
TED UNIVERSITY

# CHEF BONO: Virtual Kitchen Assistant

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# Description of The Project

## 1. Core Problem and Solution Summary

Imagine you are on a saturday afternoon and want to cook a nice food for yourself that would comply with your eating habit (diet/ vegan/ gluten-free etc.). So, you start thinking what to cook, open your fridge and try to make sense what can you do with your current ingredients. You blindly look up some recipe that has some of your ingredients. Then notice multiple ingredients are missing and don't know what to replace them with. Also having hard time following the instructions because you can't read or remember a long tiring recipe all day. You end up finishing cooking your food and taste it. It is a disaster. And you think to yourself, why didn't I order something. Then remember, you are broke.

Well don't worry, Chef Bono is here with you! Chef Bono is a virtual assistant that fetches recipes based on your eating habit, monitors users' kitchen activities in real time, understands voice commands, and provides personalized feedback at every step of the process when asked.

## 2. Core Functionalities

Chef Bono serves as an active partner in the kitchen:

### > Step Tracking and Feedback

Ex: You started preparing the cook, chef bono tells you it's time to cut the onions. As you do that, you ask Bono, "are they cut enough" then Bono goes "they look too big, try cutting them even more"

### > Cooking Control

Ex: Chef Bono told you that the food should sit at the hot pan for 10 mins. 10 mins passes then Bono goes "time is up, if you want you can show me the food so I can tell whether it looks cooked."

### > Flexible Adjustment:

Ex: You realized you don't have any butter, so you ask, how to cook this with no butter Bono? Bono adjust the recipe based on that an explains to you.

### > Recipe Retrieval:

Ex: You can't eat diary, and your friend can't eat gluten. You ask bono to retrieve a chicken based recipece with no diary or gluten. Bono provides you recipes and you choose the to go with.

### Cleanup Reminder:

**Ex: Food is almost cooked, but the kitchen is a mess, bono reminds you to clean the visible objects on the kitchen table.**

## 3. Eating Habit Options

User will be able to filter recipes based on the following flags through natural language voice command:

'main_ingredient',
'vegetarian',
'vegan',
'gluten-free',
'dairy-free',

'nut-free',
'high_fiber',
'weight_loss/diet',
'muscle_gain/bulking',
'balanced/healthy'
'carb_score',
'protein_score',
'fat_score',
‘calorie_score',
'sugar_score'.

## 4. Technologies Used

### Software

• Gemini API (LLM)
• Kokoro (TTS)
• Gemini API (for the beginning Image / Video Processing)
• Tuned models with Yolo/ pytorch/ opencv (for the future Image / Video Processing)
• Python (General Flow, backend & frontend)
• Cookbooks (Recepies and ingredients)
• SpeechRecognition python library (STT)
• SQL lite (for storage)

### Hardware

• Laptop ( built in microphone, speaker )
• Camera

Technologies may alter. As the project progress.