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# **CAPSTONE PROJECT**

## **AGENTIC AI ROADMAP**

**Presented By**

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# OUTLINE

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

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# PROBLEM STATEMENT

- Developers struggle with building agentic systems due to scattered resources and lack of structured guidance.
- Proposed Solution: AgenticAI Roadmap - a dynamic AI-powered platform that curates, visualizes, and recommends agent-building content and tools.

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# TECHNOLOGY USED

- IBM Cloud Watsonx AI Studio
- IBM Watsonx AI Runtime
- IBM Granite Foundation Models
- NLP + Retrieval-Augmented Generation (RAG)
- LangChain / Haystack / OpenAI API

# IBM CLOUD SERVICES USED

- **IBM Watsonx.ai** — For building and managing the conversational AI agent
- **Vector Index Tool (Watsonx)** — For retrieving personalized learning roadmap content
- **mistral-large Foundation Model** — Used as the LLM to generate responses based on user input
- **IBM Deployment Space** — For deploying and testing the agent
- **IBM Cloud Object Storage** — For storing custom content like roadmap files

# WOW FACTORS

This agent dramatically simplifies personalized learning for students, reduces the cognitive load of choosing the right learning path, and enables dynamic upskilling aligned with individual goals. It empowers students, job seekers, and educators with guided, intelligent, and adaptive learning journeys.

## Unique Features:

- **Semantic retrieval of learning content** via vector indexing
- **Dynamic weekly course roadmaps** generated through user interaction
- **Adaptive guidance** based on user interest: Frontend, AI, Cybersecurity, etc.
- **Prompt-aware response filtering** to avoid irrelevant information overload
- **Minimal-input interaction** for beginner-friendly experience
- **Future-ready structure:** Easily extendable to include certifications, projects, and live tracking
- **Deployed on IBM Cloud** — secure, scalable, and enterprise-grade
- **API-ready service** that can be embedded in educational platforms

## END USERS

- **Students (School & College Level)**  
Looking for personalized guidance to choose and follow learning paths.
- **Academic Institutions & Universities**  
Integrating AI advisors into learning management systems to support student development.
- **Job Seekers & Fresh Graduates**  
Needing structured roadmaps to gain industry-relevant skills for employment.
- **EdTech Platforms**  
Enhancing course discovery and user engagement with AI-driven learning suggestions
- **Career Counselors and Academic Advisors**  
Using the tool to scale personalized learning recommendations efficiently.

# RESULTS

- Built an AI agent capable of understanding user goals and generating personalized plans.
- Used Watsonx tools and RAG to provide relevant, structured responses.
- Demonstrated the agent's ability to assist in career planning and learning paths.

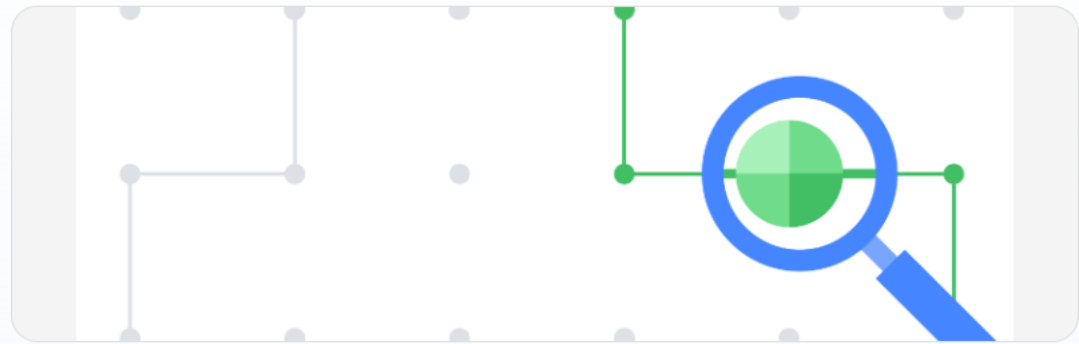
## Agent preview



Research Agent 02:54 PM

### Welcome to Research Agent

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



Type something...







# RESULTS

## The Agent Responds With:

- A **structured 8-week roadmap** tailored to the user's goal.
- Breakdown into weekly modules (e.g., Design Thinking, Visual Principles).
- Specific **learning goals** and **tools** (e.g., Miro, Notion).
- Dynamic and modular learning guidance. Demonstrates the **agent's ability to contextualize user goals**.
- Provides **actionable, domain-specific advice** instantly.
- Example of **personalized curriculum generation** using agentic design.

Agent preview

 You: 09:23 AM  
"I want to get an internship in UI/UX. What should I focus on in the next 8 weeks?"

 watsonx Agent 09:23 AM  
Hi, I am watsonx.ai agent. How can I help you?



Here's a structured 8-week plan to help you focus on UI/UX design for an internship:

**Week 1–2: Introduction to UI/UX & Design Thinking**

- **Goals:**
  - Understand the difference between UI and UX.
  - Learn the 5 stages of design thinking.
- **Tools:**
  - Miro
  - Notion

**Week 3–4: Visual Design Principles**

- **Goals:**

Type something...  

# RESULTS

- The agent is deployed and online, indicating that it's fully functional and ready for user interaction.
- Users can test the agent's performance directly in the Preview tab.
- Demonstrates the agent's ability to respond to real user queries in real-time.
- This confirms the transition from development to a working, interactive prototype.

## Deployed AI Agent

The screenshot displays the Watsonx Agent deployment interface. At the top, the breadcrumb navigation shows 'Deployment spaces / deploy r / watsonx Agent /'. The agent is labeled 'watsonx Agent' with a green checkmark and 'Deployed' status, and a grey 'Online' button. Below this are three tabs: 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. A 'New chat +' button is located in the top right corner of the chat area. The chat history shows a user message at 11:32 AM: 'I'm a complete beginner interested in Cybersecurity. Can you give me a weekly roadmap?'. The agent's response at 11:32 AM is: 'Hi, I am watsonx.ai agent. How can I help you? Here is a weekly roadmap for Cybersecurity: Cybersecurity Roadmap Week 1-2: Introduction to Cybersecurity • Learn about CIA Triad, threat landscape • IBM Security Learning Academy Week 3-4: Networking Fundamentals'. At the bottom, there is a text input field with the placeholder 'Type something...' and a send button.

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## CONCLUSION

- Successfully built an AI agent that delivers personalized learning roadmaps based on user input.
- Integrated IBM Watsonx and RAG to enable accurate, real-time responses.
- Demonstrated applications in domains like UI/UX and Cybersecurity.
- Showcased how agentic AI can enhance learning, decision-making, and user engagement.

## GITHUB LINK

- Github link : <https://github.com/EPavankumar/roadmap-agent>

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# FUTURE SCOPE

- Voice-activated interaction for hands-free user experience.
- Personalized user profiles to track progress and goals.
- Multi-domain support (e.g., Data Science, Healthcare, Cloud).
- Mobile app or chatbot integration for broader accessibility.
- Real-time content updates using web APIs and live sources.

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



D V V B PAVAN KUMAR EDUPUGANTI

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 17, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/a59df09e-84dd-4f39-a0fe-2bd3604ee1bc>



# RAG LAB CERTIFICATE

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

pavan kumar

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 25 Jul 2025 (GMT)

**Learning hours:** 20 mins

# JOURNEY TO CLOUD

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**THANK YOU**