glucose GENIE

Senior Design Project

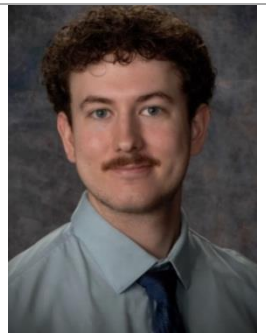
Drexel University
College of Computing and Informatics

May 2025

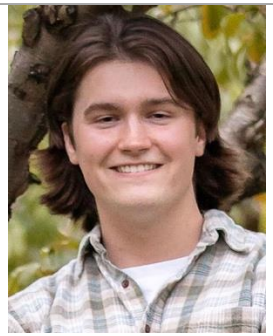
Team Members

Krisi Hristova
Computer Science

Francisco Cruz-Urbanc
Computer Science



Thomas Capro
Software Engineering



Carson Ford
Computer Science

Jared Jackson
Computer Science

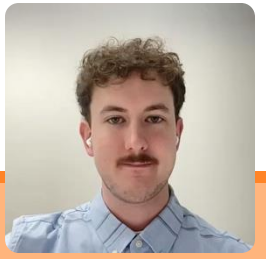
Stakeholders

Two Graduating Medical Students from Rowan University

- Abyson Kalladanthyil
- Ami Patel

Advisor

Prof. Filippos Vokolos



Presentation Overview

PROBLEM DEFINITION

APPROACH

KEY FEATURES

TECH STACK

ARCHITECTURAL DESIGN

DEMO

What is the Problem?

- As of **2021**, approximately **38.4 million** adults in the United States had diabetes.
- **Diabetic** patients must carefully manage daily nutrient intake.
- Many **lack** the tools to plan out their meals and track their intakes effectively.
- Specifically, **low-income** and **Spanish-speaking** individuals face additional challenges.
- Existing apps are **complex**, **costly**, or **not accessible** enough.
- Patients need a **simple**, **affordable**, **accessible solution.**

Approach

- Stand-Alone Mobile **IOS** App.
- The app is designed for **affordability**, **simplicity**, and **cultural accessibility.**
- Supports **Weekly Meal Planning.**
- Supports **English** and **Spanish** to reach a broader audience.
- Uses **diabetes-friendly** meal recipes.
- Provides an **interactive map** for locating **grocery stores nearby.**
- Builds **grocery lists** from weekly meal plan.
- Promotes **clean**, **healthy eating.**

Key Features

Account Creation

Recipe Search

Recipe Saving

Weekly Meal Plan

Grocery Lists

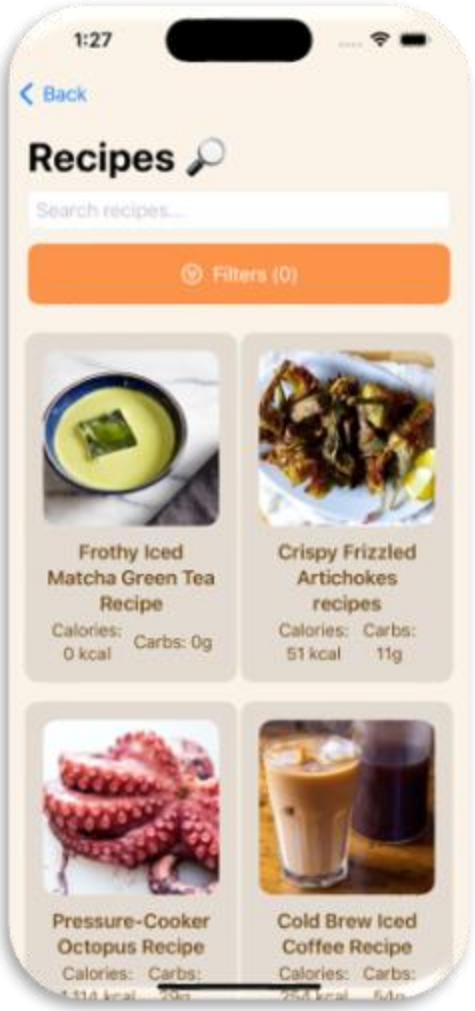
Find Grocery Stores

Nutrient Tracker

Bilingual Language Support

Account Creation

- AWS Cognito
- Secure user data



Recipe Search

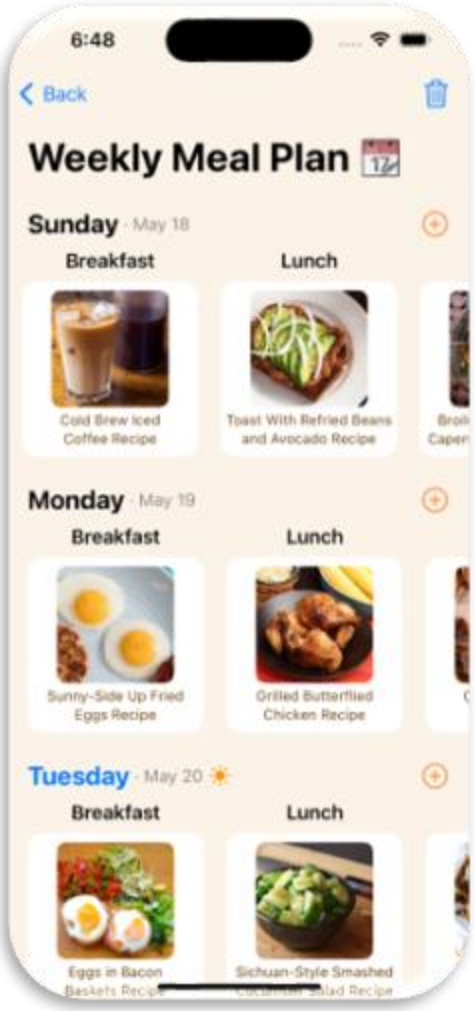
Recipes Provided

- Glycemic Index: 0-69
- Carbs: 0-50g
- Sugar: 0-15g

Filter by **meal types** and **diet types**

Search bar

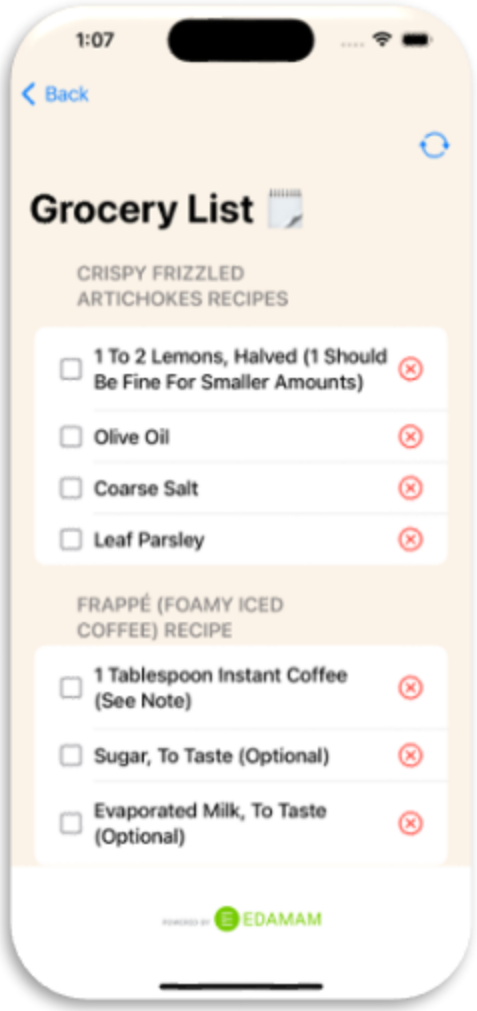
Recipe Saving



Weekly Meal Plan

Week: Sun, Mon, Tues, Wed, Thurs, Fri, Sat

Day: Breakfast, Lunch, Dinner



Grocery Lists

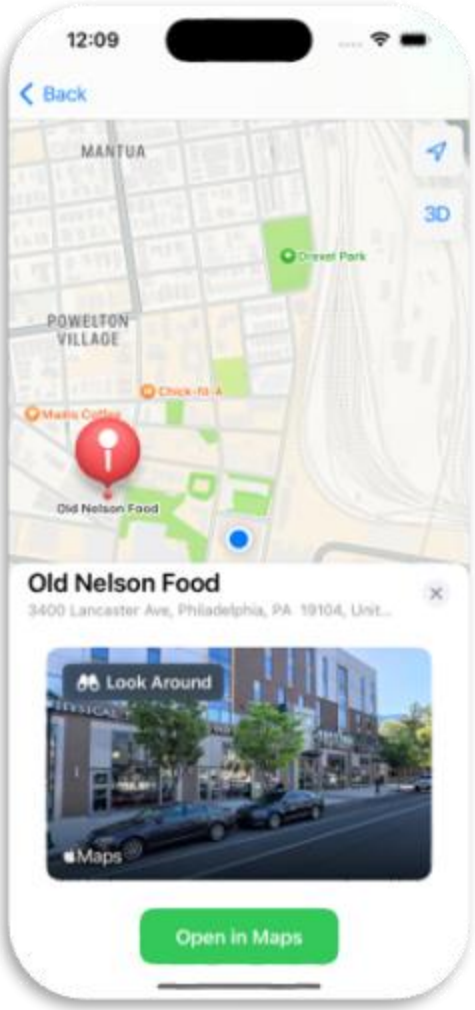
Generated through **Weekly Meal Plan** recipe **ingredients.**

Ingredients can be **crossed off** or **removed**.

Convenience

Find Nearby Grocery Stores

- Interactive map integration
  - Displays nearby grocery stores using Swift's Map UI Kit which connects to Apple's Map API
- Upon first entrance, user will be asked for location permission
- Tap "Search for stores" button

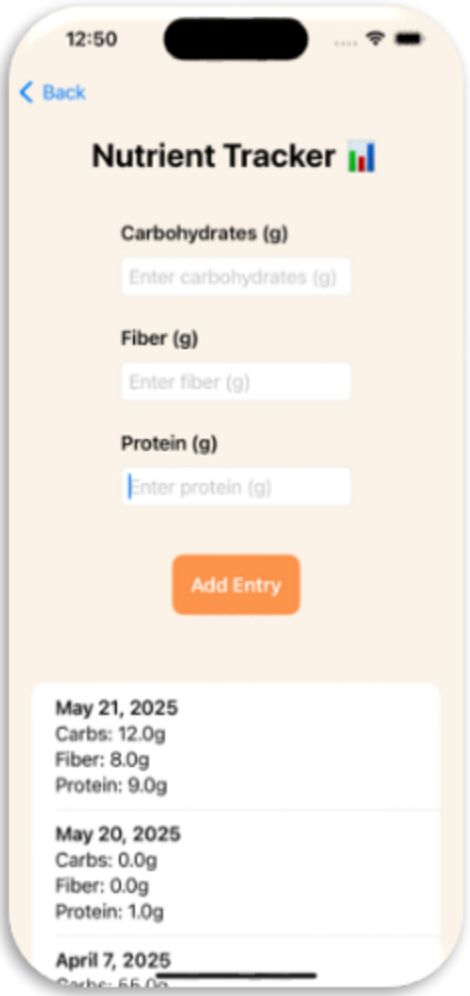


Find Nearby Grocery Stores

- Tap any store marker to show details
  - Open directions in Maps app

Find Nearby Grocery Stores

- Street View preview of every store
  - View any store using Apple's look around feature for a real-world preview



Nutrient Tracker

- Enter **carbs, fiber, protein**
- **Accumulated** nutrients shown

Bilingual Language Support

- English
- Spanish

Tech Stack

Software Development

Backend
Cognito, Amplify, DynamoDB

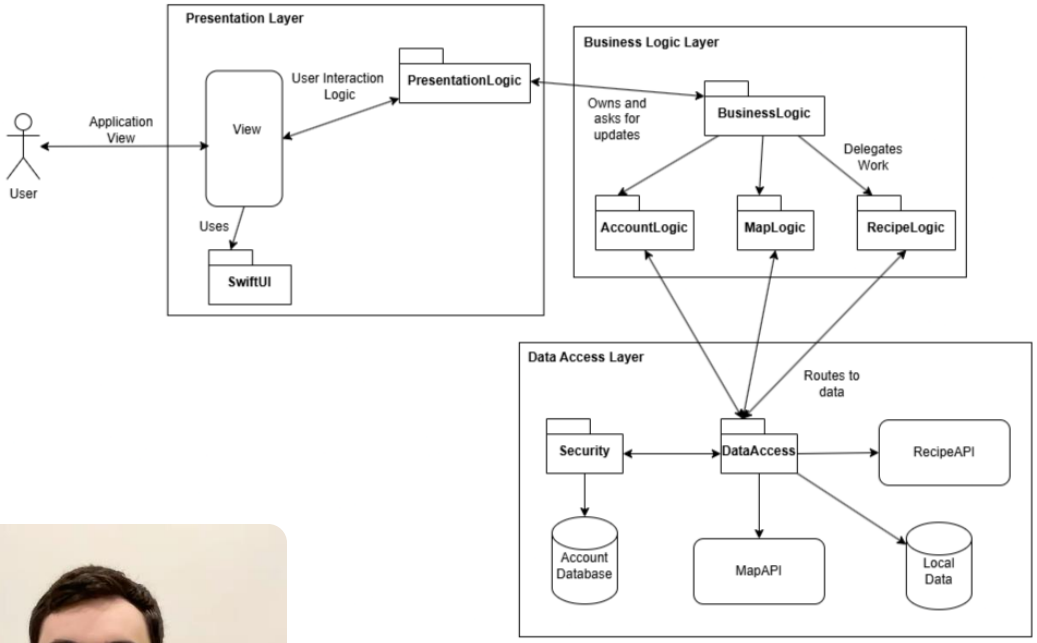
API
Edamam Recipe Search

API
Apple MapKit

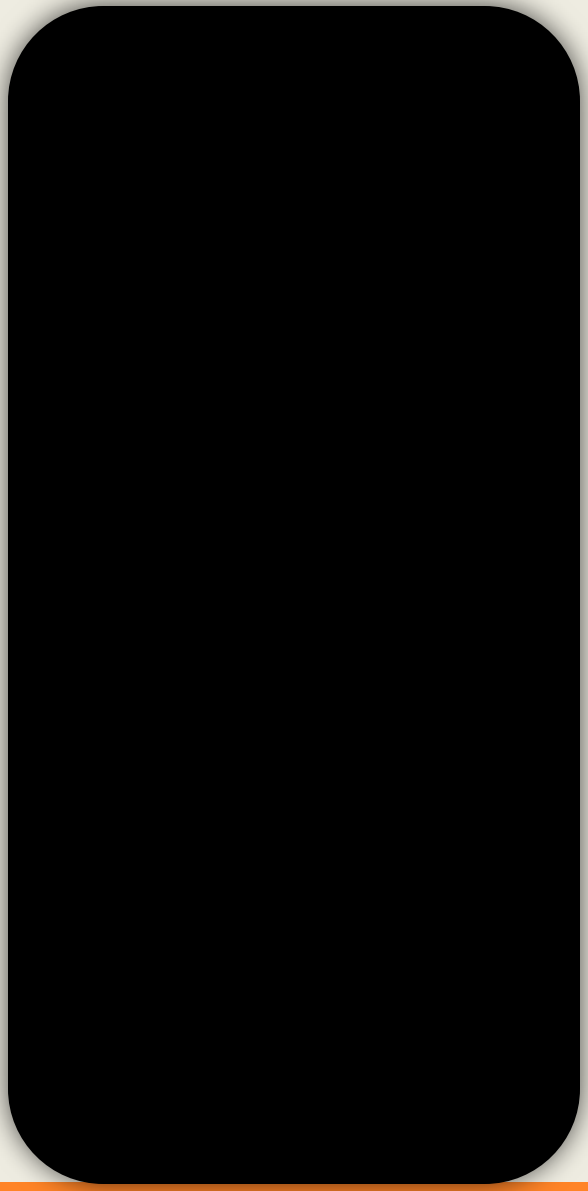
Version Control
GitHub

Art
Krita

Architectural Design



- Three main layers
  - Presentation
  - Logic
  - Data Access
- Separate responsibilities for modularity and clarity



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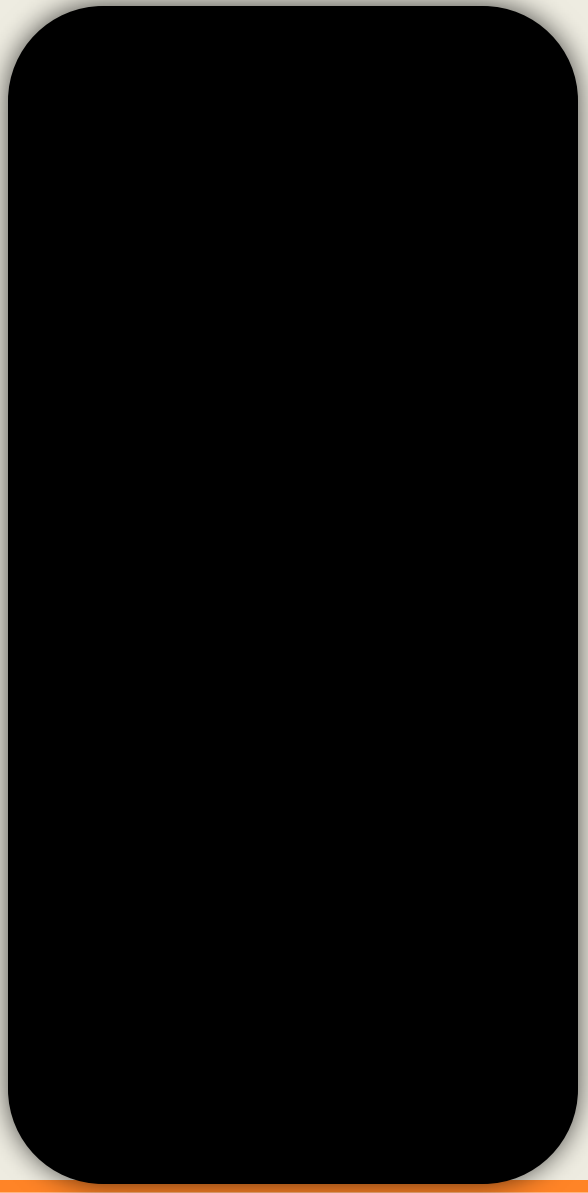

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Thank You!