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# CAPSTONE PROJECT

## NUTRITION AGENT

**Presented By:**

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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**

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# PROBLEM STATEMENT

- Example: In an era where health awareness is growing, individuals increasingly seek personalized nutrition guidance. However, most existing tools provide generic diet plans, lack real-time adaptability, and fail to consider a person's holistic lifestyle, cultural preferences, allergies, and evolving health conditions. Furthermore, dietitians and nutritionists face limitations in scaling personalized consultations due to time and resource constraints.

# PROPOSED SOLUTION

- The proposed system aims to address the challenges and limitations in scaling a personalized dietician consultation. This provides an interactive, intelligent, and adaptive virtual Nutrition assistant. The solution will consist of the following components:
- Data Collection:
  - Gather data about age, food preferences, medical conditions, fitness routines etc.
  - Utilize real-time data sources, such as weather conditions, Google search, DuckDuckGo search, Wikipedia search to enhance accuracy.
- Data Preprocessing:
  - Clean and preprocess the collected data to provide accurate nutrition plans.
  - Extract user preferences from the data to provide nutrition plans according to it.
- Machine Learning Algorithm:
  - The model used here is llama-3-3-70b-instruct, to predict bike counts based on historical patterns.
  - Consider tools like weather, Google search, DuckDuckGo search, Wikipedia search to improve accuracy.
- Deployment:
  - Develop a user-friendly AI-powered nutrition assistant that generates dynamic meal plans, recommends smart food swaps and explains nutritional choices.
  - Deploy the solution on a scalable and reliable platform, considering factors like server infrastructure, response time, and user accessibility.
- Evaluation:
  - Assess the model's performance using appropriate metrics such as age, food preference, health condition and fitness routines etc.
  - Fine-tune the model based on feedback and continuous monitoring of accuracy.
- Result:

# SYSTEM APPROACH

- The "System Approach" section of “Nutrition assistant” involves designing and implementing a comprehensive and integrated system that leverages generative AI models, NLP, multimodal understanding, and large-scale dietary databases to provide personalized nutrition guidance. Here's a suggested structure for this section: ; User input processing
- Personalized meal planning
- Contextual Explanation
- Integration with health data and food databases
- IBM cloud lite services/IBM Granite

# ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting Nutrition plans. Here's an example structure for this section:
- Algorithm Selection:
- Provide a brief overview of the chosen algorithm and justify its selection based on the problem statement and data characteristics.
- Data Input:
- Specify the input features used by the algorithm, such as age, health conditions, food preferences, fitness routines etc.
- Training Process:
- Explain how the algorithm is trained using this user preferences data. Highlight any specific considerations or techniques.
- Prediction Process:
- Detail how the trained algorithm makes predictions for nutrition plans. Discuss any real-time data inputs considered during the prediction phase.

# RESULT

The screenshot displays the IBM watsonx web interface. At the top, a navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'SNEHA LIJU's Account' in 'Dallas'. The main content area features a large welcome message 'Welcome back, SNEHA' and a section titled 'Train, validate, tune and deploy AI models.' with a 'Customize my journey' button. Below this, there are three prominent cards: 'Open Prompt Lab' for chat and building prompts, 'Build an AI agent to automate tasks' with 'Agent Lab', and 'Tune a foundation model with labeled data' with 'Tuning Studio'. A 'Collapse' button is visible on the right. At the bottom, a 'Jump back in' section lists recently visited pages like 'Nutrition\_agent / watsonx Agent', 'Spaces / Nutrition\_agent\_1', 'Home / Deployments', and 'Projects / Nutrition\_agent'. A 'Discover' section is also present at the very bottom. The browser's address bar shows the URL 'https://dataplatform.cloud.ibm.com/wx/home?context=wx'. The Windows taskbar at the bottom indicates a temperature of 28°C, a search bar, and various application icons, with the system clock showing 19:04 on 06-08-2025.

New Tab ×watsonx Agent — Nutrition\_ag ×IBM watsonx × +

← → ↻https://dataplatfom.cloud.ibm.com/wx/agents/b8643e8d-68e7-403b-9f4f-5dd68154f4d7?project\_id=d93aa3fb-d622-4389-9b68-ad421080556e ☆

Import bookmarks...Getting Started

IBM watsonxUpgrade?🔔SNEHA LIJU's Account ▾Dallas ▾SL⋮

Projects / Nutrition\_agent / watsonx AgentShare feedback β🟢 Autosave on📁 ▾New agent +Deploy🔒 ⓘ

BuildAIModel: llama-3-3-70b-instruct 🔽⚙️<

Setup

Configuration

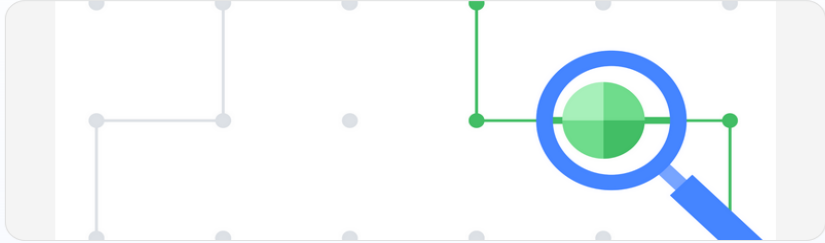
FrameworkArchitectureLangGraph 🔽ReAct 🔽

InstructionsAdvanced configurationyou are nutrition agent. take the preferences from the user like age, food preferences, medical history, city. give the specific answer to the users query.

Knowledge

ToolsAdd a toolCreate custom tool


Added tools (4)

Agent previewwatsonx Agent 05:17 PMWelcome to watsonx AgentChange this description to reflect your particular agent

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Search



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New TabNutrition\_agent — Projects | IB...IBM watsonxSettings | IBM watsonx

←→↻https://datapatform.cloud.ibm.com/projects/d93aa3fb-d622-4389-9b68-ad421080556e/assets?context=wx

Import bookmarks...Getting Started

IBM watsonxUpgrade?🔔SNEHA LIJU's AccountDallasSL⋮

Projects / Nutrition\_agent⬆️⬇️👤Launch IDE ⓘ🕒💬⚙️

OverviewAssetsDeploymentsJobsManage>

🔍Find assets

Import assets🔗New asset+

2 assets📦

All assets

Asset types

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All assets🔄

| Name                  | Last modified                    |   |
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←→↻https://dataplatfom.cloud.ibm.com/wx/home?context=wx

Import bookmarks...Getting Started

IBM watsonx

Upgrade?🔔SNEHA LIJU's AccountDallasSL⋮

Explore foundation models from IBM and other third-parties depending on your use case.

[Explore foundation models →](#)

📁Data→

📁Projects→

📁Notebooks→

📁Agents→

Aug 01, 2025→

The mistral-medium-2505 foundation model is now available in the Frankfurt region  
Jul 30, 2025→

Token usage limit increased with the watsonx.ai Runtime Lite plan  
Jul 30, 2025→

Recent work

Projects↔+

Nutrition\_agent2 h ago

SL

Final\_Project2 h ago

SL

project19 h ago

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SNEHA's sandbox19 h ago

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Deployment spaces+

Nutrition\_agent\_17 min ago

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# CONCLUSION

- The AI Nutrition Assistant project aims to revolutionize personalized nutrition guidance by leveraging state-of-the-art generative AI models, NLP, and multimodal understanding. By integrating health data, food databases, and LLM-powered reasoning, the solution will provide dynamic meal plans according to individual needs. This AI Nutrition agent provides nutrition plans according to the user's input data such as age, health conditions, fitness routines, food preferences etc. By leveraging IBM cloud services and IBM Granite, the solution will be scalable and reliable, making personalized nutrition guidance accessible to a wider audience.

# FUTURE SCOPE

- The future scope of "The Smartest AI Nutrition Assistant" project is vast and promising, with potential advancements in:- Integration with Wearable Devices, Advanced Personalization, Mental Health Support, Social Support Networks, Enhanced Data Privacy and Security, Expanded Food Databases, Seamless Integration with Healthcare Systems.

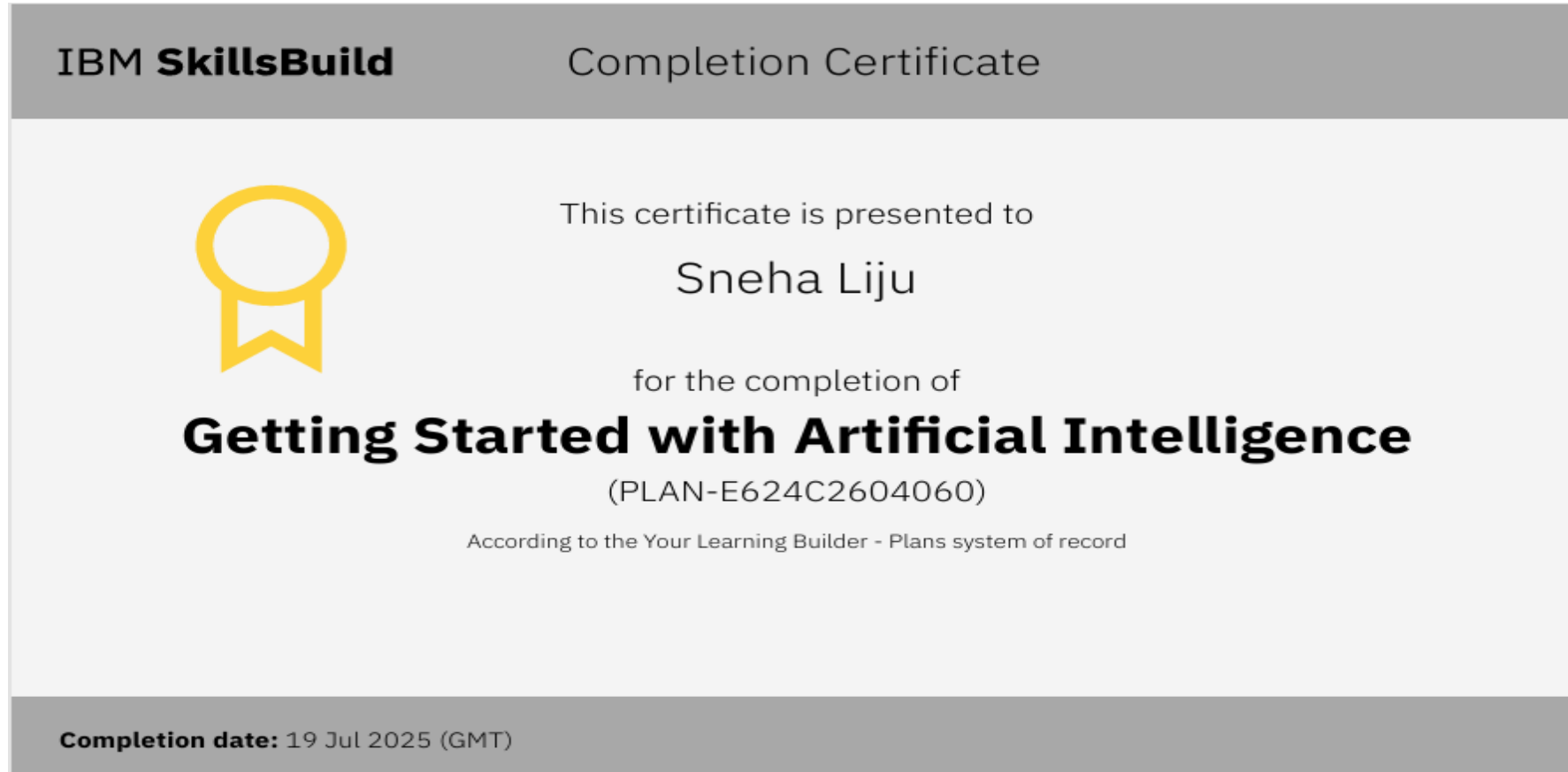
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# REFERENCES

- This project was done in IBM cloud with the help of knowledge I got from IBM SkillsBuild Internship on AI & Cloud Technologies.



# IBM CERTIFICATIONS



# IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Sneha Liju

for the completion of

**Journey to Cloud: Envisioning Your Solution**

(PLAN-32CB1E21D8B4)

According to the Your Learning Builder - Plans system of record

**Completion date:** 21 Jul 2025 (GMT)

# IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Sneha Liju

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 24 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**