
CAPSTONE PROJECT

NUTRITION AGENT

Presented By

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OUTLINE

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PROBLEM STATEMENT

In today's fast-paced world, many individuals struggle to access reliable and personalized nutritional guidance. Common questions like "How many calories are in an apple?" or "What's a balanced 2000-calorie meal plan?" often go unanswered without expert help. Existing solutions are either too generic or hard to navigate. To solve this, we propose a Nutrition Agent built using IBM Watson x Studio, which leverages natural language understanding to provide instant, accurate, and interactive responses related to diet, calories, and nutrients. This agent empowers users to make informed food choices and build healthier habits through an intelligent, conversational interface.

Proposed Solution:

To address the need for accessible and personalized nutritional support, we propose developing a **Nutrition Agent** using **IBM Watsonx Studio** and **Watson Assistant**. This AI-powered chatbot is designed to understand natural language queries and provide instant responses related to calorie counts, nutrients, meal planning, and healthy food suggestions. The agent is trained with predefined intents and dialog flows, enabling seamless interaction with users. It can be integrated into web or mobile platforms and enhanced with a vector index or external nutrition APIs for dynamic content. This solution offers a user-friendly, scalable, and intelligent way to guide individuals toward better dietary decisions.

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

WOW FACTORS

The Nutrition Agent stands out for its ability to deliver real-time, AI-driven nutritional guidance through natural conversation, eliminating the need for complex apps or expert consultations. Built on IBM Watson x Studio, it leverages advanced NLP and vector indexing for contextual, intelligent responses. Its personalized diet suggestions, integration potential with external APIs, and scalability across platforms make it ideal for health apps, fitness portals, and wellness websites. The chatbot's simplicity, accuracy, and adaptability offer a unique blend of technology and health awareness, making it a smart companion for everyday dietary decisions.

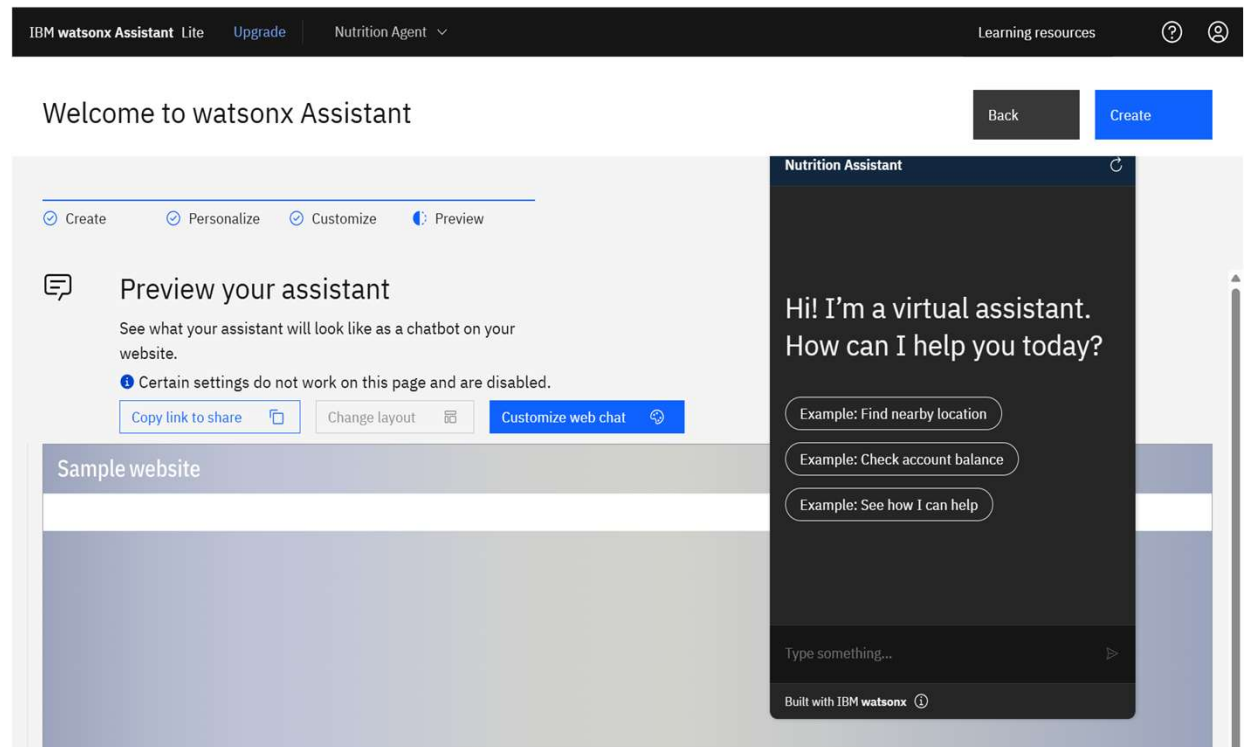
Unique features:

- AI-powered conversational interface for diet and nutrition queries
- Personalized meal and calorie-based diet suggestions
- Instant nutritional and calorie information lookup
- Supports external API integration for real-time food data
- Lightweight, scalable, and performance-optimized
- Deployable across web, mobile, or health platforms

END USERS

- Health-conscious individuals
- Fitness enthusiasts
- Dietitians and nutritionists
- Students and professionals
- Wellness app users

RESULTS



RESULTS

The screenshot displays the IBM watsonx Assistant interface for a 'Nutrition Agent'. The browser window shows the URL: `us-south.assistant.watson.cloud.ibm.com/crn%3Av1%3Abluemix%3Apublic%3Aconversation%3Aus-south%3Aa%2Fa147fe342f14437a8a07e47f6...`. The interface includes a top navigation bar with 'IBM watsonx Assistant Lite', 'Upgrade', and 'Nutrition Agent'. The main workspace is divided into three panels: a left sidebar with a step editor, a central canvas for workflow visualization, and a right 'Preview' panel.

Step Editor (Left Sidebar):

- Step 12: 'hello' (Initial message)
- Step 13: 'how much portion of food you eat daily?' (Prompt with 'Free text' input)
- Step 14: 'You can visit this chart with different aged people how much calorie intake with there...' (Prompt with 'Free text' input)

Workflow Visualization (Central Canvas):

The workflow is a linear sequence of steps: 12 (Initial message) → 13 (Prompt) → 14 (Prompt) → 15 (Action: 'Calculate daily calorie need') → 16 (Action: 'Suggest a meal plan') → 17 (Action: 'Tell me calories in a food').

Preview Panel (Right):

The preview shows a chat conversation starting at 4:45 PM. The initial message is: 'To get started, please choose one of the options below:'. The available options are: 'Calculate my daily calorie need', 'Suggest a meal plan', and 'Tell me calories in a food'. The input field at the bottom contains the text: 'Use the up arrow for prior messages'.

The bottom of the image shows a Windows taskbar with the search bar, task icons, and system tray showing the time as 16:45 on 02-08-2025.

RESULTS

The screenshot displays the IBM Watson Assistant interface in a web browser. The browser's address bar shows the URL: `us-south.assistant.watson.cloud.ibm.com/crm%3Av1%3Abluemix%3Apublic%3Aconversation%3Aus-south%3Aa%2Fa147fe342f14437a8a07e47f6...`. The interface includes a top navigation bar with "IBM watsonx Assistant Lite", "Upgrade", "Nutrition Agent", and "Learning resources".

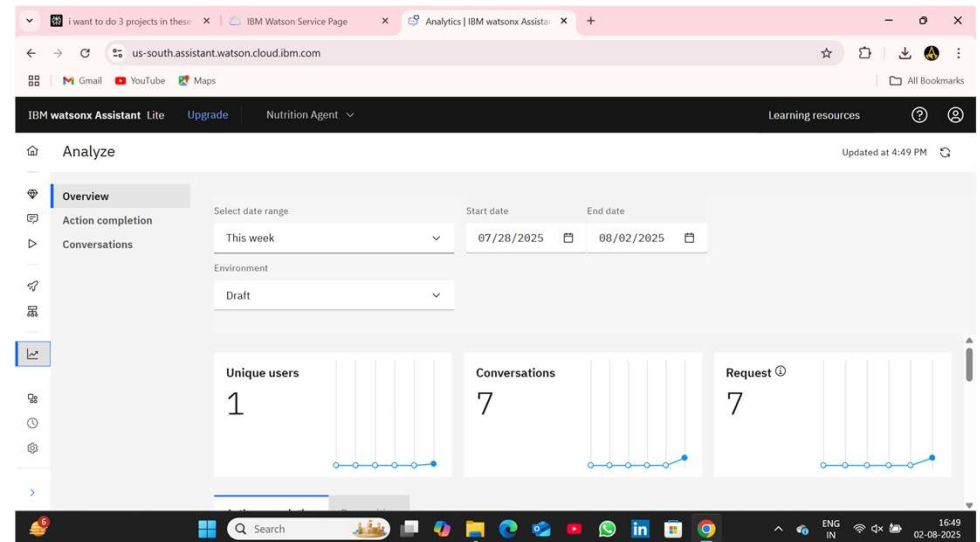
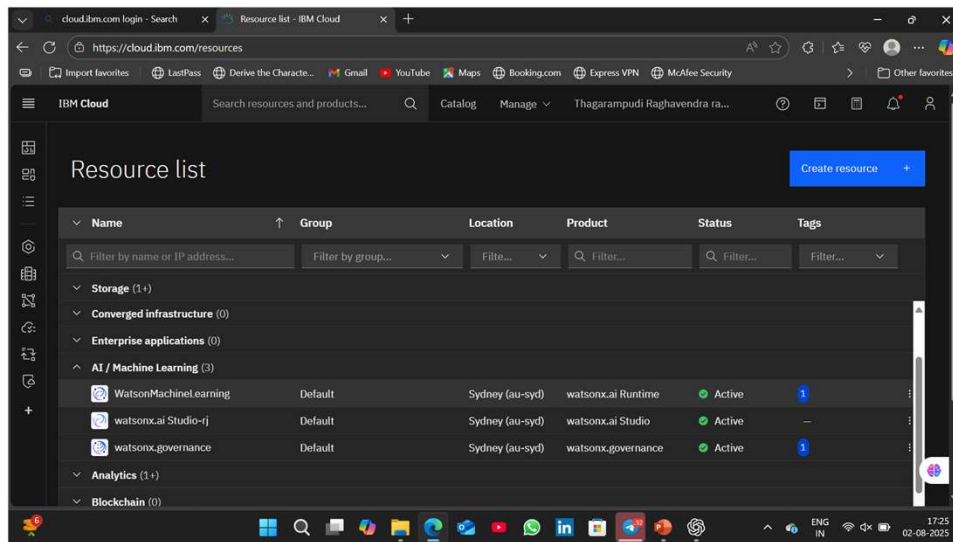
The main workspace is divided into three sections:

- Left Panel (Steps):** A list of steps in the conversation flow. Step 13 is highlighted, showing a question: "how much portion of food you eat daily?". Below it, there is a "Free text" input field and a "Continue to next step" button. Step 14 is also visible, with a similar question and input field.
- Center Panel (Editor):** A large area for editing the conversation flow, currently showing a "Read only" state.
- Right Panel (Preview):** A window titled "Preview" showing a simulated chatbot conversation. The messages are as follows:
 - User: "hello"
 - Bot: "how much portion of food you eat daily?"
 - User: "300 gm of rice daily, 150 gm of curry"
 - Bot: "You can visit this chart with different aged people how much calorie intake with there..."
 - User: "link"

The bottom of the screen shows a Windows taskbar with various application icons, a search bar, and system information indicating the time is 16:47 on 02-08-2025.

RESULTS

Deployed AI Agent



CONCLUSION

- Provides an intelligent and accessible solution for daily nutrition guidance
- Enhances user engagement through natural language interaction
- Reduces dependency on manual diet tracking or expert consultations
- Scalable and adaptable across various health and wellness platforms
- Combines AI, NLP, and vector search to deliver accurate, real-time answers
- Supports healthy lifestyle choices with personalized, user-centric design

FUTURE SCOPE

- Integrate with real-time nutrition databases and APIs for dynamic updates
- Add voice-based interaction for hands-free assistance on mobile or smart devices
- Real-Time Collaboration Features
- Enable personalized recommendations based on user health data (BMI, goals, allergies)
- Support multilingual conversations for regional language accessibility
- Enable diet tracking and progress analytics with charts and reminder

IBM CERTIFICATIONS

In recognition of the commitment to achieve
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Thagarampudi Raghavendra Rahul

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



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Completion Certificate



This certificate is presented to
Raghavendra Rahul Thagarampudi

for the completion of
**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 21 Jul 2025 (GMT)

Learning hours: 20 mins



GITHUB LINK

- Make sure that there should be readme file

THANK YOU