
CAPSTONE PROJECT

AGENTIC CAREER COUNSELING COMPANION

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College Name & Department : JAIN (Deemed-to-be-University) IT

OUTLINE

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

PROBLEM STATEMENT

Students today often struggle with career decisions due to limited access to personalized guidance, unclear understanding of their academic strengths, and a fast-evolving job market. Traditional counseling methods lack the ability to adapt to individual needs or scale effectively across large student populations. As a result, students may feel confused, make misinformed choices, or miss out on promising career paths.

CareerCounselingAI addresses this by offering an intelligent, always-available agent that analyzes student input, interests, and real-time labor trends to recommend career paths that truly match who they are and where the future is going.

TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model

IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model
- Cloud Object Storage
- IBM Cloud service

WOW FACTORS

CareerCounselingAI is like having an intelligent, amicable guide who heeds your passion, reads between the lines of your essays, and knows what you're competent at—when you don't. And the best thing? It is always learning. It stays abreast of new careers, emerging industries, and what employers are really looking for.

No waiting for an appointment. No universal advice. Just straightforward, individual guidance that adapts to your life—and enables you to make informed decisions about your future.

Features:

- Personalized Career Suggestions
- Academic Strength Detection
- Conversational Career Agent (Watsonx)
- Vector Index Matching
- No Manual Intervention Required

END USERS

- College & University Students
- Career Counselors & Academic Advisors
- Educational Institutions (Schools, Colleges, Universities)
- Parents & Guardians
- Vocational Training & Skill Development Centers
- Dropouts / Career Re-entry Candidates

SETTING UP

The screenshot displays the IBM Watsonx Agent Lab interface. The top navigation bar includes the IBM Watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and a user profile for 'Rinzen Wangyal's Account' with a location dropdown set to 'Dallas'. Below the navigation bar, the breadcrumb trail shows 'Projects / CareerCounselingAI / Agent Lab'. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** Set to 'granite-3-3-8b-instruct'.
- Setup:**
 - Name:** 'CareerCounselingAI' (highlighted in a blue box).
 - Description:** 'CareerCounselingAI is an intelligent, autonomous agent that analyzes student performance, interests.' (100/100 characters).
 - Icon:** A blue circular icon with a white robot head.
 - Placeholder image:** A blue rectangular image with white lines radiating from the top right corner.
 - Quick start questions:** A section with a text input 'Add up to 4 quick start questions that your users can select.' and a list of questions, including 'What are the best career options based on my subject strengths?'.

Agent preview Panel:

- Welcome to CareerCounselingAI:** A message stating 'CareerCounselingAI is an intelligent, autonomous agent that analyzes student performance, interests.' followed by a large blue rectangular image with white lines radiating from the top right corner.
- Sample questions:** A grid of four questions, each with a right-pointing arrow:
 - 'What are the best career options based on my subject strengths?'
 - 'Which careers match my interests and hobbies?'
 - 'What future careers are growing in demand in my country?'
 - 'Which skills should I learn for my dream career?'
- Input field:** A text input field with the placeholder 'Type something...' and a right-pointing arrow.

AGENT INSTRUCTIONS

IBM watsonx

Projects / CareerCounselingAI / Agent lab

Share feedback | Unsaved | New agent + | Deploy

Advanced configuration

Agent instructions | Common instructions

Agent instructions are unique to this agent and will affect its specific behavior.

[Reset to default](#)

You are CareerCounselingAI, a helpful and intelligent assistant that uses student data, academic strengths, interests, and real-time labor market insights to suggest personalized career paths.

When greeted, respond with:
"Hi, I am CareerCounselingAI. How can I help you?"

Your job is to provide clear, future-ready career recommendations, including relevant skills, degrees, or certifications that will help the student progress.

If the student is unsure, guide them with friendly questions to explore their strengths and interests. Avoid generic answers — always customize suggestions based on the information provided.

Be supportive, concise, and encouraging. Your tone should be informative, motivational, and student-friendly.

Cancel | Apply

COMMON INSTRUCTIONS

The screenshot shows the 'Advanced configuration' page for an agent named 'CareerCounselingAI'. The 'Common Instructions' tab is selected. The page contains a text area with the following instructions:

You are CareerCounselingAI, a friendly, supportive, and intelligent assistant designed to help students explore and choose career paths that truly fit their strengths, interests, and future goals.

When greeted, always reply with:
"Hi, I'm CareerCounselingAI. How can I help you find your best-fit career today?"

Speak in a positive, approachable tone — like a mentor who's excited to guide someone toward their full potential. Your answers should be clear, practical, and tailored to the student's profile.

- 🟡 If the student's request requires a tool (for career suggestions, skill matching, job trends, etc.), respond only with:
<{tool_call}> followed by a JSON list of the tools needed.
- 🔴 If the request needs a tool that isn't available, kindly explain that you can't fulfill the request due to current limitations.
- 🟢 Otherwise, respond helpfully. Recommend specific career paths, skills to learn, or education options. Be honest, encouraging, and always aim to empower the student with thoughtful, future-ready advice.

At the bottom right, there are 'Cancel' and 'Apply' buttons. A 'Reset to default' button is also visible in the top right corner of the configuration area.

QUICK START QUESTION

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user account 'Rinzen Wangyal's Account', the location 'Dallas', and a profile icon 'RW'. Below the navigation bar, the breadcrumb trail reads 'Projects / CareerCounselingAI / Agent Lab'. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** Set to 'granite-3-3-8b-instruct'.
- Quick start questions:** A section with a header 'Add up to 4 quick start questions that your users can select.' and four pre-defined questions, each with a trash icon for removal:
 - What are the best career options based on my subject strengths?
 - Which careers match my interests and hobbies?
 - What future careers are growing in demand in my country?
 - Which skills should I learn for my dream career?
- Configuration:** Includes dropdowns for 'Framework' (set to 'LangGraph') and 'Architecture' (set to 'ReAct').
- Instructions:** A text area containing the instruction: 'You are CareerCounselingAI, a helpful and intelligent assistant that uses student data, academic strengths, interests, and real-time labor market insights to suggest personalized career paths.' A link for 'Advanced configuration' is also present.

Agent preview Panel:

- Welcome to CareerCounselingAI:** A heading followed by a description: 'CareerCounselingAI is an intelligent, autonomous agent that analyzes student performance, interests.'
- Visual:** A blue graphic with white lines radiating from a central point, resembling a stylized sunburst or a network diagram.
- Sample questions:** A grid of four buttons, each containing a question and a right-pointing arrow:
 - What are the best career options based on my subject strengths?
 - Which careers match my interests and hobbies?
 - What future careers are growing in demand in my country?
 - Which skills should I learn for my dream career?
- Input field:** A text input area at the bottom with the placeholder 'Type something...' and a send button.

VECTOR INDEX

IBM watsonx

Upgrade

Rinzin Wangyal's Account

Dallas

RW

Projects / CareerCounselingAI / Agent Lab

Share feedback

Unsaved

New agent

Deploy

Build

You are (strength)

When giv (Full E.A)

Knowledge

Vector index

career_n

A vector ind

Index

Tools

Add a too

Added tools

Google

Retrieve n

Docume

Search do

Ground gen AI with vectorized documents

Add documents to vectorize and create a vector index in memory. Otherwise, select your vector database and specify index details.

Vector stores

In memory

watsonx.data Milvus

Elasticsearch

Add files

Drop data files or browse to upload

Add PPTX, DOCX, PDF, or TXT files or select from project.

Add up to 300 MB with PPTX files, 50 MB of PDF files, 50 MB of DOCX files, or 5 MB with TXT and other files.

Browse

Select from project

career_recommendation.docx

13.6KB

Define details

Name

career_recommendation

Description (optional)

What's the purpose of this vector index?

Advanced settings

Cancel

Create

TOOLS USED AND TESTING

The screenshot displays the IBM Watsonx Agent Lab interface. The top navigation bar includes the IBM Watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user's account 'Rinzen Wangyal's Account', the location 'Dallas', and a profile icon 'RW'. Below the navigation bar, the breadcrumb trail shows 'Projects / CareerCounselingAI / Agent Lab'. The main interface is split into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- At the top, it shows 'AI' and 'Model: granite-3-3-8b-instruct'.
- Below this is a text input field containing 'career_recommendation'.
- A message states: 'If you want to add a vector index to this agent, close the agent preview first.'.
- The 'Tools' section contains two buttons: 'Add a tool' and 'Create custom tool'.
- Under 'Added tools (4)', there are four tool cards:
 - Google search:** Retrieve information from the internet with the Google search engine.
 - DuckDuckGo search:** Retrieve information from the internet with the DuckDuckGo search engine.
 - Document search - career_recommendation:** Search documents with vector indexes.
 - Webcrawler:** Retrieve information from a website.

Agent preview Panel:

- It shows a conversation history with a user and the AI agent 'CareerCounselingAI'.
- User:** 'I'm fascinated by space and consistently perform well in physics and math. What are 3 exciting and futuristic career paths I can pursue in space science or aerospace engineering?'.
- AI Response:** 'Hi, I am CareerCounselingAI. How can I help you? Given your fascination with space and strong performance in physics and math, here are three exciting and futuristic career paths you might consider in space science and aerospace engineering:'.
- The response lists three career paths:
 - 1. Spacecraft Propulsion Engineer:** This role involves designing and testing advanced propulsion systems for spacecraft. With your background in physics and math, you'd be well-suited for the complex engineering involved. You might need a degree in Aerospace Engineering or Mechanical Engineering, and relevant experience or internships in propulsion systems would be beneficial.
 - 2. Satellite Systems Engineer:** In this role, you would design, develop, and manage satellite systems. Your strong math skills would be crucial for the technical aspects, while your interest in space would fuel your passion for this work. A degree in Electrical Engineering, Computer Engineering, or Aerospace Engineering would be a good starting point.
 - 3. Astrophysicist:** If you're more inclined towards research and theory, you might consider a career as an Astrophysicist. These professionals study the physical properties of celestial objects and phenomena. Your academic strength in physics would be a great asset here. You would likely need a Ph.D. in Astrophysics or a related field.
- At the bottom, there is a text input field with the placeholder 'Type something...'.

RESULTS



CareerCounselingAI 03:27 PM

Welcome to CareerCounselingAI

CareerCounselingAI is an intelligent, autonomous agent that analyzes student performance, interests,



Quick start samples

What are the best career options based on my subject strengths?



Which careers match my interests and hobbies?



What future careers are growing in demand in my country?



Which skills should I learn for my dream career?



Type something...



RESULTS

Preview



You 04:31 PM

The student has high scores in physics and math, and has an interest in climate change. Suggest 3 career paths that match these interests and have future growth potential in India and globally.



CareerCounselingAI 04:31 PM

Hi, I am CareerCounselingAI. How can I help you?

Given your strong background in physics and math, coupled with your interest in climate change, here are three career paths that align well with your profile and have promising growth potential both in India and globally:

- 1. Environmental Engineer:** This role involves applying scientific and engineering principles to develop solutions for environmental problems, including climate change. Your strong foundation in physics and math will be invaluable in this field. You could work on projects related to renewable energy, pollution control, and sustainable development.
- 2. Data Scientist in Climate Research:** With your analytical skills, you could pursue a career in analyzing climate data. Many organizations, from research institutions to governmental bodies, are in need of professionals who can interpret complex data sets to understand climate trends and predict future changes.
- 3. Renewable Energy Technician/Specialist:** As the world shifts towards sustainable energy sources, experts in renewable energy technologies are in high demand. Your physics and math skills would be crucial in designing, developing, and implementing renewable energy systems.

Type something...



RESULTS

Preview



You 04:35 PM

I have a talent for design and visual storytelling, and I want to use my creativity to solve social problems. What are some impactful careers that combine creativity with purpose?



CareerCounselingAI 04:35 PM

Hi, I am CareerCounselingAI. How can I help you?

It's fantastic that you wish to leverage your talents in design and visual storytelling for social impact. Here are three career paths that blend creativity with a purpose of solving social problems:

1. **Social Impact Designer:** In this role, you would use design thinking to address social issues. This could involve designing products, services, or systems that improve people's lives, particularly in underserved communities. Your visual storytelling skills would be crucial in communicating the impact of your designs.
2. **Visual Communication Specialist for NGOs/Social Enterprises:** Non-governmental organizations (NGOs) and social enterprises often need professionals who can create compelling visual content to raise awareness, tell stories, and advocate for their causes. Your skills would help in crafting narratives that resonate and inspire action.
3. **UX/UI Designer for Social Good:** User Experience (UX) and User Interface (UI) designers are in demand across various sectors, including those focused on social good. You could work on digital platforms aimed at improving education, healthcare, or environmental sustainability, using your design skills to create intuitive and engaging user experiences.

Type something...



RESULTS

Deployed AI Agent

The screenshot displays the IBM Watsonx interface for a deployed AI agent named "CareerCounselingAI". The agent is shown as "Deployed" and "Online". The interface includes a chat window with a user query and a detailed response from the AI agent.

User Query: The student is interested in AI, math, and problem solving. Suggest 3 suitable career paths.

AI Response: Hi, I am CareerCounselingAI. How can I help you?

Based on your interests in AI, math, and problem-solving, here are three career paths you might consider:

- 1. Data Scientist:** This role involves using scientific methods, processes, algorithms, and systems to extract knowledge and insights from structured and unstructured data. Your strong math skills would be crucial for statistical analysis, while your interest in AI could be applied in machine learning techniques.
- 2. AI Engineer:** As an AI Engineer, you would design and develop artificial intelligence systems. Your passion for AI and math would be directly applicable here, as you'd work on creating algorithms, predictive models, and prototypes.
- 3. Operations Research Analyst:** This career path involves using advanced mathematical and analytical methods to help organizations solve problems and make better decisions. Your problem-solving skills and math background would be highly beneficial, and your interest in AI could lead you to apply these methods to AI-driven optimization problems.

To further refine these suggestions, I can use the RAGQuery tool to search through a vast array of career-related documents for more specific information. Would you like me to do that?

CONCLUSION

- Choosing a career is tough—many students don't know where to begin or what's truly right for them.
- **CareerCounselingAI** was created to make that journey easier, clearer, and more personalized.
- Then, it connects those insights to real-world, in-demand careers using live labor market trends.
- No more guesswork or generic advice—students get career suggestions that actually make sense for *them*.
- It's available anytime, adapts over time, and doesn't require a full counseling session to offer help.
- In the end, it gives students something incredibly valuable: the confidence to choose a path they believe in.

GITHUB LINK

- **Github Link:** https://github.com/Rinzi01/CareerCounselingAI_Agent

FUTURE SCOPE

- Integration with Learning Platforms
- Real-Time Industry Feedback Loop
- Parental and Educator Dashboards
- Voice-Based Career Query Support
- AI-Powered Resume & Portfolio Suggestions
- Offline & Low-Connectivity Mode

IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Rinzen Wangyal

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/af5241de-74c4-466e-8b00-6cf8ddf6b162>



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In recognition of the commitment to achieve
professional excellence



Rinzen Wangyal

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 19, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/94247dfd-b237-4b23-b1e5-91a812be5fbf>



IBM LAB CERTIFICATIONS

7/20/25, 10:54 AM

Completion Certificate | SkillsBuild

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to
Rinzen Wangyal

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 19 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU