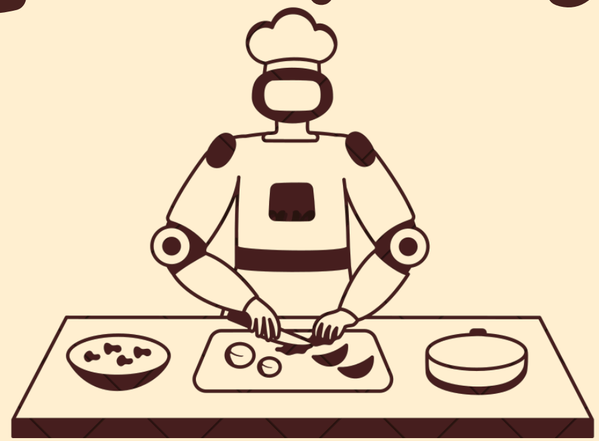
CHEFBOT

WATCH LESS, COOK MORE



PRESENTED BY

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WHAT IS CHEFBOT?

Chefbot Multimodal Cooking Assistant

ChefBot is a smart assistant that helps you get the most out of YouTube recipe videos. Using speech-to-text technology and AI, ChefBot makes cooking easier and more accessible, including for the deaf. It provides:

Text-based recipe guidance for the deaf

Why ChatBot

YouTube is a primary resource for cooking tutorials

Long videos often make it difficult to locate specific steps

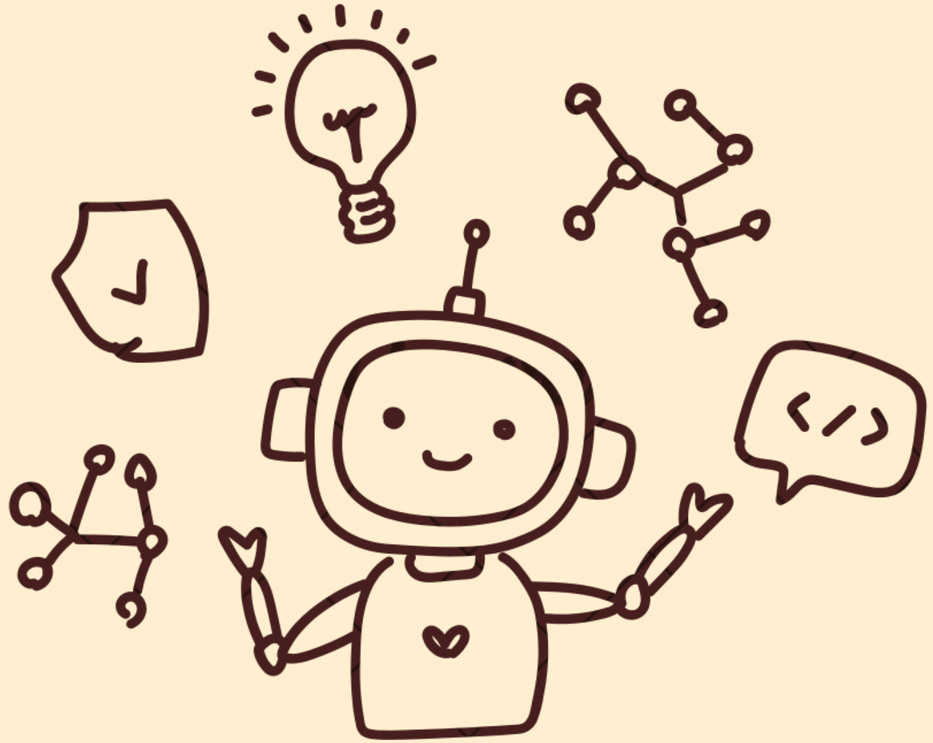
Written recipes are frequently incomplete or unclear

ChefBot addresses these challenges by transforming transcripts into interactive, searchable content

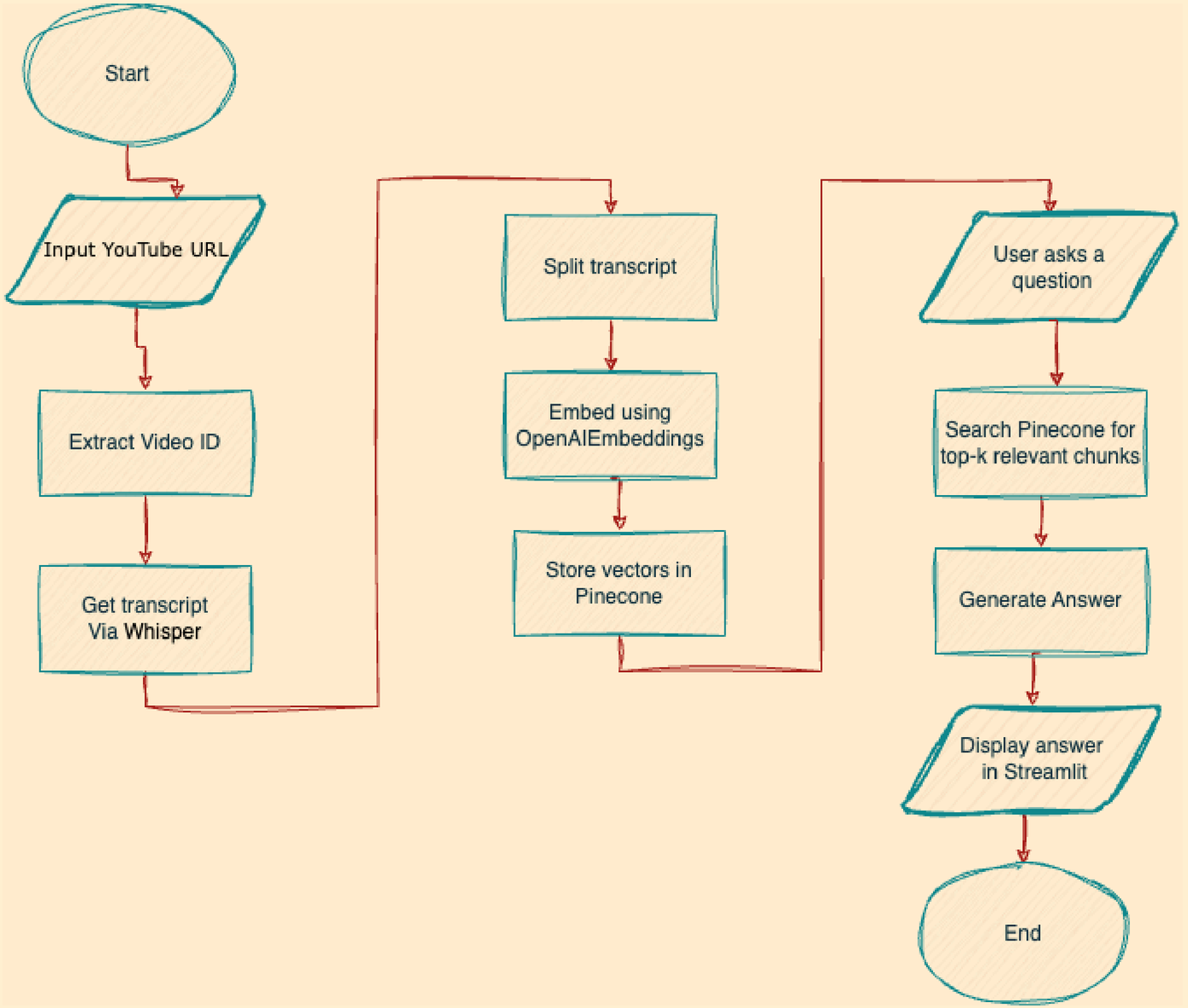
SOLUTION OVERVIEW

CHEFBOT LETS USERS:

- Paste a YouTube URL 🍽️
- ❓Ask any question about the recipe
- Get friendly chef-style answers instantly
- Auto-generate shopping lists 🛒
- Convert units (cups ↔ grams)
- Handles English + Arabic



SYSTEM ARCHITECTURE



Key Technologies

Speech-to-text

Whisper (OpenAI) → Transcribe video audio

Text Embedding

OpenAI Embeddings → Convert text → vectors

Vector DB

Pinecone → Store & retrieve transcript chunks

Language Detection

langdetect → Multilingual support

Web UI

Streamlit → User interaction

QA Model

GPT-3.5 → Chef-style answers

RAG Pipeline

Query → User asks a question

Retrieve → Top-k chunks from Pinecone

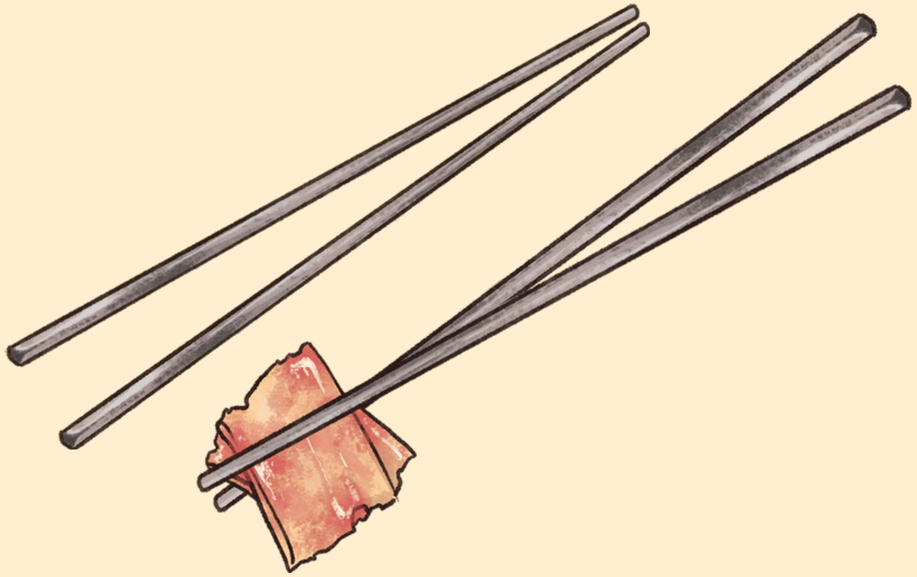
Rerank → Based on similarity

Augment → Add context to prompt

Generate → Friendly chef-style answer

KEY FEATURES

- QUESTION ANSWERING BASED ON TRANSCRIPTS
- INGREDIENT EXTRACTION FOR SHOPPING LIST
- UNIT CONVERSION (CUPS → ML, ETC.)
- FRIENDLY MULTILINGUAL ANSWERS WITH EMOJIS



Challenges & Solutions

- Problem: YouTube transcripts are often full of casual speech, grammar mistakes, and missing punctuation.
- Solution: We split the transcript into small chunks using LangChain, which made it easier for the AI to read and understand.

Challenges & Solutions

Difficulty identifying the recipe name

- Problem: Some videos don’t clearly say what recipe they are making.
- Solution: We used patterns like “how to make…” or “today we’re cooking…” to guess the recipe name

Challenges & Solutions

User questions in different languages

- Problem: Not all users ask questions in English.
- Solution: We used a language detection tool to find the user’s language and asked the AI to reply in the same language.

EVALUATION

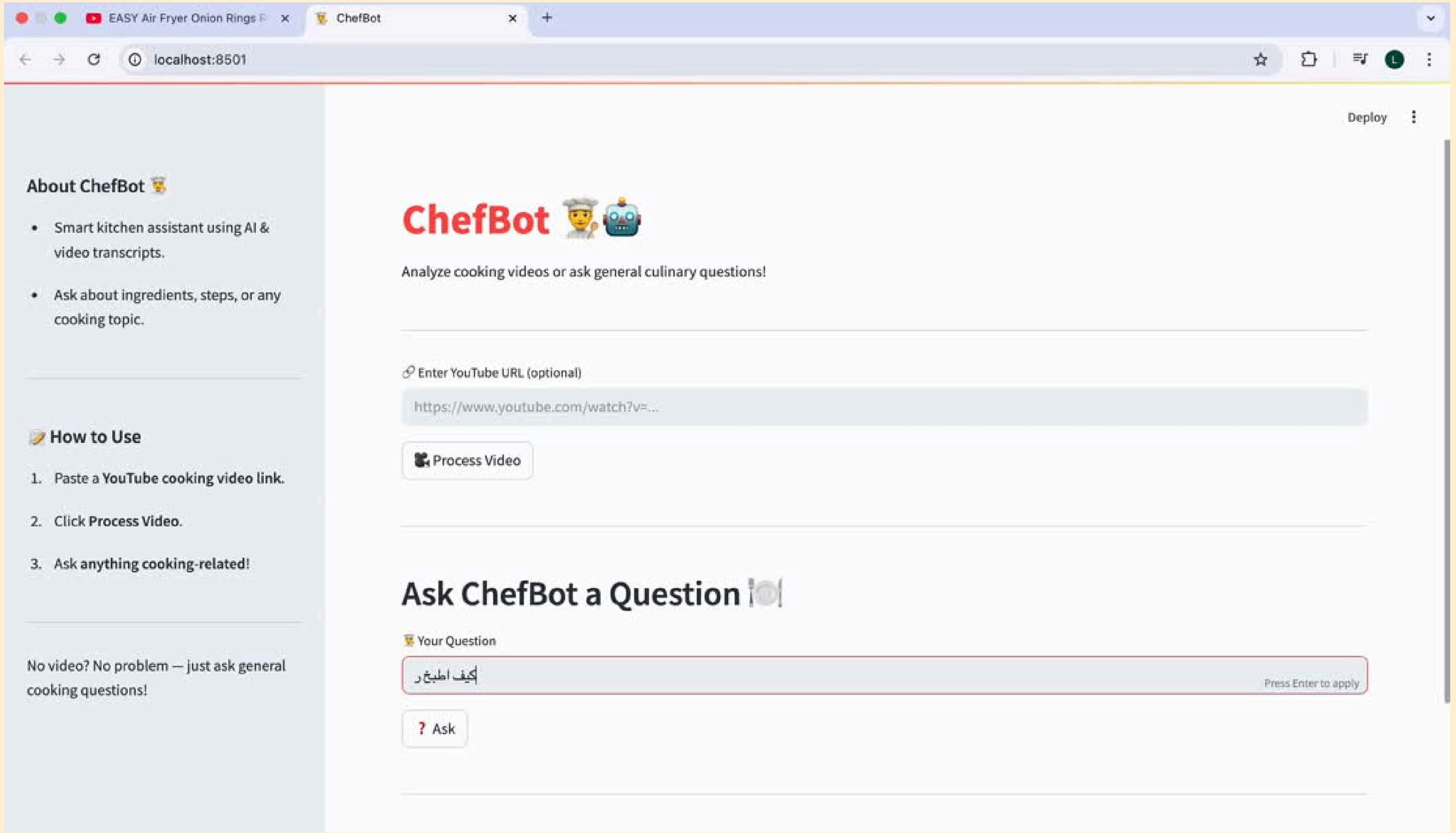
1. EVALUATION SETUP

We used LangSmith to test the model.
A small test dataset called recipe_qa_dataset_v3 was created with 3 examples.
Each example had: a question, a YouTube video URL, and the expected answer.
Sample questions:
“What is the ingredient for the recipe?”
“How long and at what temperature should I bake the pie?”
The goal was to check if the model could find and generate correct answers using RAG.

2. EVALUATION METRICS

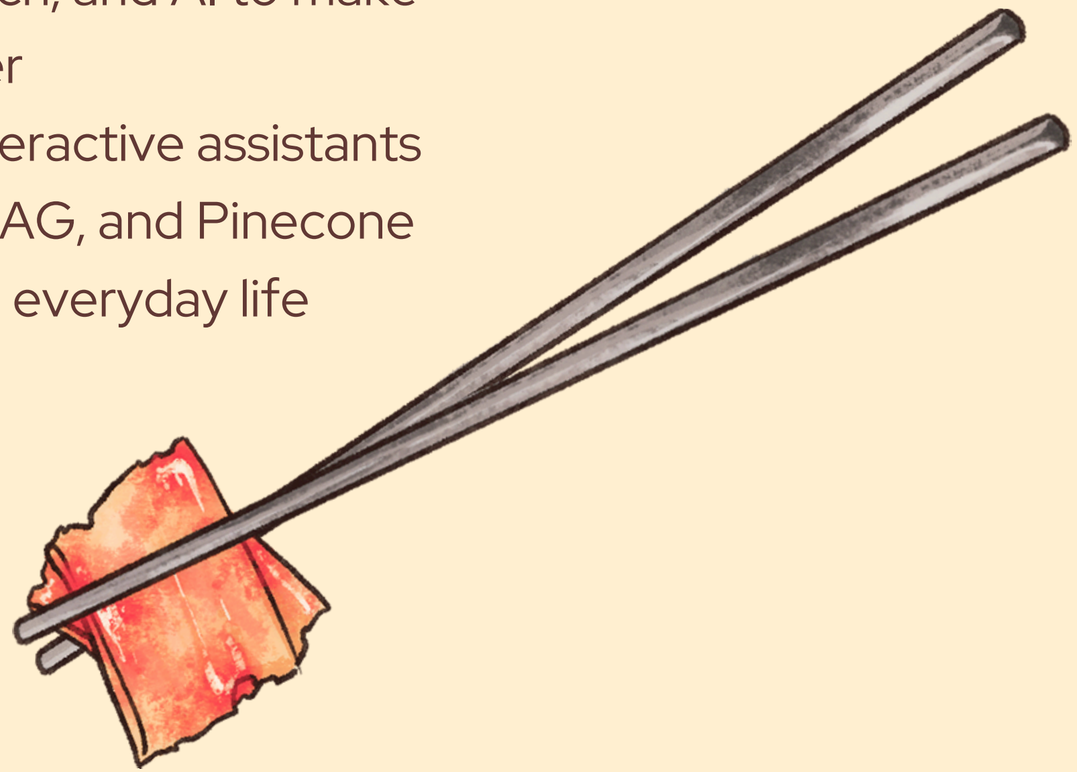
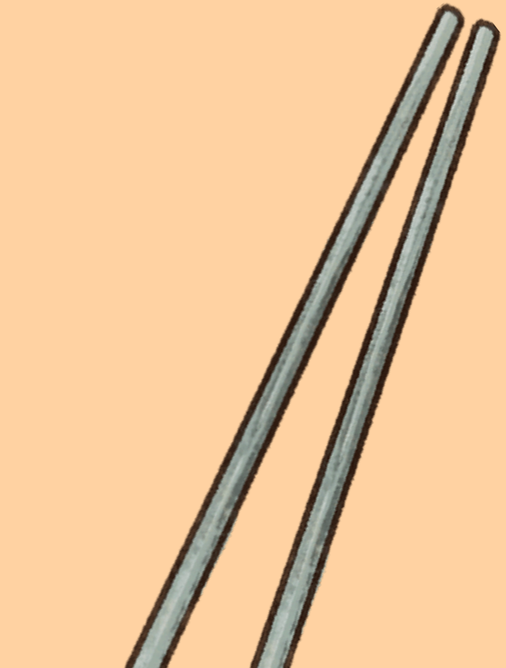
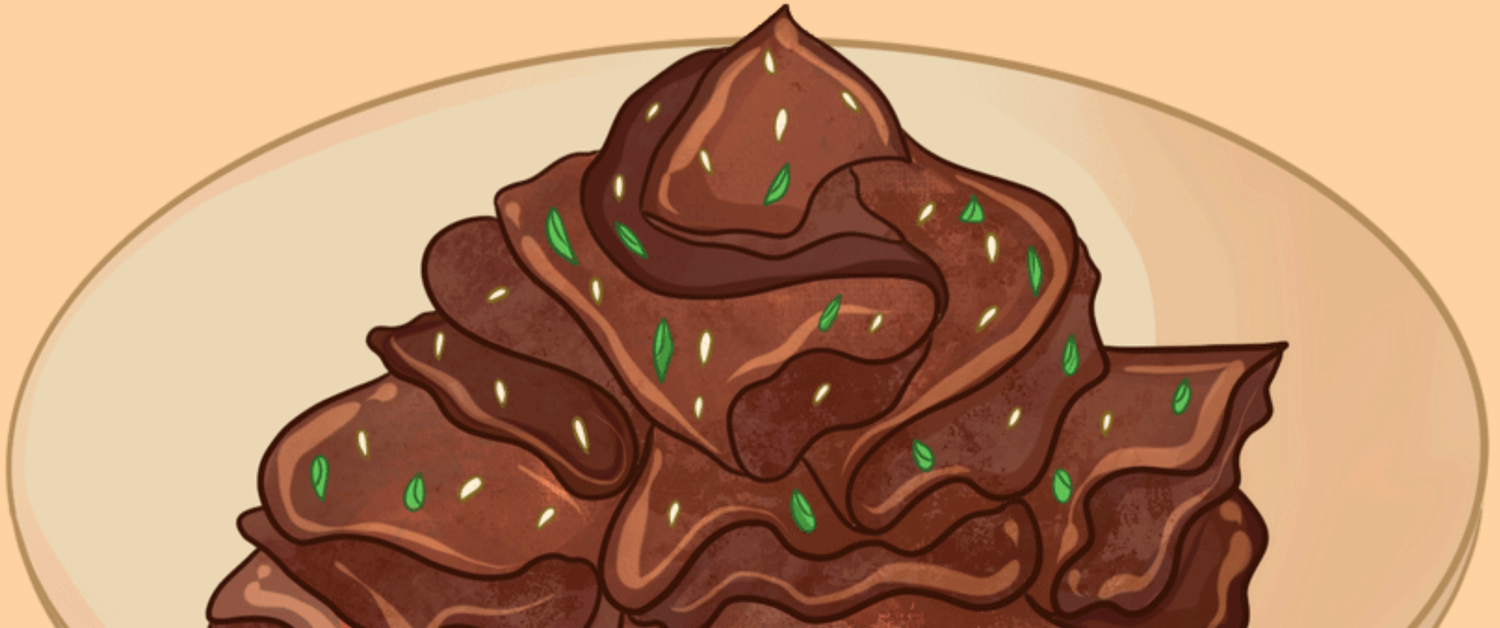
We ran three rounds of evaluation using GPT-4:
Is the answer present?
Tool: is_answered
Result: All answers were meaningful and relevant (score: 1)
Is the answer correct?
Tool: answer_correctness
Result: All answrs were factually correct and matched the expected answers (score: 1)
GPT-4 also generated explanations for each answer

STREAMLIT


EASY Air Fryer Onion Rings F
ChefBot
localhost:8501
Deploy
About ChefBot
Smart kitchen assistant using AI & video transcripts.
Ask about ingredients, steps, or any cooking topic.
How to Use
1. Paste a YouTube cooking video link.
2. Click Process Video.
3. Ask anything cooking-related!
No video? No problem — just ask general cooking questions!
ChefBot
Analyze cooking videos or ask general culinary questions!
Enter YouTube URL (optional)
https://www.youtube.com/watch?v=...
Process Video
Ask ChefBot a Question
Your Question
كيف اطبخ ر
Press Enter to apply
Ask

CONCLUSION

- ChefBot combines NLP, search, and AI to make cooking easier
- It turns passive videos into interactive assistants
- Practical use of LangChain, RAG, and Pinecone
- A great step toward AI in everyday life



THANK YOU!
FOR LISTENING