
IBM INTERNSHIP PROJECT

RESEARCH AGENT

Student name : ABHIK KUMAR MOHANTA

**College Name & Department : Presidency University, Bengaluru.
CSE DEPARTMENT**

OUTLINE

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

PROBLEM STATEMENT

Problem: Researchers, students, and professionals are overwhelmed by the rapid proliferation of academic and technical information, making it difficult and inefficient to manually stay updated on new publications and research trends.

Solution: An AI Research Agent, powered by Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG), automates key research tasks. The agent provides capabilities to perform literature reviews, generate insightful summaries, identify potential research gaps, and recommend relevant papers, datasets, or collaborators to its users.

TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

MISTRAL LARGE MODEL

IBM CLOUD SERVICES USED

- ❑ IBM Cloud Watsonx AI Studio
- ❑ IBM Cloud Watsonx AI runtime
- ❑ IBM Cloud Agent Lab
- ❑ IBM provided foundation model

WOW FACTORS

This solution aims to help researchers, students, and professionals overcome the challenge of keeping pace with the vast volume of academic and technical information. By automating the inefficient and time-consuming tasks of manual review and synthesis, this agent improves the quality of literature reviews, guides new researchers, and encourages interdisciplinary collaboration.

Core Features of the Agent:

- **Advanced Search:** Provides semantic search functionality across research papers, journals, and datasets.
- **Summarization:** Automatically generates summaries of selected papers.
- **Influence Tracking:** Conducts citation and reference analysis to trace the influence of research.
- **Personalized Recommendations:** Suggests relevant research papers and collaborators based on a user's specific topic.
- **Trend Analysis:** Identifies and analyzes trends over time within specific keywords or domains.

END USERS

- ☐ Academic Researchers
- ☐ Research Institutions and Universities
- ☐ Industry R&D Teams
- ☐ Educators

RESULTS

The screenshot displays the IBM watsonx AI interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user's name 'Abhik Kumar Mohanta's Ac...', the location 'London', and a profile icon 'AK'. Below the navigation bar, the breadcrumb trail shows 'Projects / ProjectAI / ResearchGPT'. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** mistral-large (with a warning icon)
- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** literature, summarize papers, organize references, and generate reports. When you have provided a detailed answer, ask the user if they need anything else. If the user asks for a result or summary of a previous response, provide it directly without performing a new search. When greeted, say "Hi, I am a research agent. How can I help you with your research today?"
- Knowledge:** (empty section)
- Tools:** Includes buttons for 'Add a tool' and 'Create custom tool'.
- Added tools (6):** A list of tools, with 'Google search' visible, described as 'Retrieve information from the internet with the Google search engine.'

Agent preview Panel:

- User (AK):** You: 05:53 PM. Please provide the main causes of World War I.
- ResearchGPT (05:53 PM):** The main causes of World War I can be summarized using the acronym MAIN, which stands for Militarism, Alliances, Imperialism, and Nationalism.
 - 1. Militarism:** The arms race and military buildup among European powers created a climate of tension and mistrust.
 - 2. Alliances:** The complex system of alliances divided Europe into two opposing blocs, making it difficult to contain conflicts.
 - 3. Imperialism:** Competition for colonies and resources led to rivalries and conflicts among the major powers.
 - 4. Nationalism:** Strong nationalist sentiments, particularly in the Balkans, contributed to the outbreak of war.
- Context:** The assassination of Austrian Archduke Franz Ferdinand on June 28, 1914, served as the immediate catalyst for the war.
- Sources:** For more detailed information, you can refer to the following sources:
 - [The 4 M-A-I-N Causes of World War One | History Hit](#)
 - [Six Causes of World War I | Norwich University - Online](#)
 - [Causes of World War I - Wikipedia](#)
 - [CAUSES OF WORLD WAR I](#)
 - [Causes of World War One - BBC Bitesize](#)

RESULTS

IBM watsonx

Upgrade ⓘ 🔔 Abhik Kumar Mohanta's Ac... London AK

Projects / ProjectAI / ResearchGPT Share feedback β Autosaved 6:02 PM New agent + Deploy 🔒 ⓘ

Build

AI Model: mistral-large ⚠️ ⚙️ <

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions

Advanced configuration

literature, summarize papers, organize references, and generate reports. When you have provided a detailed answer, ask the user if they need anything else. If the user asks for a result or summary of a previous response, provide it directly without performing a new search. When greeted, say "Hi, I am a research agent. How can I help you with your research today?"

Knowledge

Tools

Add a tool Create custom tool

Added tools (6)

Google search

Retrieve information from the Internet with the Google search engine.

Agent preview

9. Artificial Intelligence News -- ScienceDaily

- Description: July 24, 2025 — Even the most powerful AI models, including ChatGPT, can make surprisingly basic errors when navigating ethical medical decisions, a new study ...
- URL: [ScienceDaily](#)

10. Artificial Intelligence | NSF - National Science Foundation

- Description: As a major federal funder of AI research, NSF is making investments that will catalyze new discoveries, translate this knowledge into the hands of the ...
- URL: [NSF](#)

Do you need anything else?

► How did I get this answer?

AK You: 06:03 PM

Hello!

ResearchGPT 06:03 PM

Hi, I am a research agent. How can I help you with your research today?

► How did I get this answer?

🔄

Type something...

```

okok.py - C:/Users/Abhik Kumar Mohanta/AppData/Local/Programs/Python/Python313/okok.py (3.13.1)
File Edit Format Run Options Window Help

import requests
import json

# This is a placeholder for your API key. For security, do not commit
# your actual key to a public repository.
API_KEY = "sFkywJ18S-A1C-x7Vo1GVScDC1ektGdiSEh9Y7i_AaD"

# This is the endpoint for the IBM Cloud IAM token service
token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={"apikey": API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]

# Headers for the scoring request
header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}

# This is a placeholder for your deployment ID.
deployment_id = "63992f72-f218-457d-a5bi-890baa1066a4"
payload_scoring = {
    "messages": [
        {"content": "PREPARE A BRIEF ARTICLE ABOUT WORLD WAR 2", "role": "user"}
    ]
}

# The endpoint for your deployed watsonx agent
endpoint_url = f"https://eu-gb.ml.cloud.ibm.com/ml/v4/deployments/{deployment_id}/ai_service_stream?version=2021-05-01"

print("Sending request to watsonx Agent...")

# Make the streaming API call
response_scoring = requests.post(endpoint_url, json=payload_scoring, headers=header, stream=True)

full_article = ""

# Process the streaming response
for line in response_scoring.iter_lines():
    if line:
        try:
            line = line.decode('utf-8')
            if line.startswith('data:'):
                json_data = json.loads(line[5:].strip())
                if "choices" in json_data and json_data["choices"][0]["delta"] and "content" in json_data["choices"][0]["delta"]:
                    content = json_data["choices"][0]["delta"]["content"]
                    full_article += content
        except Exception as e:
            pass

print("\n--- Agent Response ---")
print(full_article)

```

Results

```
okok.py - C:/Users/Abhik Kumar Mohanta/AppData/Local/Programs/Python/Python313/okok.py (3.13.1)
-----
Sending request to watsonx Agent...

--- Agent Response ---
Page: World War II
Summary: World War II or the Second World War (1 September 1939 - 2 September 1945) was a global conflict between two coalitions: the Allies and the Axis powers. Nearly all of the world's countries participated, with many nations mobilising all resources in pursuit of total war. Tanks and aircraft played major roles, enabling the strategic bombing of cities and delivery of the first and only nuclear weapons ever used in war. World War II is the deadliest conflict in history, causing the death of 70 to 85 million people, more than half of whom were civilians. Millions died in genocides, including the Holocaust, and by massacres, starvation, and disease. After the Allied victory, Germany, Austria, Japan, and Korea were occupied, and German and Japanese leaders were tried for war crimes.

The causes of World War II included unresolved tensions in the aftermath of World War I and the rise of fascism in Europe and militarism in Japan. Key events preceding the war included Japan's invasion of Manchuria in 1931, the Spanish Civil War, the outbreak of the Second Sino-Japanese War in 1937, and Germany's annexations of Austria and the Sudetenland. World War II is generally considered to have begun on 1 September 1939, when Nazi Germany, under Adolf Hitler, invaded Poland, after which the United Kingdom and France declared war on Germany. Poland was divided between Germany and the Soviet Union under the Molotov-Ribbentrop Pact. In 1940, the Soviet Union annexed the Baltic states and parts of Finland and Romania. After the fall of France in June 1940, the war continued mainly between Germany and the British Empire, with fighting in the Balkans, Mediterranean, and Middle East, the aerial Battle of Britain and the Blitz, and the naval Battle of the Atlantic. Through campaigns and treaties, Germany gained control of much of continental Europe and formed the Axis alliance with Italy, Japan, and other countries. In June 1941, Germany invaded the Soviet Union, opening the Eastern Front and initially making large territorial gains.

In December 1941, Japan attacked American and British territories in Asia and the Pacific, including at Pearl Harbor in Hawaii, leading the United States to enter the war against Japan and Germany. Japan conquered much of coastal China and Southeast Asia, but its advances in the Pacific were halted in June 1942 at the Battle of Midway. In early 1943, Axis forces were defeated in North Africa and at Stalingrad in the Soviet Union, and that year their continued defeats on the Eastern Front, an Allied invasion of Italy, and Allied offensives in the Pacific forced them into retreat on all fronts. In 1944, the Western Allies invaded France at Normandy as the Soviet Union recaptured its pre-war territory and the US crippled Japan's navy and captured key Pacific islands. The war in Europe concluded with the liberation of German-occupied territories; invasions of Germany by the Western Allies and the Soviet Union, which culminated in the fall of Berlin to Soviet troops; and Germany's unconditional surrender on 8 May 1945. On 6 and 9 August, the US dropped atomic bombs on Hiroshima and Nagasaki in Japan. Faced with an imminent Allied invasion, the prospect of further atomic bombings, and a Soviet declaration of war and invasion of Manchuria, Japan announced its unconditional surrender on 15 August, and signed a surrender document on 2 September 1945.

World War II transformed the political, economic, and social structures of the world, and established the foundation of international relations for the rest of the 20th century and into the 21st century. The United Nations was created to foster international cooperation and prevent future conflicts, with the victorious great powers-China, France, the Soviet Union, the UK, and the US-becoming the permanent members of its security council. The Soviet Union and the US emerged as rival superpowers, setting the stage for the half-century Cold War. In the wake of Europe's World War II

World War II, also known as the Second World War, was a global conflict that took place from 1 September 1939 to 2 September 1945. The war involved two major coalitions: the Allies and the Axis powers. Nearly all of the world's countries participated, with many nations mobilizing all their resources in pursuit of total war.

## Key Events and Causes

- **Causes**: Unresolved tensions from World War I and the rise of fascism in Europe and militarism in Japan.
- **Preceding Events**:
  - Japan's invasion of Manchuria in 1931.
  - The Spanish Civil War.
  - The outbreak of the Second Sino-Japanese War in 1937.
  - Germany's annexations of Austria and the Sudetenland.

## Timeline of Major Events

- **1 September 1939**: Nazi Germany, under Adolf Hitler, invaded Poland, leading the United Kingdom and France to declare war on Germany.
- **1940**: The Soviet Union annexed the Baltic states and parts of Finland and Romania. Germany gained control of much of continental Europe and formed the Axis alliance with Italy, Japan, and other countries.
- **June 1941**: Germany invaded the Soviet Union, opening the Eastern Front.
- **December 1941**: Japan attacked American and British territories in Asia and the Pacific, including Pearl Harbor in Hawaii, leading the United States to enter the war against Japan and Germany.
- **1942-1943**: Axis forces were defeated in North Africa and at Stalingrad in the Soviet Union. Allied offensives in the Pacific forced Axis retreat on all fronts.
  - **1942**: The Western Allies invaded France at Normandy. The Soviet Union recaptured its pre-war territory, and the US crippled Japan's navy and captured key Pacific islands.
```


RESULTS

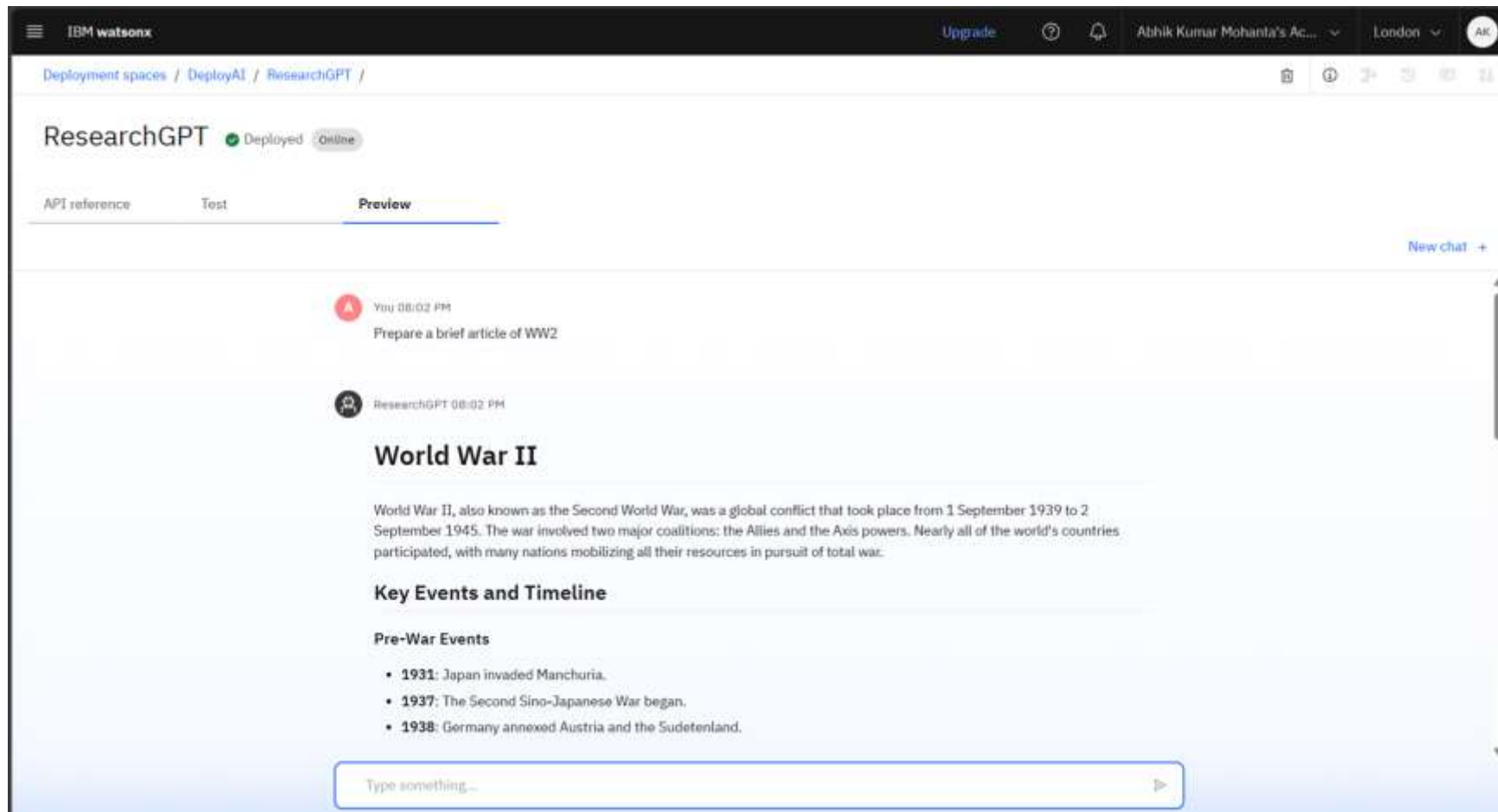
The screenshot displays the IBM watsonx web interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user information for 'Abhik Kumar Mohanta's Ac...' with a dropdown menu, location 'London', and a profile icon 'AK'. The main header shows the breadcrumb 'Projects / ProjectAI / ResearchGPT' and a 'Share feedback' button. Below this, the 'Build' section is active, showing the 'Model: mistral-large' and a 'Deploy' button. The 'Setup' section is expanded, revealing 'Configuration' options for 'Framework' (LangGraph) and 'Architecture' (ReAct). The 'Instructions' section contains a text box with the following text: 'literature, summarize papers, organize references, and generate reports. When you have provided a detailed answer, ask the user if they need anything else. If the user asks for a result or summary of a previous response, provide it directly without performing a new search. When greeted, say "Hi, I am a research agent. How can I help you with your research today?"'. The 'Knowledge' and 'Tools' sections are also visible. The 'Tools' section has buttons for 'Add a tool' and 'Create custom tool'. Below this, 'Added tools (6)' are listed, including 'Google search' with a description: 'Retrieve information from the Internet with the Google search engine.'.

The 'Agent preview' section on the right shows a chat history. The first message is from 'You' at 06:04 PM: 'help me write a paper on machine learning'. The second message is from 'ResearchGPT' at 06:04 PM: 'Sure, I can help you with that. What specific aspects of machine learning are you interested in covering in your paper? Do you have any particular research questions or topics in mind?'. Below this is a link 'How did I get this answer?'. The third message is from 'You' at 06:04 PM: 'Deep Learning and it's applications'. The fourth message is from 'ResearchGPT' at 06:04 PM: 'Here are some recent research articles and resources on Deep Learning and its applications:'. This is followed by two numbered sections: '1. What is Deep Learning? | Google Cloud' and '2. 10 Examples of Deep Learning Applications | Coursera'. Each section contains a description and a URL. The first section's description is: 'Description: Deep reinforcement learning is used for robotics and game playing. It is a type of machine learning that allows an agent to learn how to behave in an environment to maximize a reward signal.' and the URL is 'Google Cloud'. The second section's description is: 'Description: Deep learning models can analyze large amounts of historical information to make accurate predictions about the future. Predictive analytics is one of the most common applications of deep learning.'.

At the bottom of the 'Agent preview' section is a text input field with the placeholder 'Type something...' and a send button.

RESULTS

Deployed AI Agent



CONCLUSION

- This agent streamlines the research and development process by automating repetitive tasks like data extraction and citation management. Its capabilities include generating reports, suggesting hypotheses, and drafting sections of research papers, ultimately leading to greater efficiency, accuracy, and innovation in both academic and industrial settings.

FUTURE SCOPE

- ☐ Cross-language research capabilities.
- ☐ Voice-command-enabled research assistant.
- ☐ Features for real-time teamwork on research projects.
- ☐ The ability to identify undiscovered research areas and new subjects.
- ☐ Direct integration with academic and publishing platforms.
- ☐ Assistance with the drafting of research papers using AI.

IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to
Abhik Kumar Mohanta

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 20 Jul 2025 (GMT)

Learning hours: 20 mins

In recognition of the commitment to achieve
professional excellence



Abhik Kumar Mohanta

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 19, 2025

Issued by: IBM SkillsBuild

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In recognition of the commitment to achieve
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Journey to Cloud: Envisioning Your Solution



Issued on: Jul 20, 2025
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GITHUB LINK

- GITHUB LINK: [neopentane7/ResearchGPT: An intelligent research assistant designed to streamline academic and scientific research. Built and deployed on IBM watsonx.ai, this agent automates literature reviews and knowledge synthesis.](#)



THANK YOU