AI-Powered Research Agent

Project Description:

The Research Agent is an AI system designed to revolutionize academic and scientific research workflows.

Built using IBM Watsonx.ai Studio and Granite foundation models, it automates time-consuming research tasks like literature search, summarization, reference management, and report drafting.

Key Features:

- Autonomous academic literature search
- Paper summarization and key insight extraction
- Reference organization and citation generation
- Report section drafting (Introduction, Literature Review, etc.)
- Hypothesis generation
- Data extraction from research papers

Technology Stack:

- AI Platform: IBM Watsonx.ai Studio
- Foundation Model: IBM Granite (NLP/Instruction)
- RAG System: FAISS / IBM Watson Discovery
- Backend API: Flask / Node.js
- Data Source: arXiv / Semantic Scholar APIs
- Document Handling: PDF Parser / LangChain

How It Works:

1. User Input: A research question or topic is provided.

2. Retrieval: Agent fetches related papers using arXiv or custom vector DB (FAISS).

3. Granite LLM: Context is passed to IBM Granite model for summarization and response generation.

4. Output: Results include paper summaries, citations, hypotheses, or structured research drafts.

Sample Prompts:

- Summarize the key contributions of the paper titled 'Self-Attention in Transformers'.
- Generate an abstract based on the following context from retrieved papers.
- What are current challenges in AI-based healthcare diagnostics?
- Create a related work section for a paper on neural-symbolic AI.

Developed By:

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