IBM PROJECT

LEARNMATE – AGENTIC AI FOR PERSONALIZED COURSE PATHWAYS

Presented By:
1. Vinitha R- Kongu Engineering College-ECE

OUTLINE

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- **Proposed System/Solution**

- **System Development Approach** (Technology Used)

- **Algorithm & Deployment**

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PROBLEM STATEMENT

Students often struggle to identify the right learning path that aligns with their interests and long-term goals due to the overwhelming number of online courses and a lack of personalized guidance. LearnMate aims to solve this by acting as an Agentic AI coach that interacts with students, understands their interests (like Frontend Development, Cybersecurity, UI/UX Design, etc.), assesses their current skill level, and dynamically builds a personalized course roadmap that adapts over time based on progress and preferences.

PROPOSED SOLUTION

LearnMate is an Agentic AI Coach designed entirely on IBM Cloud's Watsonx.ai platform using IBM Granite Foundation Models.

- Communicates with the student to gather interests, skills, and time availability.

- Uses AI prompts to generate personalized learning paths.

- Stores session data inside Watsonx.ai for continuity (session memory).

- Adapts recommendations in real time based on feedback and progress.

- Runs entirely inside IBM Cloud — no external files, servers, or frontend code.

Example:

If a beginner selects Cybersecurity as an interest with 5 hours/week learning time,

LearnMate generates a 3-month roadmap with:

Weekly modules.

Free and relevant resources.

Tools/software to practice.

Motivational check-ins.

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SYSTEM APPROACH

Since the project was developed completely on **IBM Cloud** without external dependencies, all components are cloud-native.

Component	IBM Cloud Service Used	Purpose
AI Agent	Watsonx.ai Agent Builder	Creates conversational AI logic
Foundation Model	IBM Granite-13b-chat / Mistral-Large	Generates learning roadmaps
Runtime Environment	Watsonx.ai Runtime Service	Executes AI responses
Storage / Context	Built-in session & project storage in Watsonx.ai	Maintains state between interactions
Deployment	Watsonx.ai Deployment Space	Publishes and runs the agent

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ALGORITHM & DEPLOYMENT

Algorithm Steps

1. Initialization

Load Watsonx.ai Granite model in the Agent Builder.

2. User Interaction

Agent asks:

"What are your interests?"

"What is your skill level?"

"How much time can you dedicate per week?"

3. Prompt Processing

Input → System Prompt (custom) + User Prompt → Granite model generates a tailored learning roadmap.

4. Roadmap Generation

AI outputs:

Weekly modules.

Resource suggestions.

Milestones.

Motivational tips.

5. Progress Update

Student gives feedback ("I struggled with Week 2"), AI adapts roadmap (adds simpler tutorials or extends schedule).

6. Deployment

Agent deployed inside IBM Cloud Deployment Space for continuous availability.

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GITHUB LINK

https://github.com/vinithar-rv/IBM-Cloud-Project

RESULT

RESULT

CONCLUSION

- The LearnMate project demonstrates that personalized education can be delivered entirely from a cloud-based AI platform without any local infrastructure.

- By combining Agentic AI design with IBM Granite models inside Watsonx.ai, the system:

  - Produces relevant, adaptive learning paths.

  - Removes decision paralysis for students.

  - Can be scaled to support multiple domains without code changes.

  - Requires zero external hosting or custom frontend.

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FUTURE SCOPE

- Add course completion tracking with certificates.

- Integrate video content summarization for quicker learning.

- Use voice-based interaction with IBM Speech-to-Text and Text-to-Speech.

- Expand to corporate training paths for employees.

- Implement AI quizzes to automatically update skill levels.

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REFERENCES

- 1. IBM Watsonx.ai – https://www.ibm.com/cloud/watsonx

- 2. IBM Granite Foundation Models – IBM Research

- 3. "Agentic AI Design Principles" – IBM Cloud Documentation

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

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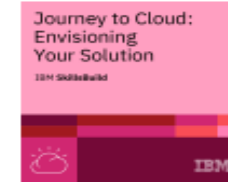
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