IBM HACKATHON PROJECT

RESEARCH AI AGENT

Presented By:

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OUTLINE

Researchers and students face challenges in quickly finding, summarizing, and organizing academic research. Traditional search engines return too much unstructured data, and manual reading of papers is time-consuming. Our AI Research Agent solves this by autonomously searching literature, summarizing key findings, and providing detailed answers with citations.



PROBLEM STATEMENT

Researchers, students, and professionals often struggle to stay updated with the rapidly growing volume of academic publications, technical articles, datasets, and evolving research trends. Manually reviewing, filtering, and synthesizing information across multiple domains is timeconsuming and inefficient.

Proposed Solution:

An AI Research Agent that uses Natural Language Processing (NLP), Retrieval-Augmented Generation (RAG), to assist users in conducting efficient literature reviews, generating summaries, identifying research gaps, and recommending relevant papers, datasets, or collaborators.



TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model



IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



WOW FACTORS

This agent will significantly **reduce research time**, improve the **quality of literature reviews**, **help early-stage researchers** find direction, and foster interdisciplinary collaboration by making knowledge more accessible and actionable.

Unique features:

- Semantic search across research papers, journals, and datasets
- Auto-summarization of selected papers
- Citation and reference analysis to trace influence
- Recommendation of research papers based on a user's current topic
- Trend analysis over time for specific keywords or domains.
- Collaboration mapping: suggests potential co-authors or institutions based on similar research interests.



END USERS

Students & Researchers

- University students working on assignments, dissertations, or theses.
- PhD and postdoctoral researchers conducting literature reviews.

Educational Institutions

- Colleges and universities integrating the agent into research labs or libraries.
- Faculty members preparing lectures or course material.

Industry R&D Teams

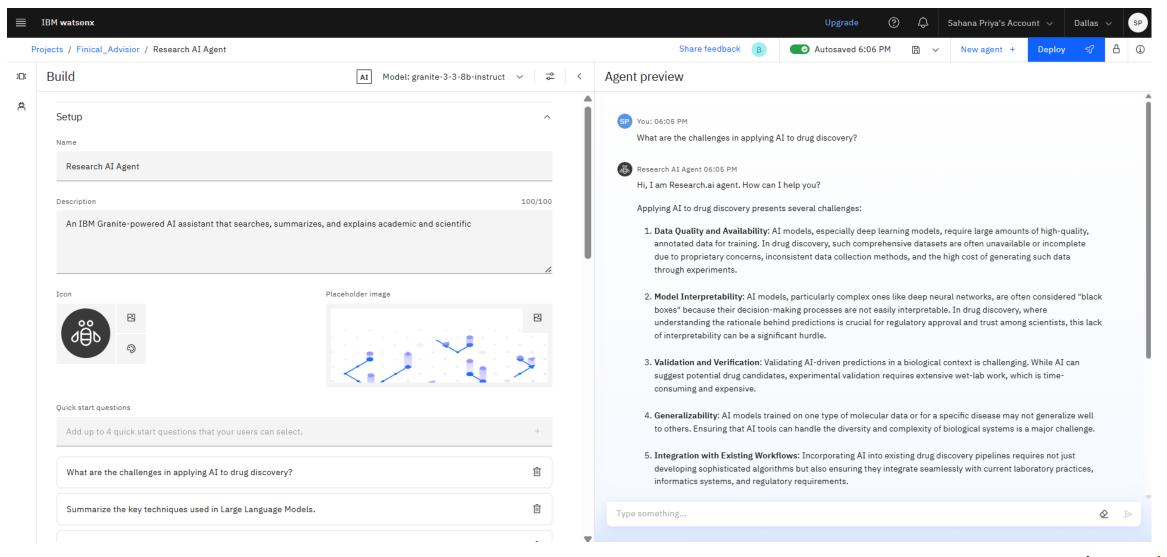
- Scientists and engineers in companies who need fast access to research findings.
- Corporate knowledge management teams.

Libraries & Knowledge Hubs

•Digital library platforms offering AI-powered literature assistance.

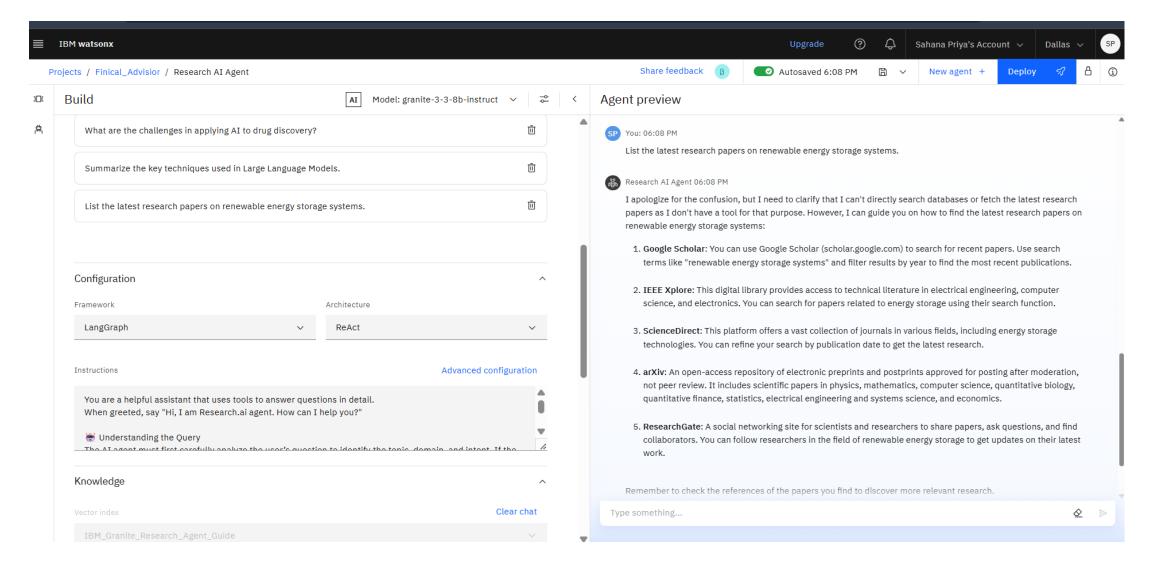


RESULTS: SETTING UP AGENT



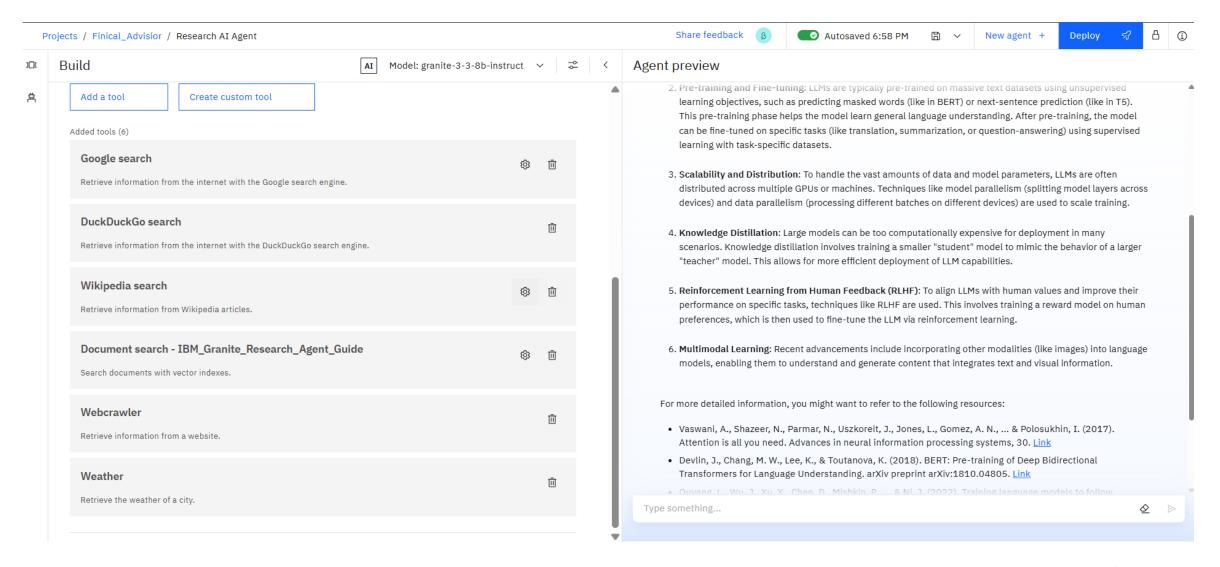


RESULTS: AGENT PREVIEW



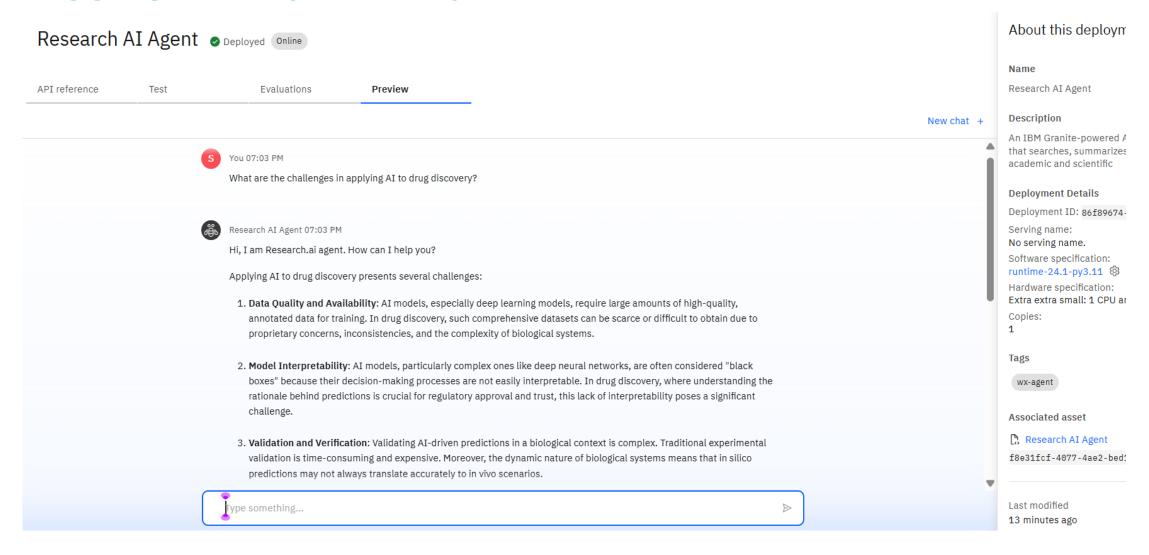


RESULTS: TOOLS USED





RESULTS: DEPLOYED AI AGENT





CONCLUSION

- The agent can generate reports, suggest hypotheses, and even draft sections of research papers.
- It saves time by automating repetitive tasks like citation management and data extraction.
- Research Agents enhance efficiency, accuracy, and innovation in both academic and industrial R&D.



GITHUB LINK

GitHub Repository Link :

https://github.com/SahanaPriyaG/Research-AI-Agent.git



FUTURE SCOPE

- Multilingual Research Support
- Voice-Activated Research Assistant
- Real-Time Collaboration Features
- Research Gap and Novel Topic Identification
- Integration with Publishing Platforms
- AI-Assisted Paper Drafting



IBM CERTIFICATIONS

This certificate is presented to
Sahana Priya G

for the completion of

Lab: Retrieval Augmented Generation with
LangChain
(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 29 Jul 2025 (GMT)

Learning hours: 20 mins







THANK YOU

