

FRESHLENS

Sprint 4 - TEAM-4 Sierra



AGENDA

- Project Review
- Team members
- MVP
- Technologies
- Algorithms
- Diagrams
- Sprint 3 recap
- Product and Sprint 4 Backlog
- Sprint 2 and Sprint 3 summary and burndown chart
- Metrics
- Retrospective
- Project demo
- Github
- App demo

TEAM MEMBERS



Chandu Pentela
Project Manager /
Backend Developer



Banoth Ashok
Backend Developer



**Jaya Venkata Vara Sai Prakash
Perumalla**
Backend Developer

TEAM MEMBERS



Ashish Padma
Machine Learning Engineer



Poojitha chinthala
Machine Learning Engineer



Sushmitha Reddy Poddaturu
Machine Learning Engineer

TEAM MEMBERS



Satish kumar reddy indla
Developer



Aishwarya Kongari
Developer

Changes based on Professor feedback

- Changes in MVP
- Adding Historical Velocity
- Changing Table layouts

PROBLEM STATEMENT

Many individuals want to maintain a healthy diet but they find it challenging to keep track of their diet and analyse it. The traditional way where keep logging food intake often time and it is prone to inaccuracies, which leads to poor diet choices and even demotivates the individual.

There needs to be a way for a more intuitive and efficient way to understand the nutritional values of fruits and easy to keep track of the intake. Which makes individuals to take healthy diet options.

PROJECT DESCRIPTION

Project Name:	FreshLens
Team:	Sierra
Project Description:	<p>FreshLens revolutionizes the tracking of diet by instant recognition and nutritional analysis of fruits and vegetables only by photo snap.</p> <p>For health conscious individuals who find traditional diet tracking inconvenient.</p> <p>the Freshlens is a mobile application that simplifies healthy eating by instantly identify fruits and vegetables through photo and provide nutritional insights, unlike traditional complicated manual tracking methods our application offers a seamless and effective way to understand and improve diet.</p>
Project Description	
Benefit Outcomes:	<p>User get an in depth understanding about the nutritional value of their fruits and vegetables, which helps them take perfect choices.</p> <p>It eliminates the manual logging, which makes the diet tracking efficient.</p> <p>It even educates the users about the food variety and nutritional benefits, promoting healthy choices.</p>
Github Link:	https://github.com/htmwm/2024S-Sierra

TEAM WORKING AGREEMENT

TEAM AGREEMENT

- If any individual faces any problem in their work, they can reach out to other individuals and request help and vice versa.
- There will be a team meeting held weekly once on Tuesday and all individuals must participate in the meeting and we will discuss the update about the project (workflow) during the call.
- A recurring meeting will be happening via Google Meet and will be getting mail prior day before the meeting starts.
- Everyone should respect each other and their decisions. We take a poll in the team meeting on the workflow and the majority will be the final decision from the team polls.
- Inappropriate behavior is not acceptable and will be informed to the professor immediately.
- Missing more than 4 calls is also not acceptable and will be informed to the professor.
- Everyone should give equal contribution to the project and should work as a team.
- All work should be done, prior 1 day before the due date.

Teammates signature

1. Ashish Padma
2. Poojitha chinthal
3. Jaya Venkata Vara Sai Prakash Perumalla
4. Chandu Pentela
5. Aishwarya Kongari
6. Sushmitha Reddy Poddaturu
7. Satish kumar reddy ~~indla~~
8. Banoth Ashok

PERSONAS



- **Name:** Emily
- **Age:** 30
- **Occupation:** Marketing Analyst
- **Interests:** Yoga, cooking, and reading health blogs
- **Goals:** Maintain a balanced diet
- **Challenges:** Struggles to find accurate nutritional info for fresh produce
- **How Your App Helps:** FreshLens offers instant nutritional content, supporting her balanced diet and culinary exploration.

PERSONAS



- **Name:** Alex
- **Age:** 35
- **Occupation:** Software Engineer
- **Interests:** Tech gadgets, hiking, fast cooking
- **Goals:** Eat healthily despite a busy schedule
- **Challenges:** Has limited time for meal prep and nutrition tracking
- **How Your App Helps:** FreshLens easily fits in busy lifestyle, it's designed for healthy eating with quick scan

PERSONAS

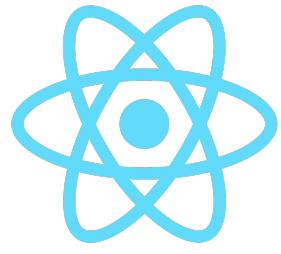


- **Name:** Jordon
- **Age:** 26
- **Occupation:** Personal Trainer
- **Interests:** Gym workouts, sports nutrition, bodybuilding
- **Goals:** Optimize diet for muscle gain and performance
- **Challenges:** Needs precise macro and micro intake from natural foods
- **How Your App Helps:** FreshLens helps in tracking nutritional values, enhancing his meal planning.

Minimum Viable Product (MVP)

- **Photo Food Logging:** Effortless food tracking with AI-powered photo recognition. No manual entry required.
- **Intuitive Design:** Clean, modern UI for seamless dietary monitoring. Delightful user experience.
- **Nutritional Insights:** Detailed breakdown of nutrients, macros, and calories for informed diet choices.
- **Secure Profiles:** Robust authentication for personalized accounts and data privacy.
- **Customizable Plans:** Tailored profiles for dietary preferences, restrictions, and goals.
- **Weekly Analytics:** Comprehensive weekly reports for diet pattern analysis and progress tracking.

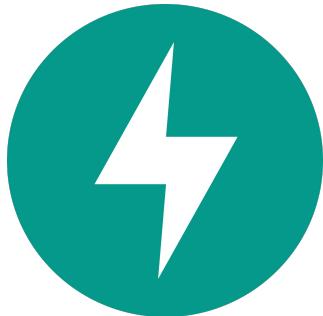
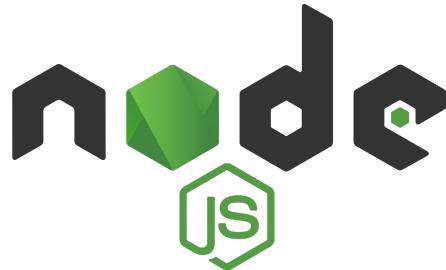
Technologies - Frontend



We will be using React native expo for developing UI for the mobile application and expo is wrapper around react native and it makes prototyping faster.

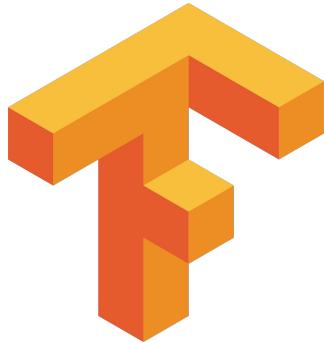


Technologies - Backend



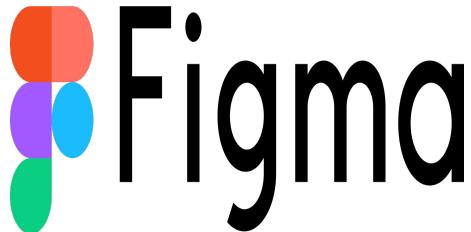
We will be using node js and fastapi for backend and mongodb as database and its nosql database and even firebase for Authentication and storing images using firebase cloud storage.

Technologies - Machine Learning



We will be using tensorflow to perform machine learning tasking and tensorflow is deep learning framework and it will be used for implementing CNN algorithm.

TECH STACK

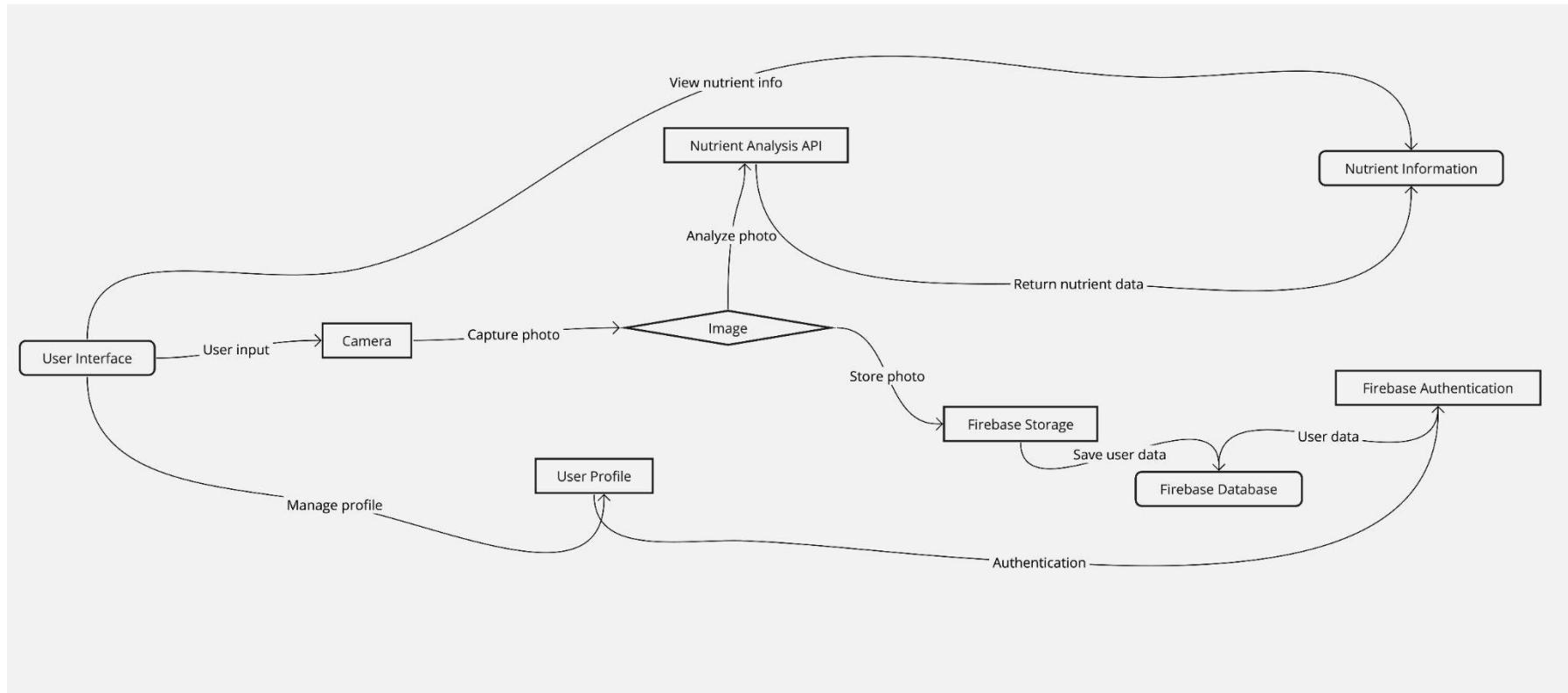


Figma is used for designing of the application and sharing the application ideas on how it should look like.

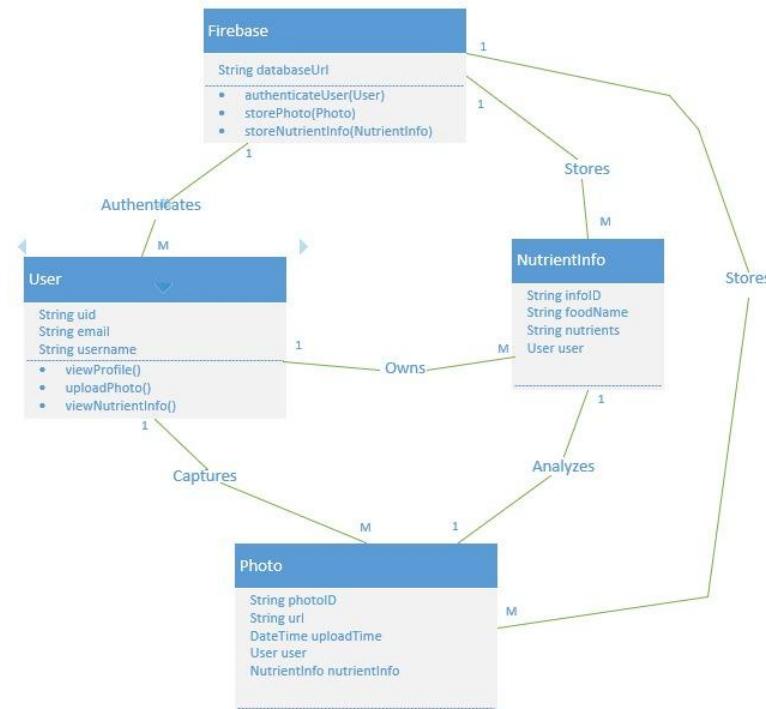
Machine Learning Algorithm

- CNN Architecture Algorithm .
- In CNN Algorithm. we use DenseNet121.
- The DenseNet model is trained using fruits and vegetables dataset. Due to its efficiency and high accuracy, DenseNet model effectively learns from the data and accurately identifies objects.

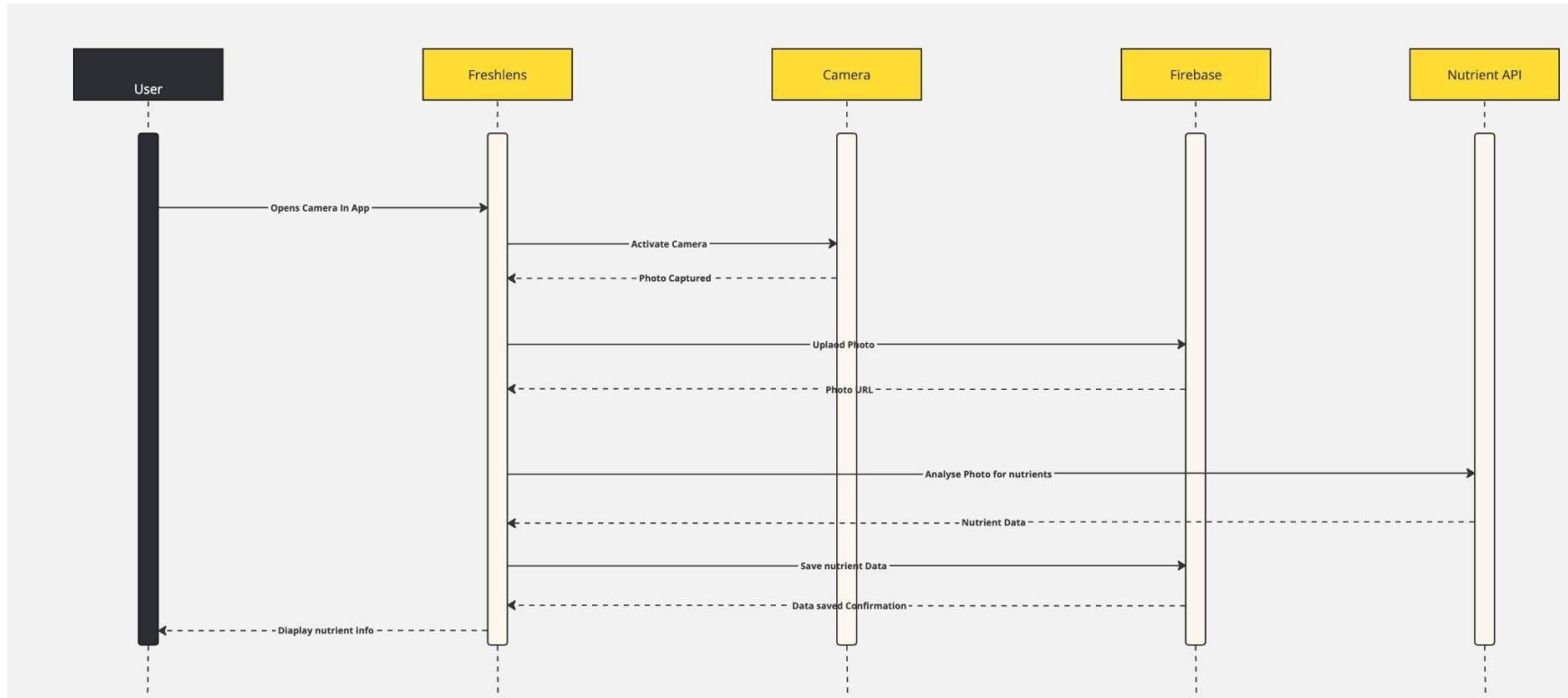
Conceptual Architecture Diagram



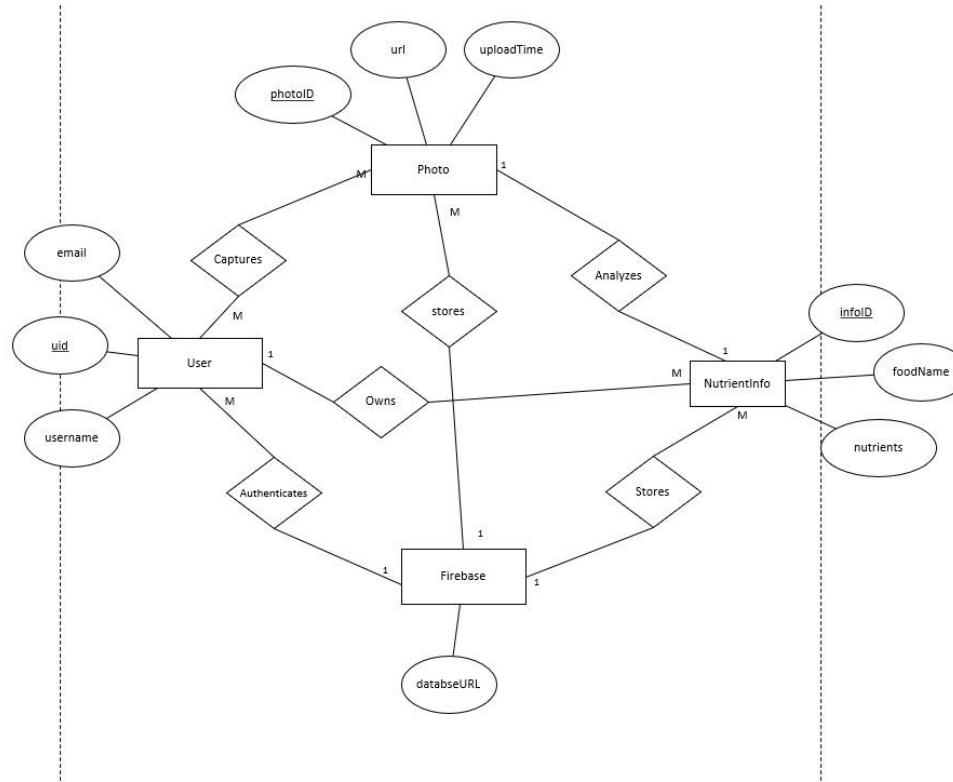
Class Diagram



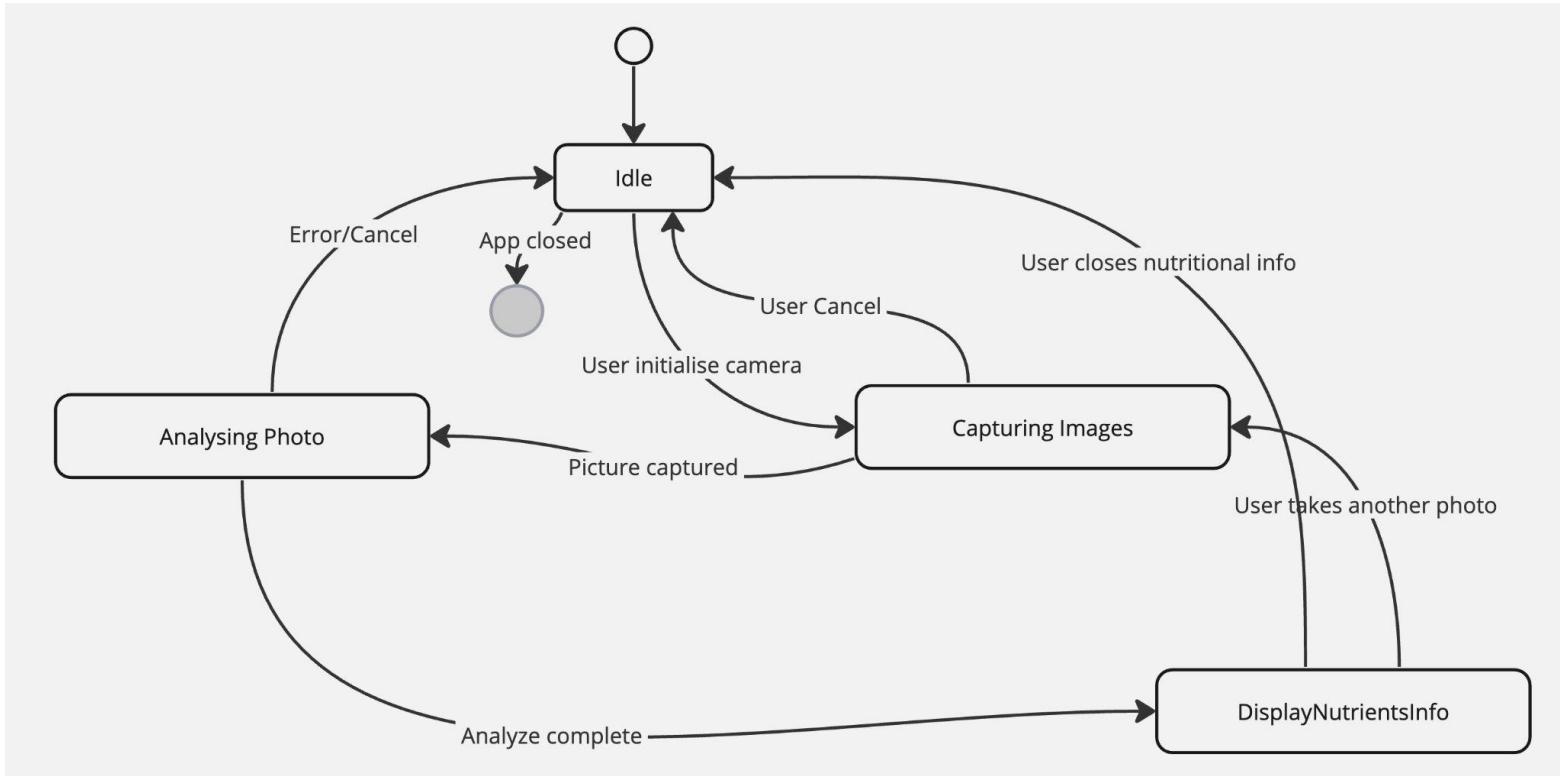
Sequence Diagram



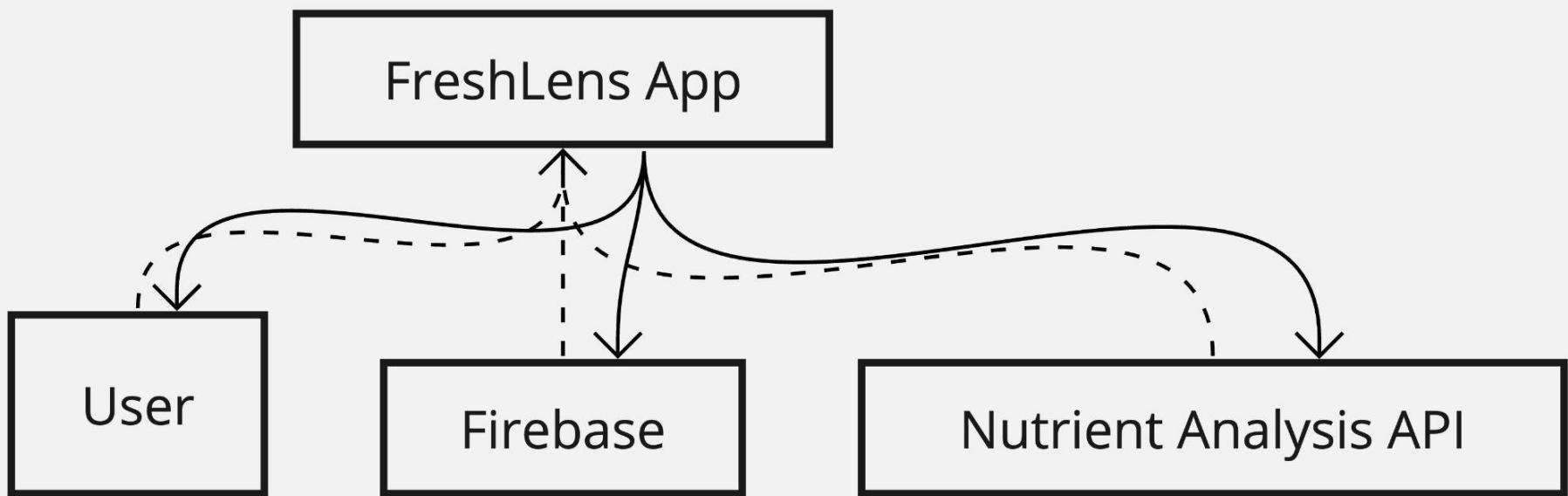
Entity Relationship Diagram



State diagram



Context Diagram



Sprint 3 Recap

- Image recognition and identify the image.
- Integration with the API for getting nutritional data
- Saving the data in favorites screen
- Database created and stored
- 23 Points
- 100% completed

Product Backlog

S.no	Feature	User Story	Points
1	Image capture	As a user, I want to capture images of fruits	5
2	User Profile	As a user, I want to view a profile screen	3
3	Favorites	As a user, I want to have a favorite screen to save my preferred fruits	5
4	Fruit Recognition	As a user, I want the app to recognize fruits from the images I capture using ML	13
5	Nutritional Info	As a user, I want to view nutritional information for the recognized fruits	3
6	Intake Logging	As a user, i want to log my daily fruit intake	2
7	Database Storage	As a user, I want the logged fruit intake to be stored in a database	5
8	Fruit Reviews	As a user, I want to rate and review the fruits I consume	8
9	Multilingual Support	As a user, I want the app to provide multilingual support	3
10	Recipe Sharing	As a user, I want to contribute my own fruit based recipes to the app	8
11	Challenges	As a user, I want to participate in fruit consumption challenges	13
12	Intake Reminders	As a user, I want to receive reminders to log my fruit intake	2

User Stories and Acceptance Criteria

S.no	Feature	User Story	Points
1	The app should provide an option to capture or select fruit images, and display the captured/selected image.		
	Image Capture	As a user, I want to capture images of fruits.	5
2	The app should have a dedicated profile screen where users can view and update their information.		
	User Profile	As a user, I want to view a profile screen.	3
3	The app should have a favorites screen for adding, removing, and persisting favorite fruits across sessions.		
	Favorites	As a user, I want to have a favorites screen to save my preferred fruits.	5

User Stories and Acceptance Criteria

S.no	Feature	User Story	Points
4	The app should implement ML or integrate with a fruit recognition API to accurately identify fruits from user images and provide feedback.		
	Fruit Recognition	As a user, I want the app to recognize fruits from the images I capture using ML.	13
5	The app should have access to a database or API to display nutritional information (e.g., calories, vitamins, minerals) for recognized fruits.		
	Nutritional Info	As a user, I want to view nutritional information for the recognized fruits.	3
6	The app should allow users to log their fruit intake, including quantity/serving size, and maintain a log or history.		
	Intake Logging	As a user, I want to log my daily fruit intake.	2

User Stories and Acceptance Criteria

S.no	Feature	User Story	Points
7	The app should have a database or storage mechanism to persist and retrieve the user's logged fruit intake across sessions and devices.		
	Database Storage	As a user, I want the logged fruit intake to be stored in a database.	5
8	The app should enable users to rate and review fruits, and display their ratings and reviews for each fruit.		
	Fruit Reviews	As a user, I want to rate and review the fruits I consume.	8
9	The app should support multiple languages, allow users to select their preferred language, and display all content in the selected language.		
	Multilingual Support	As a user, I want the app to provide multilingual support.	3

User Stories and Acceptance Criteria

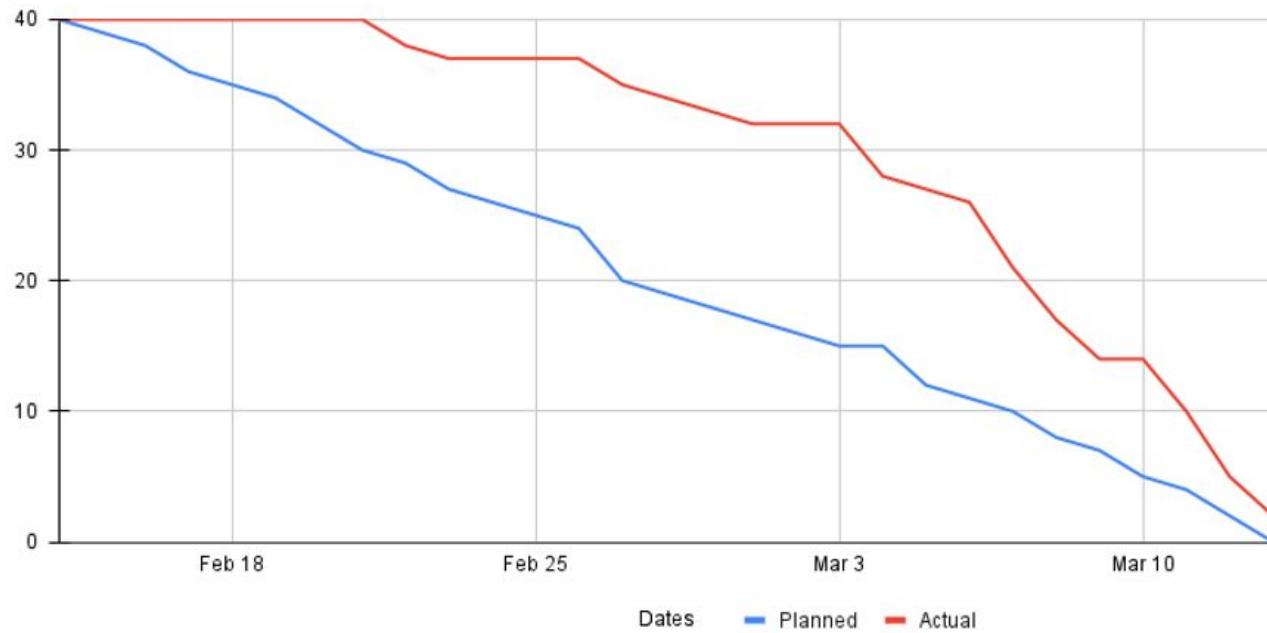
S.no	Feature	User Story	Points
10	The app should provide a way for users to submit their own fruit-based recipes, including details like ingredients, instructions, and optionally, images or videos, and display a collection of user-contributed recipes.		
	Recipe Sharing	As a user, I want to contribute my own fruit-based recipes to the app.	8
11	The app should offer various fruit consumption challenges, allow users to join and participate, track progress, and provide rewards or recognition for completing challenges.		
	Challenges	As a user, I want to participate in fruit consumption challenges.	13
12	The app should allow users to enable reminders for logging fruit intake, set reminder frequency and timing, and send notifications or reminders accordingly.		
	Intake Reminders	As a user, I want to receive reminders to log my fruit intake.	2

Sprint 2 Summary

<i>S.no</i>	<i>Feature</i>	<i>User Story</i>	<i>Points</i>
1	The app should provide an option to capture or select fruit images, and display the captured/selected image.		
	Image Capture	As a user, I want to capture images of fruits.	5
2	The app should have a dedicated profile screen where users can view and update their information.		
	User Profile	As a user, I want to view a profile screen.	3
3	The app should have a favorites screen for adding, removing, and persisting favorite fruits across sessions.		
	Favorites	As a user, I want to have a favorites screen to save my preferred fruits.	5

Sprint 3 Burndown chart

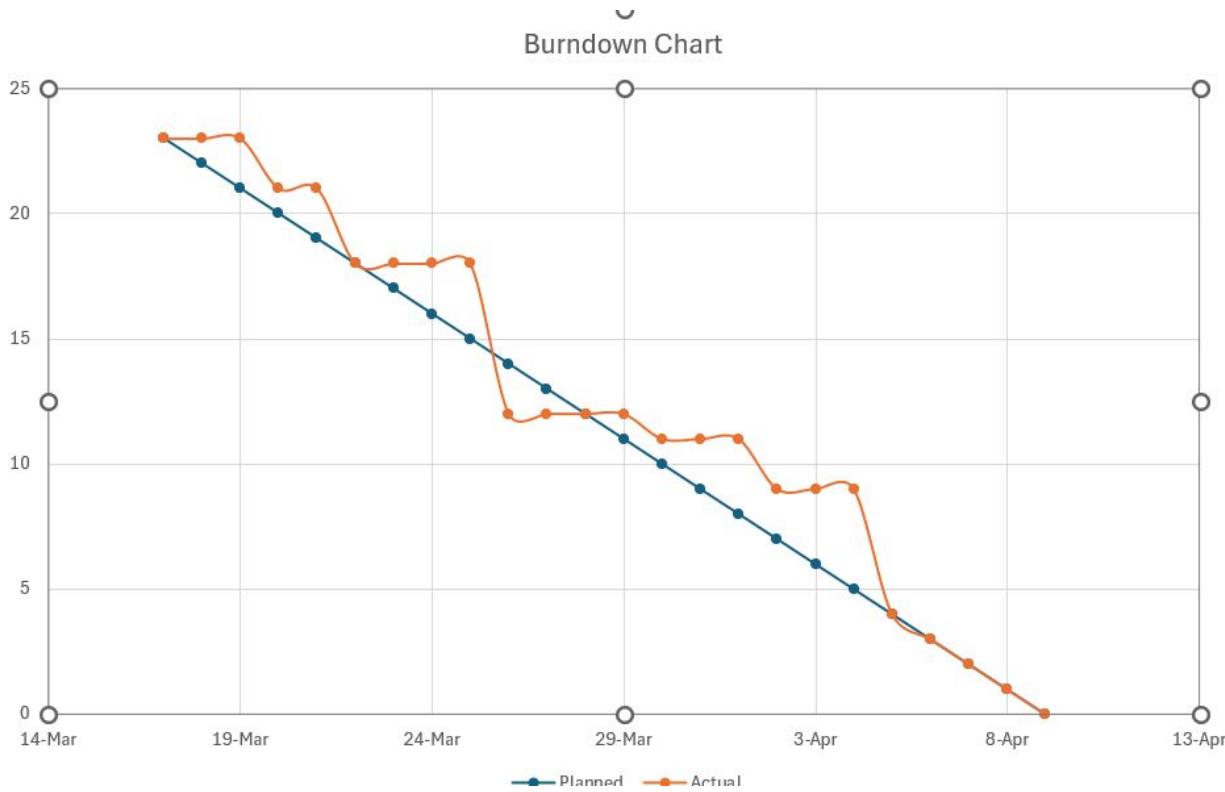
Burndown Chart



Sprint 3 Summary

S.no	Feature	User Story	Points
4	The app should implement ML or integrate with a fruit recognition API to accurately identify fruits from user images and provide feedback.		
	Fruit Recognition	As a user, I want the app to recognize fruits from the images I capture using ML.	13
5	The app should have access to a database or API to display nutritional information (e.g., calories, vitamins, minerals) for recognized fruits.		
	Nutritional Info	As a user, I want to view nutritional information for the recognized fruits.	3
6	The app should allow users to log their fruit intake, including quantity/serving size, and maintain a log or history.		
	Intake Logging	As a user, I want to log my daily fruit intake.	2
7	The app should have a database or storage mechanism to persist and retrieve the user's logged fruit intake across sessions and devices.		
	Database Storage	As a user, I want the logged fruit intake to be stored in a database.	5

Sprint 3 Burndown chart



Sprint 4 Backlog

S.no	Feature	User Story	Points
8	The app should enable users to rate and review fruits, and display their ratings and reviews for each fruit.		
	Fruit Reviews	As a user, I want to rate and review the fruits I consume.	8
9	The app should support multiple languages, allow users to select their preferred language, and display all content in the selected language.		
	Multilingual Support	As a user, I want the app to provide multilingual support.	3
10	The app should provide a way for users to submit their own fruit-based recipes, including details like ingredients, instructions, and optionally, images or videos, and display a collection of user-contributed recipes.		
	Recipe Sharing	As a user, I want to contribute my own fruit-based recipes to the app.	8
11	The app should offer various fruit consumption challenges, allow users to join and participate, track progress, and provide rewards or recognition for completing challenges.		
	Challenges	As a user, I want to participate in fruit consumption challenges.	13
12	The app should allow users to enable reminders for logging fruit intake, set reminder frequency and timing, and send notifications or reminders accordingly.		
	Intake Reminders	As a user, I want to receive reminders to log my fruit intake.	2

Test Cases

Test Case ID	User Story ID	Feature	Description	Steps	Expected Result	Status
TC1	8	Fruit Reviews	Add Fruit Review	Login, navigate to fruit review section, choose a fruit, submit a review and rating.	Review and rating are saved and displayed for that fruit.	Pass
TC2	8	Fruit Reviews	Display Reviews	Navigate to a fruit detail page.	All reviews and ratings for that fruit are displayed.	Pass
TC3	8	Fruit Reviews	Review Input Validation	Attempt to submit an empty review or an invalid rating.	Error message is displayed and review is not submitted.	Pass
TC4	9	Multilingual Support	Change Language	Go to settings, select a different language.	All app content updates to reflect the selected language.	Pass
TC5	9	Multilingual Support	Language Persistence	Change language, close and reopen the app.	App retains the selected language setting.	Pass

Test Cases

Test Case ID	User Story ID	Feature	Description	Steps	Expected Result	Status
TC1	8	Fruit Reviews	Add Fruit Review	Login, navigate to fruit review section, choose a fruit, submit a review and rating.	Review and rating are saved and displayed for that fruit.	Pass
TC2	8	Fruit Reviews	Display Reviews	Navigate to a fruit detail page.	All reviews and ratings for that fruit are displayed.	Pass
TC3	8	Fruit Reviews	Review Input Validation	Attempt to submit an empty review or an invalid rating.	Error message is displayed and review is not submitted.	Pass
TC4	9	Multilingual Support	Change Language	Go to settings, select a different language.	All app content updates to reflect the selected language.	Pass
TC5	9	Multilingual Support	Language Persistence	Change language, close and reopen the app.	App retains the selected language setting.	Pass

Test Cases

Test Case ID	User Story ID	Feature	Description	Steps	Expected Result	Status
TC6	9	Multilingual Support	Display Content in Selected Language	Select a language, navigate through various app sections.	All textual content is displayed in the chosen language.	Pass
TC7	10	Recipe Sharing	Submit Recipe	Navigate to recipe submission page, fill in details, submit.	Recipe is added to the collection and is viewable by others.	Pass
TC8	10	Recipe Sharing	Recipe Detail Viewing	Click on a user-submitted recipe.	Detailed view of the recipe including ingredients, instructions, and media if available.	Pass
TC9	10	Recipe Sharing	Invalid Recipe Submission	Attempt to submit a recipe with missing required fields.	Error messages are shown and submission is prevented.	Pass
TC10	11	Challenges	Join Challenge	Browse available challenges, select a challenge, join.	User is added to the challenge and can start participating.	Pass

Test Cases

Test Case ID	User Story ID	Feature	Description	Steps	Expected Result	Status
TC11	11	Challenges	Track Progress	Participate in a challenge, log activities.	Progress is tracked and displayed correctly.	Pass
TC12	11	Challenges	Complete Challenge	Meet all challenge criteria.	Challenge is marked as completed and rewards are issued.	Pass
TC13	12	Intake Reminders	Set Reminder	Go to reminder settings, enable reminders, set frequency and timing.	Reminders are set up as specified.	Pass
TC14	12	Intake Reminders	Reminder Persistence	Set reminders, close and reopen the app.	Reminder settings are preserved.	Pass

Stories Completed

S.no	Feature	User Story	Points	Status
8	Fruit Reviews	As a user, I want to rate and review the fruits I consume.	8	Completed
9	Multilingual Support	As a user, I want the app to provide multilingual support.	3	Completed
10	Recipe Sharing	As a user, I want to contribute my own fruit-based recipes to the app.	8	Completed
11	Challenges	As a user, I want to participate in fruit consumption challenges.	13	Completed
12	Intake Reminders	As a user, I want to receive reminders to log my fruit intake.	2	Completed

Metrics

Sprint 2 team velocity: 40

Sprint 3 team velocity: 23

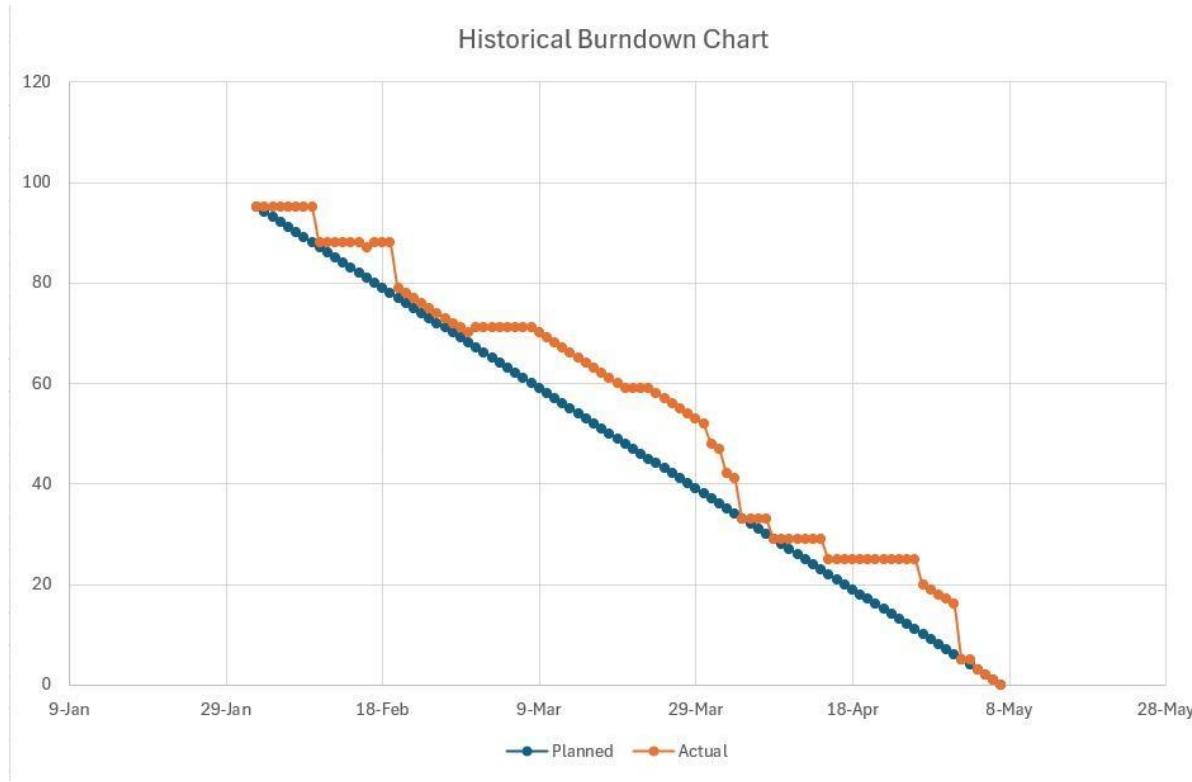
Sprint 4 team velocity: 34

Average Velocity: $(40+23+34) / 3 = 32.33$

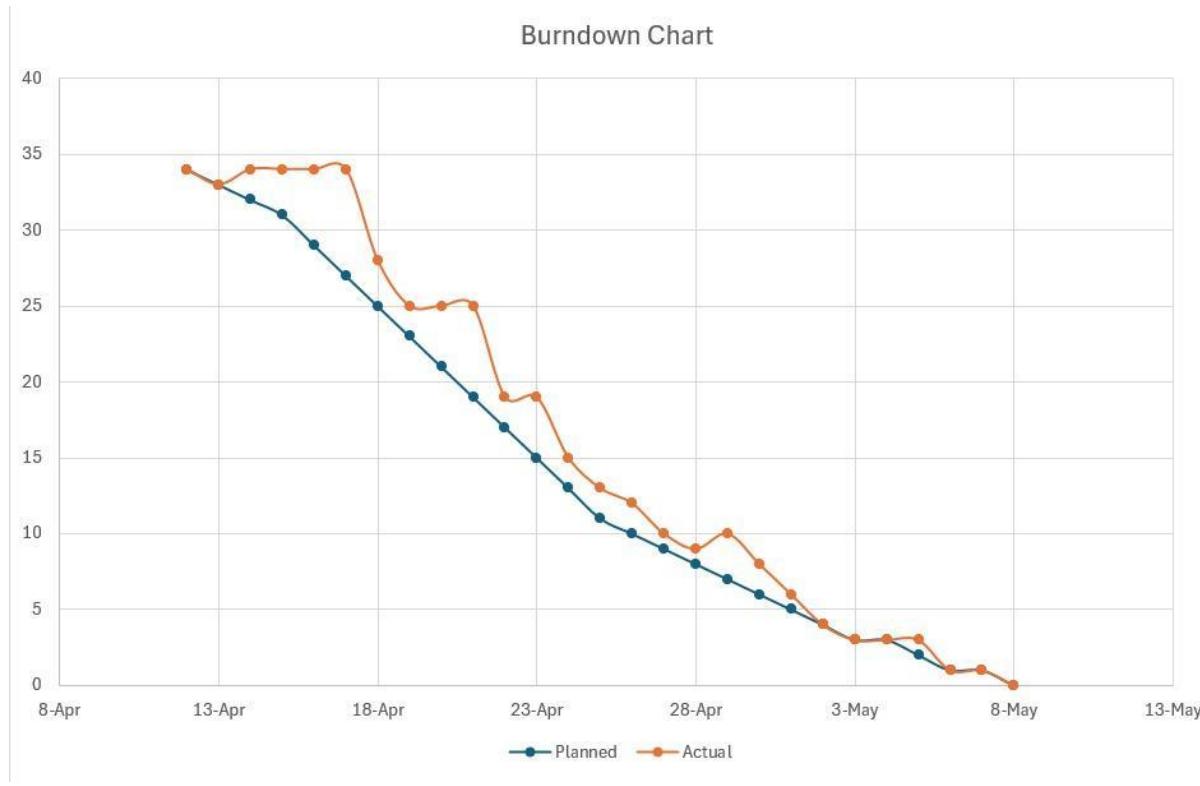
For Sprint 4 : 100% completed

Average completion is 100%

All Sprint Burndown chart



Burndown chart Sprint 4



RETROSPECTIVE

Freshlens

What went well

Effective TeamWork + 5	Clear Project vision + 8
regular updates + 4	consistency throughot the project(Communication,meeting) + 5
Flexibility in adapting to changes + 13	Resourceful approach + 4
Delivering High quality work + 6	Smooth work flow + 1

What can be improved

Improve the project's documentation + 2	Improve UI communication and Engagement + 2
Tight Scheduling + 2	Skill enhancement efforts + 1
Work on feedback + 1	Work Accuracy check + 1

Action Items

Increase Accuracy check + 1	Conduct risk Analysis + 1
conduct skill-building sessions + 1	Document model details + 1
Improving the testing protocols + 1	

Demo Screenshots

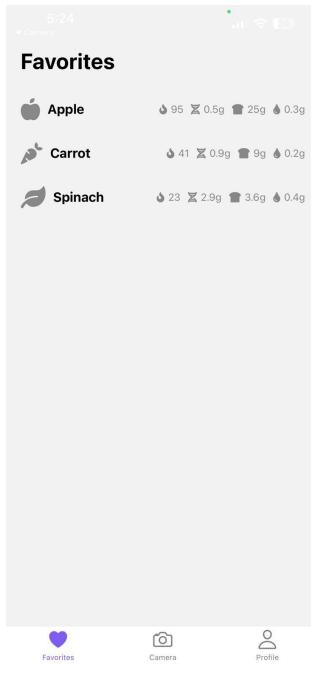


Favorite
Screen

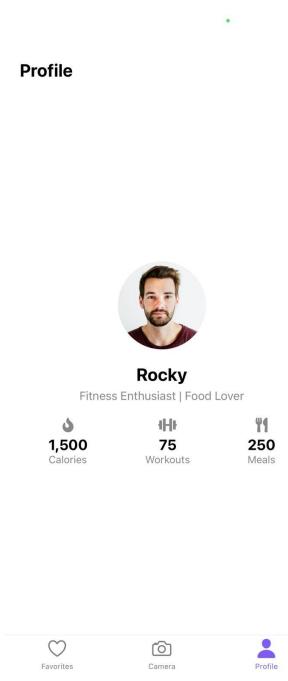


Capture
Modal

Demo Screenshots

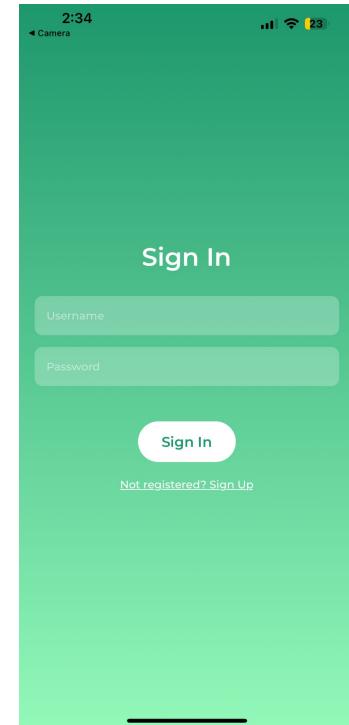
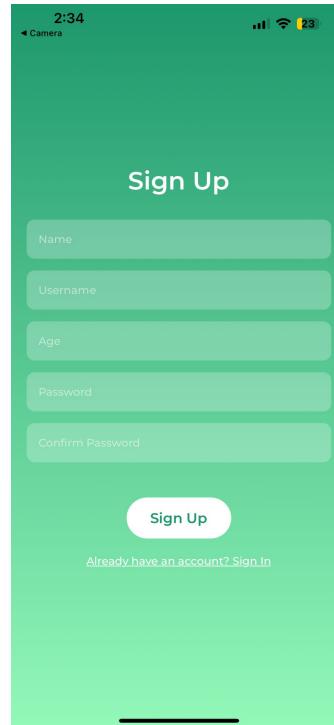
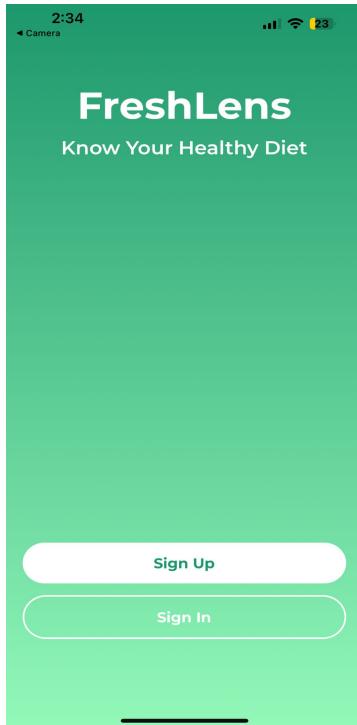


Favorite Screen



Profile Screen

Demo Screenshots Auth Screen



6:57



10

**Potato**

Model Confidence: 89%

About

The potato is a starchy, tuberous crop from the perennial nightshade *Solanum tuberosum*. It is a staple food in many parts of the world and is an excellent source of carbohydrates, vitamins, minerals, and antioxidants.

Nutrition Summary

Calories: 77 kcal

Protein: 2g

Carbs: 17g

Fat: 0.1g



Favorites



CameraStack



Profile

Application

Apple

Calories: 95

Protein: 0.5g

Carbs: 25g

Fat: 0.3g

About

The apple is a crisp, edible fruit that grows on apple trees. Apples are among the most popular fruits in the world and are packed with antioxidants, vitamins, and dietary fiber.

Back

FavoritesStack



CameraStack



Profile

Demo Screenshots



Challenge
Screen

FastAPI

```
@app.exception_handler(Exception)
async def exception_handler(request, exc):
    return JSONResponse(
        status_code=500,
        content={"message": "An error occurred while processing the request."}
    )

@app.post("/predict")
async def predict(file: UploadFile = File(...)):
    try:
        contents = await file.read()
        image = Image.open(io.BytesIO(contents)).convert('RGB')
        image = image.resize((100, 100))
        image_array = np.array(image) / 255.0
        image_array = np.expand_dims(image_array, axis=0)

        predictions = model.predict(image_array)
        predicted_class_index = np.argmax(predictions[0])
        predicted_class_label = class_labels[predicted_class_index]

        return {"fruit": predicted_class_label}
    except Exception as e:
        raise e
```

Node JS Api

```
const API_URL = "https://www.fruityvice.com/api/fruit/all";

app.get("/api/fruit/:fruitName", async (req, res) => {
  const { fruitName } = req.params;

  try {
    const response = await axios.get(API_URL);
    const fruits = response.data;
    const fruitData = fruits.find(
      (fruit) => fruit.name.toLowerCase() === fruitName.toLowerCase(),
    );

    if (fruitData) {
      res.status(200).json(fruitData);
    } else {
      res.status(404).json({ message: "Fruit not found" });
    }
  } catch (error) {
    console.error("Error fetching fruits:", error);
    res.status(500).json({ message: "Failed to retrieve fruit data" });
  }
});
```

Firebase API

```
import { initializeApp } from "firebase/app";
import { getAuth } from "firebase/auth";
import { getFirestore } from "firebase/firestore";

const firebaseConfig = {
  apiKey: "AIzaSyDm6AzKIkSgyFqpUVXcf-DcRY0iqBBV8SE",
  authDomain: "freshlens-e2cc4.firebaseio.com",
  projectId: "freshlens-e2cc4",
  storageBucket: "freshlens-e2cc4.appspot.com",
  messagingSenderId: "298310083659",
  appId: "1:298310083659:web:c5e55777e650b04e4399ce",
};

const app = initializeApp(firebaseConfig);
const auth = getAuth(app);
const db = getFirestore(app);

export { auth, db };
```

Wikipage link

<https://github.com/htmw/2024S-Sierra/wiki>

Application Demo

THANK YOU