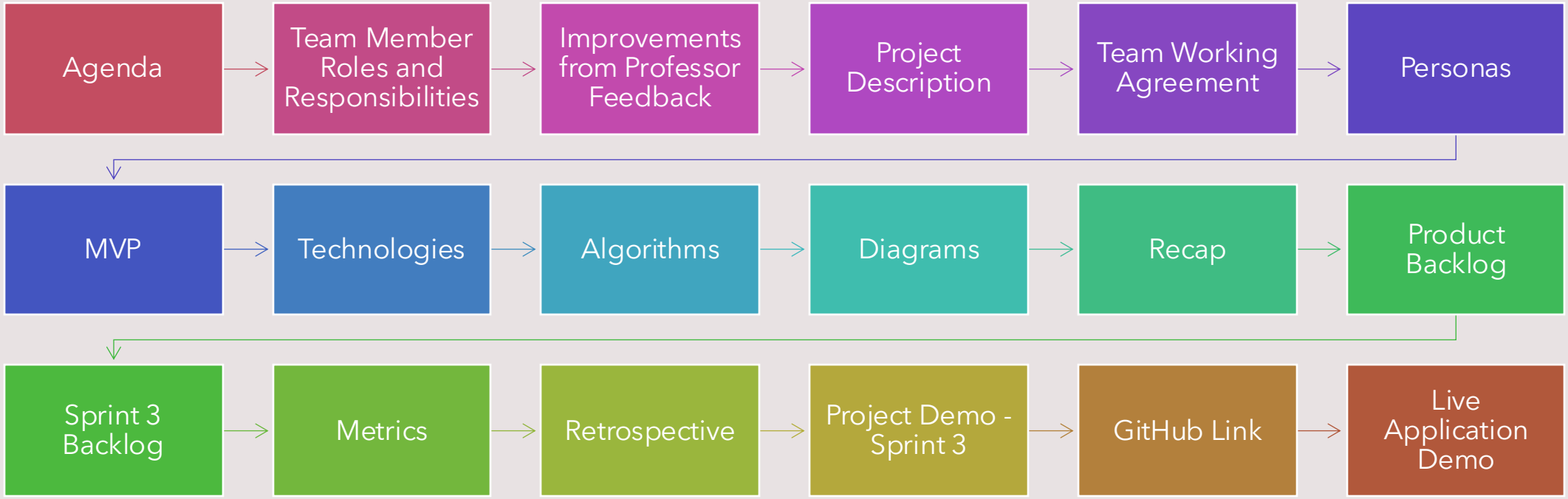
CalorieMate

By Team 3 - The Innovators

Agenda


Agenda
Team Member Roles and Responsibilities
Improvements from Professor Feedback
Project Description
Team Working Agreement
Personas
MVP
Technologies
Algorithms
Diagrams
Recap
Product Backlog
Sprint 3 Backlog
Metrics
Retrospective
Project Demo - Sprint 3
GitHub Link
Live Application Demo

Team Member Roles and Responsibilities

Ranjitha Durgasi – Frontend Developer- Team Leader

Nikhitha Reddy Nallanagula – Frontend Developer

Harshitha Korapati Murali – Backend Developer

Team Member Roles and Responsibilities

Sai Bhargav Ram Koduru – Backend Developer

Saikumar Gone – Machine Learning Engineer- Scrum Master

Kariveda Vikranth Reddy – Machine Learning Engineer

Improvements

- Retrospective: Share a collaborative link, introduce everyone, and ensure action items focus on real improvements.
- Sprint Planning: Include team introductions, show total sprint load (Slide 41), and clearly reference user stories with roles/personas.
- Demo Video: Skip “Hello Professor” and explain how the code works.
- Slide Fixes: Add average value on Slide 36 and specify “As a user” with total points on Slide 34, Add Sprint Recap.
- Burndown Chart: Explain it as a story of sprint progress and clarify what it shows about team performance.

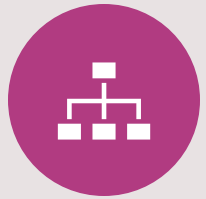
Project Description

Project Name:	*CalorieMate*
Team:	The Innovators
Project Description:	**For** health-conscious users **who** want to easily track their food intake and manage their diet**,** **the** CalorieMate app **is a** smart, AI-powered solution **that** automatically identifies food from photos, calculates nutrition, and offers personalized meal suggestions**.** **Unlike** traditional calorie-tracking apps that require manual data entry**,** **our application** provides a fast, hassle-free way to track calories and nutrition, saving time and improving accuracy**.**
Benefit Outcomes:	• **Time Savings:** Users can quickly track their meals through photo analysis without manual data entry. • **Improved Accuracy:** AI provides precise estimates for calories and nutrients, reducing guesswork. • **Health Goal Support:** Personalized diet plans help users stay on track with their weight loss, muscle gain, or overall wellness goals. • **Convenience:** Barcode scanning for packaged food makes nutritional tracking fast and effortless. • **Consistency:** Easy tracking and user-friendly features increase engagement, encouraging long-term healthy habits.
Github Link:	https://github.com/htmw/2025S-The-Innovators/wiki

Team Working Agreement

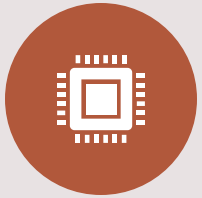
Communication: Lets make sure to share updates and have discussions on platforms like Slack. Make sure to have check ins, such, as weekly stand up meetings or sprint reviews to keep everyone on the same page and working together smoothly. Cooperation;

Team Meetings & Collaboration: To ensure effective meetings, the team should agree on key points, such as scheduling regular meetings twice a week at 6-8pm via virtual (zoom).Our main agenda is to make all team members work and make submissions on time. As a team we should help one another by sharing each other thoughts and make sure all perspectives are heard before deciding.



Roles and Responsibilities: Each team member has the task of finishing assignments based on their designated roles in frontend development, backend development, and machine learning. Coordinate with teams to seamlessly incorporate various functionalities.

Decision-Making: Decisions will be collaboratively reached in team gatherings. In situations where there are differences in opinions or views arise among us team members, we go for majority votes.



Deliverables: Each sprint should lead to producing the outcomes like presentations updates, to technical papers and wikis. Make sure to review and test all your work before submitting it for consideration.

Retrospectives: After each sprint is completed it's important to have a session to review the successes and areas for improvement as well as to outline specific steps, for the upcoming sprint.

Agreed by:

- Ranjitha Durgasi
- Nikhitha Reddy Nallanagula
- Harshitha Korapati Murali
- Sai Bhargav Ram Koduru
- Saikumar Gone
- Kariveda Vikranth Reddy

Persona

Sneha (Fitness Freak)

•**Age:** 26

•**Occupation:** Marketing Specialist

•**Goals:** To build muscle and maintain a healthy diet.

•**Challenges:** Finds it time-consuming to manually log every meal and calculate macros (proteins, carbs, fats).

•**How CalorieMate Helps:** Sneha can take photos of her meals to instantly track nutrients, saving time and keeping her fitness plan on track.

Persona

Surya cook (Busy Professional)

•**Age:** 35

•**Occupation:** Software Engineer

•**Goals:** To lose weight and adopt healthier eating habits.

•**Challenges:** Limited time to research or record calorie information due to his demanding work schedule.

•**How CalorieMate Helps:** The app's photo recognition and barcode scanner allow cooking to quickly track meals, making calorie management fit seamlessly into his day.

Persona

Kruti Patel (Health-Conscious Parent)

•**Age:** 30

•**Occupation:** Doctor

•**Goals:** To maintain a balanced diet and teach her family healthy eating habits.

•**Challenges:** Difficulties estimating nutritional content of home-cooked meals.

•**How CalorieMate Helps:** Kruti can easily track home-cooked meals using photo recognition and adjust portions to get accurate nutritional insights, helping her plan meals for the entire family.

MVP

- Food identification from photos using AI
- Automatic calorie and nutrition calculation
- Barcode scanning for packaged food
- Daily calorie and nutrient tracking dashboard
- Personalized meal suggestions based on user goals

Technologies

Frontend: Expo (React Native)

Used to build the mobile app for both Android and iOS platforms, ensuring a smooth and consistent user experience across devices.

Technologies

Backend: FastAPI, MongoDB, AWS

- **FastAPI:** Manages API communication between the mobile app, machine learning models, and database.
- **MongoDB:** Stores user data such as meals, nutritional logs, and preferences.
- **AWS:** Provides cloud infrastructure for hosting the app, including APIs, databases, and machine learning services, ensuring scalability and reliability.

Technologies

Hugging Face

Machine Learning: PyTorch, Hugging Face

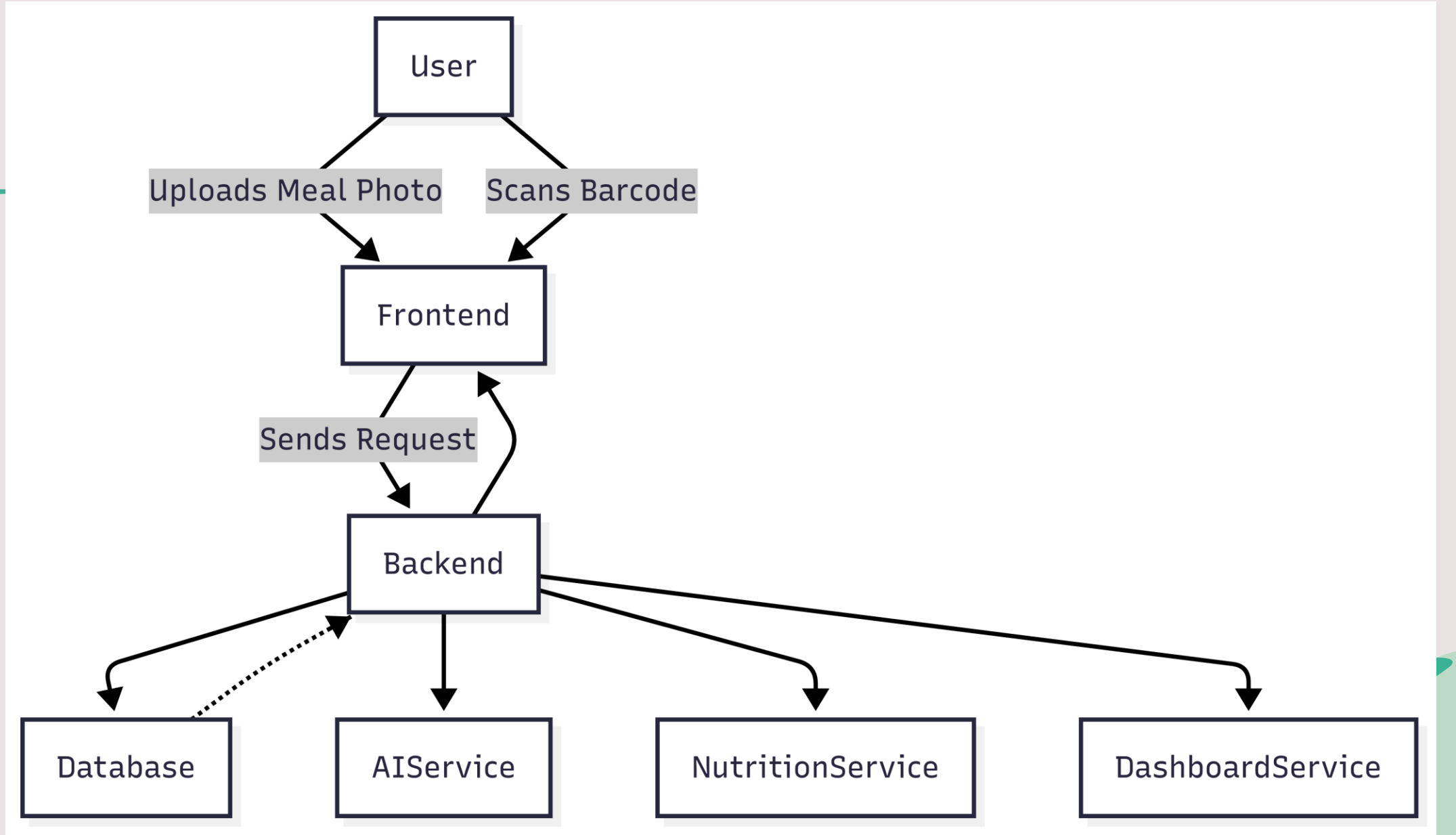
- **PyTorch:** Used to build and deploy AI models for food recognition and nutrition estimation.
- **Hugging Face:** Supplies pre-trained vision-language models (VLM) to improve image recognition accuracy, reducing development time.

PyTorch

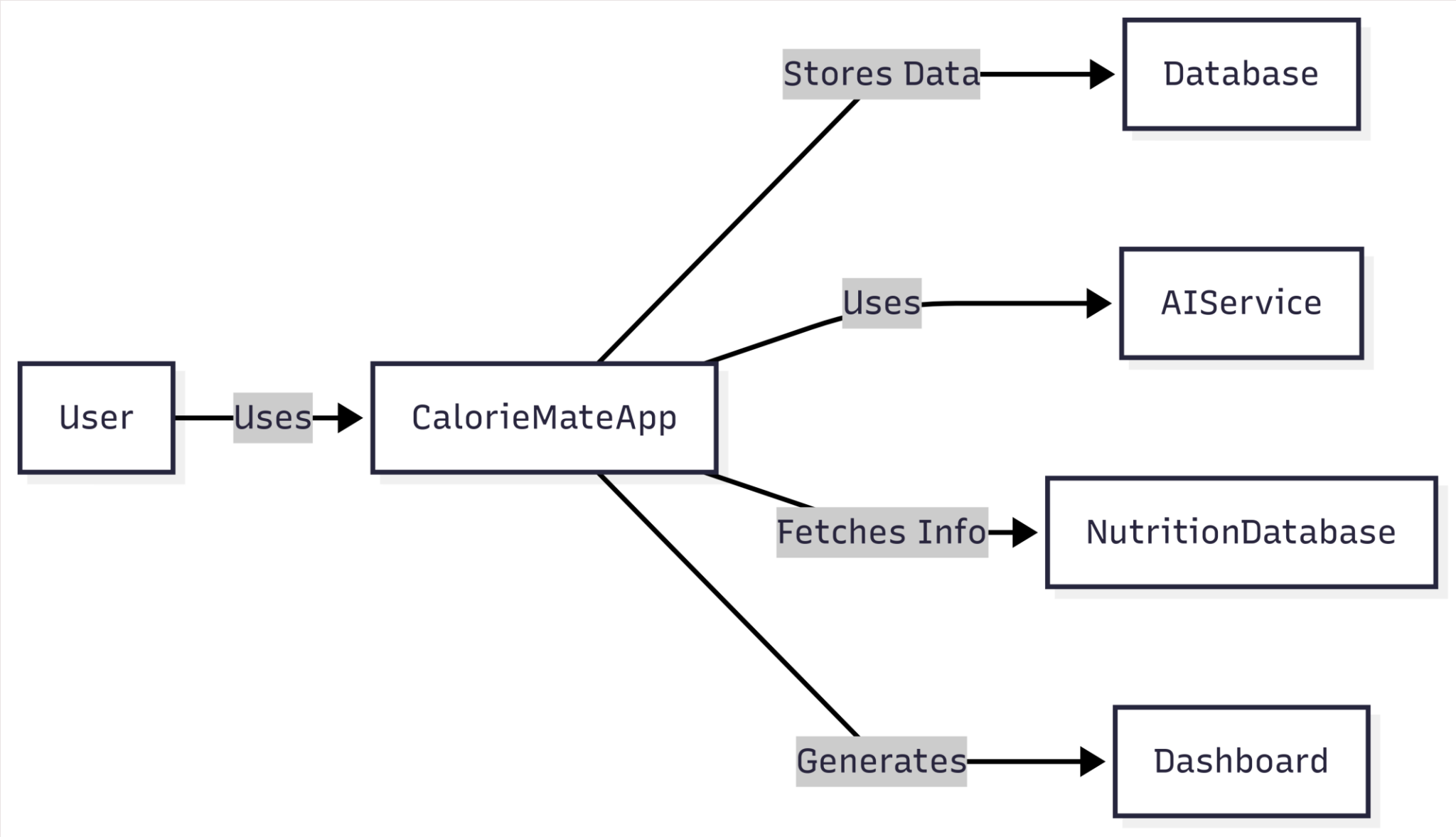
Algorithm

Our application utilizes some important algorithms to automate and enhance the process of calorie and nutrition tracking. The food image recognition algorithm employs the **InstructBLIP** model to process meal images, identify food items, and recognize them with high accuracy. After recognizing the foods, a nutritional estimation algorithm estimates the calories, proteins, carbohydrates, and fats based on nutritional databases and approximate portion sizes.

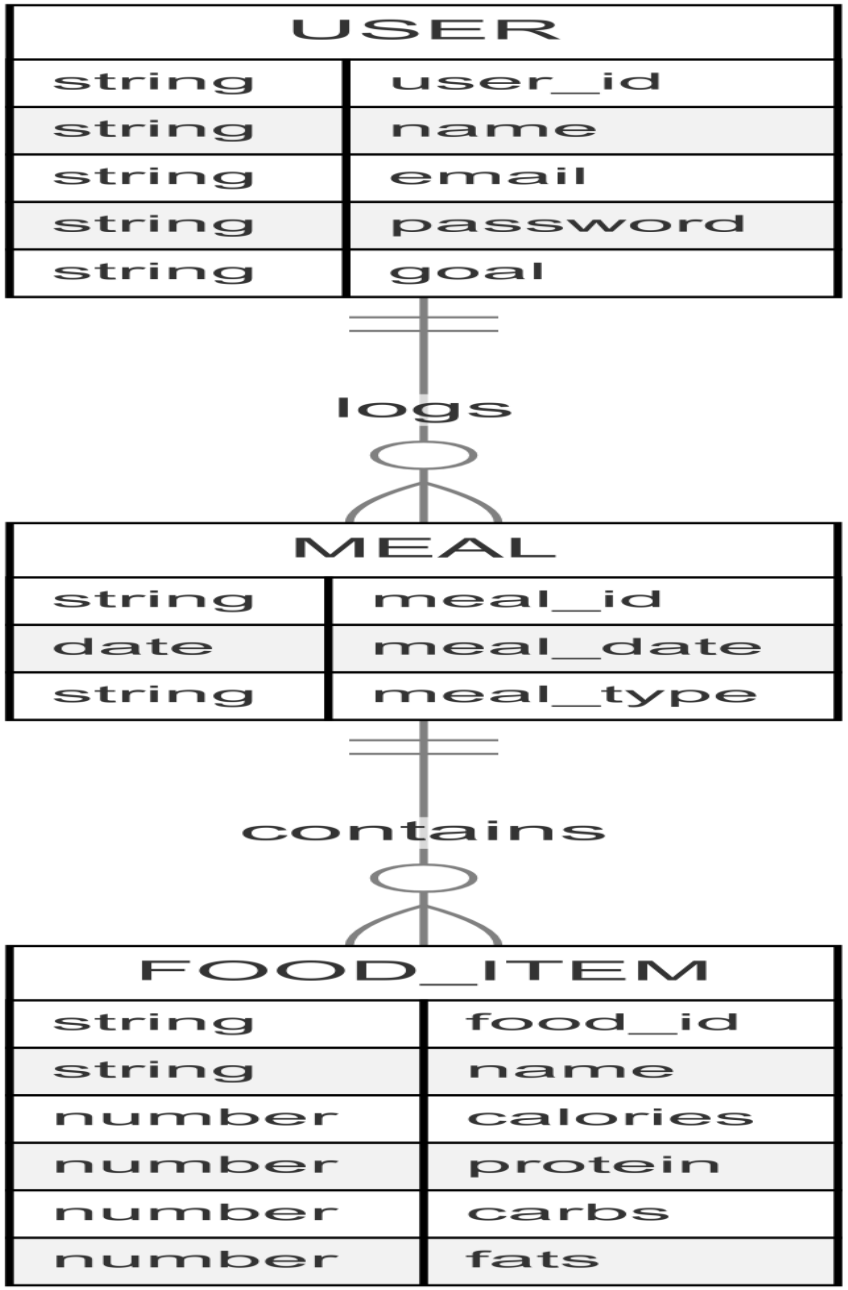
Architecture Diagram



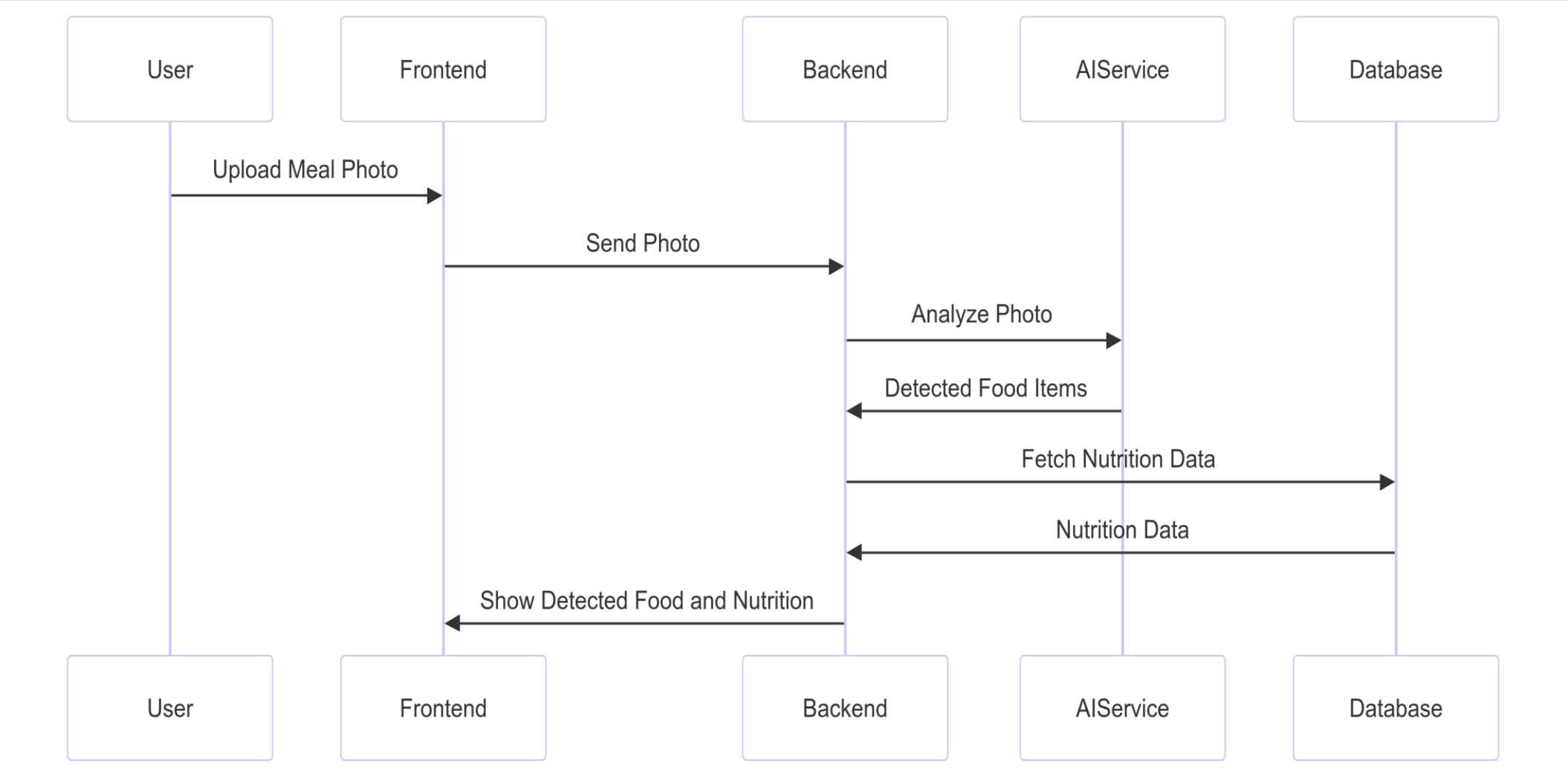
Context diagram



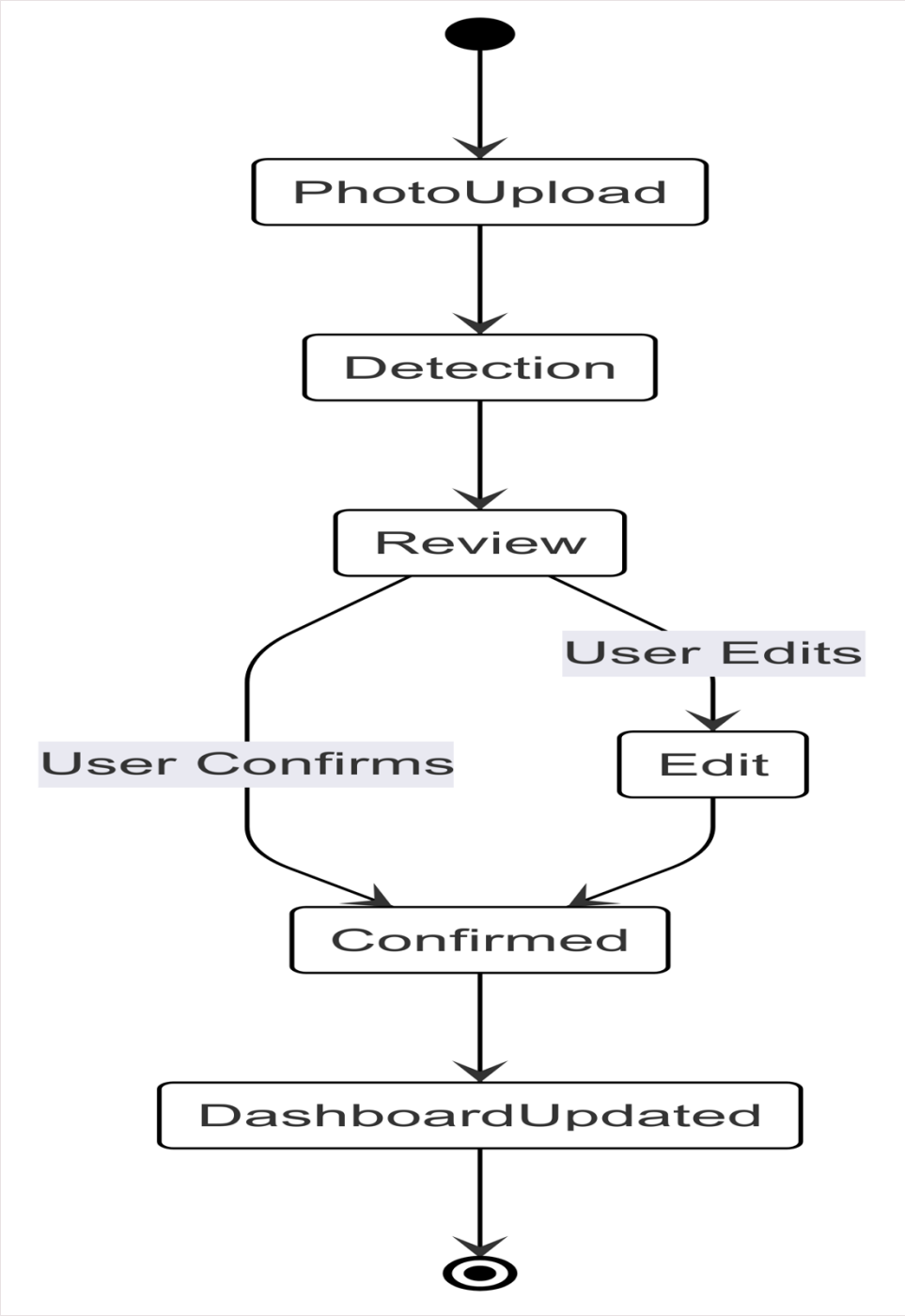
ER Diagram


USER
string user_id
string name
string email
string password
string goal
logs
MEAL
string meal_id
date meal_date
string meal_type
contains
FOOD_ITEM
string food_id
string name
number calories
number protein
number carbs
number fats

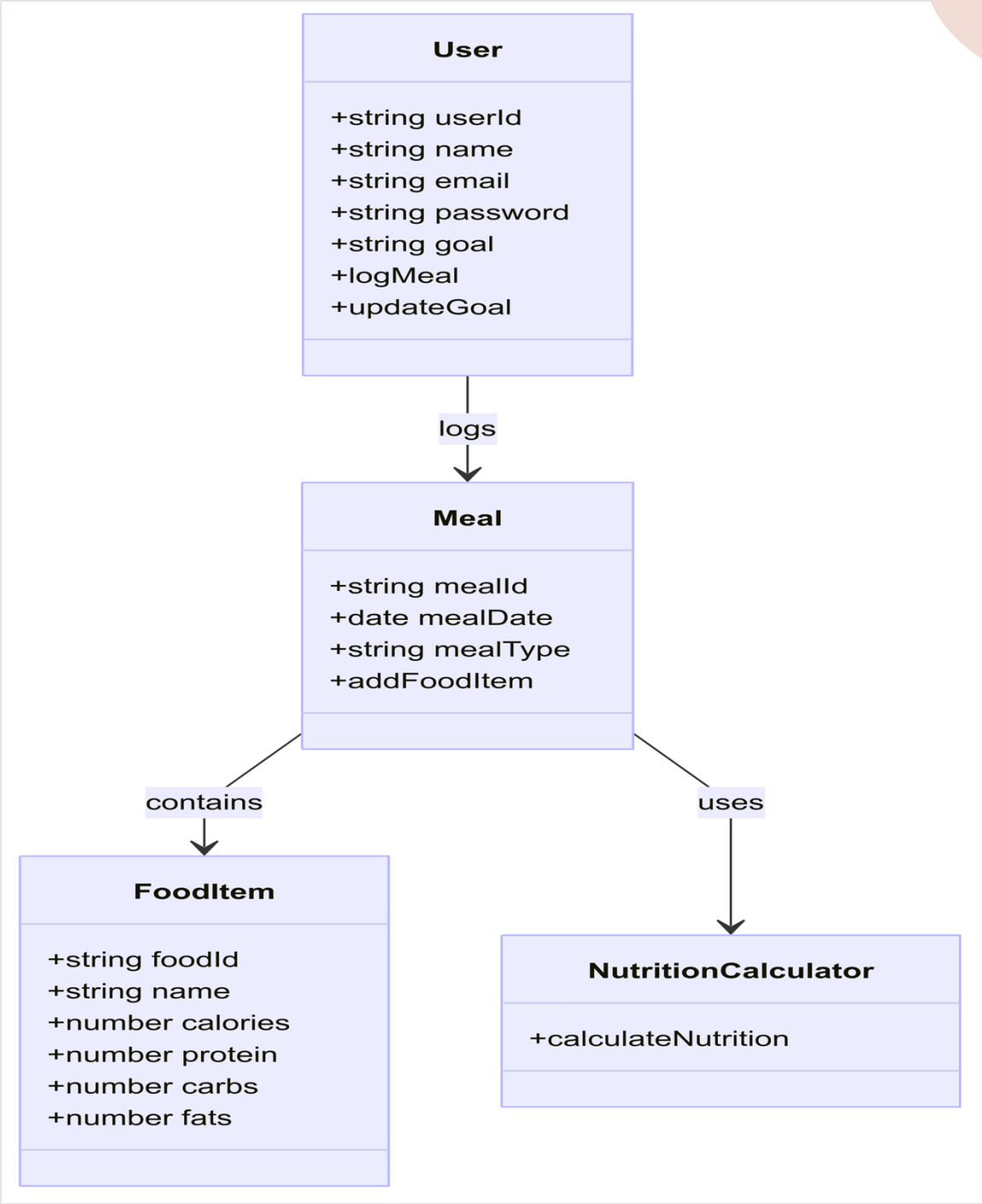
Sequence Diagram



State Diagram



Class Diagram



Recap Sprint 2

In Sprint 2, we implemented barcode scanning for quick meal logging, added goal setting to personalize calorie targets, and enhanced the dashboard with macro breakdowns. Users can now edit or delete past meals, and view full meal history by date. All planned features were completed, achieving a 100% completion rate.

Product Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
US1	As a Health-Conscious Individual, I want to create an account and log in so that my data is saved.	User can sign up and log inError shown for wrong credentialsLogout works	Authentication	3	1
US2	As a Fitness Enthusiast, I want to upload a meal photo or take an image from the camera so that I can manually enter my food details.	Users can upload an image or take a photo.Users manually input food items.Error shown if no items are added.	Photo Upload	5	1
US3	As a Nutrition Tracker, I want to manually enter food items so that I can track my meals.	Users can enter food items manually.Users can input portion sizes.Data is saved to the meal log after confirmation.	Food Entry	3	1
US4	As a Meal Logger, I want to edit food items so that my meal log is accurate.	Users can modify the food name and portion size. Changes are saved automatically to the meal log.	Manual Food Editing	3	1
US5	As a Health Monitor, I want to see a daily dashboard so that I can track my calories and nutrients.	Dashboard shows calories consumed, remaining budgetMacro breakdown shown	Dashboard	3	1

Product Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
TS1	Set up user authentication backend	Database created for usersSignup, login, logout APIs readyPasswords securely stored	Authentication Backend	3	1
TS2	Set up photo upload UI	Users can upload images from the gallery or take a photo.	Photo Upload	5	1
TS3	Build UI for manual food entry	Users can enter food names and portion sizes manually.	Food Entry	3	1
TS4	Build UI for food editing	Users can edit food items and portion sizes.	Manual Food Editing	3	1
TS5	Build daily dashboard UI & backend	Dashboard reads meal logCalculates totalsShows simple charts	Dashboard Backend + UI	3	1

Product Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
US6	As a Busy Professional, I want to scan barcodes to log packaged food so that I can log faster.	Barcode scanning worksFinds product in databaseAdds to meal log	Barcode Scanning	5	2
US7	As a Fitness Enthusiast, I want to set my health goal so that my calorie target is personalized.	Goal can be setCalorie target updatesGoal can be changed later	Goal Setting	2	2
US8	As a Health Monitor, I want to see my daily macro breakdown so that I know if my meals are balanced.	Dashboard shows grams & percentages for macrosUpdates after each meal log	Dashboard	2	2
US9	As a Meal Logger, I want to edit or delete past meal entries so that I can fix mistakes.	Past meals listedEdit or delete worksDashboard recalculates after change	Meal Log Management	3	2
US10	As a Nutrition Tracker, I want to view my full meal history so that I can review my past eating habits.	All past meals listed by dateClicking shows full details	Meal History	2	2

Product Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
TS6	Build barcode scanning backend and food database	Food database includes packaged foodsBarcode scanning works on mobileAdds directly to log	Barcode Scanner Backend	5	2
TS7	Set up goal setting feature	Goal stored in user profileGoal adjusts calorie target in dashboard	Goal Backend	2	2
TS8	Add macro breakdown logic to dashboard	Dashboard calculates macros from mealsUpdates automatically	Dashboard Logic	2	2
TS9	Build meal history with edit/delete	Meal logs stored by dateEdit and delete APIs workDashboard updates after changes	Meal Log Backend	3	2
TS10	Build full meal history page	Meals listed by dateClicking opens meal details	Meal History UI	2	2

Product Backlog

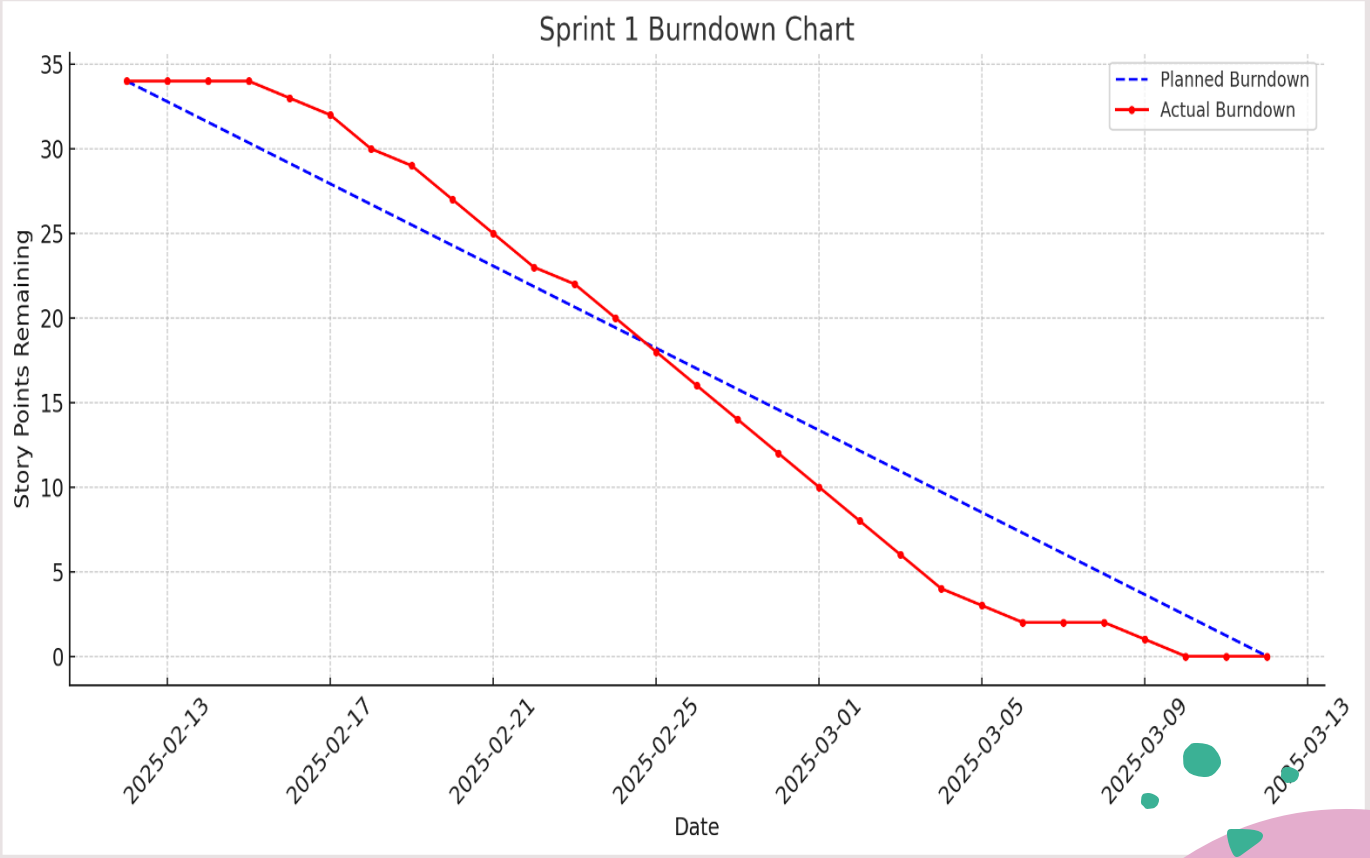
ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
US11	As a fitness freak, I want to see calories and nutrients after entering my meal so that I know what I'm eating.	Users enter food items manually.Calories, protein, carbs, and fats are displayed.Data is saved to the meal log.	Calorie & Nutrition Display	5	3
US12	As a Health conscious parent, I want to see a weekly progress report so that I can track my long-term trends.	Weekly calories graph shownWeekly macro average shown	Progress Report	3	3
US13	As a gym addict, I want a settings page to manage my preferences so that I can customize the app.	User can set units (metric/imperial)User can change goalChanges saved immediately	Settings	2	3
TS11	Build AI-based calorie & nutrition calculation	Users enter food items manually.AI calculates calories, protein, carbs, and fats.Data is saved to the meal log.	AI-Based Nutrition Calculation	5	3
TS12	Build weekly progress backend & UI	Backend calculates 7-day summaryUI shows graph & macro summary	Progress Report	3	3

Product Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
TS13	Build settings page backend & UI	Preferences saved per userChanges reflected in dashboardSupports units and goals	Settings Backend + UI	2	3

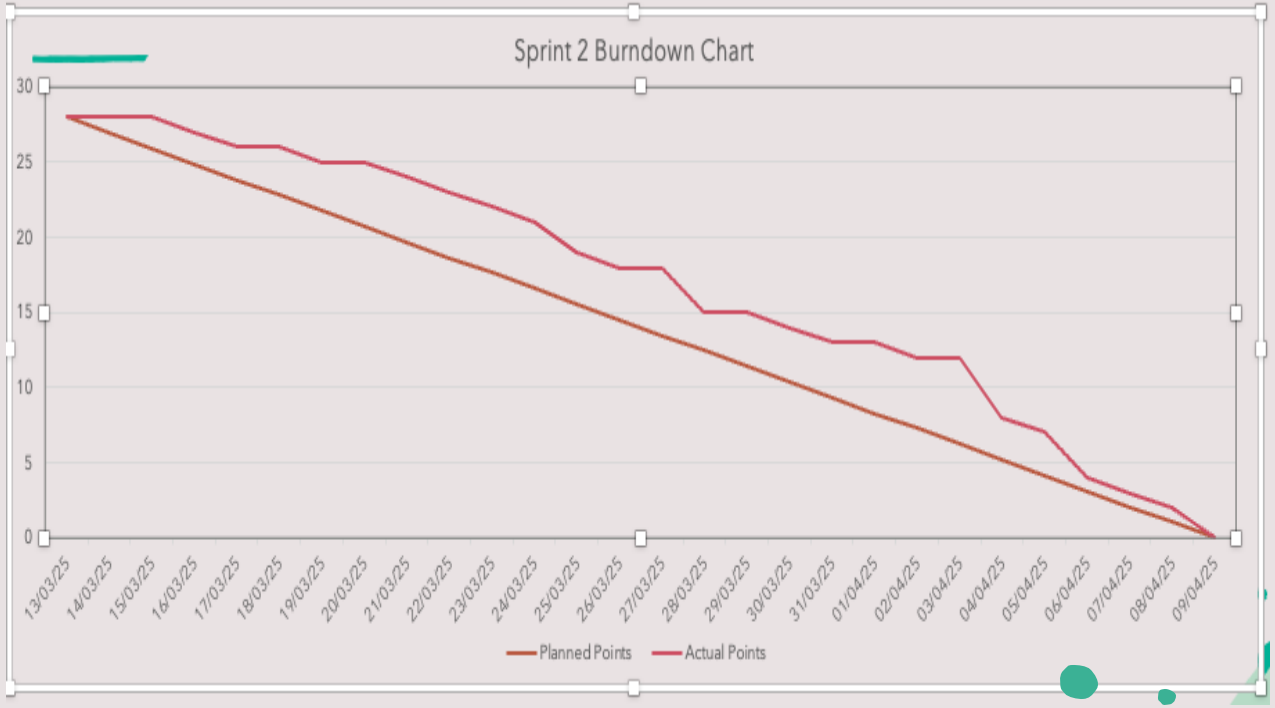
Sprint 1 Summary

Delivered user authentication, meal photo upload, manual food entry, food editing, and daily dashboard. A total of **34 story points** were committed and fully completed.



Sprint 2 Summary

Focused on barcode scanning, personalized goal setting, dashboard macro breakdown, meal log management (edit/delete), and full meal history view. All **28 story points** were completed as planned.



Sprint 3 Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
US11	As a Fitness freak, I want to see calories and nutrients after entering my meal so that I know what I'm eating.	Users enter food items manually.Calories, protein, carbs, and fats are displayed.Data is saved to the meal log.	Calorie & Nutrition Display	5	3
US12	As a health conscious parent, I want to see a weekly progress report so that I can track my long-term trends.	Weekly calories graph shownWeekly macro average shown	Progress Report	3	3
US13	As a gym addict, I want a settings page to manage my preferences so that I can customize the app.	User can set units (metric/imperial)User can change goalChanges saved immediately	Settings	2	3
TS11	Build AI-based calorie & nutrition calculation	Users enter food items manually.AI calculates calories, protein, carbs, and fats.Data is saved to the meal log.	AI-Based Nutrition Calculation	5	3
TS12	Build weekly progress backend & UI	Backend calculates 7-day summaryUI shows graph & macro summary	Progress Report	3	3

Sprint 3 Backlog

ID	User Stories	Acceptance Criteria	Feature	Story Points	Sprint
TS13	Build settings page backend & UI	Preferences saved per userChanges reflected in dashboardSupports units and goals	Settings Backend + UI	2	3

Test Cases

US ID	Test Case ID	Test Case Description	Steps to Execute	Expected Result	Result (Pass/Fail)
US11	TC11.1	Enter meal manually and view nutrition	1. Open food entry screen2. Input food name and portion3. Save meal	Calories and macros (protein, carbs, fats) are shown	Pass
US11	TC11.2	Ensure nutrition data is saved	1. Enter and save food2. Open meal log3. View saved item	Nutrition info is stored and shown correctly	Pass
US12	TC12.1	View weekly calories chart	1. Log meals for 7 days2. Open weekly progress screen3. Review graph	Weekly calories graph is displayed	Pass
US12	TC12.2	Check weekly macro average	1. Log meals with macros2. Open progress screen3. Review summary	Weekly macro average is shown (protein, carbs, fats)	Pass

Test Cases

US ID	Test Case ID	Test Case Description	Steps to Execute	Expected Result	Result (Pass/Fail)
US13	TC13.1	Change unit preference	1. Go to settings2. Change unit from metric to imperial3. Save and go to dashboard	Dashboard reflects new unit preference	Pass
US13	TC13.2	Update health goal	1. Go to settings2. Change goal (e.g., weight loss to maintenance)3. Save and check dashboard	Calorie target updates accordingly	Pass
US13	TC13.3	Save preferences persistently	1. Change settings2. Log out3. Log back in and open settings	Changes are saved and persist between sessions	Pass

Completed Stories Sprint 3

Story ID	Story Description	Story Points
US11	As a fitness freak, I want to see calories and nutrients after entering my meal so that I know what I'm eating.	5
US12	As a health conscious parent, I want to see a weekly progress report so that I can track my long-term trends.	3
US13	As a gym addict, I want a settings page to manage my preferences so that I can customize the app.	2
TS11	Build AI-based calorie & nutrition calculation	5
TS12	Build weekly progress backend & UI	3
TS13	Build settings page backend & UI	2

Total Points: 20

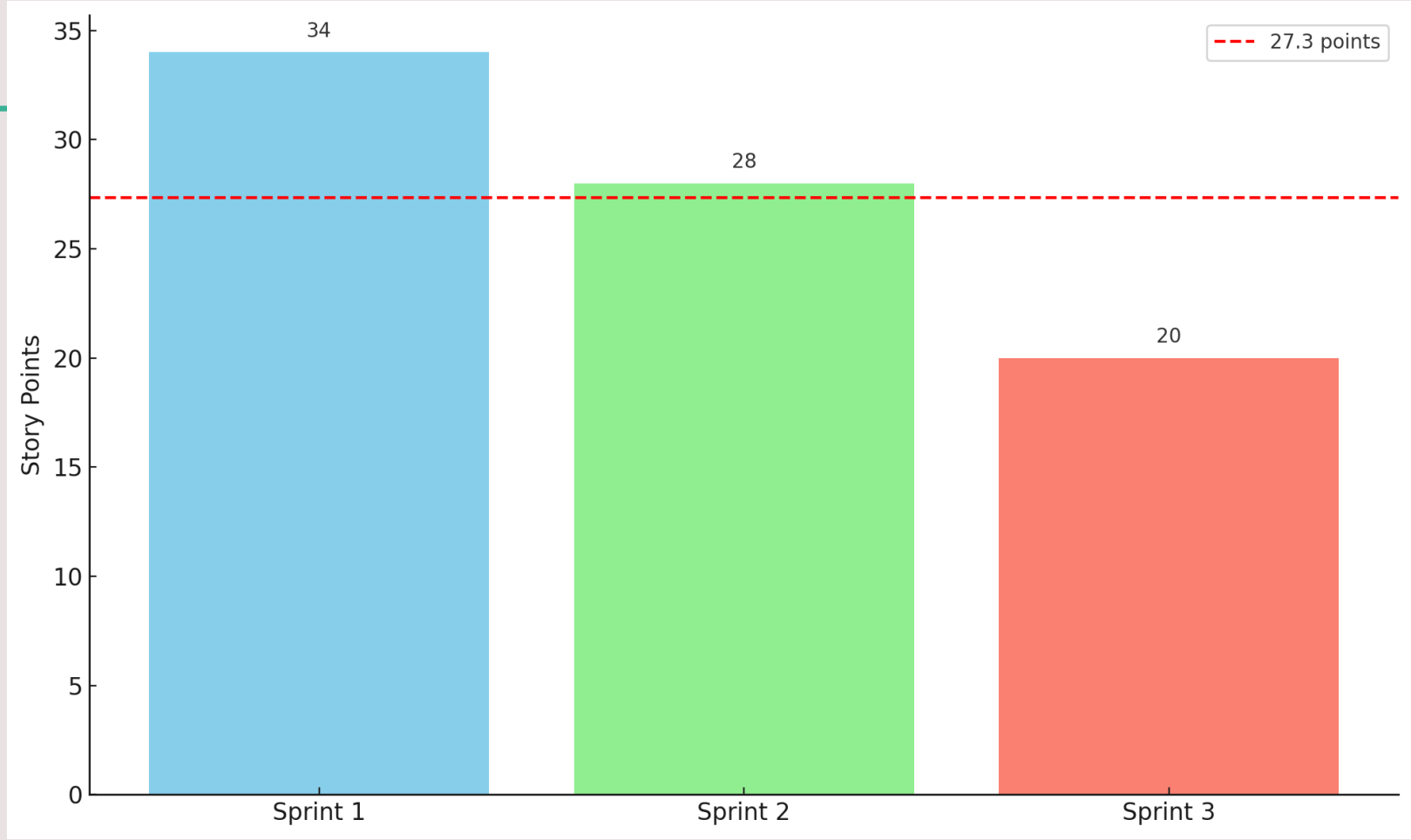
Team Velocity Sprint 3

Committed: 20 story points

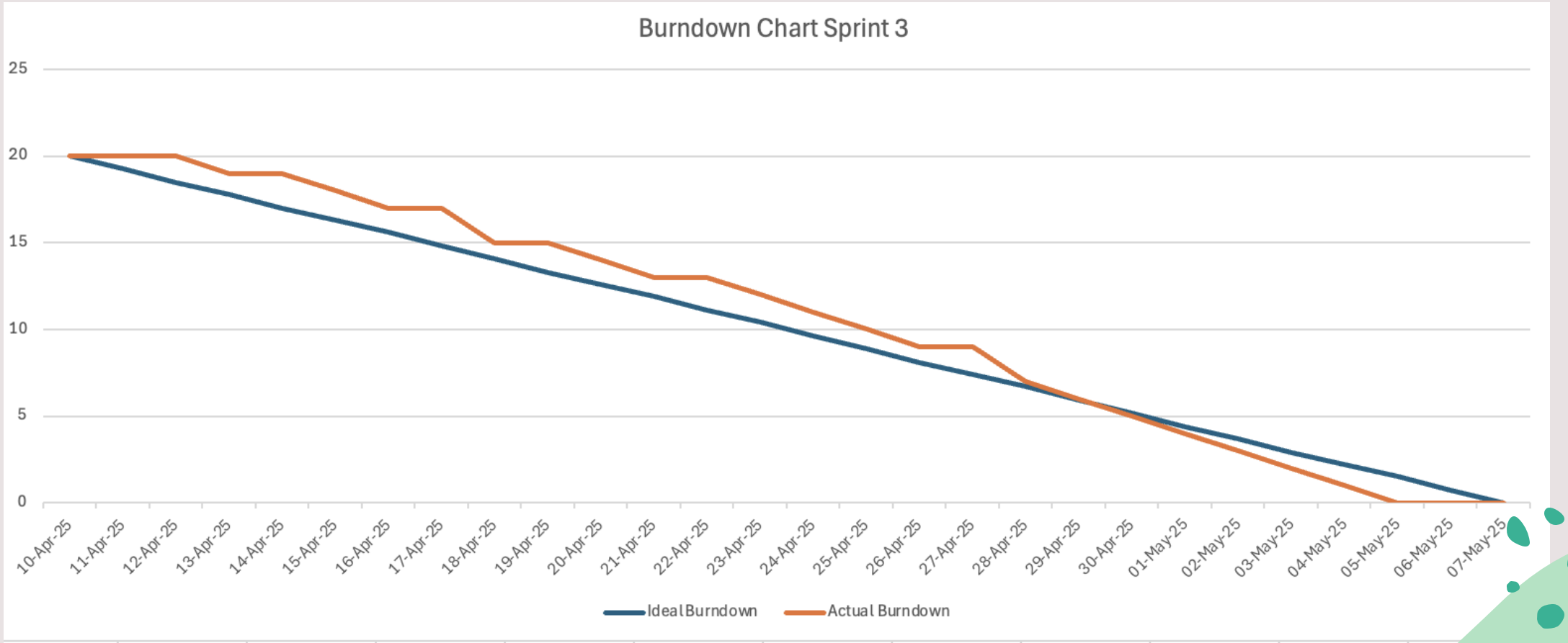
Completed: 20 story points

Velocity: 20 story points

Historical Team Velocity



Burndown Chart

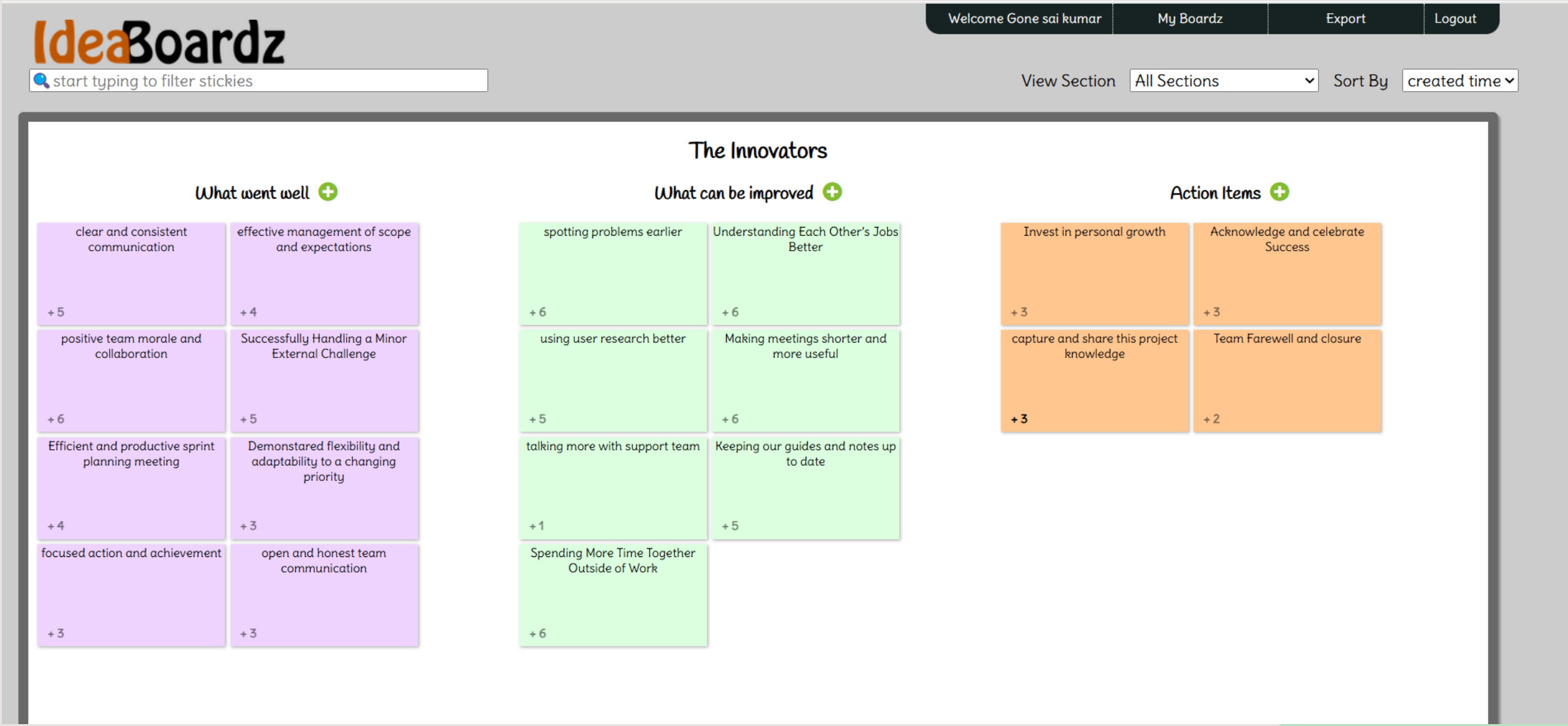


Completed/Committed Ratio

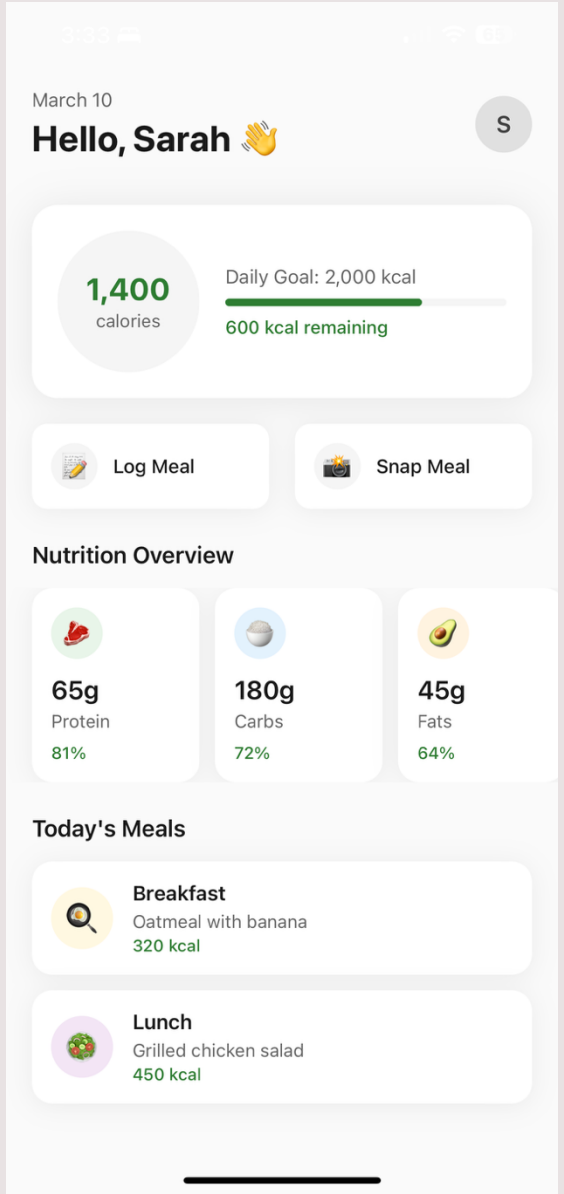
Sprint	Committed	Completed	Ratio
Sprint 1	34	34	100%
Sprint 2	28	28	100%
Sprint 3	20	20	100%

Average Completed/Committed Ratio (Sprint 1,2,3)
(100% + 100% + 100%) / 3 = 100%

Retrospective



Application Screenshots



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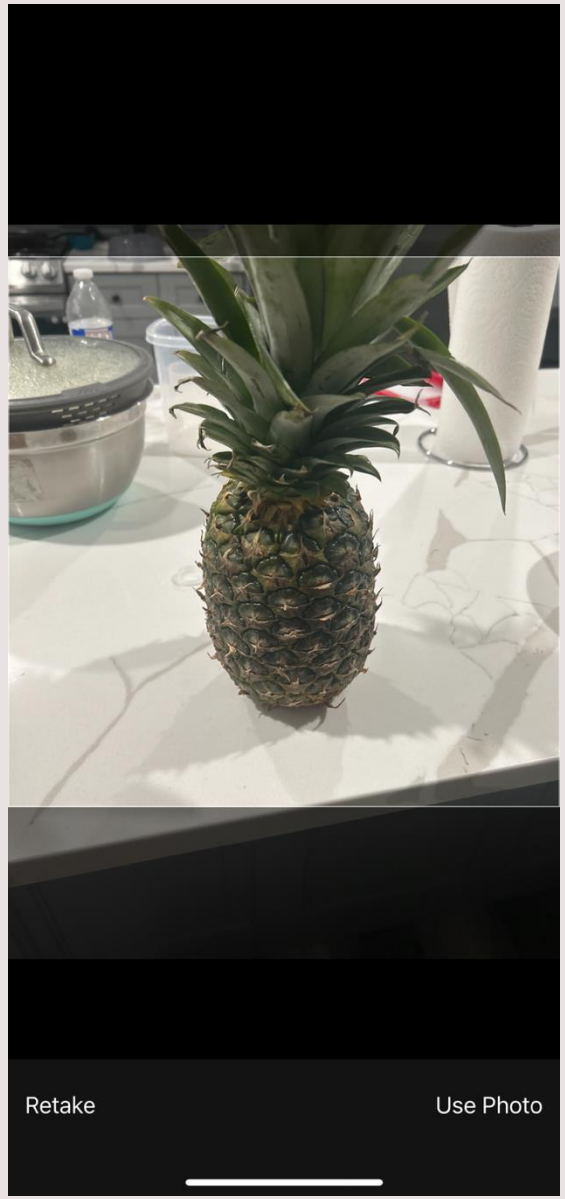
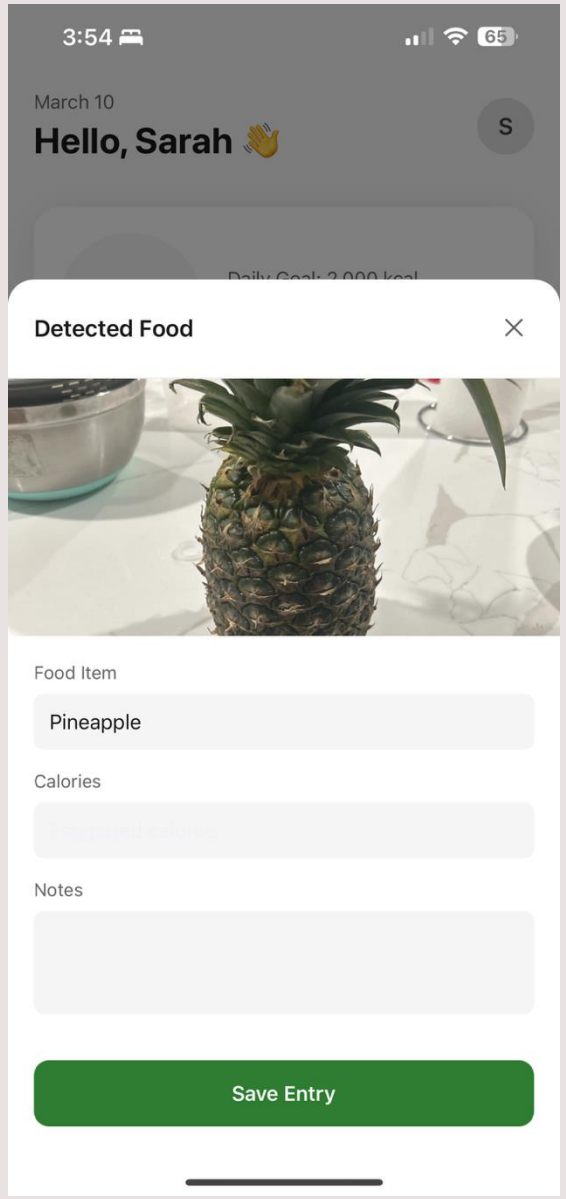
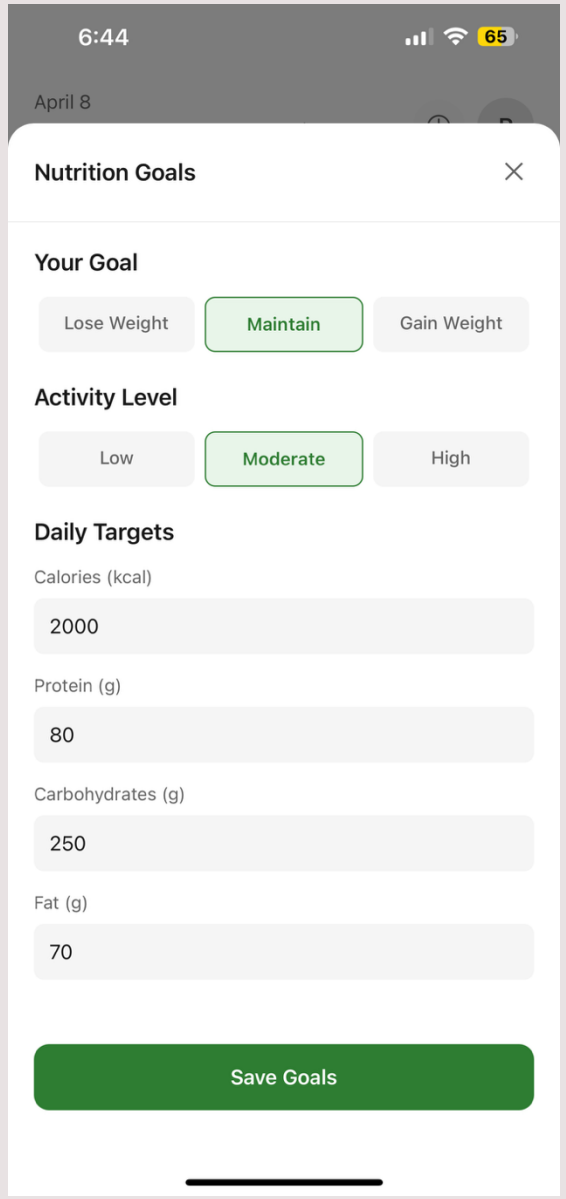


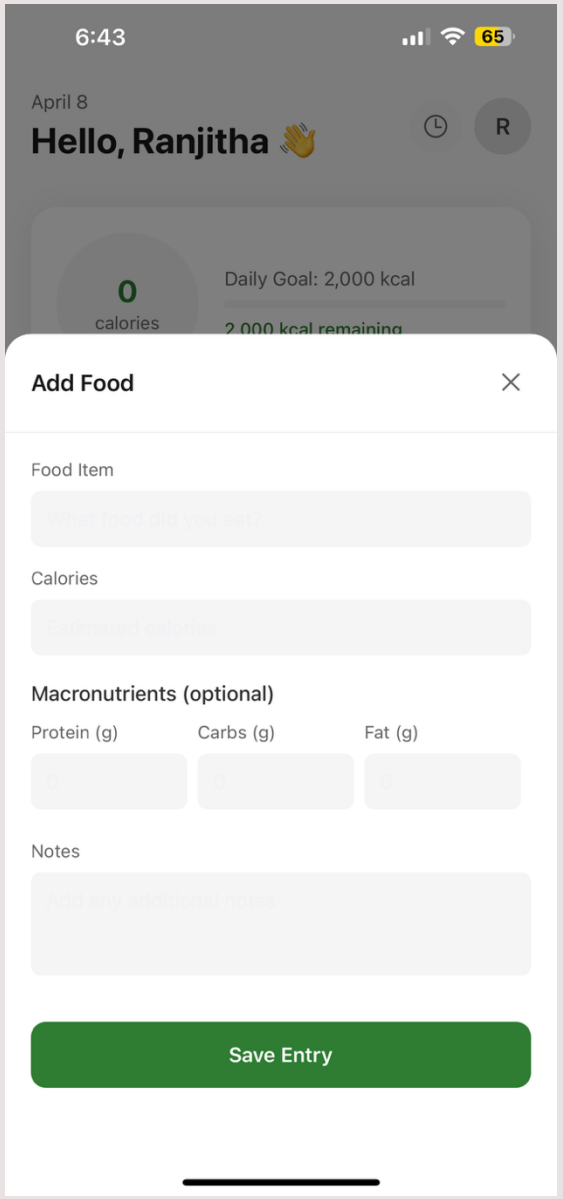
Application Screenshots



Application Screenshots



Application Screenshots



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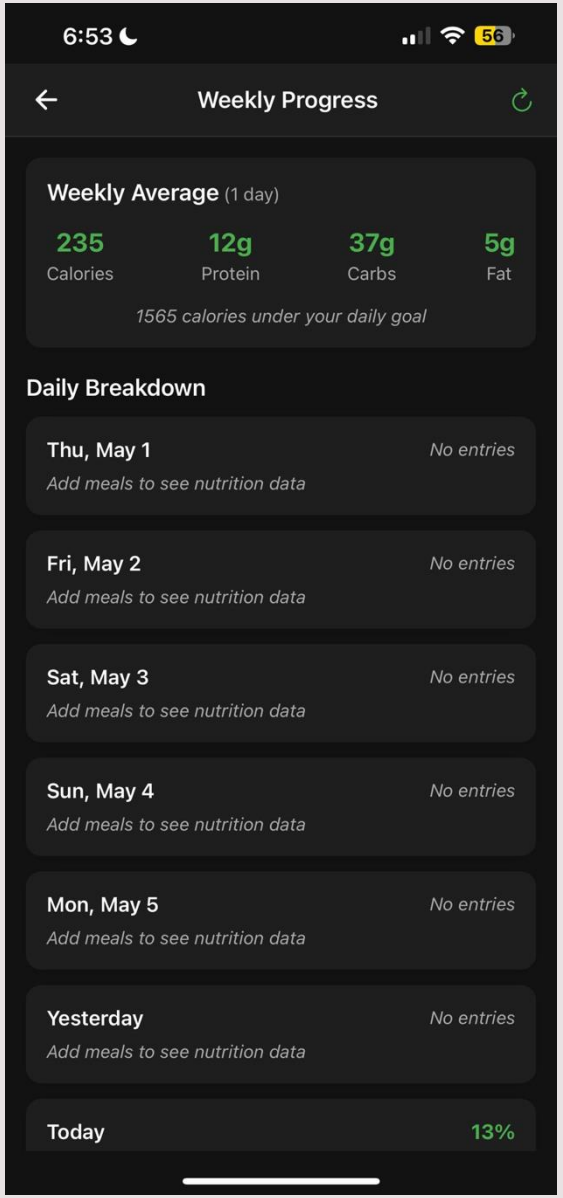

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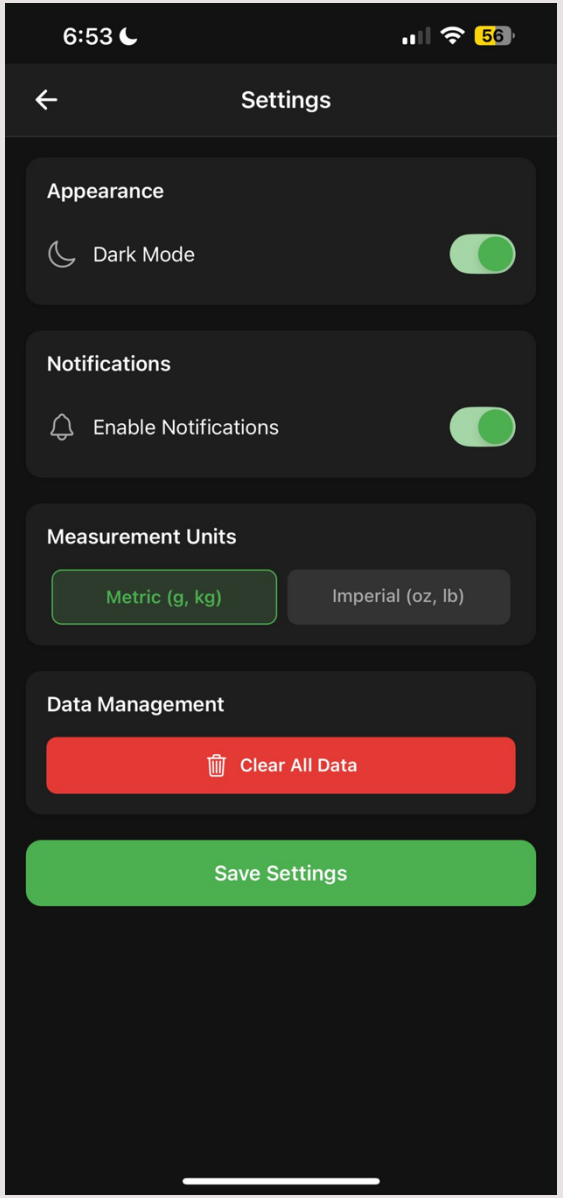

API

Get all foods

$ curl http://localhost:3000/api/foods

{ "success": true, "data": ["apple", "banana", "orange", "strawberry", "blueberry", "watermelon", "grape", "pineapple", "mango", "avocado", "carrot", "broccoli", "spinach", "potato", "tomato", "chicken breast", "salmon", "rice", "bread", "egg"] }

API

Get a specific food (apple)

$ curl http://localhost:3000/api/foods/apple

{ "success": true, "data": { "food": "apple", "calories": 52, "unit": "per 100g" } }

Wikipage Link

https://github.com/htmw/2025S-The-Innovators/wiki

Live Demo