and diverse questions for interviewing candidates.

By inputting job descriptions or specific skills, the application uses a Large Language Model (LLM) to generate questions that cover technical skills, behavioural traits, and situational responses. Users can easily customize the type and difficulty of questions to match their needs.

The main benefits of this application include saving time and effort in creating interview questions, ensuring the questions are relevant and varied, and improving the overall efficiency of the hiring process. It integrates with existing HR systems to streamline workflow and provides valuable insights into the effectiveness of different questions.

In summary, the Interview Question Creator application simplifies the interview preparation process by using AI to generate high-quality, customizable questions tailored to specific job roles.

# **Introduction**

## **Why this High-Level Design Document?**

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

* Present all of the design aspects and define them in detail
* Describe the user interface being implemented
* Describe the hardware and software interfaces
* Describe the performance requirements
* Include design features and the architecture of the project List and describe the non-functional attributes like:
* Security
* Reliability
* Maintainability
* Portability
* Reusability
* Application compatibility
* Resource utilization
* Serviceability

## **1.2 Scope**

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

## **1.3 Definitions**

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| Term | Description |
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# **General Description**

## **Product Perspective**

The Interview Question Creator is a web-based application designed to help recruiters and hiring managers generate tailored interview questions efficiently. It uses AI to produce questions based on job descriptions and required skills, ensuring a comprehensive evaluation of candidates.

## **Problem Statement**

Recruiters and hiring managers often spend a significant amount of time creating relevant and diverse interview questions for various roles. This process is time-consuming and can lead to inconsistent and sometimes ineffective questioning, impacting the quality of candidate assessments.

## **Proposed Solution**

The Interview Question Creator automates the generation of interview questions using a Large Language Model (LLM). By inputting job descriptions or specific skill requirements, users can quickly generate a variety of relevant questions. This solution ensures that the questions are comprehensive, consistent, and tailored to the specific needs of the role, thus improving the overall efficiency and effectiveness of the interview process.

## **Technical Requirements**

1. User Interface:

* A web-based platform with a simple and intuitive design.
* Forms for inputting job descriptions and required skills.
* Options for customizing and saving generated questions.

1. AI and Data Processing:

* Integration with a Large Language Model (LLM) to generate questions.
* Capability to process and understand natural language inputs.
* Algorithms for categorizing and storing generated questions.

1. Backend and Database:

* A robust backend to handle data processing and storage.
* A database to store job descriptions, generated questions, and user preferences.
* API integrations with existing HR and recruitment systems.

1. Security and Compliance:

* Secure authentication and authorization mechanisms.
* Data encryption for protecting sensitive information.
* Compliance with relevant data protection regulations (e.g., GDPR).

1. Performance and Scalability:

* Efficient processing to generate questions quickly.
* Scalability to handle multiple users and large datasets.
* Regular updates and maintenance to ensure optimal performance.

## **Data Requirements**

1. Job Descriptions:

* Detailed descriptions of various job roles, including responsibilities, required skills, and qualifications.

1. Skill Taxonomies:

* Comprehensive lists of skills categorized by industry and job function.

1. Sample Interview Questions:

* A database of existing interview questions categorized by job type, skill, and difficulty level.

1. Candidate Profiles:

* Optional data on candidate backgrounds to generate personalized questions, ensuring compliance with data protection regulations.

1. Feedback Data:

* Historical feedback on the effectiveness of interview questions to improve the generation process.

## **Tools and Technologies**

1. Natural Language Processing (NLP) Tools:

* Hugging Face Transformers: For implementing and fine-tuning pre-trained language models (e.g., GPT-4) to generate interview questions.
* spaCy For additional NLP tasks such as tokenization, named entity recognition, and text parsing.

1. Backend Development:

* Django: A high-level Python web framework for building the backend and handling complex functionalities.
* FastAPI: A modern, fast (high-performance), web framework for building APIs with Python 3.6+ based on standard Python type hints.

1. Database Management:

* PostgreSQL: An advanced, open-source relational database for storing structured data.
* MongoDB: A flexible NoSQL database for handling unstructured data and rapid development.

1. Frontend Development:

* React: A JavaScript library for building responsive and interactive user interfaces.
* Vue.js: A progressive JavaScript framework for building user interfaces and single-page applications.

1. Authentication and Security:

* OAuth2: For secure authentication and authorization protocols.
* JWT (JSON Web Tokens): For secure transmission of data between client and server.

1. API Integration:

* GraphQL: For efficient data querying and manipulation, allowing clients to request only the data they need.
* REST: For building and consuming RESTful APIs, ensuring compatibility with a wide range of services.

1. Cloud Services:

* AWS (Amazon Web Services): For scalable cloud infrastructure, including services like EC2 (virtual servers), S3 (storage), and RDS (managed databases).
* Azure: For cloud services from Microsoft, useful for organizations already leveraging Microsoft products.

1. Version Control and Collaboration:

* Git: For version control and tracking changes in code.
* GitHub/GitLab: Platforms for hosting repositories, code review, and collaborative development.

1. CI/CD (Continuous Integration/Continuous Deployment):

* Jenkins: For automating the CI/CD pipeline to build, test, and deploy code.
* GitHub Actions: Integrated CI/CD workflows directly within GitHub.

1. Monitoring and Analytics:

* Google Analytics: For tracking user interactions and application performance.
* Prometheus and Grafana: For real-time monitoring and visualization of application and server metrics.