

# IBM HACKATHON PROJECT

*PathfinderAI* (Agentic AI for Personalized Course Pathways)

## Presented By:-

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# OUTLINE

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

# PROBLEM STATEMENT

In today's digital learning world, students are surrounded by countless online courses, certifications, and platforms. While this abundance offers flexibility and access, it also leads to **decision overload**.

Many learners struggle with questions like:

- “Where do I begin?”
- “Is this course right for my goals?”
- “What should I learn next?”

Without personalized guidance, they often choose the wrong content, skip important fundamentals, or jump between topics with no clear direction. This not only wastes time but also reduces motivation and confidence.

There's a clear need for a system that helps learners navigate their journey with clarity, structure, and support.

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# PROPOSED SOLUTION

*PathfinderAI* is like having your own smart learning buddy. It talks to you, gets to know your interests and current skill level, and then builds a personalized learning path just for you.

As you grow, it grows with you—adapting your roadmap, suggesting better content, and helping you stay on track. Whether you're switching careers, upskilling, or just starting out, PATHFINDERAI makes sure you're always moving in the right direction—with confidence, clarity, and purpose.

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# TECHNOLOGY USED

- IBM Watsonx.ai Studio
- IBM Granite Foundation Model (LLM)
- Vector Index for Retrieval-Augmented Generation
- NLP (Natural Language Processing)
- IBM Cloud Object Storage

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# IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model
- IBM Cloud Lite Account
- IBM Cloud IAM
- IBM Cloud Object Storage

# WOW FACTORS

This agent will significantly reduce time spent on course selection, improve the quality of a student's learning journey, help early-stage learners find clarity, and support skill-building by making personalized learning paths more accessible and adaptive.

## Unique Features:

- Semantic search across online course platforms and uploaded learning content
- Auto-generation of personalized course roadmaps based on user goals and skills
- Skill-level analysis to match learners with appropriate course difficulty
- Smart recommendations that evolve with user progress and feedback
- Learning trend analysis to suggest in-demand skills and certifications
- Future roadmap planning to align with academic or career goals
- Optional peer-learning network based on shared interests or learning stages

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# END USERS

- School and College Students – looking to build skills alongside academics
- Working Professionals – aiming to upskill or switch careers
- Fresh Graduates – seeking guided learning paths for job readiness
- Online Learners & MOOC Participants – who need structure and direction
- Career Counselors & Mentors – to support students with smart recommendations
- Educational Institutions – to enhance digital learning support system



# RESULTS

## Agent preview



PathfinderAI 06:54 PM

Welcome to PathfinderAI

Hi, I'm PathfinderAI – your AI learning buddy helping you find the best courses and grow your skills



## Sample questions



What career or skill are you interested in learning (e.g., Web Dev, Cybersecurity)?



What's your current skill level – Beginner, Intermediate, or Advanced?



Type something...




## RESULTS

Projects / AI\_Pathfinder / Agent Lab

Build

AI

Model: granite-3-3-8b-instruct



Quick start questions

Add up to 4 quick start questions that your users can select.

What career or skill are you interested in learning (e.g., Web Dev, Cybersecurity)?

What's your current skill level – Beginner, Intermediate, or Advanced?

Configuration

Framework

LangGraph

Architecture

ReAct

Instructions

You must:

Great users with: "Hi, I'm Pathfinder"

What do you like to learn today?"

Advanced configuration

Agent preview

You: 06:57 PM

can give me 30 days plan to master it and get job

PathfinderAI 06:57 PM

While mastering Machine Learning and securing a job within 30 days is quite ambitious, I can certainly help you create a focused 30-day plan to kickstart your learning journey and prepare for job applications. Here's a high-intensity plan:

Week 1-2: Python Refresher & Statistics Review

- Spend 2-3 hours daily on Codecademy's Python course.
- Review statistical concepts on Khan Academy.

Week 3: Machine Learning Basics

- Enroll in the "Machine Learning" course by Andrew Ng on Coursera.
- Spend 2-3 hours daily on the course content and exercises.

Week 4: Deep Dive into Machine Learning

- Continue with the Coursera course.
- Start working on a simple machine learning project using a public dataset from Kaggle.

Week 5: Intermediate Machine Learning

- Move to "Deep Learning Specialization" by Andrew Ng on Coursera.
- Continue your Kaggle project, aiming to complete it by the end of the week.

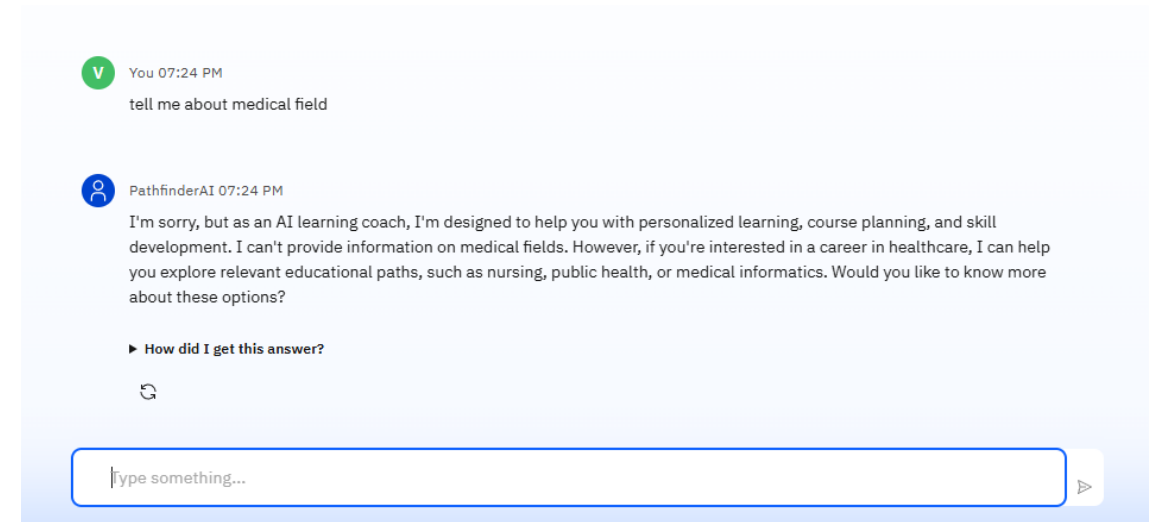
Week 6: AI Fundamentals

- Begin an introductory AI course on IBM SkillsBuild or edX.

Type something...

# RESULTS

## ❑ Ignores Irrelevant Queries to Maintain Learning Path



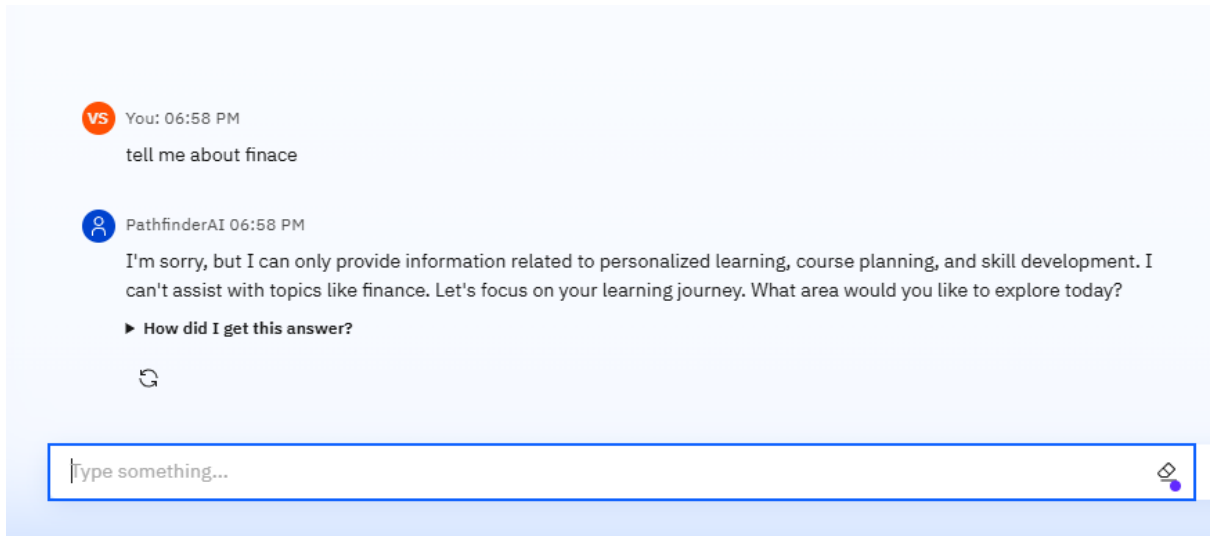
**V** You 07:24 PM  
tell me about medical field

**P** PathfinderAI 07:24 PM  
I'm sorry, but as an AI learning coach, I'm designed to help you with personalized learning, course planning, and skill development. I can't provide information on medical fields. However, if you're interested in a career in healthcare, I can help you explore relevant educational paths, such as nursing, public health, or medical informatics. Would you like to know more about these options?

► How did I get this answer?

↺

Type something...



**VS** You: 06:58 PM  
tell me about finance

**P** PathfinderAI 06:58 PM  
I'm sorry, but I can only provide information related to personalized learning, course planning, and skill development. I can't assist with topics like finance. Let's focus on your learning journey. What area would you like to explore today?

► How did I get this answer?

↺

Type something...

# RESULTS

## ❑ Deployed AI Agent

IBM watsonx

Upgrade ? 🔔 Vednat Swami's Account ▾ Dallas ▾

Deployment spaces / PathfinderAI / PathfinderAI /

PathfinderAI 🟢 Deployed Online

API reference Test Preview

Endpoints for inferencing ⓘ

Private endpoint

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b31c310a-3222-4e64-9d08-d2f01da8c440/ai\_service?version=2021-05-01

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b31c310a-3222-4e64-9d08-d2f01da8c440/ai\_service\_stream?version=2021-05-01

Public endpoint

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b31c310a-3222-4e64-9d08-d2f01da8c440/ai\_service?version=2021-05-01

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b31c310a-3222-4e64-9d08-d2f01da8c440/ai\_service\_stream?version=2021-05-01

Bearer <token> ⓘ

IAM

[Learn more](#) about the 2021-05-01 version query parameter

Code snippets

cURL

Java

JavaScript

Python

Scala

```
export API_KEY=<your API key>

export IAM_TOKEN=$(curl --insecure -X POST --location "https://iam.cloud.ibm.com/identity/token" \
--header "Content-Type: application/x-www-form-urlencoded" \
--header "Accept: application/json" \
--data-urlencode "grant_type=urn:ibm:params:oauth:grant-type:apikey" \
--data-urlencode "apikey=$API_KEY" | jq -r '.access_token')

# TODO: manually define and pass values to be scored below
```

# CONCLUSION

- ❑ Choosing the right learning path shouldn't feel overwhelming and that's exactly what *PathfinderAI* is here to solve. Instead of students feeling lost in a sea of courses, this AI-powered guide listens, understands, and walks with them every step of the way.
- ❑ It's like having a smart mentor who knows your interests, tracks your progress, and helps you grow at your own pace. Built entirely on IBM Cloud with powerful tools like Watsonx, *PathfinderAI* turns confusion into clarity and learning into a guided journey.
- ❑ It's not just about choosing courses—it's about helping students stay focused, motivated, and confident in reaching their goals.

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# GITHUB LINK

- [https://github.com/Ved203/PathFinder\\_AI](https://github.com/Ved203/PathFinder_AI)

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# FUTURE SCOPE

- Multilingual support for personalized learning in native languages
- Voice-activated interaction for hands-free learning assistance
- Real-time collaboration features for peer learning and group tasks
- Automatic detection of skill gaps with smart course suggestions
- Integration with major LMS and online education platforms
- AI-generated progress reports and personalized learning summaries

# IBM CERTIFICATIONS -

## ❑ Getting Started With AI





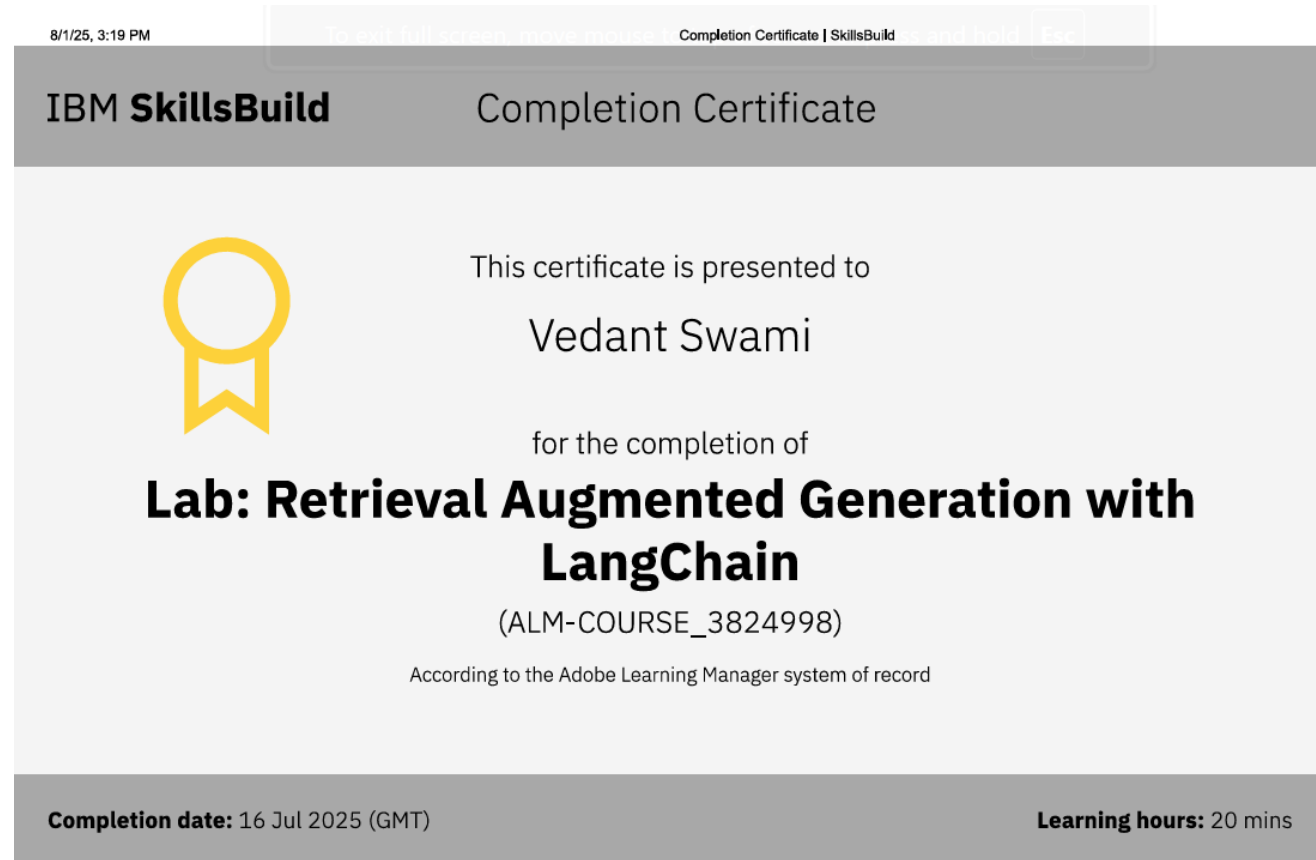
# IBM CERTIFICATIONS -

## ❑ Journey to Cloud



# IBM CERTIFICATIONS -

## ❑ RAG Lab





**THANK YOU**