# **Project Documentation:**

# **AI\_powered\_interview-Prsentation (POC)**

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## **1. Introduction**

The AI-Driven Skills Assessment System is a dynamic platform that evaluates users’ expertise in various domains through adaptive multiple-choice questions (MCQs). The system utilizes AI to identify sub-areas of expertise, generate relevant questions dynamically, and assess users’ knowledge levels.

## **2. Features**

### **2.1 Adaptive Difficulty Level**

* The system starts with simple questions for each sub-area.
* If the user answers correctly, the AI increases question complexity.
* If the user answers incorrectly, the AI maintains complexity.

### **2.2 User Grading and Assessment**

* The system dynamically grades users on each identified sub-area.
* Scores are generated for sub-areas such as Terraform, Docker, etc.
* A final summary highlights strengths and weaknesses in each sub-area.

## **3**. **Technical Components**

### **3.1 AI Integration (OpenAI)**

* Use GPT models to:
* Identify sub-areas within broad expertise areas.
* Generate relevant questions dynamically.

### **3.2 Adaptive Algorithm**

* Develops a simple algorithm that:
* Adjust difficulty based on user responses.
* Increase question complexity on correct answers.
* Maintain complexity on incorrect answers.

### **3.3 User Interface (Streamlit)**

* A simple UI allowing users to:
* Select the main expertise area.
* Answer dynamically generated AI questions.
* View results and summary at the end.

### **3.4 Backend Logic**

* + Stores user interactions, responses, and dynamically generated sub-areas.
  + Computes scores per dynamically identified sub-area.

## **4. System Architecture**

### **4.1 API Implementation (FastAPI)**

The backend is built using FastAPI, incorporating the following functionalities:

#### **4.1.1 User Management**

* + **Endpoint:** `/save-user/` (POST)
  + **Function:** Saves user details in MongoDB.

#### **4.1.2 Sub-Area Identification**

* + **Endpoint:** `/sub-areas/{expertise\_area}` (GET)
  + **Function:** Generates sub-areas dynamically using AI.

#### **4.1.3 Question Generation**

* **Endpoint:** `/generate-mcqs/` (POST)
* **Function:** Generates MCQs dynamically based on the expertise area, sub-area, and difficulty.

#### **4.1.4 Question Evaluation**

* + **Endpoint:** `/evaluate-mcqs/` (POST)
  + **Function:** Evaluates user responses and determines the next complexity level.

#### **4.1.5 User Results Retrieval**

* **Endpoint:** `/get-results/{email}` (GET)
* **Function:** Retrieves user assessment results.

## **7. Database Structure**

**7.1 MongoDB Collections**

* **Users Collection:** Stores user details and assessment results.
* **MCQ Collection:** Stores dynamically generated questions and answers evaluation.

## **8. AI-Based Question Generation and Evaluation**

### **8.1 AI Model Usage**

* + Uses OpenAI GPT models to:
  + Identify sub-areas.
  + Generate MCQs.
  + Provide structured responses.

### **8.2 Dynamic Question Complexity Adjustment**

* + Score-based complexity adaptation:
  + Three sets per sub-area, each containing 10 questions.
  + If the **score is≥ 70%,** it increases the difficulty of the next set.
  + Otherwise, maintain current difficulty for next set.

## **9. Conclusion**

The AI-Driven Skills Assessment System efficiently evaluates users’ expertise, providing dynamic, personalized assessments. It adapts to users' proficiency levels and offers targeted insights into their strengths and areas for improvement.