

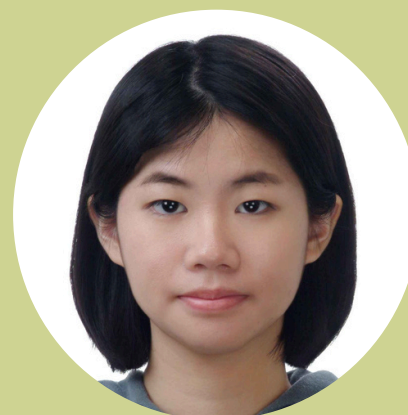
# appetAlwan

(APPETITE + AI + TAIWAN)

GROUP 3



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Information Management,  
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Information Management,  
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DATE : JUNE. 04, 2025



**SOFTWARE ENGINEERING MIDTERM**  
**WEBSITE: [HTTPS://APPETAIWAN.GITHUB.IO/](https://appetaiwan.github.io/)**  
**INSTRUCTOR: MIN YUH DAY**

# CONTENT

- 01. PRODUCT BACKGROUND
- 02. PERSONAS, SCENARIOS AND STORIES
- 03. STP/4P/SWOT ANALYSIS
- 04. PRODUCT DEVELOPMENT PROCESS
- 05. PRODUCT FUNCTIONS AND DEMO
- 06. BUSINESS MODEL



# Product Background and User Scenarios

We explain the motivation behind our system and illustrate how different users interact with it.



**Chieh-Yu TIEN (Jenny)**  
Information Management,  
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# Product Background



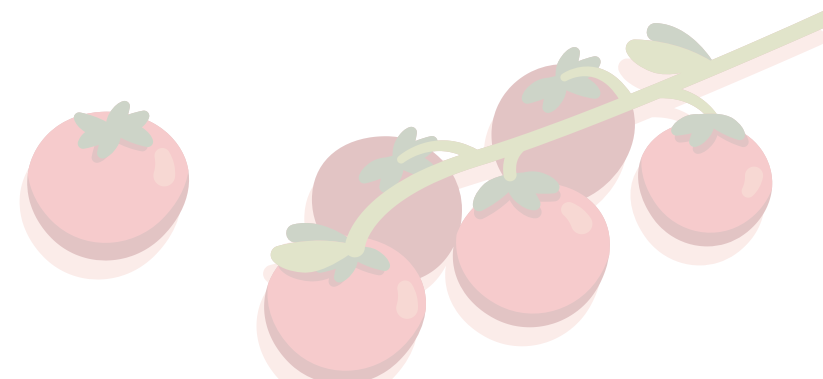
## Hard to Eat Right When Eating Out

- People care more about **healthy eating** and want to control **calories, protein, and sodium**.
- But **eating out lacks clear nutrition info**, making it hard to track intake.
- This drives demand for simple, nutrition-aware home recipes.



## Recipes Lack Personalization

- Most platforms just show how to cook.
- They don't filter based on **health needs** like hypertension or nutrition goals.
- Users have to search and calculate nutrients on their own.







Mary

Age:55

Identity:

Housewife

## Background

- Suffers from **hypertension**
- Primarily **cooks** meals **at home**
- **Not good with tech**, but knows how to **use Line**.

## Objective

Hopes to improve health through diet and home cooking, and prefers **not to rely on medication** for control.

## Challenges

- Doesn' t know how to read **nutrition labels**.
- Afraid tech is too hard to use.

## Scenario

When filling in her personal information, she selects the hypertension category. The system automatically filters suitable recipes for her, making it easy to understand and clear when choosing what to eat.

## User Story

As a hypertension patient who isn' t good with technology and often feels confused about how to cook healthily, I hope to have a simple tool that tells me what I can eat, so I can confidently manage my diet.



**Ben**

**Age:** 30

**Identity:** Office worker

## Background

- Wants to **lose weight** due to obesity
- Plans to control diet by cooking at home
- Has **limited knowledge** about **nutrients** required for weight loss

## Objective

- Find simple, weight-loss-friendly recipes
- Quickly decide what to cook after work
- Build healthy habits and steadily lose weight

## Challenges

- Lacks knowledge to choose the right foods
- Too busy to study calories and nutrients
- Overwhelmed by too many or unclear recipe options

## Scenario

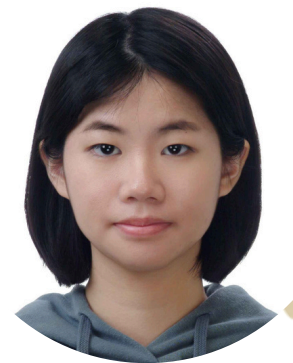
After work, he opens the LINE Bot and selects "Weight Loss." Based on his personal information, the system calculates and recommends suitable recipes with cooking steps and nutritional information, helping him prepare meals quickly and stay on track with his dietary goals.

## User Story

As a busy office worker trying to lose weight, I **want quick recipe suggestions** that fit my needs, so I can eat healthy without extra effort.

# STP Analysis , 4P Analysis and SWOT Analysis

This section shows how we apply STP, 4P and SWOT to better understand our target users and position our product.



**Jia-Ci WEN (Janet)**  
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# STP ANALYSIS

## Segmentation

**Body Condition:** Normal weight /  
Overweight/ Obese

**Medical History:** No condition/  
Hypertension / Diabetes

**Health Goals:** Maintain weight / Weight  
loss / Manage blood pressure

**Physical Activity Level:** Sedentary /  
Light / Moderate / Active / Very Active

**Technology Usage Habits:** LINE user /  
Health app user

**Cooking Habits:** Regular home cook /  
Occasional cook / Does not cook

## Targeting

Overweight or obese LINE  
users with health goals (e.g.,  
weight loss, blood pressure  
control) who cook at home ,  
seeking simple and  
personalized dietary advice.

## Positioning

**"Your personal smart  
meal assistant on LINE —  
tailored to your body,  
habits, and goals."**



# 4P ANALYSIS



## PRODUCT

### Core Features

- ◆ Daily calorie estimation (TDEE)
  - ◆ Smart recipe recommendations
- ◆ Nutrition info & food comparison
  - ◆ Cooking tips and interactive guidance

## PRICE

### Short-term

Free basic features for all users

### Long-term

Free basic features  
&  
**feature-based unlock model**

## PLACE

**LINE Bot**

## PROMOTION

### Social media

LINE official account

### Collaborative promotion

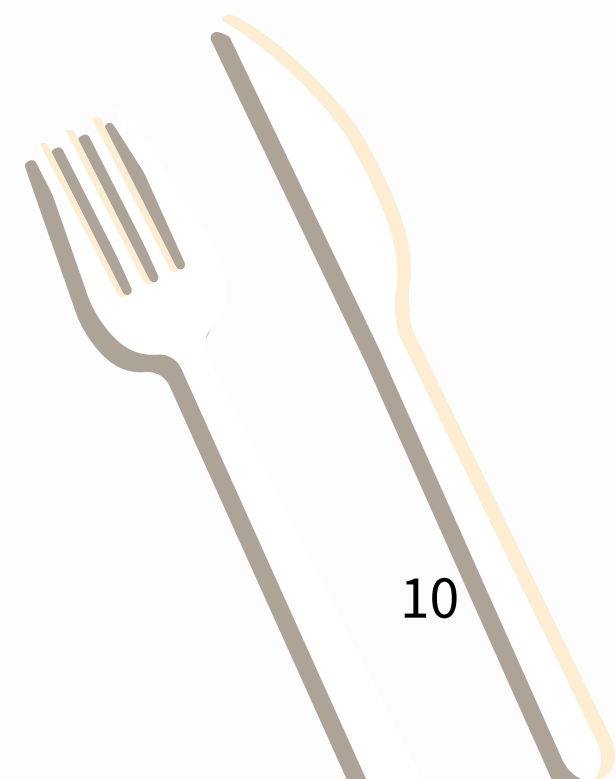
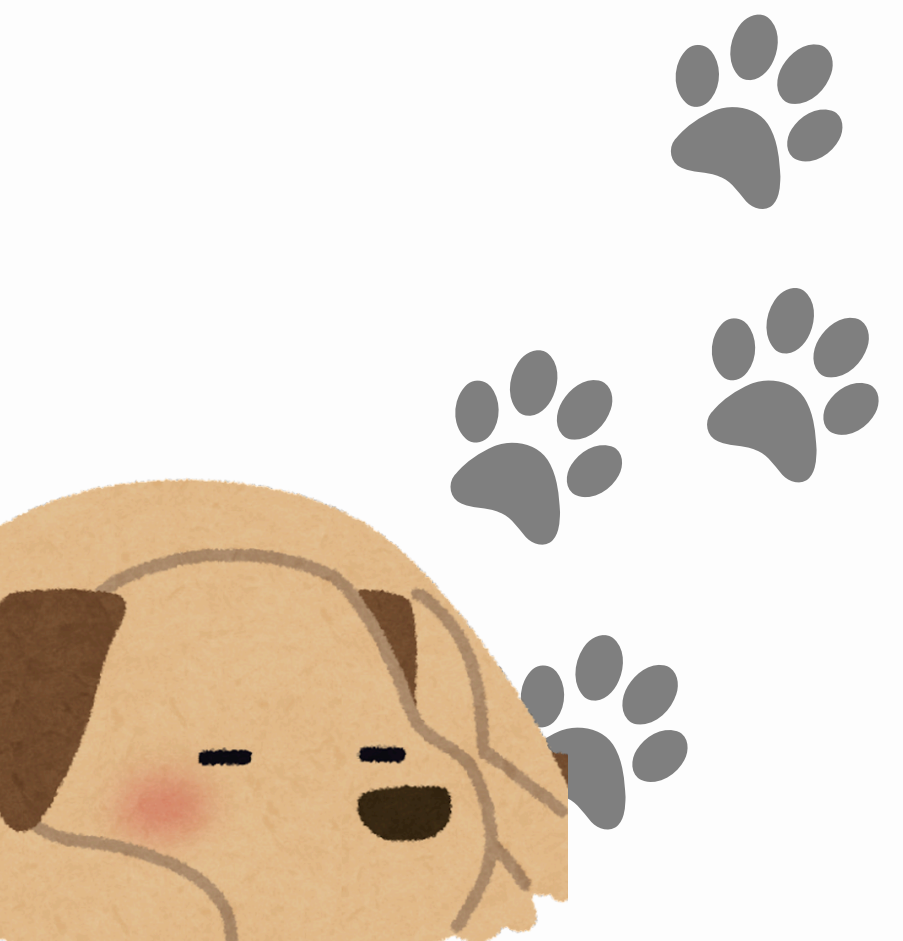
KOL & nutritionist

### Offline promotion

(QR codes in clinics, gyms, markets)



# MARKETING





# SWOT ANALYSIS

## STRENGTHS

- **AI Tools**  
Application of advanced technologies such as LLM and RAG.
- **Line**  
Leverages LINE, a widely-used and familiar platform

## WEAKNESSES

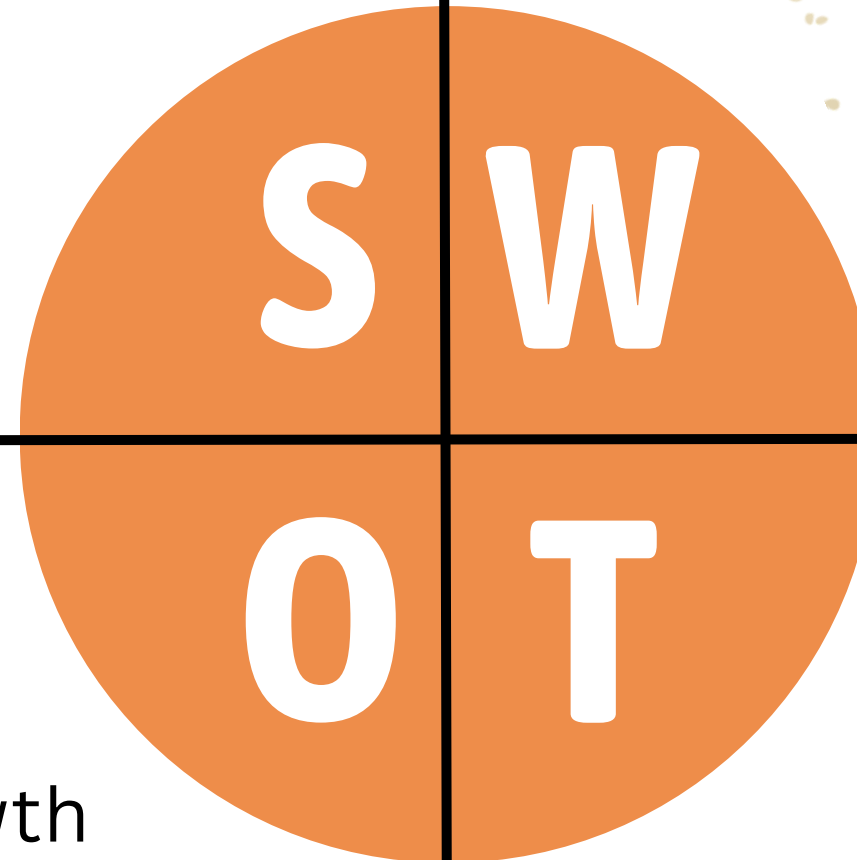
- Users may doubt or hesitate to trust AI recommendations

## OPPORTUNITIES

- Healthy Eating Market Growth
- Opportunities for cross-industry partnerships

## THREATS

- Established competitors in the health and nutrition space
- Competitors are easily to replicate



# Product Development process



**Hsin-Ting Lu (Bob)**  
Information Management,  
NTPU

# Our Team

---

**Jenny**



## UI/UX Designer

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- Message tone design
- Brand Icon Design

**Janet**



## Product Manager

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- Design recipe recommendation flow
- Task scheduling

**Bob**



## Full-Stack Developer

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- Data processing
- LINE API integration and deployment



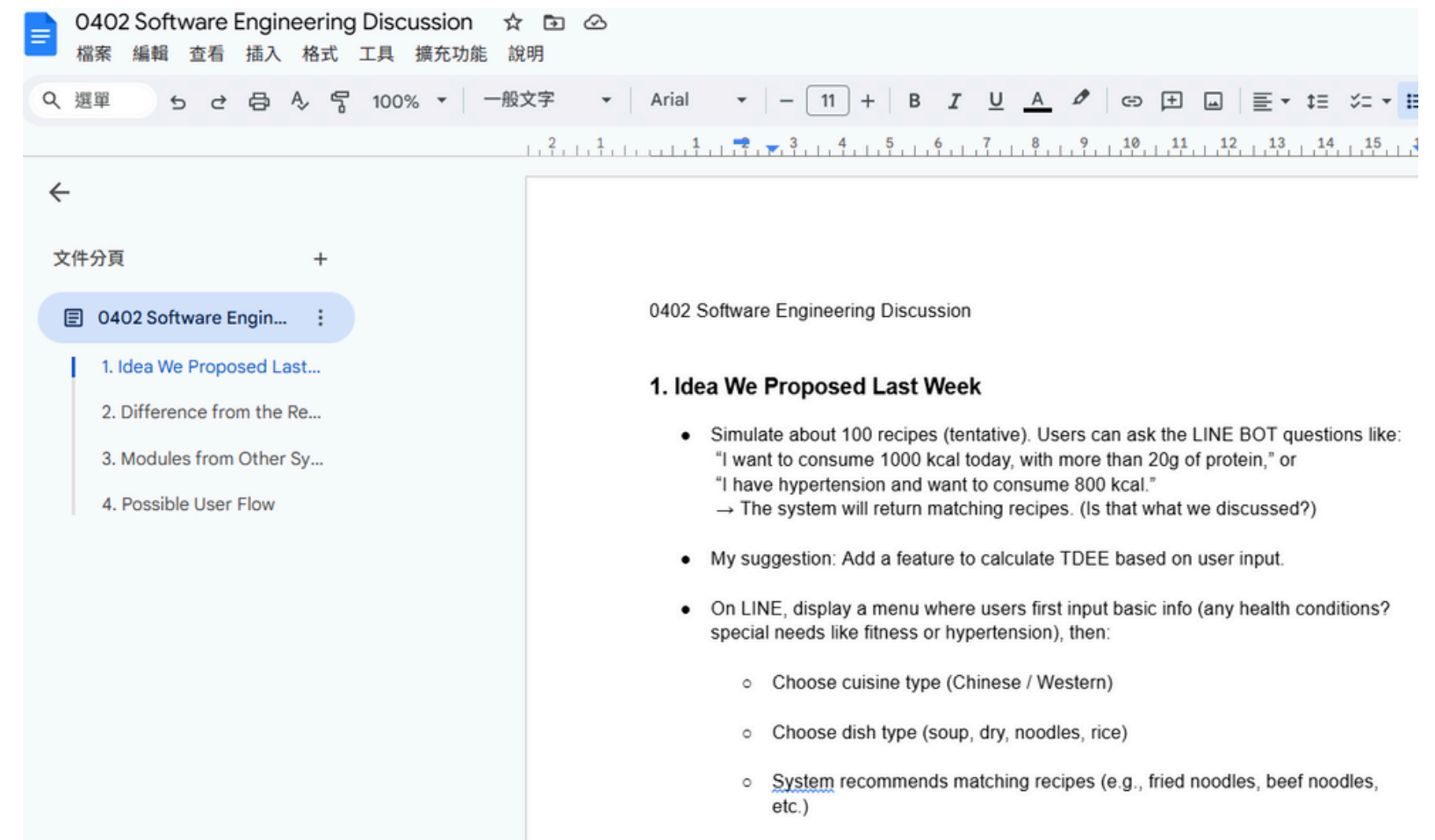
# Development process

## System Planning and Conversation Flow Design

## System Development

## LINE Bot Integration and Testing

- 🤖 Conducted initial discussion using Google Shared Documents
- 🤖 Defined main LINE Bot functions and response logic:
  - Recipe keyword search
  - Nutrition-based suggestions
- 🤖 Mapped out conversation flows
  - User input methods
  - System response logic
- 🤖 Team collaboration enabled rapid updates and improvements
  - Real-time comments, edits, and idea alignment
  - Shared documents improved collaboration efficiency

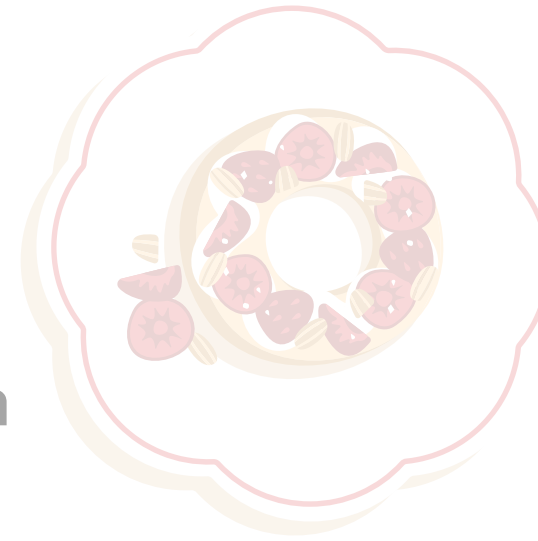


# Development process

System Planning  
and Conversation Flow Design

System Development

LINE Bot Integration  
and Testing



We developed our system in Python, integrating RAG into a LINE Bot.

 Retrieval Module:

- Loads recipe data
- Splits it into chunks and builds a vector index

 Interaction Module:

- Receives user queries via LINE
- Retrieves relevant content and sends it to OpenAI API for generation
- Returns AI-generated answers through the LINE Bot API

This setup enables our bot to provide accurate, contextual answers to user questions about recipes and nutrition.

```
56  def initialize_rag(partitions, model_name="intfloat/multilingual-e5-base"):  
57      device = "cuda" if faiss.get_num_gpus() > 0 else "cpu"  
58      embed_model = SentenceTransformer(model_name, device=device)  
59      indexes, segments_map = {}, {}  
60      for sec, texts in partitions.items():  
61          embs = embed_model.encode(texts, show_progress_bar=True)  
62          dim = embs.shape[1]  
63          idx = faiss.IndexFlatL2(dim)  
64          idx.add(np.array(embs, dtype="float32"))  
65          indexes[sec] = idx  
66          segments_map[sec] = texts  
67      return embed_model, indexes, segments_map  
68  
69  def query_rag(query, embed_model, indexes, segments_map, top_k=3, threshold=1.5):  
70      q_emb = embed_model.encode([query])  
71      results = []  
72      for sec, idx in indexes.items():  
73          dists, ids = idx.search(np.array(q_emb, dtype="float32"), k=top_k)  
74          for dist, i in zip(dists[0], ids[0]):  
75              if i >= 0 and dist < threshold:  
76                  results.append(segments_map[sec][i])  
77      return results
```

# Development process

System Planning  
and Conversation Flow Design

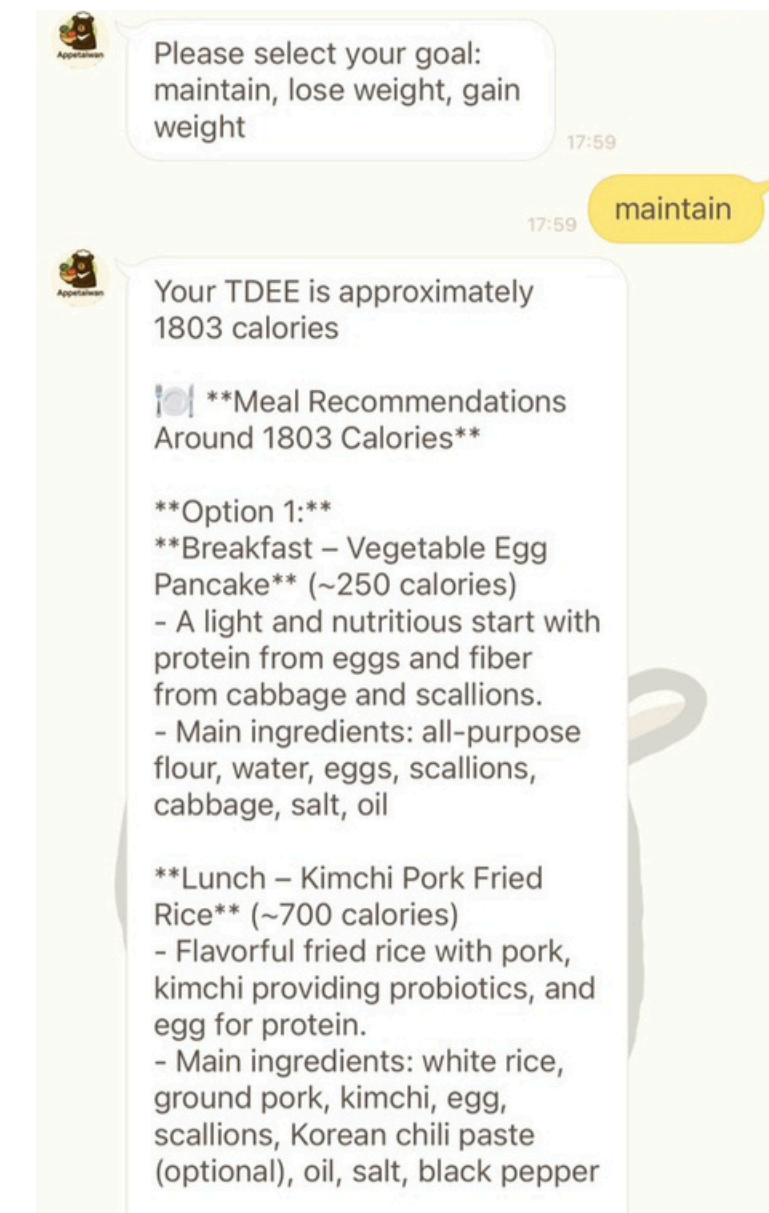
System Development

LINE Bot Integration  
and Testing

We integrated our system with LINE Bot API, enabling real-time interaction with users.

- Users send questions via LINE (e.g., calorie needs, dietary goals)
- Tested and refined response formats to improve clarity and user experience
- Ensured smooth message flow and logic with multiple test cases

This phase ensured our bot delivers helpful, accurate responses in a natural conversation flow.





# Software Architecture (1/2)



1. Send Message

3. Return Reply

LINE Platform

Reply Message

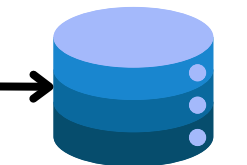
2. Webhook POST  
/callback

Cloud Infrastructure

Cloud run

Flask + line-bot-sdk

Store user  
replies



Firebase

Intent Detector  
(OpenAI SDK)

Intent = RAG

Intent = TDEE

Call



OpenAI Chat API

Recipe data

RAG Engine

TDEE Module

# Software Architecture (2/2)

## RAG Engine

- Converts recipe text into a searchable vector database
- Finds the most relevant context for user queries
- Builds the knowledge base for GPT

## OpenAI Chat API

- Uses RAG output as context
- Generates fluent, user-friendly responses
- Blends retrieved facts with GPT's language skills
- Delivers accurate and engaging answers

**RAG provides the facts,  
GPT delivers them naturally**

**together, they power  
Appetaiwan, our smart  
recipe & nutrition bot.**

# Product Functions and Demo



**Jia-Ci WEN (Janet)**  
Information Management,  
NTPU



# PRODUCT FUNCTIONS

scan this



## TDEE CALCULATION

- Calculate **daily calorie** requirements
- **Personalized basal metabolic rate** analysis
- **Goal-adjusted calorie** recommendations

## RECIPE QUERIES

- Various **cooking methods**
- Detailed **step-by-step** instructions
- **Cooking tips** and tricks

## FOOD CALORIE QUERIES

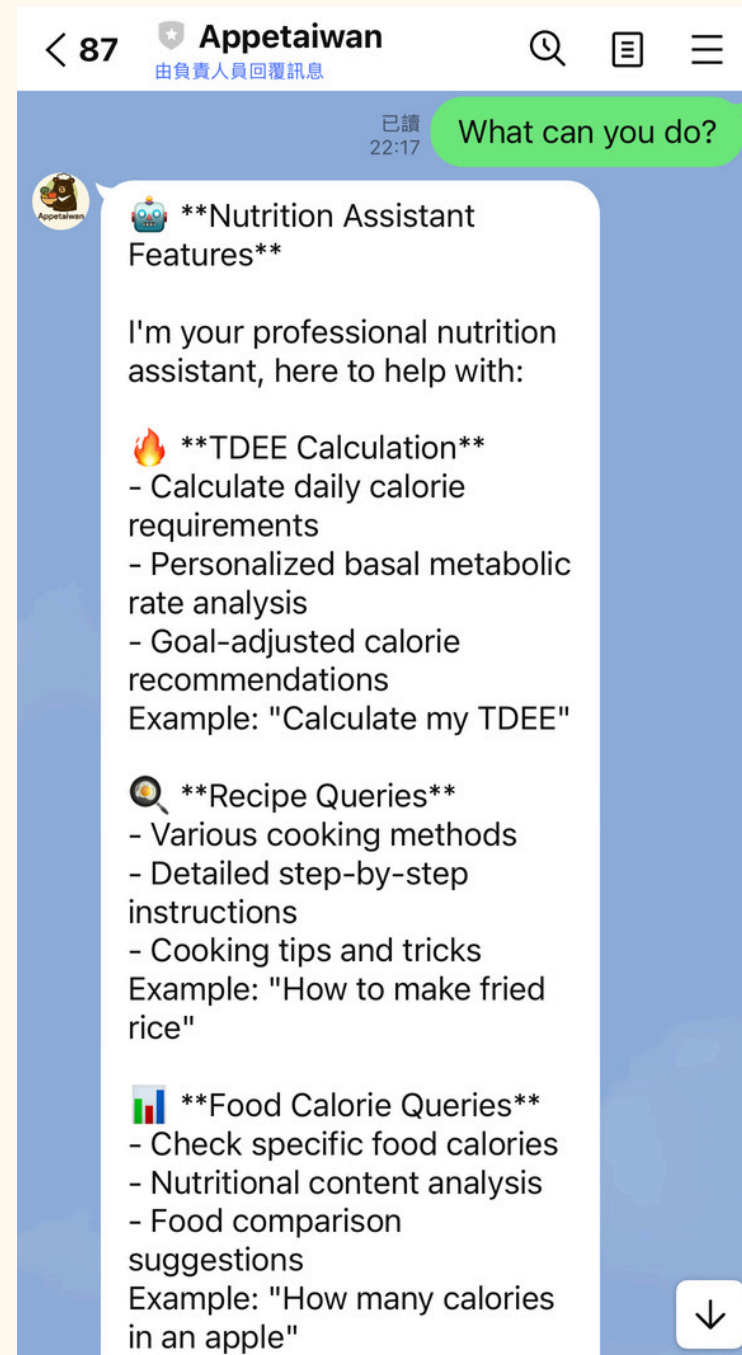
- Check **specific food calories**
- **Nutritional content** analysis
- Food **comparison** suggestions

## PERSONALIZED MEAL RECOMMENDATIONS

- Meal suggestions based on **calorie needs**
- **Customized dietary** advice
- **Weight loss/gain** meal

**Friendly interactive conversations**

# PRODUCT FUNCTIONS



**If you're not sure what Appetaiwan can do, you can simply ask about its features.**



**scan this**

# STEPS TO USE APPETAIWAN

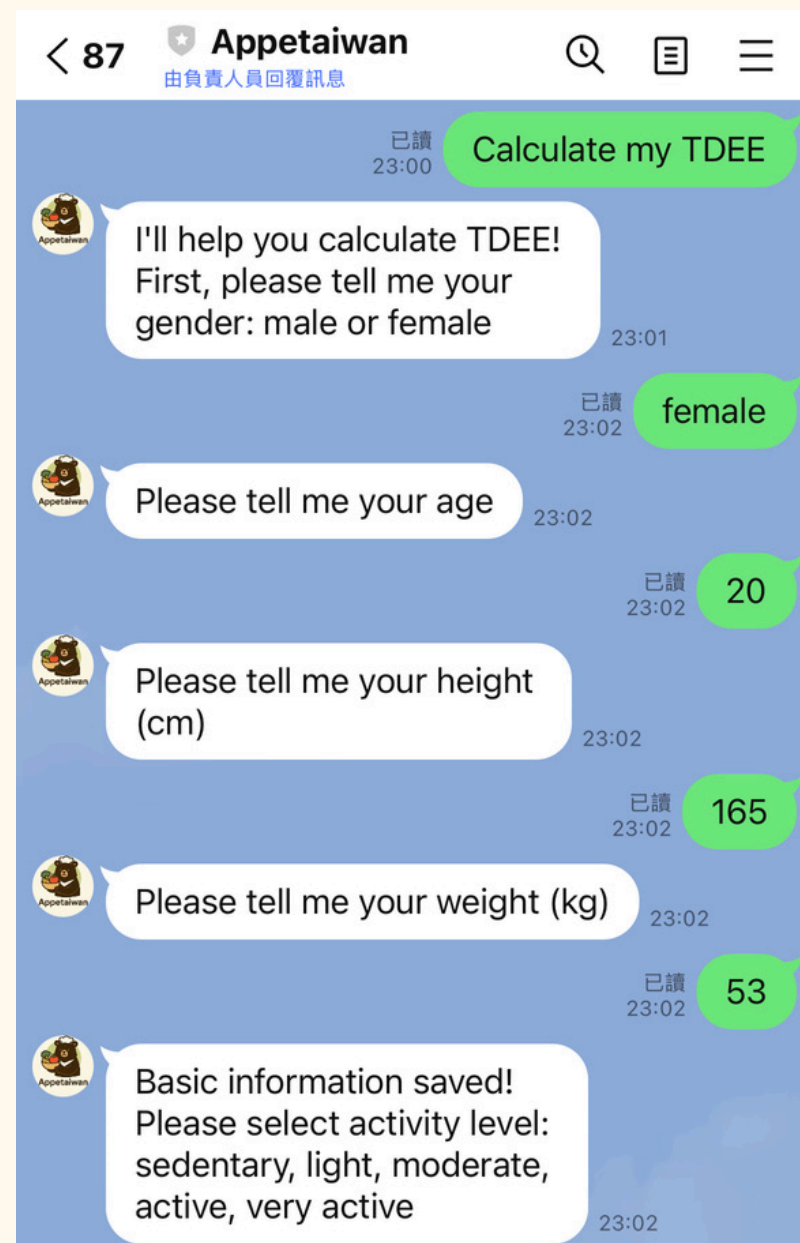
## STEP 1

Add as a Friend  
Search:Appetaiwan



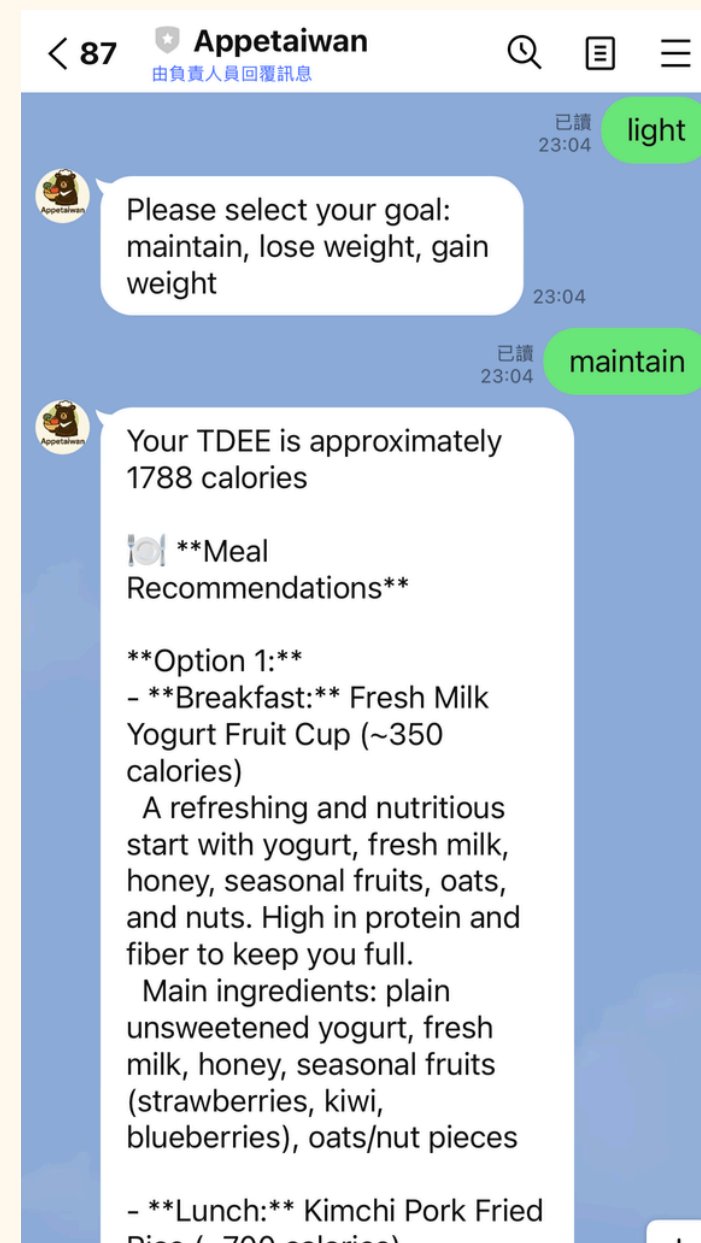
## STEP 2

Start the Chat  
Input Your Info



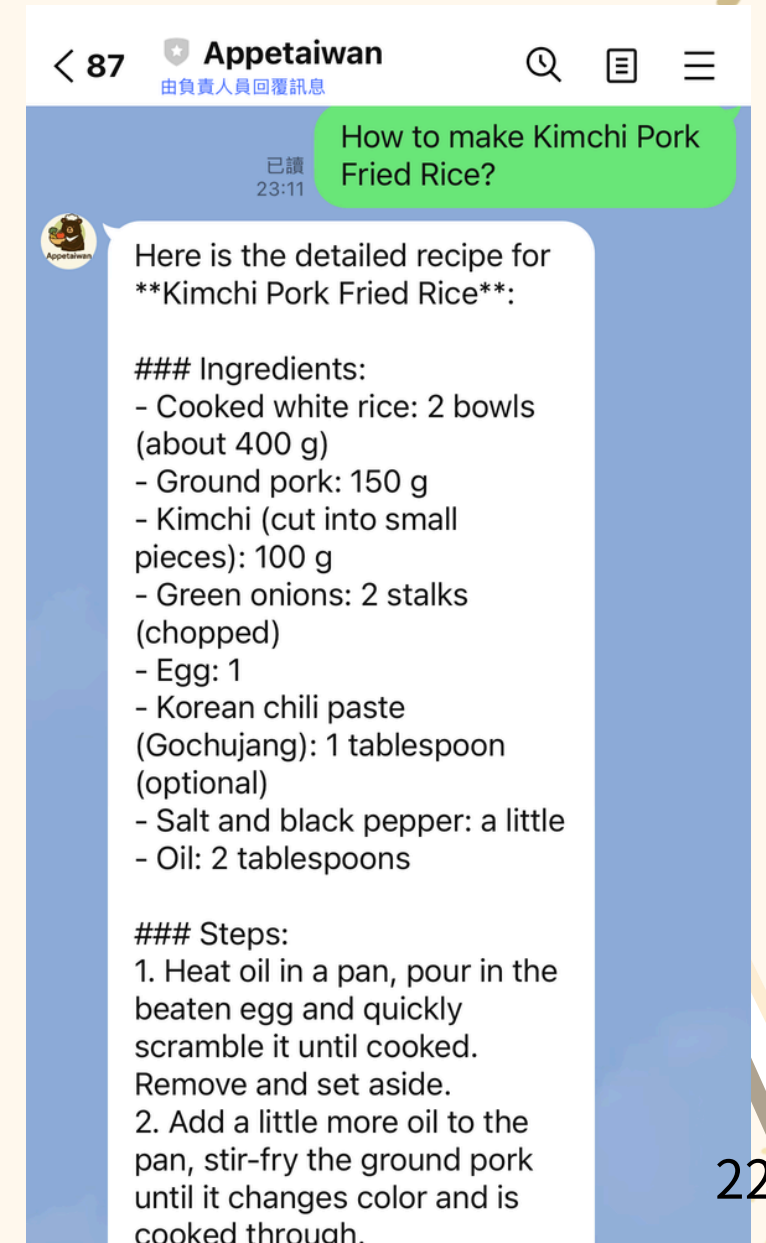
## STEP 3

Get TDEE and Meal  
Suggestions



## STEP 4

View Full Recipe  
Details





# Business Model



**Chieh-Yu TIEN (Jenny)**  
Information Management,  
NTPU

## Key Partners

- Marketing partners
- Restaurant

## Key Activities

- Expand the food database
- User analysis
- Continue developing system features
- Enhance user experience flow

## Key Resources

- Food Database
- User Database
- Platform Tools
- Research and Development Team

## Value Proposition

- Provide AI-powered meal recommendations based on users' health conditions and goals
- No need to download an app, easy and instant access
- Support various use cases such as chronic disease management, weight loss, and nutrition tracking
- Users receive personalized recipes and dietary suggestions via LINE conversations

## Customer Relationship

- LINE push notifications for regular follow-up
- AI chatbot for meal Q&A

## Channels

- Social Media(Line Chatbot)
- Health-related Community

## Customer Segments

- Health-focused adults who are overweight, obese, or managing chronic conditions
- LINE users who cook at home regularly or occasionally
- Individuals seeking personalized dietary advice for weight control, blood pressure management, or healthy living

## Cost Structure

- AI model hosting and API integration fees
- LINE Official Account and push message limits
- System development and maintenance
- Data update and maintenance
- Ads

## Revenue Streams

- Advertising
- Partner Income
- Premium features

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# Q&A appetAIwan

(APPETITE + AI + TAIWAN)

GROUP 3



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**DATE : JUNE. 04, 2025**



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