

## 1. Purpose and Objective

To create a smart AI Nutrition Assistant that:

- Understands users via **text, voice, or image**
  - Generates **personalized meal plans**
  - Explains **nutritional choices** contextually
  - Adapts to **feedback** and changing user needs
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## 2. Input Modalities Supported

- **Text:** Natural language prompts or questions
  - **Voice:** Spoken queries about food, nutrition, etc.
  - **Image:** Grocery labels, food plates, packaging
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## 3. Key Features

- Personalized meal plans based on:
    - **Health goals** (e.g., weight loss, muscle gain)
    - **Medical conditions** (e.g., diabetes, heart issues)
    - **Fitness routines**
    - **Cultural & food preferences**
    - **Allergies & restrictions**
  - AI-powered food comparisons (e.g., “Why is brown rice better than white rice?”)
  - **Smart food swaps**
  - Ongoing learning from user **feedback**
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## 4. Health & Medical Considerations

- Diabetic-friendly recommendations
  - Heart-healthy meal planning
  - Low-sodium diets for hypertension
  - Avoiding allergens like nuts, dairy, gluten
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## 5. Technical Architecture (for embedding engine)

- Vectorization of this document into **embeddings**

- **Indexing in memory** (or vector DB like Milvus, ChromaDB, Pinecone)
  - Retrieval-augmented generation (RAG) model
  - Feeding responses into a **Generative AI model** (e.g., LLM)
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## 6. Food Data & Nutrition Sources

- **USDA FoodData Central**
  - **Indian Food Composition Tables (IFCT)**
  - NutritionX or Edamam APIs (optional)
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## 7. Personalization Parameters

- Age
  - Gender
  - Weight & height (BMI)
  - Lifestyle: Active / Sedentary
  - Preferred cuisines: Indian, Mediterranean, Vegan, etc.
  - Allergies or intolerances
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## 8. Adaptability & Feedback Loop

- Ask: “How did you feel after this meal plan?”
  - Adapt future suggestions
  - Track: Energy, sleep, satisfaction, performance
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## 9. Sample Queries Your AI Can Answer

- “Suggest a 1200-calorie Indian meal plan for weight loss.”
  - “Can I eat paneer if I have cholesterol issues?”
  - “What’s a good replacement for white sugar?”
  - “Is this food (image of a packaged snack) good for me?”
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## 10. Use of IBM Cloud & Watson Services

- IBM Watsonx.ai or IBM Watson Assistant for interaction
- Watson Studio for notebook/LLM customization

- IBM Cloud Object Storage for dataset/document storage
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## 11. Final Notes

- This document must be **uploaded to the AI assistant's memory** for it to:
  - Understand nutrition logic
  - Fetch accurate answers
  - Respond like a dietician/nutritionist