



WEIGH TO GO

EAT NOW, REGRET LATER!

AI-powered app that simplifies meal tracking
and provides accurate nutritional insights
tailored to local diets.



Team DeepSleep



SUFFICIENT AND BALANCED NUTRITION: A CHALLENGE

The World Health Organization (WHO) estimates that up to 80% of heart disease, stroke, and type 2 diabetes, and 30-50% of cancers could be prevented through healthy lifestyle choices, including better nutrition.

There is a clear need for a reliable, informative and easy-to-use tool for monitoring nutritional intake.

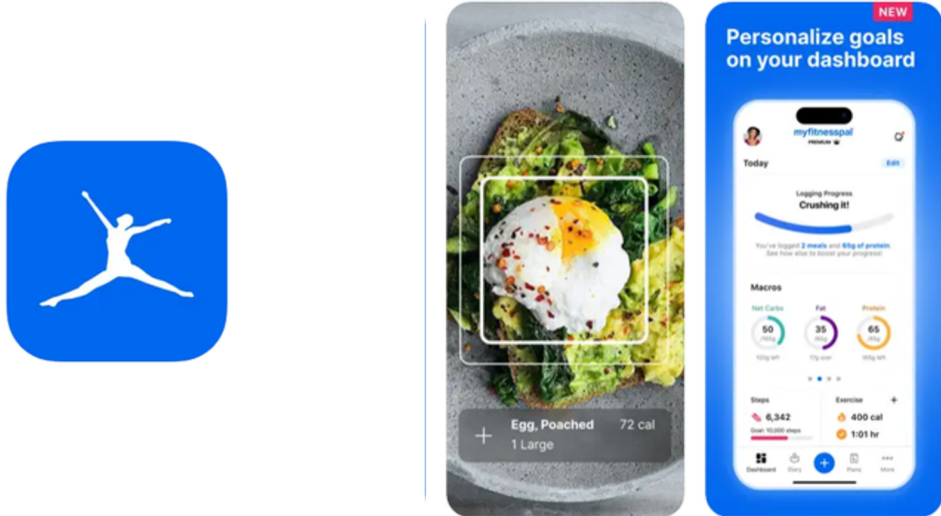
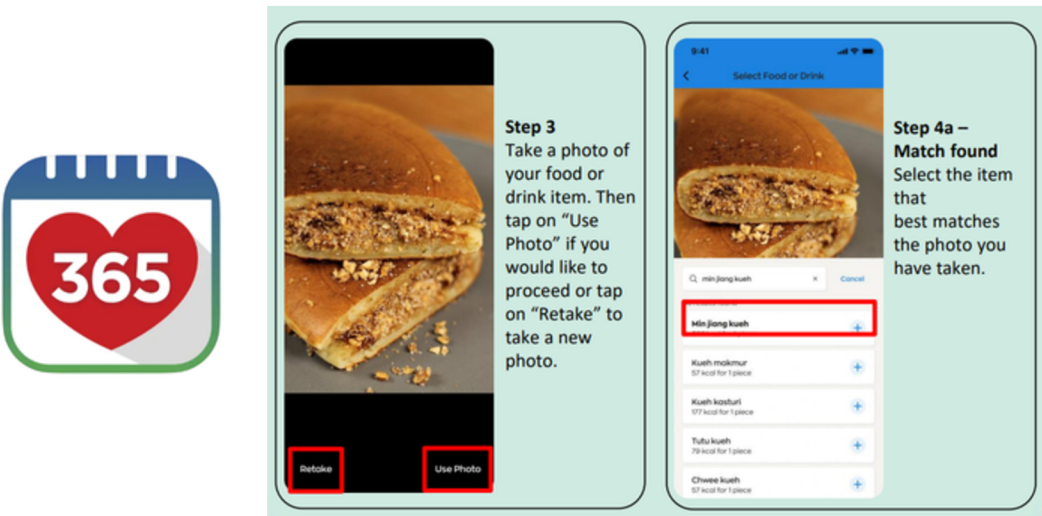
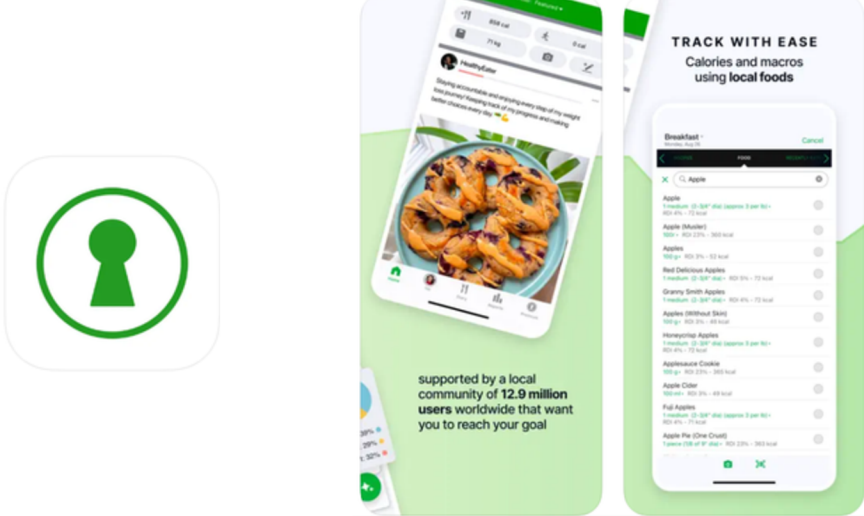
PROBLEM STATEMENT

Existing calorie-tracking apps rely on manual input and lack accuracy in portion estimation. Food recommendations are also not contextualised sufficiently for Singapore. This makes food logging time-consuming and unreliable.

How might we provide real-time, personalised dietary insights to promote healthier eating among Singaporeans?



STATE OF THE ART

MyfitnessPal: Calorie counter	Healthy365: Meal log tool	Calorie Counter by fatsecret
		
Features • Image recognition to log food types • Barcode scanner for quick entry of packaged foods • Community Forums for motivation and advice	Features • Image recognition to log food types • Contextualised to Singapore foods • Connects with Singaporean health programs and events	Features • Image recognition to log food types • Barcode scanner for quick entry of packaged foods • Provides a visual overview of calories consumed and burned over time
Gaps • Requires <u>user input</u> to select the food items detected in the photo (and manually add undetected foods) • Food items <u>only include individual ingredients</u> rather than whole dishes • <u>Lack comprehensive data on Singaporean dishes</u>	Gaps • Requires <u>user input</u> to select the food item that best matches the photo taken • <u>No detailed breakdown</u> into individual ingredients • Depends on user-provided portion sizes, which can be subjective	Gaps • <u>Does not provide detailed analysis of individual ingredients</u> within complex dishes • <u>Customized for US foods and brands</u>

OUR SOLUTION: WEIGH TO GO

Our AI-powered app simplifies meal tracking by automatically identifying local dishes, providing accurate nutritional insights, and providing meal recommendations tailored to local diets.

KEY FUNCTIONS:



NUTRITIONAL ESTIMATION OF YOUR MEAL



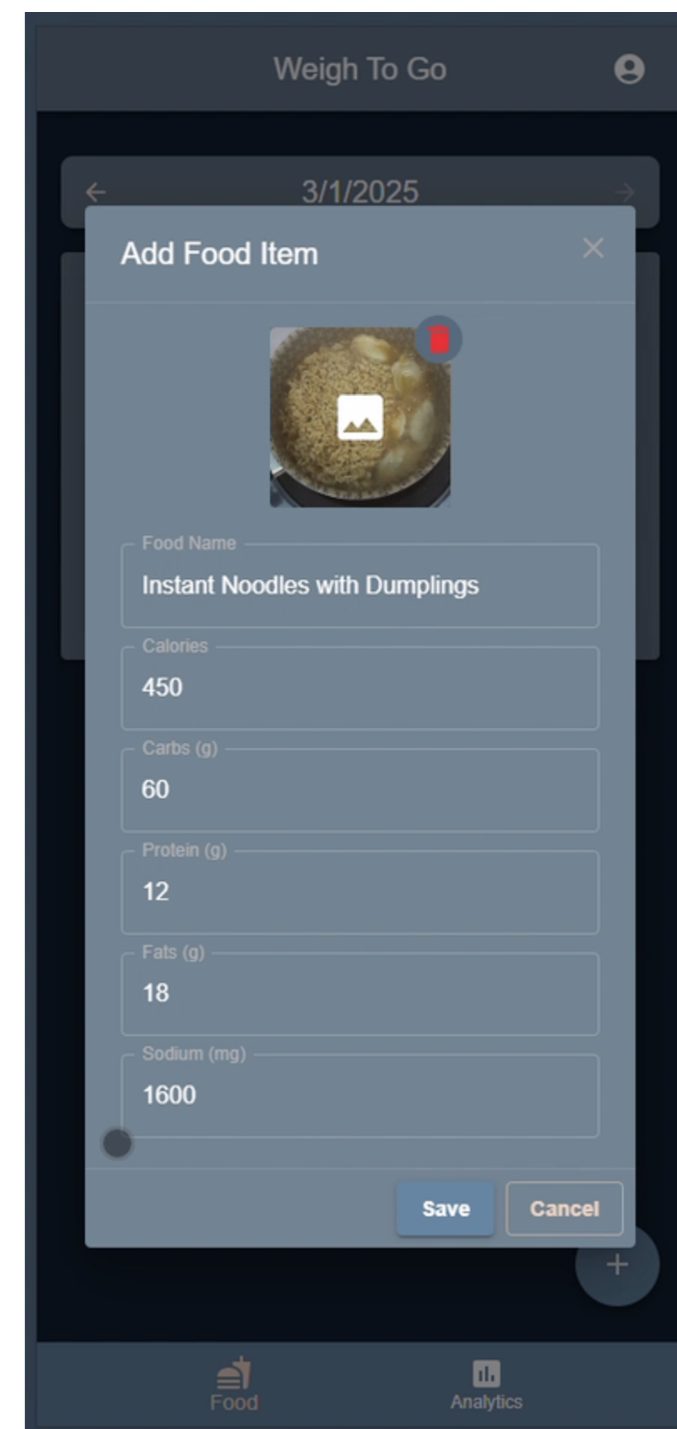
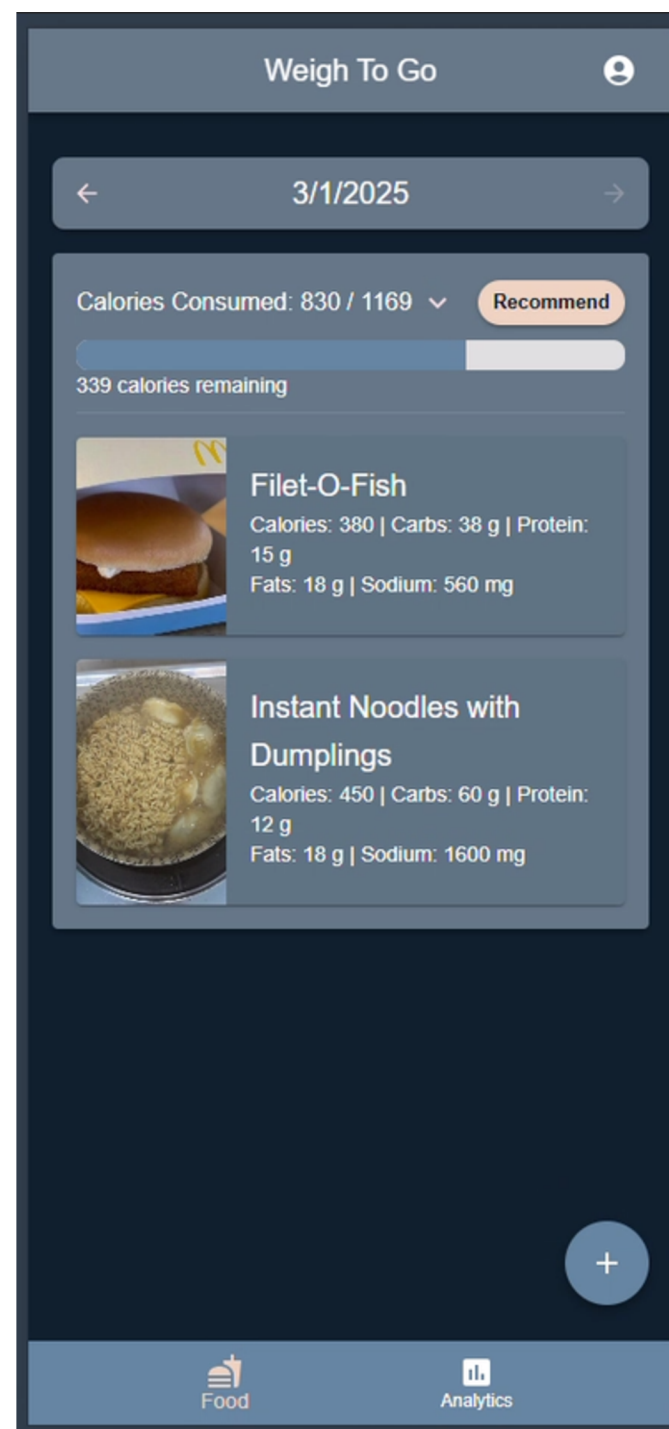
CALORIC EXPENDITURE FOR THE DAY



MEAL/FOOD RECOMMENDATION



NUTRITIONAL ESTIMATION OF YOUR MEAL



WITH A SINGLE IMAGE, WEIGH TO GO:

- Identifies the main nutritional ingredients.
- Breaks down and stores information on
 - Calories
 - Carbs
 - Protein
 - Fats
 - Sodium
- Is capable of recognising popular foods in Singapore.



CALORIC EXPENDITURE FOR THE DAY

Weigh To Go

Name: Ryan

Email: wangwangwang@gmail.com

Age (years): 24 Height (cm): 140

Weight (kg): 44.3 Medical Conditions: High cholesterol

Target Weight Goal (kg): 70

Steps per Day: 2

Target Weight Loss per Week: 0.25 kg/week

BMR (Basal Metabolic Rate): 1203

Estimated Caloric Expenditure: 1444

Daily Calorie Target: 1169

Save Cancel

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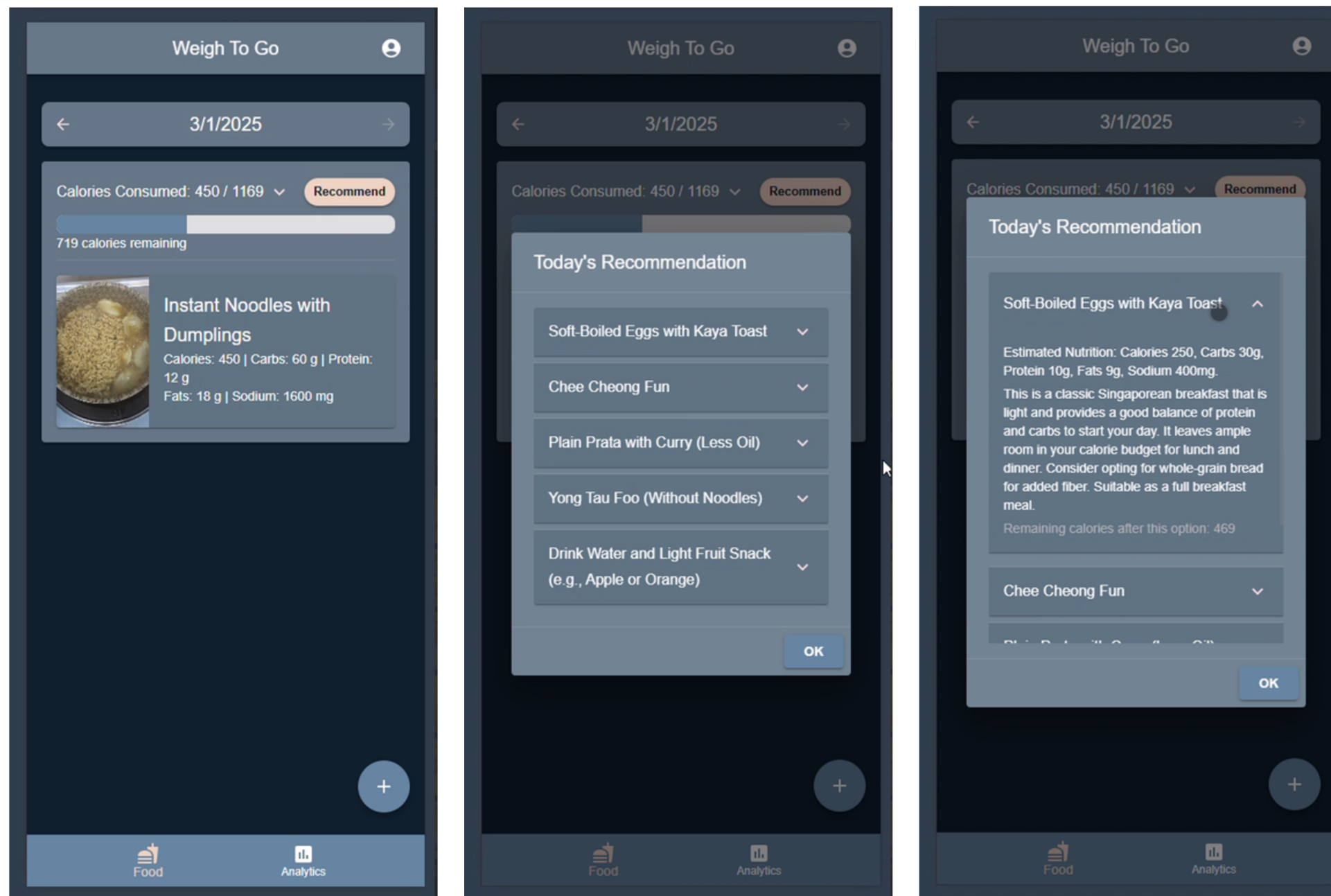
Edit Profile

TRACKING CALORIE CONSUMPTION

- Fill in some details about your health and fitness goals on the profile page
- Based on this and the nutritional intake from previously logged meals, track your daily consumption
- Know more than just the calories, track key macronutrients essential for a healthy lifestyle.



MEAL/FOOD RECOMMENDATION



FOOD SUGGESTIONS WITHIN EASY REACH

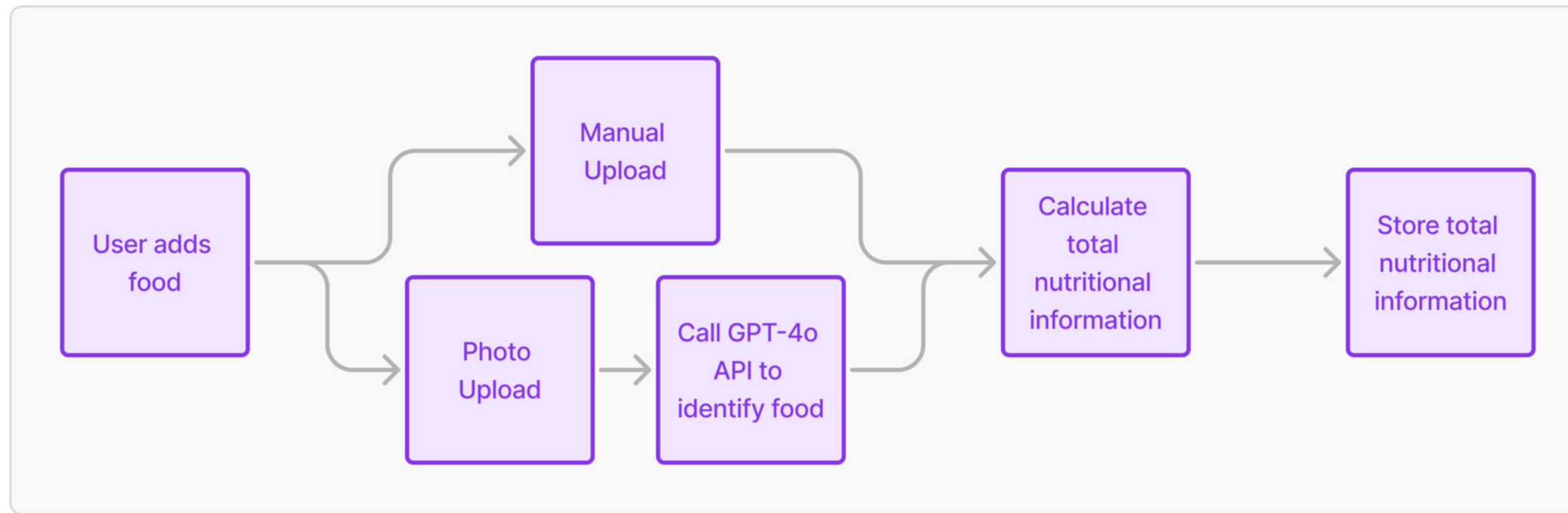
- Provides realistic suggestions – food available at home, food courts and nearby supermarkets

CONTEXTUALISED TO SINGAPORE FOODS

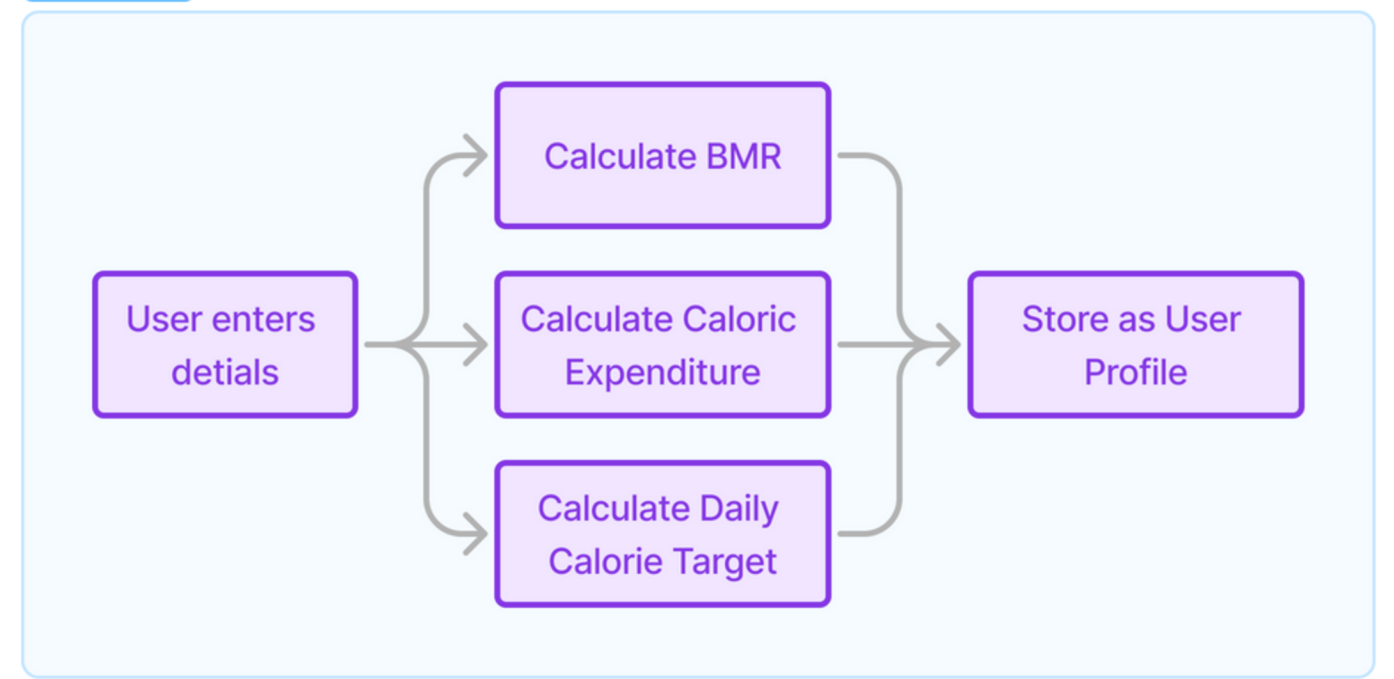
- Dish recommendations are relevant to the Singapore palate
- Healthy recommendations – less rice, selecting soup options – are appropriate for Singaporean foods

WORKFLOW DIAGRAMS

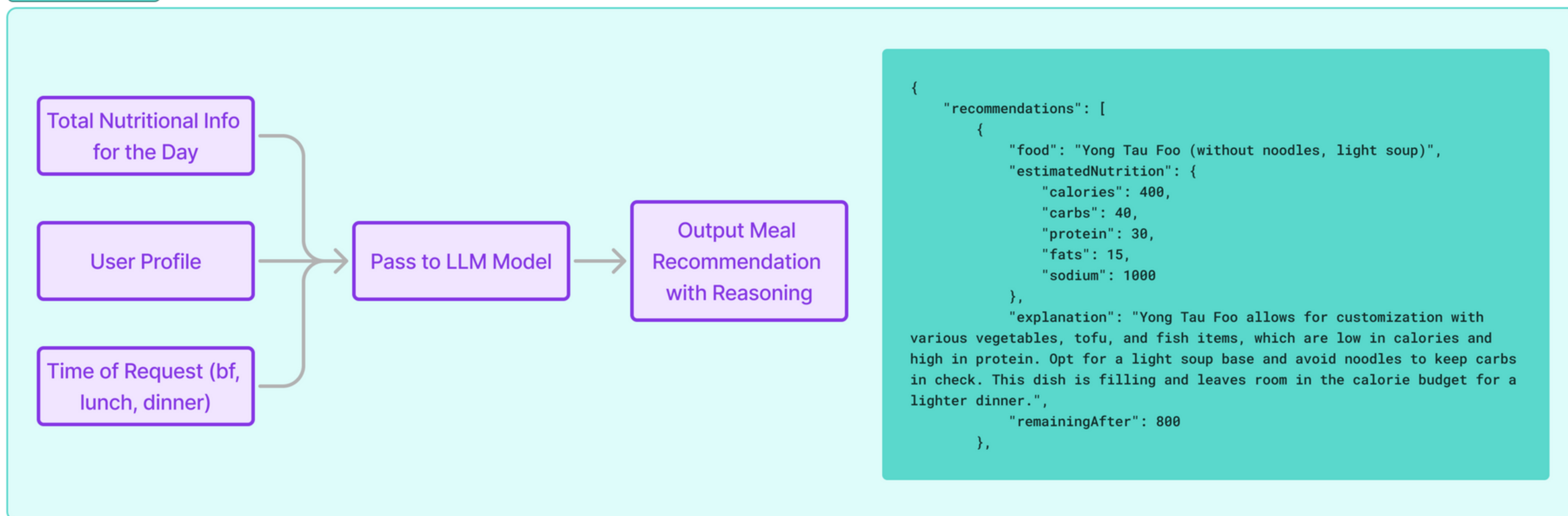
Adding Food



User Profile



Recommendations



AI TECHNIQUES

Our solution revolves around Prompt Engineering for Cloud Multimodal-LLMs due to:

Dataset Constraints

- No existing dataset for local Singaporean food
- Difficult to fine-tune or train custom models

Without a high-quality labeled dataset, training a specialized AI model to recognize and analyze local food accurately is not feasible.

Compute Constraints

- Training or fine-tuning large language models requires significant computational resources, which are not readily available
- Hosting such models for real-time inference would demand high-end infrastructure

Prompt engineering is a more practical and resource-efficient alternative.

BUT!!

Security and Privacy

- Due to privacy concerns, an ideal scenario would involve running AI models locally rather than relying on cloud-based solutions

While current models like DeepSeek are not yet optimized for mobile deployment, they are highly memory-efficient.

PROMPT ENGINEERING



Non-Contextualised

"Based on the following nutritional information of a consumed dish and considering the following user profile details

Provide personalized follow-up recommendations for the rest of the day, taking into account remaining calorie limits, dietary restrictions, allergies and any health conditions."

Breakfast

- ****Option 1: Greek Yogurt Parfait****
 - **Ingredients:** Greek yogurt (1 cup), mixed berries (1/2 cup), granola (1/4 cup)
 - **Estimated Calories:** ~300 kcal
 - ****Note:**** Provides protein and fiber for a satisfying start to the day.

Dinner

- ****Option: Grilled Salmon with Quinoa and Asparagus****
 - **Ingredients:** Salmon fillet (150g), quinoa (1 cup cooked), steamed asparagus
 - **Estimated Calories:** ~550 kcal
 - ****Note:**** Omega-3 fatty acids in salmon are beneficial for heart health.



Contextualised

"Based on the following nutritional information of a consumed dish and considering the following user profile details

Provide personalized follow-up recommendations for the rest of the day, taking into account remaining calorie limits, dietary restrictions, allergies and any health conditions.

Do not recommend foods that are restricted by allergies or dietary restrictions. Food recommendations should be available or common in Singapore."

Breakfast

- **Kaya Toast with Soft-Boiled Egg:**
 - **Calories:** 250-300 kcal
 - **Benefits:** A traditional Singaporean breakfast, providing a balance of carbs and protein. Opt for whole-grain bread for extra fibre.

Dinner

- **Stir-Fried Tofu with Mixed Vegetables:**
 - **Calories:** 300 - 350 kcal
 - **Nutrition:** A good source of plant-based protein and vegetables. Use light soy sauce instead of regular to reduce sodium intake.

INTENDED FEATURES



MEAL PORTION ESTIMATION

- Estimates ingredient portion sizes from images to provide more accurate caloric and nutritional data.



ANALYTICS PAGE WITH PATTERN RECOGNITION

- The app will analyze user behavior, such as identifying days with consistent overeating (e.g., every Tuesday) and suggest modifications to balance out these habits, like recommending lighter meals or smaller portions.



PERSONALISED NUTRITION TARGET SETTING

- Users, particularly those with specific fitness goals (e.g., bodybuilders), can set customized protein intake targets.

COST ANALYSIS

Model	Input Cost/1M tokens	Output Cost/1M tokens	Evaluation
GPT-4o (OpenAI)	\$2.50	\$10.00	Best multimodal accuracy
Claude 3.5 Sonnet (Anthropic)	\$3.00	\$15.00	Advanced reasoning tasks, not multimodal
Claude 3.5 Haiku (Anthropic)	\$0.80	\$4.00	Balanced performance, not multimodal
Gemini 2.0 Flash	\$0.10	\$0.40	Cheapest multimodal model
Gemini 2.0 Flash-Lite	\$0.075	\$0.30	Lowest-cost Google AI

BUSINESS JUSTIFICATION FOR WEIGH TO GO

- ✔ BEST COST-PERFORMANCE TRADEOFF: OPENAI GPT-4O
 - STRONGEST MULTIMODAL ABILITIES
 - COSTS LESS THAN USD0.001 PER FOOD RECOMMENDATION

*The team also considered Deepseek R1 7b Distill Qwen, a locally run multimodal model

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