



# Food and Nutrition Chatbot

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# Introduction

## 1 Overview

The Food and Nutrition Chatbot offers personalized dietary advice and recipe suggestions.

## 2 Objectives

Provide nutritional information, cooking tips, and recipe suggestions based on available ingredients.

## 3 Importance

Integrates LLMs in health and wellness applications, making dietary advice more accessible.





# Project Description

## Description

A chatbot assisting users with food and nutrition-related queries.

## Problem

Lack of accessible, personalized dietary advice.

## Scope

Targets general public, health enthusiasts, and home cooks.

# Project Architecture

1

## User Interface

Streamlit provides the front-end for user interaction.

2

## Query Processing

Gemini Pro LLM processes user queries.

3

## Data Retrieval

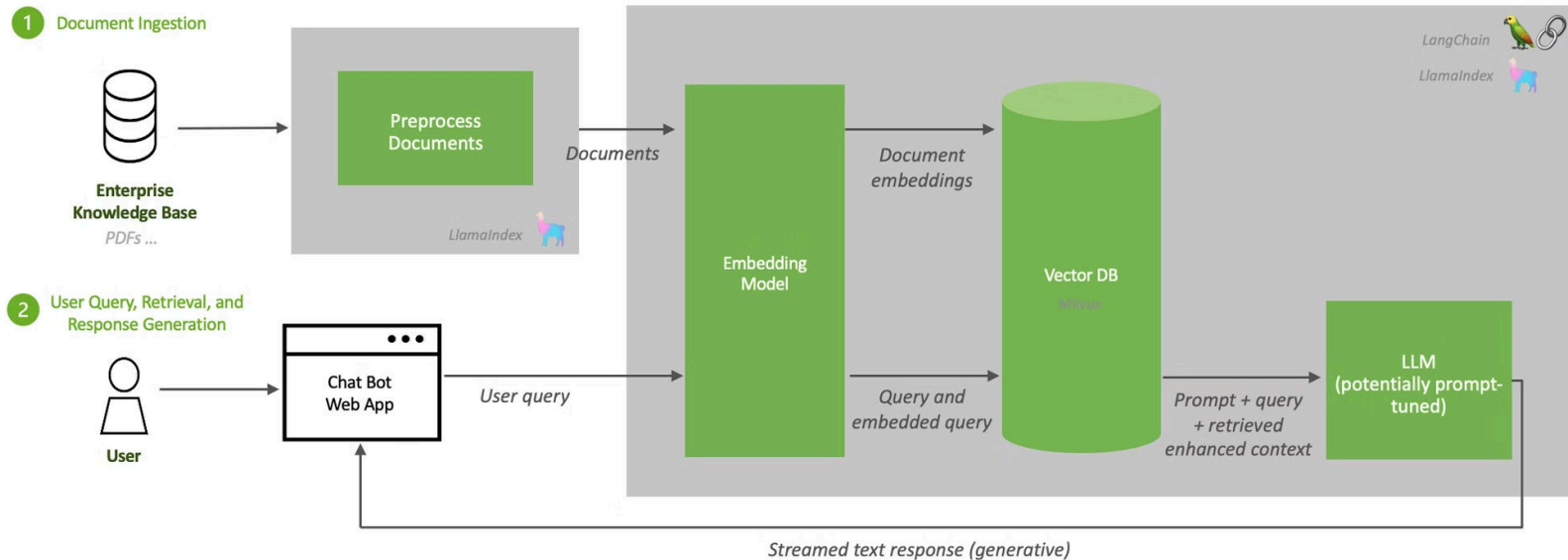
PineCone Vector DB stores and retrieves relevant data.

4

## Response Generation

Processed responses are displayed to the user.

## Retrieval Augmented Generation (RAG) Sequence Diagram



# Data Collection and Preprocessing

## Sources

Public datasets on nutrition, recipes, and dietary guidelines.

## Collection Steps

Extracting data from reliable sources. Cleaning and formatting data.

## Preprocessing

Tokenization, normalization, and embedding using text-embedding-004.



# RAG Pipeline Implementation

1

## Query Embedding

Convert user queries into vector representations.

2

## Data Retrieval

Fetch relevant information from the vector database.

3

## Response Generation

Generate accurate responses using retrieved data.



# Performance Metrics

Metric	Method	Initial Results
Accuracy	Benchmark queries	High in nutritional info
Response Time	Timing tests	Quick responses
User Satisfaction	User feedback	Positive initial feedback





# Methods to Improve Metrics



## Enhance Data

Expand and refine training data sources.



## Fine-tune Model

Optimize model parameters for better performance.



## User Feedback

Incorporate user input for continuous improvement.

# Deployment Plan

1

## Finalize Codebase

Complete and review all code components.

2

## Staging Environment

Test on Google Cloud Platform using Docker.

3

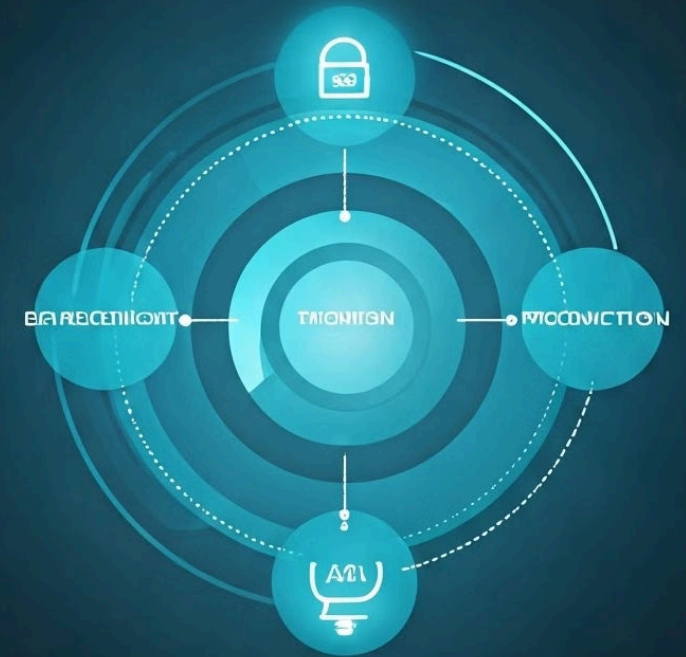
## Beta Testing

Conduct user testing and collect feedback.

4

## Full Deployment

Launch the chatbot for public use.





# Future Work

## Extensions

Integrate with wearable devices and create personalized meal plans.

## Long-term Vision

Develop a comprehensive digital health assistant.

## Continuous Development

Explore additional use cases and improve functionality.

# Conclusion

Easier for users to access accurate and up-to-date nutritional information, promoting healthier eating habits

Helps users make healthier food choices tailored to their individual needs

# Questions ?