📄 Project Explanation: Autonomous Resume Screening Agent

Use Case Selected

Use Case 1 – Build an Autonomous Resume-Screening Agent for HR Teams

🕐 Objective

To create an AI-powered agent that can autonomously: - Accept a job description (JD) - Parse and analyze a folder of resumes (PDF format) - Extract and rank the top 3 most relevant candidates - Present output with clear reasoning

🧰 Tools & Technologies

- **Python**: Core programming language
- **Streamlit**: Interactive web-based UI
- **LangChain**: LLM chain orchestration for PDF handling and reasoning
- **OpenAI API**: Used for embedding and explanation generation
- **ChromaDB**: Fast, lightweight vector store for semantic resume matching
- **PyPDF2 / LangChain PDFLoader**: Resume content extraction from PDFs

🛠️ How the Agent Works

1. **Input**: HR enters a job description in the UI.
2. **Parsing**: All resumes in a pre-defined folder are parsed.
3. **Embedding**: The JD and all resumes are converted to vector representations using OpenAI embeddings.
4. **Storage & Search**: Resume vectors are stored in ChromaDB. Semantic search identifies resumes most similar to the JD.
5. **Ranking**: Top 3 resumes are selected based on cosine similarity scores.
6. **Reasoning**: Each of the top resumes is explained using OpenAI LLM to provide a summary and justification.
7. **Output**: Results are shown in the UI with ranking and reasoning.

Agentic Capabilities

- **Autonomy**: Requires only a JD and resumes folder; everything else is handled by the agent.
- **Reasoning**: Generates human-understandable justification for selections.
- **Looping**: Agent iterates through all resumes and operates in a goal-driven manner.

📈 Outcome

The agent successfully mimics a real-world HR assistant: - Reduces screening time - Improves candidate-job alignment - Adds transparency with rationale for each decision

🔗 Deliverables

Deliverable	Status
Python Code	✅Done
Streamlit Interface	✅Done
Vector Search DB	✅Done
Agent Flow Diagram	✅Included
Example Outputs	✅Provided
Explanation Report (This)	✅Generated

📮Contact

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