# Hiring Assistant – Project Documentation

## 📌 Project Overview

Hiring Assistant is an AI-powered technical interview chatbot built with Google Gemini Pro. It simulates an intelligent, human-like interviewer that generates personalized, scenario-based questions tailored to a candidate’s background, experience level, and technical stack. The chatbot evaluates responses in real time and follows up with deeper or clarifying questions.

## ✨ Key Features

- Interactive candidate data collection and validation  
- Smart candidate profiling based on tech stack and experience  
- Personalized technical question generation  
- Context-aware follow-up questions based on response quality  
- Adaptive interview flow and skill gap detection  
- Interview session logging in structured JSON format

## 🧰 Tech Stack

- Python 3.9+  
- Google Generative AI (Gemini Pro)  
- dotenv for secure API key management  
- Custom NLP for skill depth assessment and response pattern detection  
- JSON for output logs

## ⚙️ Installation Instructions

1. Clone the repo and navigate into it  
2. Set up a virtual environment: `python -m venv venv`  
3. Activate the environment and install dependencies: `pip install -r requirements.txt`  
4. Add your Gemini API Key in a `.env` file  
5. Run: `python chatbot.py`

## ✍️ Prompt Engineering Strategy

Prompts were crafted to capture specific candidate contexts, including years of experience, target role, and stack. Each prompt is detailed and ensures responses are scenario-based, practical, and aligned with real-world challenges. Follow-up prompts adapt to each answer’s depth.

## 🧠 Implementation Highlights

- Class-based architecture using finite state machine design.  
- State transitions include GREETING, INFO COLLECTION, TECH STACK, QUESTIONING, and COMPLETION.  
- Dynamic question generation based on uncovered areas and previous performance.  
- Sentiment and confidence indicators guide follow-up depth.  
- Output is stored in JSON format for future reference.

## ⚔️ Challenges & Solutions

1. \*\*Challenge\*\*: Generating truly personalized and non-repetitive questions.  
 \*\*Solution\*\*: Used context-rich prompts and tracked covered areas.  
   
2. \*\*Challenge\*\*: Ensuring adaptive follow-up logic.  
 \*\*Solution\*\*: Implemented a response analysis engine with skill depth scoring.  
  
3. \*\*Challenge\*\*: Maintaining tech and role relevance.  
 \*\*Solution\*\*: Designed position-specific focus templates and fallback mechanisms.

## ✅ Conclusion

The Hiring Assistant represents a robust step toward automating and enhancing the technical interview process using LLMs. It mimics expert-level interview behavior while offering consistency, adaptability, and context-awareness in candidate evaluation.