IBM HACKATHON PROJECT

RESEARCH AGENT AI

Presented By:-

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OUTLINE

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PROBLEM STATEMENT

Research Agent

Researchers, students, and professionals often struggle to stay updated with the rapidly growing volume of academic publications, technical articles, and datasets. Manually reviewing and synthesizing this data is time-consuming and inefficient.

Proposed Solution:

An Al-powered Research Agent that leverages Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG) to:

- Summarize research papers
- Identify research gaps
- Generate hypotheses
- Recommend datasets, collaborators, and more



TECHNOLOGY USED

- IBM Watsonx.ai Studio for building the agent
- IBM Granite Foundation Model core reasoning and generation model
- Retrieval-Augmented Generation (RAG) for grounded document-based responses
- Natural Language Processing (NLP) to understand academic queries
- IBM Cloud Object Storage (Lite) for storing research papers
- Watsonx Agent Builder no-code interface for agent creation



IBM CLOUD SERVICES USED

- IBM Watsonx.ai Studio
- IBM Watsonx Runtime
- IBM Cloud Object Storage (Lite)
- IBM Granite Model (13B)
- Watsonx Agent Builder (No-code)



WOW FACTORS

Automates literature reviews and research drafting

Semantic search across uploaded papers and documents

Auto-summarization of technical content

Identifies research gaps and trends

Collaboration mapping for co-author suggestions

Citation influence tracking

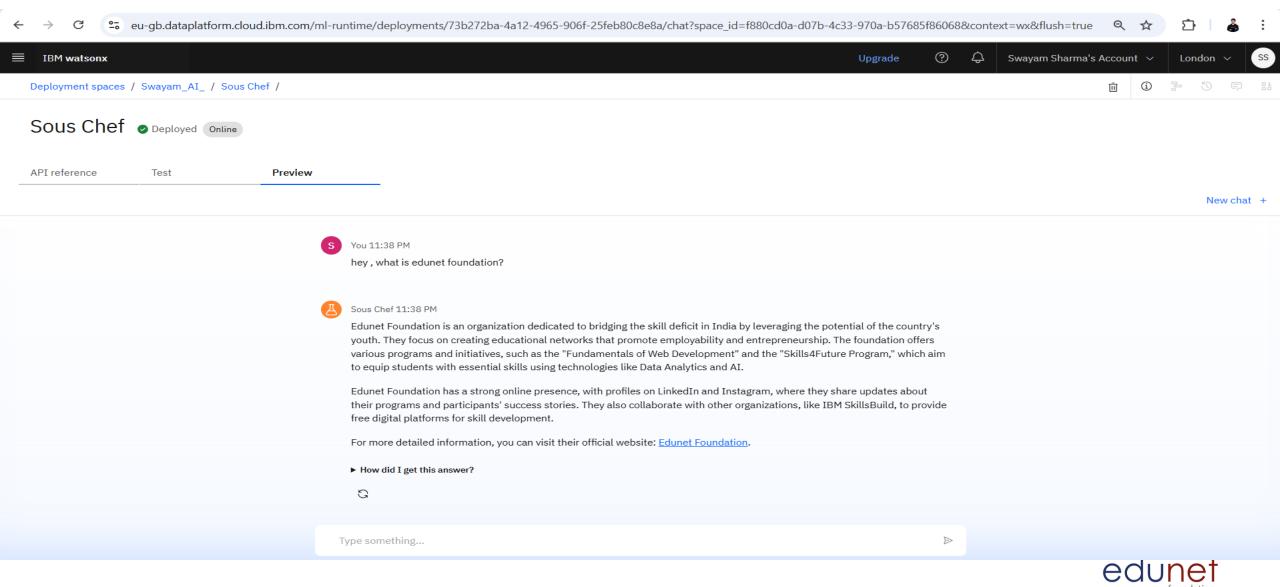


END USERS

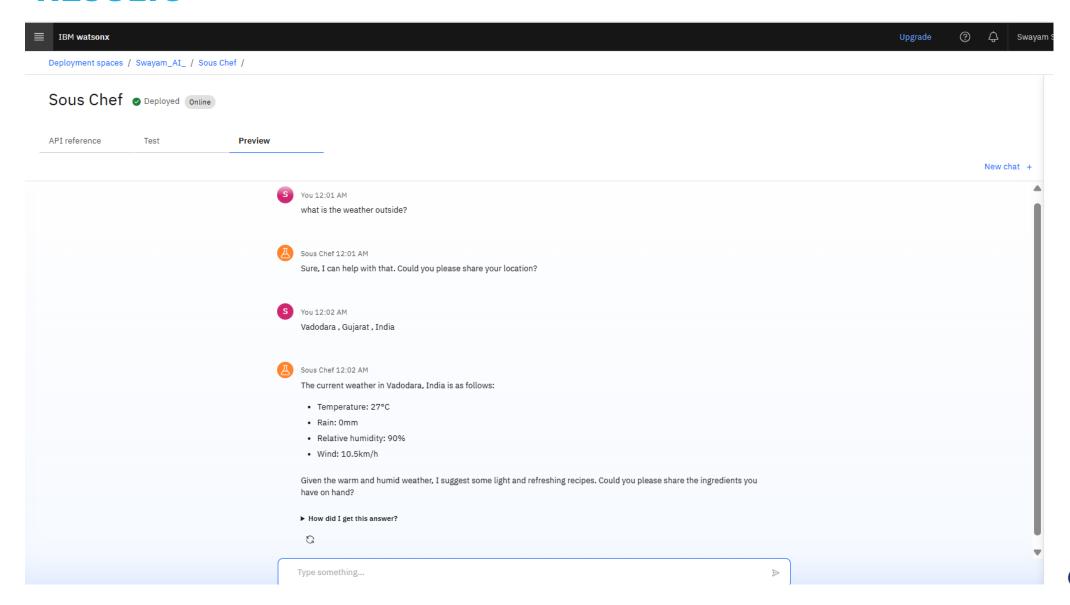
- Academic Researchers
- Research Institutions and Universities
- Industry R&D Labs
- Educators and Ph.D. Guides



RESULTS

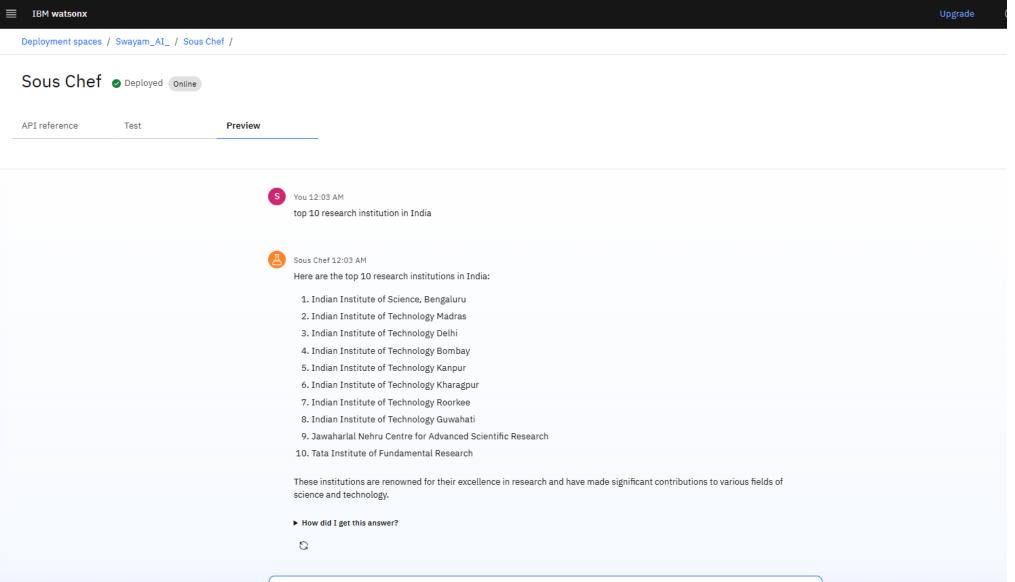


RESULTS





RESULTS





Type compthing

CONCLUSION

The Research Agent AI assists with literature review, drafting, citation management, and hypothesis generation. It improves research quality, saves time, and fosters interdisciplinary work. The agent enhances both academic and industrial research workflows using AI.



GITHUB LINK

GitHub Link: https://github.com/swayam1604/research-agent-ai_ibm



FUTURE SCOPE

- Multilingual support for regional researchers
- Voice-activated research interaction
- Real-time collaboration dashboard
- Automatic BibTeX citation exports
- Research topic suggestion & gap detection
- Al-assisted full paper drafting



IBM CERTIFICATIONS

In recognition of the commitment to achieve Artificial Intelligence professional excellence Swayam Sharma Has successfully satisfied the requirements for: Getting Started with Artificial Intelligence Issued on: Jul 18, 2025 Issued by: IBM SkillsBuild Verify: https://www.credly.com/badges/d841a50a-267a-43e1-9d95-232b36393341



IBM SkillsBuild

Completion Certificate



This certificate is presented to

Swayam Sharma

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 18 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU

