# IBM HACKATHON PROJECT

# ACADEMIC RESEARCH AI AGENT

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# OUTLINE

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- IBM Certifications

# PROBLEM STATEMENT

The traditional academic and scientific research process is incredibly time-consuming and labor-intensive. Researchers dedicate a vast amount of time to repetitive tasks like literature discovery, paper summarization, and citation management. This manual effort creates a significant bottleneck, slowing down the pace of analysis, innovation, and discovery. The challenge is to create an intelligent system that automates these tedious aspects of research.

# TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Mistral-large Model

# IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab

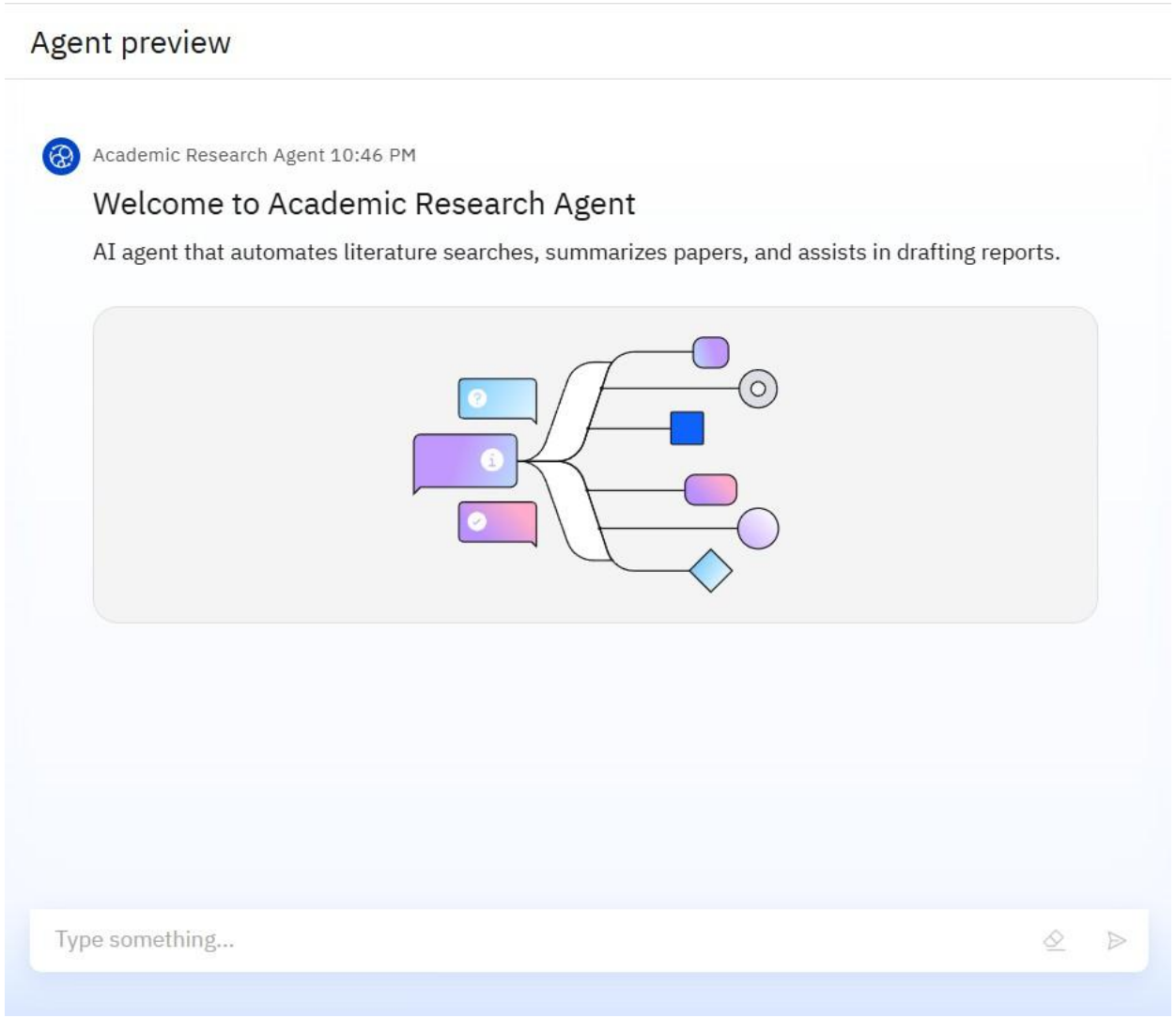
# WOW FACTORS

- **Autonomous Synthesis:** It doesn't just fetch papers; it autonomously reads, understands, and synthesizes information from multiple sources to generate coherent summaries and reports.
- **Creative Hypothesis Generation:** The agent's most advanced capability is suggesting novel hypotheses based on gaps or connections it identifies in the existing literature, actively contributing to the creative aspect of research.
- **End-to-End Workflow Automation:** It covers the research lifecycle from the initial query to drafting sections of a paper, offering a comprehensive, all-in-one solution that dramatically accelerates the research process.

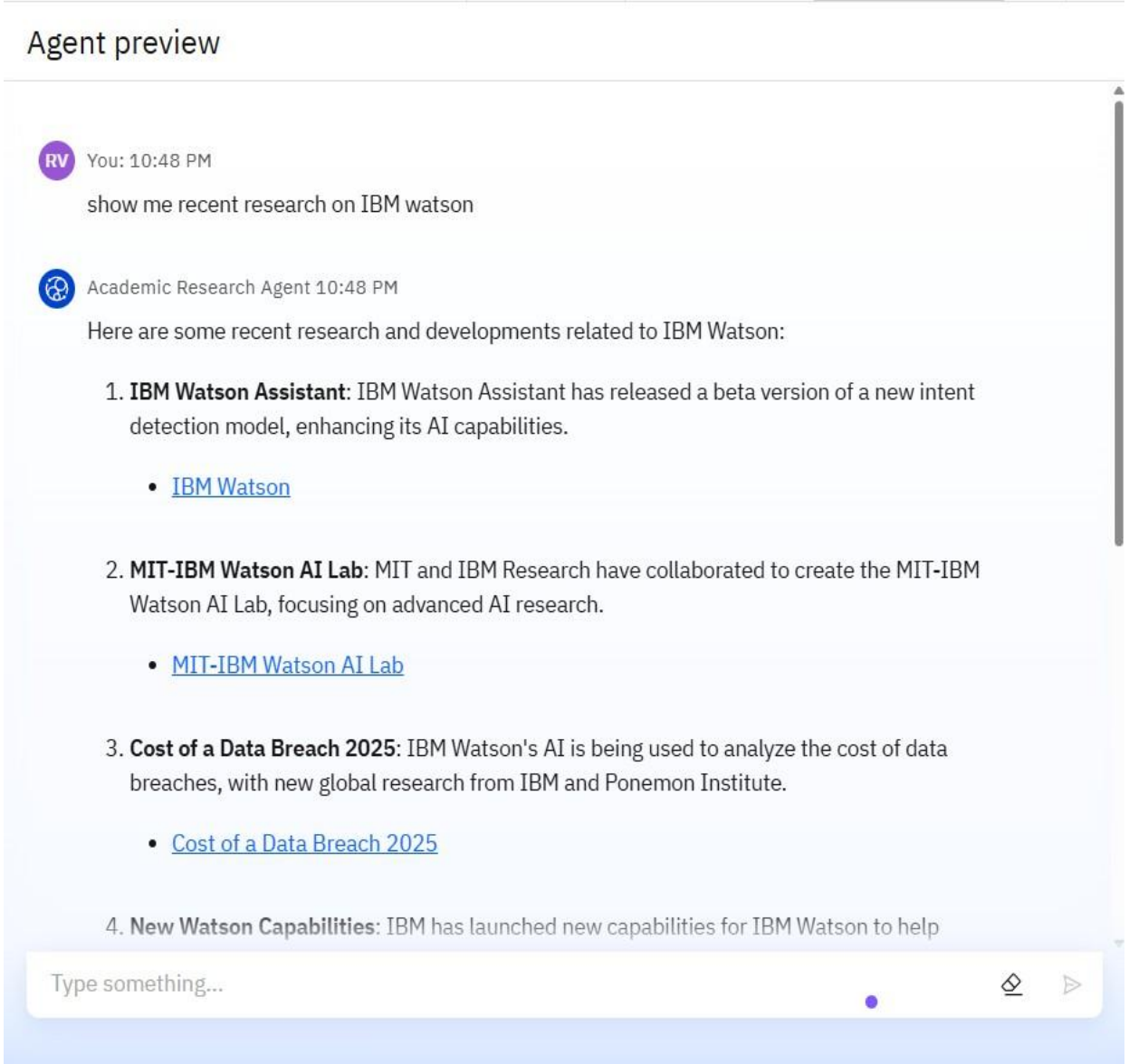
## END USERS

- **Academics and Students:** Professors, PhD/Master's candidates, and university students who need to conduct literature reviews for papers, theses, and dissertations.
- **Corporate R&D Professionals:** Scientists and engineers in industries like pharmaceuticals, technology, and manufacturing who must stay current with the latest innovations and patents.
- **Market Analysts and Journalists:** Professionals who need to quickly get up to speed on complex topics to produce reports, articles, and analyses.

# RESULTS


Agent preview
Academic Research Agent 10:46 PM
Welcome to Academic Research Agent
AI agent that automates literature searches, summarizes papers, and assists in drafting reports.
Type something...

# RESULTS

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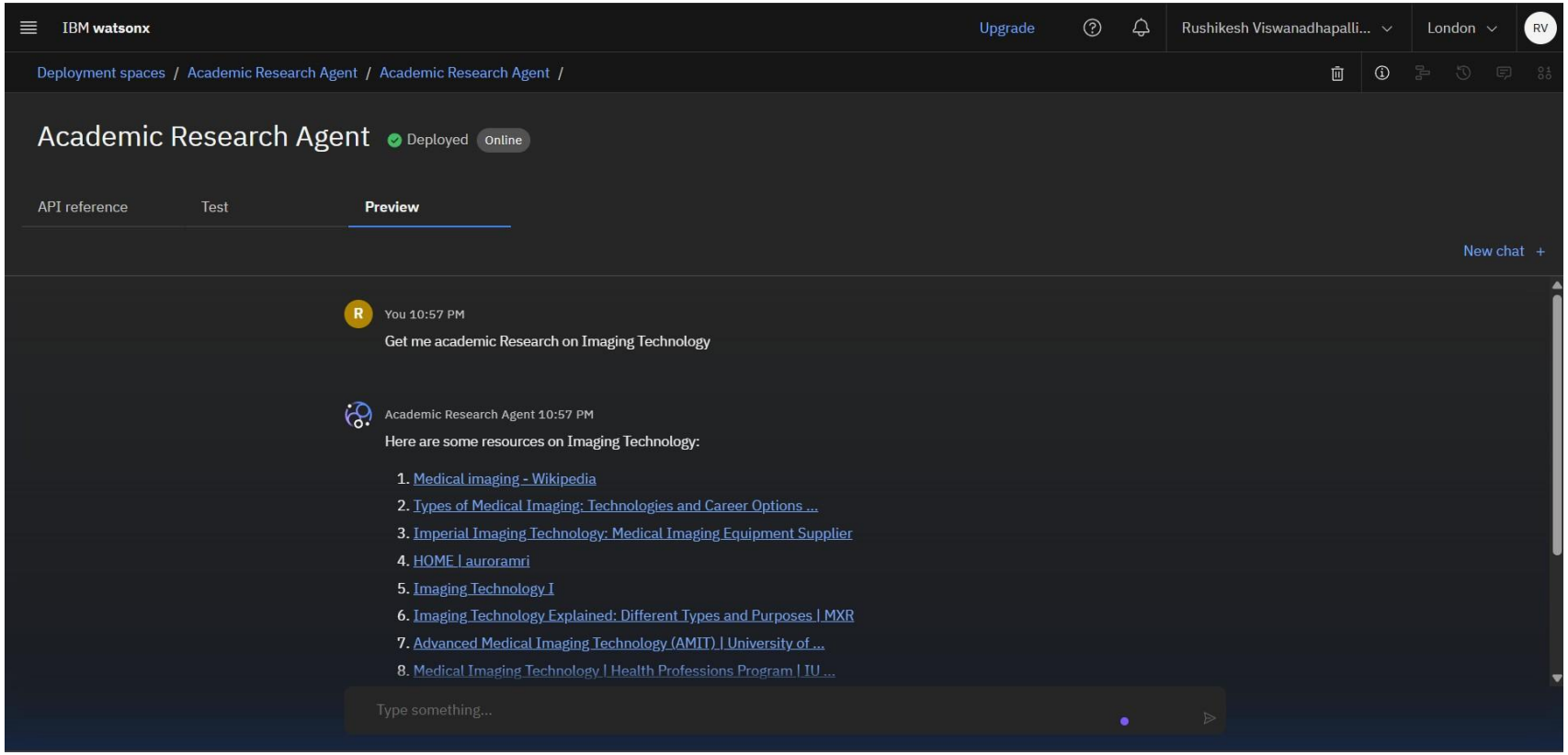
# RESULTS

## Deployed AI Agent

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# CONCLUSION

- The AI Research Agent successfully demonstrates how leveraging IBM's cloud-based AI services can solve a critical real-world problem. By automating the most repetitive and time-consuming tasks in research, the agent acts as a powerful productivity multiplier. It empowers researchers, enhances the quality of their work by ensuring comprehensive literature coverage, and ultimately accelerates the timeline from research to breakthrough discovery.

# GITHUB LINK

- https://github.com/Rushikeshvis/Agentic-Research-Assistant

# FUTURE SCOPE

- Advanced Data Integration: Integrate capabilities to extract and analyze data from tables and charts within research papers.
- Multilingual Processing: Expand the agent to understand and process research published in languages other than English.
- Collaborative Features: Develop a platform where teams of researchers can use the agent collectively on a single project.
- Direct Plugin Integration: Create plugins for popular reference managers (like Zotero, Mendeley) and word processors (like Microsoft Word, Google Docs) for a seamless workflow.

# IBM CERTIFICATIONS

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In recognition of the commitment to achieve professional excellence

Journey to Cloud: Envisioning Your Solution

IBM

Rushikesh Viswanadapalli

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution

Issued on: Jul 26, 2025
Issued by: IBM SkillsBuild

Verify: https://www.credly.com/badges/4d831cae-4383-4a76-af24-312cf76a72df

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IBM **SkillsBuild** Completion Certificate



This certificate is presented to

Rushi Kesh

for the completion of

# Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 26 Jul 2025 (GMT)

**Learning hours:** 20 mins

# THANK YOU

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