
CAPSTONE PROJECT

NUTRITION AGENT

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OUTLINE

- **Problem Statement**
- **Proposed System/Solution**
- **System Development Approach**
- **Algorithm & Deployment**
- **Result**
- **Conclusion**
- **Future Scope**
- **References**

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 Agent Lab web application. The browser's address bar shows the URL `dataplatfom.cloud.ibm.com/wx/home?context=wx`. The application header includes the IBM watsonx logo, a user profile for LIMNA V A's Account, and a location dropdown for Dallas. The main content area features a large background graphic of concentric circles and a grid. A welcome message "Welcome back, LIMNA" is displayed. Below it, a section titled "Train, validate, tune and deploy AI models." includes a "Customize my journey" button. A central panel, titled "Open in: Nutrition_agent1", contains three AI development options: "Chat and build prompts with foundation models" (with a "Start chatting..." input and "Open Prompt Lab" button), "Build an AI agent to automate tasks" (with "with Agent Lab" and a beta icon), and "Tune a foundation model with labeled data" (with "with Tuning Studio"). A "Collapse" button is visible on the right. The bottom section, titled "Jump back in", lists recently visited pages: "Projects / Nutrition_agent1", "Nutrition_agent1 / Agent Lab", "Services catalog / Cloud Object Storage", and "Home / New project". A "Discover" section is also present at the bottom. The Windows taskbar at the very bottom shows the system clock as 11:19 on 03-08-2025, along with weather (80°F Cloudy) and various application icons.

Agent Lab (beta) — Docs | IBM x Home | IBM watsonx x +

dataplatfom.cloud.ibm.com/wx/home?context=wx

YouTube Maps Gmail

IBM watsonx ? LIMNA V A's Account Dallas LV

Welcome back, LIMNA

Open in: Nutrition_agent1

Train, validate, tune and deploy AI models.

Customize my journey

[...] AI Chat and build prompts with foundation models

Start chatting... Open Prompt Lab

AI Build an AI agent to automate tasks with Agent Lab

AI Tune a foundation model with labeled data with Tuning Studio

Collapse

Jump back in Recently visited pages

Projects / Nutrition_agent1

Nutrition_agent1 / Agent Lab

Services catalog / Cloud Object Storage










Home / New project

Discover Collapse Discover section

80°F Cloudy Search ENG IN 11:19 03-08-2025

Choose a tool to add to your agent.

 Search for a tool

| | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Google search</p> <p>Retrieve information from the internet with the Google search engine.</p> |  <p>DuckDuckGo search</p> <p>Retrieve information from the internet with the DuckDuckGo search engine.</p> |  <p>Wikipedia search</p> <p>Retrieve information from Wikipedia articles.</p> |  <p>Document search</p> <p>Search documents with vector indexes.</p> |
|  <p>Tavily search</p> <p>Retrieve information from the internet with the Tavily search engine.</p> |  <p>Webcrawler</p> <p>Retrieve information from a website.</p> |  <p>Python Interpreter </p> <p>Execute Python code generated by the agent.</p> |  <p>Weather</p> <p>Retrieve the weather of a city.</p> |

Foundation models

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

[Explore foundation models →](#)

Prompts

Data

Projects

Notebooks

Agents

Save resources by training, deploying, and inferencing foundation models that are fine tuned with the low-rank adaptation technique

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_agent1

LA

28 min ago

Nutrition_agent

LA

12 h ago

weather_agent

LA

13 h ago

Deployment spaces

Nutrition_agent1_2

1 min ago

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.

REFERENCES

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

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In recognition of the commitment to achieve
professional excellence



Limna V A

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



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Journey to Cloud: Envisioning Your Solution



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24/07/2025, 18:59

Completion Certificate | SkillsBuild

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Limna V A

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