

PathPilot – AI Learning Guide for Personalized Education

Introduction

In today's fast-paced world, learners of all backgrounds—students, working professionals, and career switchers—are overwhelmed by the vast number of online courses and skill development resources available. Without personalized guidance, it becomes challenging to choose the right learning path that aligns with their goals, interests, and time availability.

PathPilot is an Agentic AI-powered learning advisor built using IBM Cloud services and Granite LLM models. It interacts with users in a conversational manner, understands their preferences, current skill level, and objectives, and creates a **dynamic, adaptable learning roadmap** tailored to their needs. The system continuously updates recommendations based on user feedback and real-time web search results, ensuring the learning journey remains relevant and effective.

Problem Statement

Learners often struggle to decide:

- **What** skills to learn next
- **Which** courses are most effective and trustworthy
- **How** to organize a structured learning plan

The abundance of online learning platforms and resources can be overwhelming, leading to **decision fatigue** and **lack of progress**. Without structured guidance, learners waste time and resources, often abandoning their goals altogether.

There is a need for a **personalized, adaptive, and accessible AI-driven guide** that simplifies course selection, tracks progress, and keeps learners motivated.

Objective

To develop an **Agentic AI-powered personalized learning advisor** that:

- Understands learner preferences and goals through interactive questioning
- Generates and adapts a **3-phase structured learning roadmap**
- Integrates **real-time web search** to fetch the latest free and paid courses

- Tracks progress and reshapes the roadmap dynamically
- Supports **domain-agnostic learning**, making it suitable for any field

Why This Problem?

Millions of learners start online courses but fail to complete them due to:

- Lack of guidance on the correct learning order
- Overwhelm from too many available resources
- Absence of motivation and progress tracking

By offering a **conversation-driven, adaptive learning plan**, PathPilot ensures users stay engaged and confident in their learning journey—reducing dropout rates and enhancing skill acquisition.

Solution – Overview

PathPilot is a conversational AI learning guide built with IBM Watsonx AI and Granite LLM. It uses **one-question-at-a-time interaction** to collect essential learner information and instantly creates a **personalized roadmap**.

The system is:

- **Adaptive** – Updates based on learner’s progress and feedback
- **Resourceful** – Pulls up-to-date course suggestions using web search
- **Motivational** – Sends reminders and milestone messages to keep users engaged

Key Features

- **Personalized Roadmaps** – 3-phase learning plan (Foundations, Intermediate, Capstone)
- **One-Question Interaction** – Reduces cognitive load for users
- **Live Web Search Integration** – Fetches fresh course links
- **Dynamic Adaptation** – Roadmap changes as users progress
- **Domain-Agnostic Learning** – Works for tech, design, business, etc.

Technical Implementation

1. **Conversational AI** – IBM Watsonx Assistant + IBM Granite LLM for intelligent interactions
2. **Web Search Integration** – Real-time course and certification fetching
3. **Backend Hosting** – IBM Cloud Lite services for scalability
4. **User Data Handling** – Temporary session-based context storage (no sensitive data retention)
5. **Testing** – Verified against multiple learner personas and scenarios

Why IBM Resources and Tools?

- **IBM Watsonx AI Studio** – Build and orchestrate the conversational logic
- **IBM Granite LLM** – Advanced language understanding for adaptive roadmaps
- **IBM Cloud Agent Lab** – Agentic behavior testing and deployment
- **IBM Cloud Hosting** – Reliable and scalable platform for live deployment

Future Work

1. **Multilingual Support** – Roadmaps in local languages
2. **Mobile App Version** – Learning on the go
3. **Gamified Progress Dashboard** – Badges, streaks, and points system
4. **Integration with Learning Platforms** – Direct enrollment links for Coursera, Udemy, etc.
5. **Voice Input/Output** – Accessibility for all users
6. **Community Learning Spaces** – Peer mentoring and collaboration features

Conclusion

PathPilot is designed to bridge the gap between overwhelming learning choices and clear, actionable skill-building. By combining **Agentic AI**, **dynamic adaptation**, and **real-time content sourcing**, it empowers learners to achieve their goals efficiently. This solution promotes lifelong learning and skill development for diverse audiences—whether in school, employed, or exploring a career change.