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# **IBM PROJECT**

## **NUTRITION AGENT**

**Presented By:**

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**College Name & Department : GITAM UNIVERSITY, CSE(core)**

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## OUTLINE

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

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# PROBLEM STATEMENT

- In today's world, individuals are becoming more health-conscious and are actively looking for personalized nutrition guidance. However, existing diet applications often provide one-size-fits-all meal plans that do not consider a user's medical conditions, allergies, fitness goals, or food preferences. Moreover, these tools lack the ability to adapt in real time based on user feedback or lifestyle changes.
- On the other hand, dietitians and nutrition experts face limitations in providing customized advice to a large number of people due to time and resource constraints.
- **Proposed Solution**  
To address these challenges, this project introduces an AI-powered Nutrition Agent that uses cloud services and artificial intelligence to generate personalized meal plans and health suggestions. The system also allows users to upload images of food items, which are then classified using machine learning models to provide appropriate dietary recommendations. This ensures a scalable, intelligent, and interactive way to promote healthy eating habits.

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# TECHNOLOGY USED

- IBM Cloud Lite Services
- IBM Watson Studio / Watsonx.ai
- Python, Pandas
- Hugging Face Transformers (optional)
- Jupyter Notebook

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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

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## WOW FACTORS

- The AI Nutrition Agent stands out due to its ability to analyze food items and offer real-time, personalized feedback to users. It combines machine learning with cloud technology to create a seamless experience where users can receive intelligent suggestions simply by uploading food images.

### Unique Features

- Automatically classifies food images such as burgers, pizza, and salads using pretrained machine learning models.
- Offers context-based health recommendations tailored to the user's dietary needs.
- Uses IBM Cloud Object Storage to handle user-uploaded images efficiently.
- Developed using IBM Watson Studio and Hugging Face Transformers for advanced AI capabilities.
- Bridges the gap between static diet charts and dynamic, interactive health guidance.

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## END USERS

- Health-conscious individuals
- Fitness trainers
- Dieticians and nutritionists
- Diabetic or allergy-prone patients
- Healthcare startups

# RESULTS

Projects / Nutrition AI Agent / MealPlanAssistant

File Edit View Run Kernel Help

Not Trusted Memory:156 / 8192 MB Python 3.11

```
[34]:
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.

cos_client = ibm_boto3.client(service_name='s3',
                              ibm_api_key_id='oAnxta94LlKVCPfY0LQ66sVpxiDW8-SAEr93BjCQhGq1',
                              ibm_auth_endpoint='https://iam.cloud.ibm.com/identity/token',
                              config=Config(signature_version='oauth'),
                              endpoint_url='https://s3.direct.eu-gb.cloud-object-storage.appdomain.cloud')

bucket = 'nutritionaiagent-donotdelete-pr-kiiiibqntitp7v'
object_key = 'sample_nutrition_data.csv'

body = cos_client.get_object(Bucket=bucket,Key=object_key)['Body']
# add missing __iter__ method, so pandas accepts body as file-like object
if not hasattr(body, "__iter__"): body.__iter__ = types.MethodType( __iter__, body )

df_1 = pd.read_csv(body)
df_1.head(10)
```

	Food Item	Calories	Tags	Suitable For
0	Millet Upma	210	vegetarian, gluten-free	weight_loss
1	Grilled Chicken	250	non-veg, high_protein	muscle_gain
2	Paneer Salad	280	vegetarian, dairy	muscle_gain
3	Brown Rice + Dal	300	vegetarian, wholegrain	general_health
4	Veg Salad	180	vegetarian, low_calorie	weight_loss

IBM watsonx.ai Studio

Search in your workspaces

Upgrade

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df\_1 = pd.read\_csv(body)  
df\_1.head(10)

```
[34]:
```

	Food Item	Calories	Tags	Suitable For
0	Millet Upma	210	vegetarian, gluten-free	weight_loss
1	Grilled Chicken	250	non-veg, high_protein	muscle_gain
2	Paneer Salad	280	vegetarian, dairy	muscle_gain
3	Brown Rice + Dal	300	vegetarian, wholegrain	general_health
4	Veg Salad	180	vegetarian, low_calorie	weight_loss



# RESULTS

Navigation bar for IBM Watson AI Studio. It includes a search bar, a user profile (CHETTU Prasanna Lakshmi), and a location (London). The URL in the address bar is: eu-gb.dataplatform.cloud.ibm.com/analytics/notebooks/v2/87603f15-22bd-4df8-9252-c0c2f04cc638?projectid=7919b6d3-f75...

Projects / Nutrition AI Agent / MealPlanAssistant

File Edit View Run Kernel Help

Code

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from botocore.client import Config
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                              ibm_auth_endpoint='https://iam.cloud.ibm.com/identity/token',
                              config=Config(signature_version='oauth'),
                              endpoint_url='https://s3.direct.eu-gb.cloud-object-storage.appdomain.cloud')

bucket = 'nutritionaiagent-donotdelete-pr-kiiibiqntitp7v'
object_key = 'burger.webp'

# Load data of type "image/webp" into a botocore.response.StreamingBody object.
# Please read the documentation of ibm_boto3 and pandas to learn more about the possibilities to load the data.
# ibm_boto3 documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/

streaming_body_1 = cos_client.get_object(Bucket=bucket, Key=object_key)['Body']
```

```
[45]: # --- Burger ---
body = cos_client.get_object(Bucket=bucket, Key='burger.webp')['Body']
img = Image.open(io.BytesIO(body.read())).convert("RGB")
```

Navigation bar for IBM Watson AI Studio. It includes a search bar, a user profile (CHETTU Prasanna Lakshmi), and a location (London). The URL in the address bar is: eu-gb.dataplatform.cloud.ibm.com/analytics/notebooks/v2/87603f15-22bd-4df8-9252-c0c2f04cc638?projectid=7919b6d3-f75...

Projects / Nutrition AI Agent / MealPlanAssistant

File Edit View Run Kernel Help

Code



Predicted: cheeseburger  
Usually high in fats. Try grilled or veggie versions.

# RESULTS

Projects / Nutrition AI Agent / MealPlanAssistant



File Edit View Run Kernel Help

Code

```
[42]: import os, types
import pandas as pd
from boto3.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
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cos_client = ibm_boto3.client(service_name='s3',
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                              ibm_auth_endpoint="https://iam.cloud.ibm.com/identity/token",
                              config=Config(signature_version='oauth'),
                              endpoint_url='https://s3.direct.eu-gb.cloud-object-storage.appdomain.cloud')

bucket = 'nutritionaiagent-donotdelete-pr-kiiibiqntitp7v'
object_key = 'salad.webp'

# Load data of type "image/webp" into a boto3.response.StreamingBody object.
# Please read the documentation of ibm_boto3 and pandas to learn more about the possibilities to load the data.
# ibm_boto3 documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/

streaming_body_3 = cos_client.get_object(Bucket=bucket, Key=object_key)['Body']
```

```
[48]: # --- Salad ---
body = cos_client.get_object(Bucket=bucket, Key='salad.webp')['Body']
```

IBM watsonx.ai Studio

Search in your workspaces

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File Edit View Run Kernel Help

Code



Predicted: plate  
Excellent choice! Full of fiber and nutrients.

# RESULTS

## Deployed AI Agent

Processing: pizza.webp



Predicted Food: pizza, pizza pie  
⚠ Rich in cheese. Thin crust + veggies = better!



Predicted Food: plate  
💡 Suggest checking ingredients and portions.

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## CONCLUSION

- The Nutrition Agent AI offers personalized health support using cloud AI.
- It improves awareness, supports healthier decisions, and demonstrates how generative AI can serve real-world healthcare needs.
- The project bridges the gap between apps and real expert advice.

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## FUTURE SCOPE

- Add support for voice inputs
- Connect with fitness trackers (Apple Health, Fitbit)
- Suggest recipes and shopping lists
- Multilingual support
- Real-time meal scanning (mobile camera)

# IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



prasanna lakshmi

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 21, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/45546d12-6c58-43e4-aeaf-593b051d23a7>



IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Chettu Prasanna Lakshmi 22237517101

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

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Git hub lik : <https://github.com/chettuprasanna/Nutrition-agent-ai/tree/main>



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## GITHUB LINK

- Make sure that there should be readme file

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**THANK YOU**