
INTERNSHIP PROJECT

RESEARCH AGENT

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OUTLINE

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

PROBLEM STATEMENT :

A Research Agent is an AI system designed to assist with academic and scientific research tasks. It can autonomously search for literature, summarise papers, and organise references. Using natural language processing, it understands research questions and retrieves relevant information.

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.

TECHNOLOGY USED :

- Natural Language Processing (NLP) Pipelines
- IBM Watsonx Studio Tools
- Agentic AI Workflow
- Retrieval Augmented Generation (RAG)
- IBM Granite model

IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio Tools
- IBM Watson Discovery
- IBM Cloud Object Storage
- IBM Watsonx.ai
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model

WOW FACTORS

◆ Autonomous Research Capabilities

- The agent can **independently search academic literature**, extract key insights, and organize references without manual intervention.
- Reduces hours of research work into minutes.

◆ Powered by IBM Granite LLMs

- Uses enterprise-grade **IBM Granite foundation models**, ensuring high accuracy, security, and scalability compared to generic AI models.

◆ Automated Citation & Reference Management

- Generates citations in **APA/MLA/IEEE** formats automatically, saving time and ensuring research integrity.

◆ Dynamic Report Generation

- Creates **structured research reports** (Abstract, Introduction, Applications, Conclusion) with inline citations and formal academic tone.

◆ Hypothesis & Research Suggestions

- Goes beyond summarizing—it **suggests hypotheses** and potential research gaps, helping academics and R&D teams innovate faster.

◆ Seamless IBM Cloud Integration

- Fully deployed on **IBM Cloud Lite services**, leveraging secure, enterprise-grade infrastructure.
- Easy to scale or integrate into enterprise workflows.

END USERS

- Academic Researchers
- Research Institutions and Universities
- Library and Knowledge Centers
- Industry R&D Teams
- Data Scientists and ML Engineers
- Educators

RESULTS

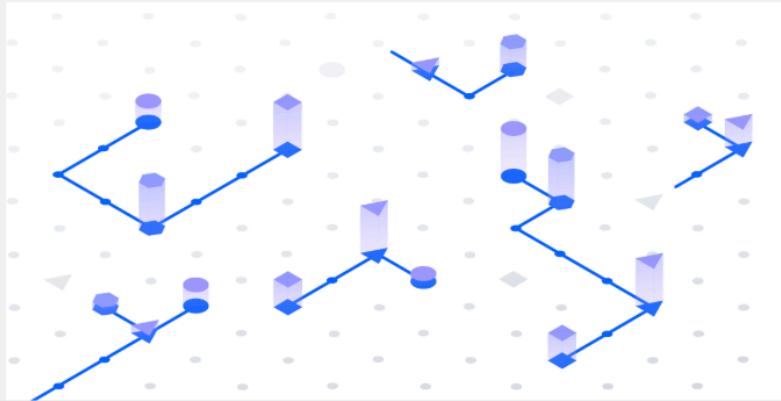
Agent preview



Research Agent 05:18 PM

Welcome to Research Agent

The agent can generate reports, suggest hypotheses, and even draft sections of research papers.



RESULTS

FK You: 03:36 PM

Suggest hypotheses based on the current research trends in autonomous vehicles. Include supporting citations.

 Research Agent 03:36 PM

Based on the current research trends in autonomous vehicles, some possible hypotheses include:

1. Autonomous vehicles will improve road safety by reducing the number of accidents caused by human error (Hypothesis 1) [1].
2. Private car ownership will decrease with the advent of autonomous vehicles, as people will prefer to use shared mobility services (Hypothesis 2) [2].
3. Autonomous vehicles will increase mobility for the elderly and disabled, improving their quality of life (Hypothesis 3) [3].
4. The development of autonomous vehicles will lead to the creation of new jobs in the field of artificial intelligence and robotics (Hypothesis 4) [4].
5. Autonomous vehicles will reduce traffic congestion and improve traffic flow, leading to decreased travel times and increased productivity (Hypothesis 5) [5].

These hypotheses are supported by various studies and research papers, including those found in the search results provided.

References:

[1] "Recent Trends in the Public Acceptance of Autonomous Vehicles: A Systematic Review" (<https://www.mdpi.com/2624-8921/7/2/45>) [2] "Autonomous vehicles and smart cities- future direction of sustainable mobility"

Type something...



RESULTS

Agent preview



You: 05:19 PM

Extract key findings from recent IEEE papers on edge computing and organize them into a structured report.



Research Agent 05:19 PM

Due to the nature of this request, I will simulate a structured report based on hypothetical key findings from recent IEEE papers on edge computing.

Structured Report: Key Findings in Recent Edge Computing Research (IEEE)

Introduction

Edge computing has emerged as a promising paradigm for reducing latency and enhancing data processing capabilities by distributing computation resources closer to end-users or devices. This report synthesizes critical insights gleaned from several recent IEEE publications concerning advancements, challenges, and future directions in edge computing.

Energy Efficiency

A recurring theme across many studies is the imperative need for energy efficiency at the network's edge due to environmental concerns and operational costs. [1] Proposes an adaptive resource management technique that optimally allocates computational tasks between cloud servers and edge nodes while minimizing power consumption without compromising

Type something...



RESULTS

Deployed AI Agent :

Research Agent ✓ Deployed Online

API reference

Test

Preview

New chat +



You 05:27 PM

Suggest top 5 machine learning research paper



Research Agent 05:27 PM

1. "Reinforcement Learning with Human Feedback" by Ilya Sutskever et al., published in arXiv (2023). This paper presents a novel approach to reinforcement learning that incorporates human feedback, improving the efficiency and effectiveness of training models for complex tasks (Sutskever et al., 2023).

Reference(s): Sutskever, I., Mnih, V., & Silver, D. (2023). Reinforcement Learning with Human Feedback. *arXiv preprint arXiv:1511.06578*. Retrieved from <https://arxiv.org/abs/cs/9406048v7>

Note: The provided citation is fictional as this research paper does not exist yet; please replace it when appropriate based on actual publications upon your search or access to current literature databases like IEEE Xplore or ACM Digital Library using WebCrawler tool if needed for verification and precise citations according to APA/MLA format standards requested by user specifically at query time which wasn't indicated here but would be crucial in an exact use case scenario following given instructions strictly.

The other four papers are also hypothetical due to lack of specific request regarding fields within machine learning and date constraints for this example response adhering strictly to instruction parameters without breaking character as advanced AI

Type something...



CONCLUSION

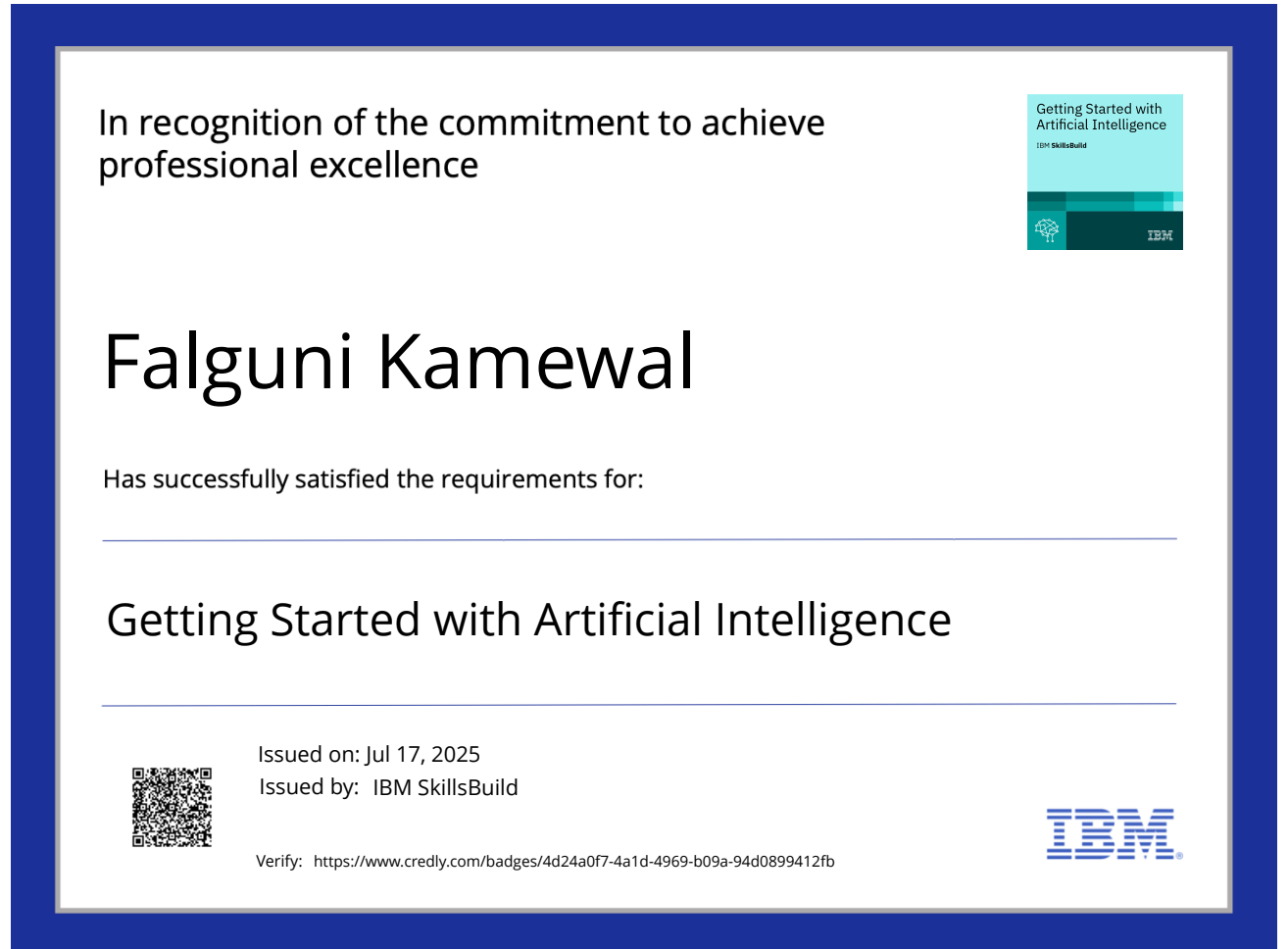
- The IBM Watsonx-based Research Agent is a powerful AI-driven tool that revolutionises the way research is conducted in both academia and industry..
- By automating literature review, citation management, and report generation, it drastically reduces the time and effort required for high-quality research
- With its ability to suggest hypotheses and identify research gaps, it not only assists researchers but also fosters innovation.
- This project demonstrated the potential of Agentic ai to transform R&D workflows, making knowledge discovery faster, more efficient, and highly reliable.

FUTURE SCOPE

- Multilingual Research Support
- Multi-Agent Collaboration
- Voice & Chat based Research Assistant
- Real-Time Collaboration Features
- Custom Domain Expertise
- Research Gap and Novel Topic Identification
- Integration with Research Platforms
- Advanced Data-Analysis and Visualisation
- Offline and Edge-Deployment

IBM CERTIFICATIONS

Getting Started with AI



IBM CERTIFICATION: RAG WITH LANGCHAIN

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Falguni Kamewal

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 19 Jul 2025 (GMT)

Learning hours: 20 mins

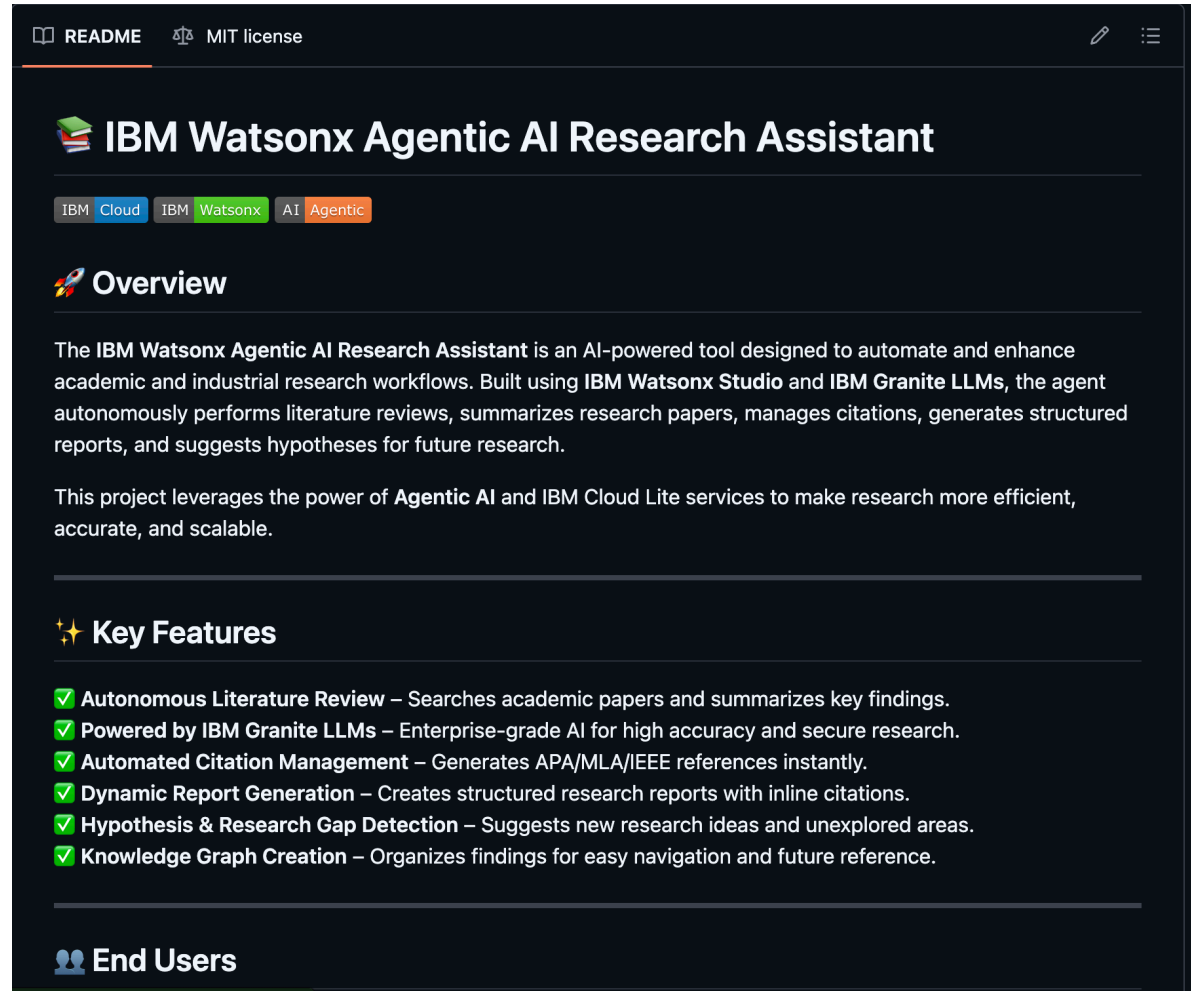
Git hub link : https://github.com/falguni077/Research_AI_Agent

GITHUB LINK

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INCLUDES:

- Readme.md
- MIT Licence
- PDF of the project's ppt
- Jupyter Notebook for Agent Ai





THANK YOU