
CAPSTONE PROJECT

AGENTIC AI FOR PERSONALIZED COURSE PATHWAY

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

With the abundance of online learning resources, students often face difficulty in choosing the right learning path that aligns with their goals and skill levels. The lack of personalized career guidance makes it hard to stay motivated and follow a structured learning journey..

PROPOSED SOLUTION

- LearnMate is an Agentic AI system that acts as a personalized AI career coach.
- It interacts with students, understands their interests (e.g., Frontend, Cybersecurity, UI/UX), assesses their skill level, and generates a customized 3-step learning roadmap.
- It also adapts over time based on feedback using IBM Watsonx.ai and IBM Granite models.

SYSTEM APPROACH

System requirements:

- IBM Cloud Lite
- Watsonx.ai Prompt Lab
- llama-3-3-70b Instruct

ModelLibraries/Tools:-

- IBM Watsonx.ai Agentic Lab (Prompt Lab)
- Prompt Template deployment
- Deployment space with Watsonx Runtime

ALGORITHM & DEPLOYMENT

No classical ML algorithm is used. Instead, IBM's Granite LLM is prompted and deployed as an agent.

Steps:

- 1. Prompt Template is created in Watsonx.ai using llama-3-3-70b instruct.
- 2. Prompt includes career-coach logic to assess interest and level.
- 3. Template is deployed as a chat agent via IBM Cloud deployment space.
- 4. Agent interacts dynamically with user to generate learning roadmap.

Deployment:-

- Deployed inside IBM Watsonx.ai via Prompt Lab
- Deployment space with Watsonx Runtime + COS storage.

Agent Lab (beta) — Docs | IBM | watsonx Agent — LearnMate AI | LearnMate AgentAI — Projects | 's sandbox — Projects | IBM wa | +

dataplatform.cloud.ibm.com/wx/agents/f7372663-9cb3-4f0a-b5b2-3eae2bff8692?project_id=9543f017-dd15-4781-a4fd-2c1ab6ea6d36&context=wx

IBM watsonx Upgrade ? aashida --'s Account Dallas A-

Projects / LearnMate AgentAI / watsonx Agent Share feedback Autosaved 3:49 PM New agent + Deploy

Build AI Model: llama-3-3-70b-instruct

Setup Configuration Framework: LangGraph Architecture: ReAct

Instructions Advanced configuration

You are LearnMate, an AI career coach built to help students identify the best learning path based on their interests and skill levels.

Your job is to:

1. Ask the user what technical domain they're interested in (e.g., Frontend Development, Backend Development, Data Science, etc.).

Knowledge Tools

Add a tool Create custom tool

Added tools (5)

Agent preview

You: 03:49 PM

hi I'm interested in cybersecurity and I'm just a beginner

watsonx Agent 03:49 PM

Welcome to the world of cybersecurity. I'm excited to help you get started. As a beginner, here's a 3-step learning roadmap tailored just for you:

- 1. Introduction to Cybersecurity:** Start with the basics. I recommend checking out the "Cybersecurity 101" course on Coursera, which covers the fundamentals of cybersecurity, including threat analysis, risk management, and security measures.
- 2. Online Security Courses:** Once you have a solid understanding of the basics, move on to more advanced topics. You can find a wide range of free and paid courses on platforms like Udemy, edX, and Cybrary. Some popular courses include "CompTIA Security+" and "CISSP".
- 3. Hands-on Practice:** To gain practical experience, try out online platforms like Hack The Box, TryHackMe, or Cybersecurity and Infrastructure Security Agency (CISA)'s virtual labs. These platforms offer a safe environment to practice your skills and learn from real-world scenarios.

Before we proceed, I'd like to ask: Would you like to continue with this roadmap, switch to a different domain, or need help with something else?

Please respond, and I'll be happy to assist you further.

New to find more resources on this topic, I will perform the following search: ["type": "function"]

Type something...

Agent preview

You: 03:49 PM

give me some resources

watsonx Agent 03:49 PM

Here are some resources to help you get started with cybersecurity:

- Websites:**
 - Cybersecurity and Infrastructure Security Agency (CISA): www.cisa.gov
 - National Institute of Standards and Technology (NIST): www.nist.gov
 - SANS Institute: www.sans.org
- Online Courses:**
 - Coursera: www.coursera.org (search for "cybersecurity" courses)
 - edX: www.edx.org (search for "cybersecurity" courses)
 - Udemy: www.udemy.com (search for "cybersecurity" courses)
- YouTube Channels:**
 - Cybersecurity 101: www.youtube.com/cybersecurity101
 - HackerSploit: www.youtube.com/hackersploit
 - Cybrary: www.youtube.com/cybrary

Type something...

9 33°C Light rain Search 15:50 03-08-2025 ENG IN

The LearnMate agent dynamically generates a personalized 3-step course roadmap based on user's interest and skill level using the IBM Granite foundation model.

CONCLUSION

- LearnMate successfully demonstrates how Agentic AI can be used to provide career guidance. By using IBM Granite on Watsonx.ai, the solution offers dynamic and personalized learning roadmaps based on user feedback and interests. It minimizes the need for manual tracking or coding, making it efficient for rapid AI deployment in education domains.

FUTURE SCOPE

- Integrate progress tracking and real-time analytics-
- Add voice interaction using Watson Speech Services
- Enable domain-specific agents for fields like medicine, law, etc.
- Extend roadmap adaptation based on test scores or certifications

REFERENCES

- 1. IBM Watsonx.ai documentation
- 2. IBM Granite Foundation Models
- 3. IBM Cloud Lite documentation
- 4. Agentic AI articles from IBM blog

IBM CERTIFICATIONS



IBM CERTIFICATIONS



IBM CERTIFICATIONS

IBM SkillsBuild	Completion Certificate
	<p>This certificate is presented to</p> <p>aashida V</p> <p>for the completion of</p> <p>Lab: Retrieval Augmented Generation with LangChain</p> <p>(ALM-COURSE_3824998)</p> <p>According to the Adobe Learning Manager system of record</p>
Completion date: 19 Jul 2025 (GMT)	Learning hours: 20 mins



THANK YOU