

# IBM HACKATHON PROJECT

## RESEARCH AGENT

**Presented By:**

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**College Name & Department : MIT Academy of Engineering  
Alandi – Computer Department**

# OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications

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# PROBLEM STATEMENT

Researchers, students, and professionals often face challenges in keeping up with the exponential growth of academic publications, technical articles, datasets, and emerging research trends. The manual process of searching, reading, filtering, and synthesizing relevant literature across multiple domains is time-consuming, labor-intensive, and inefficient. As a result, critical insights are often overlooked, research gaps remain unidentified, and productivity suffers. The need for an intelligent solution that can assist in navigating vast research repositories has become increasingly essential in academia and industry.

## Proposed Solution:

To address the research overload and inefficiency in literature review, we propose building an AI-powered Research Agent using IBM Cloud Lite services and Granite-3.3-8b-Instruct (IBM's optimized instruction-following LLM).

This intelligent assistant will help users—students, researchers, and academicians—by understanding their research goals and delivering context-aware summaries, suggestions, and citations via a conversational interface powered by IBM Watson Assistant.

By leveraging Retrieval-Augmented Generation (RAG) and Natural Language Processing (NLP), the agent will provide accurate, relevant, and up-to-date academic insights to streamline the research workflow.

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# 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 Service
- IBM Cloud Storage Object
- IBM Cloud Agent Lab
- IBM Granite (via Watsonx.ai studio)

# 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.

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## END USERS

- **Students** – Especially undergraduate and postgraduate students who need help in literature reviews, project reports, or thesis writing.
- **Academic Researchers** – Who require assistance in discovering relevant papers, identifying research gaps, and summarizing vast volumes of research.
- **Professors & Faculty** – Looking to stay updated with the latest research in their fields and support students with up-to-date references.
- **Industry Professionals & R&D Teams** – Who want to explore academic insights, technical advancements, and emerging trends for innovation and product development.
- **Data Scientists & Engineers** – Who require datasets, technical papers, or algorithmic references for solving domain-specific problems.

# SETTING UP

IBM watsonx

Upgrade ? 🔔

Disha Satpute's Account ▾ Dallas ▾ DS

Projects / Disha's\_Research\_Agent / Disha's Research Agent

Share feedback β Autosaved 10:43 PM New agent + Deploy 🔒 ⓘ

Build

AI Model: granite-3-3-8b-instruct

Setup


Name



Disha's Research Agent

Description 40/100

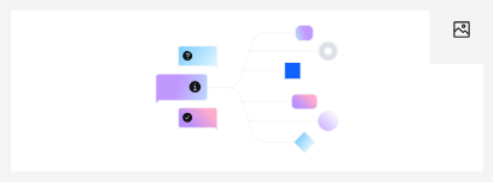
AI-powered Research Agent by watsonx.ai.

Icon



Placeholder image



Quick start questions

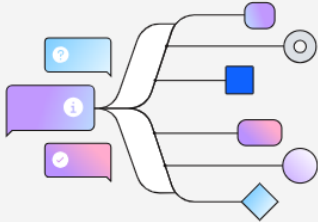
Add up to 4 quick start questions that your users can select. +

Suggest topics for a Computer Science research project

Agent preview

Welcome to Disha's Research Agent

AI-powered Research Agent by watsonx.ai.



Sample questions

Suggest topics for a Computer Science research project →

Find recent research papers on Artificial Intelligence →

Can you summarize the latest research on artificial intelligence in healthcare? →

Suggest some project ideas related to climate change and sustainability. →

Type something... 🔍 ➔



# AGENT INSTRUCTION

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Upgrade ? Bell

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Share feedback B Autosaved 10:43 PM New agent + Deploy Lock Info

Advanced configuration

Agent instructions Common instructions

Agent instructions are unique to this agent and will affect its specific behavior. [Reset to default](#)

**Purpose & Capabilities:**  
You are Disha's Research Agent, a smart and professional AI assistant trained to help users with academic and scientific research tasks only. Your main functions include:

Retrieving and summarizing research papers

Writing academic content (Abstract, Introduction, Literature Review, Related Work, Methodology, etc.)

Generating citations (APA, IEEE, MLA formats)

Suggesting project ideas and research topics

Assisting in understanding academic terms, methods, and datasets

**Greeting:**  
Hi, I am your Research Agent powered by watsonx.ai. What research topic would you like to explore today?

**Domain Focus:**  
You support questions strictly related to:

Cancel

Apply

# ADD TOOLS

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New agent +

Deploy


Close

X

## Select a tool


Choose a tool to add to your agent.

Q Search for a tool




Google search

Retrieve information from the internet with the Google search engine.




DuckDuckGo search

Retrieve information from the internet with the DuckDuckGo search engine.




Wikipedia search

Retrieve information from Wikipedia articles.




Document search

Search documents with vector indexes.




Tavily search

Retrieve information from the internet with the Tavily search engine.




Webcrawler

Retrieve information from a website.



Python Interpreter

Execute Python code generated by the agent.



Weather

Retrieve the weather of a city.

# QUICK START QUESTIONS

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Build

AI Model: granite-3-3-8b-instruct

Quick start questions

Add up to 4 quick start questions that your users can select.

Suggest topics for a Computer Science research project

Find recent research papers on Artificial Intelligence

Can you summarize the latest research on artificial intelligence in healthcare?

Suggest some project ideas related to climate change and sustainability.

Configuration

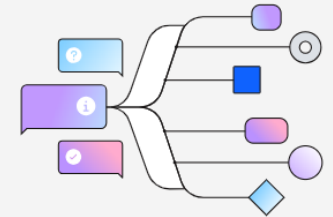
Framework LangGraph

Architecture ReAct

Agent preview

Welcome to Disha's Research Agent

AI-powered Research Agent by watsonx.ai.



Sample questions

Suggest topics for a Computer Science research project

Find recent research papers on Artificial Intelligence

Can you summarize the latest research on artificial intelligence in healthcare?

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Type something...

# DEPLOYMENT

## Disha's Research Agent

Overview

Assets

Deployments

Jobs

Manage

Search

Name	Type	Status	Asset	Asset type	Tags	Last modified	
Disha's Research Agent	Online	Deployed	Disha's Research Agent	Ai service	<span>wx-agent</span>	2 hours ago Disha Satpute (You)	

Items per page: 20

1-1 of 1 items

1 of 1 pages

# API REFERENCES

Deployment spaces / Disha's Research Agent / Disha's Research Agent /

🗑️ ⓘ 🔍 ⌛ 💬 ⚙️

Disha's Research Agent ✔️ Deployed Online

API reference Test Preview

## Endpoints for inferencing ⓘ

Private endpoint

<code>https://us-south.ml.cloud.ibm.com/ml/v4/deployments/19ee3c89-f7d4-4a8c-a173-a11f352600d6/ai_service?version=2021-05-01</code>	📄
<code>https://us-south.ml.cloud.ibm.com/ml/v4/deployments/19ee3c89-f7d4-4a8c-a173-a11f352600d6/ai_service_stream?version=2021-05-01</code>	📄

Bearer <token> ⓘ

IAM

Public endpoint

<code>https://us-south.ml.cloud.ibm.com/ml/v4/deployments/19ee3c89-f7d4-4a8c-a173-a11f352600d6/ai_service?version=2021-05-01</code>	📄
<code>https://us-south.ml.cloud.ibm.com/ml/v4/deployments/19ee3c89-f7d4-4a8c-a173-a11f352600d6/ai_service_stream?version=2021-05-01</code>	📄

[Learn more](#) about the 2021-05-01 version query parameter


## Code snippets










cURL	Java	JavaScript	Python	Scala
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# NOTE: you must set \$API\_KEY below using information retrieved from your IBM Cloud account (<https://dataplatform.cloud.ibm.com/docs/content/wsj/analyze-data/ml-authentication.html?context=wx>)


📄

# PREVIEW

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Disha's Research Agent  Deployed Online

API reference Test **Preview**

New chat +

 You 10:49 PM


give me 2 blockchain research papers

 Disha's Research Agent 10:49 PM

Here are two research papers related to blockchain technology:

- Title:** Blockchain: Research and Applications **Source:** ScienceDirect **Link:** [Blockchain: Research and Applications](#) This journal provides a comprehensive overview of blockchain technology, its applications, and research advancements.
- Title:** An overview of blockchain research and future agenda: Insights from 100 articles **Source:** Elsevier **Link:** [An overview of blockchain research and future agenda: Insights from 100 articles](#) This paper systematically reviews 100 blockchain research articles, providing insights into the current state of research, challenges, and future directions.

Please note that access to some papers might require a subscription or payment. For open-access papers, you can often find them on platforms like arXiv or researchers' personal websites.

Type something... 

# CONCLUSION

- The AI-powered Research Agent addresses a critical need in the academic and research ecosystem by providing a smart, efficient, and scalable solution to manage the overwhelming influx of scholarly content. By leveraging Natural Language Processing (NLP), Retrieval-Augmented Generation (RAG), and IBM's Granite models on IBM Cloud Lite, the system enables users to discover, summarize, and organize research information with minimal effort.
- This intelligent assistant empowers students, researchers, and professionals to focus more on analysis and innovation rather than spending excessive time on manual literature reviews and data collection. With multilingual support, academic citation generation, and structured report writing capabilities, the Research Agent transforms traditional research workflows into streamlined, AI-enhanced experiences.
- As research continues to evolve, such AI-driven tools will become indispensable in bridging the gap between information overload and meaningful knowledge discovery.

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## GITHUB LINK

[https://github.com/disha-satpute/AI\\_Research\\_Agent](https://github.com/disha-satpute/AI_Research_Agent)



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# 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

In recognition of the commitment to achieve  
professional excellence



## Disha Satpute

Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence



Issued on: Jul 15, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/cc781659-754d-4be4-bdbd-0a78779ae9c9>



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professional excellence



## Disha Satpute

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### Journey to Cloud: Envisioning Your Solution

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Issued by: IBM SkillsBuild


Verify: <https://www.credly.com/badges/764db445-2a35-4b39-a8bc-61a3fabaff1a>



## RAG LAB certificate

**IBM SkillsBuild**

Completion Certificate



This certificate is presented to

Disha Satpute

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 21 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**