

Problem and Proposed Solution

Managing personal nutrition has become complicated. Users are forced to use separate apps for macros, recipes, and meal planning with no integration. This makes consistent healthy eating difficult, especially for those with specific dietary goals.

Nutrichoice solves this with a full-stack web platform where users can discover and create recipes, build weekly meal plans, track macronutrients, and engage with a community, all in one place.

System Architecture

- Frontend:** React SPA (TypeScript + Vite)
Backend: Django + Django REST Framework (Python)
- API is structured as a multi-app Django project
 - Authentication uses DRF Token Auth
 - CORS is handled by *django-cors-headers*
 - *Gunicorn as WSGI Server, handles HTTP requests*
 - *Whitenoise to serve static content directly*
 - *Postmark to handle emails*
- Data:** Supabase Postgres + Supabase Storage

Requirements

Functional:

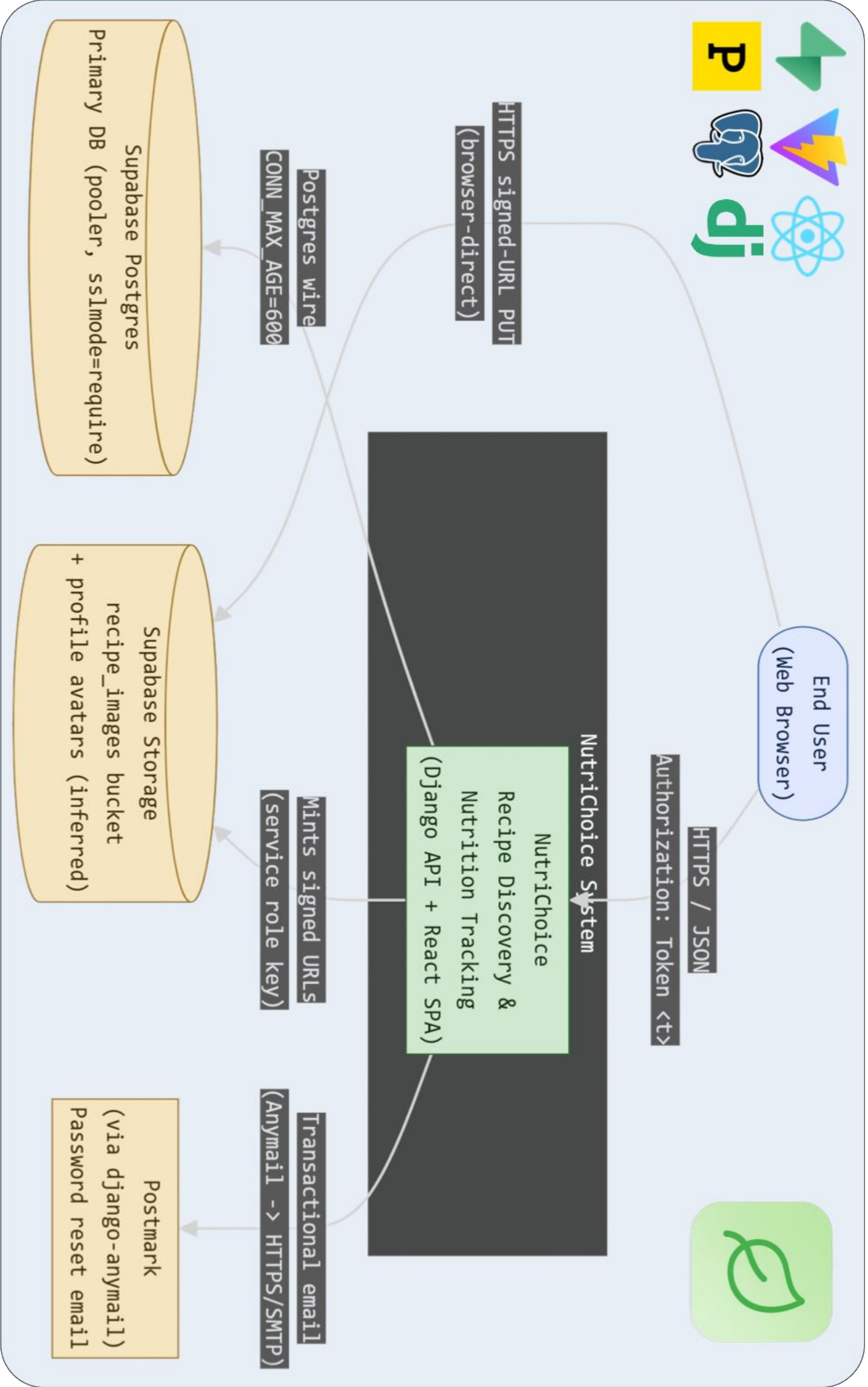
- Users must be able to:
 1. Register, log in, and reset their password via email
 2. Browse and filter recipes by cuisine type and diet
 3. Mark recipes as tried, save them into cookbooks and assign them to a meal plan
 4. Set calorie and protein goals and track progress
- Each recipe must display a full nutritional breakdown calculated automatically from ingredients

Non-Functional:

- All API communication must use token-based authentication over HTTPS
- The system must support concurrent users with connection pooling
- The UI must be accessible in light and dark modes
- The UI must be mobile compatible

Key Features

- Recipe Discovery and Filtering:** Browse recipes by cuisine types or dietary tags (vegan, gluten-free...)
- Automatic Nutrition Breakdown:** Every recipe instantly shows calories, protein, carbs, fat, fiber... calculated automatically from the ingredients.
- Cooking History:** Mark recipes as “tried” to build a personal log and feed the popularity algorithm
- Cookbook Collections:** Create and name cookbooks to organize recipes into custom collections.
- Weekly Meal Planner:** Assign recipes to days of the week using a simple calendar view.
- Nutrition Goal Tracking:** Set daily calorie and protein targets, with a daily and weekly tracker.
- Account and Security Management:** Edit profile, update dietary preferences, upload a profile picture, and reset password via email.



Django apps

- users**
- profiles**
- recipes**
- api**
- ingredients**
- social**
- nutrition**
- meal plan**

Future Work

Nutrichoice has many features still being developed. We aim to provide users with AI assisted ingredient substitution, so users may eat their favorite recipes without having to compromise their nutritional goals. Additionally, we plan to incorporate smartwatch connectivity to provide real-time health tracking, and introduce a smart shopping list feature, to automatically generate weekly grocery lists.

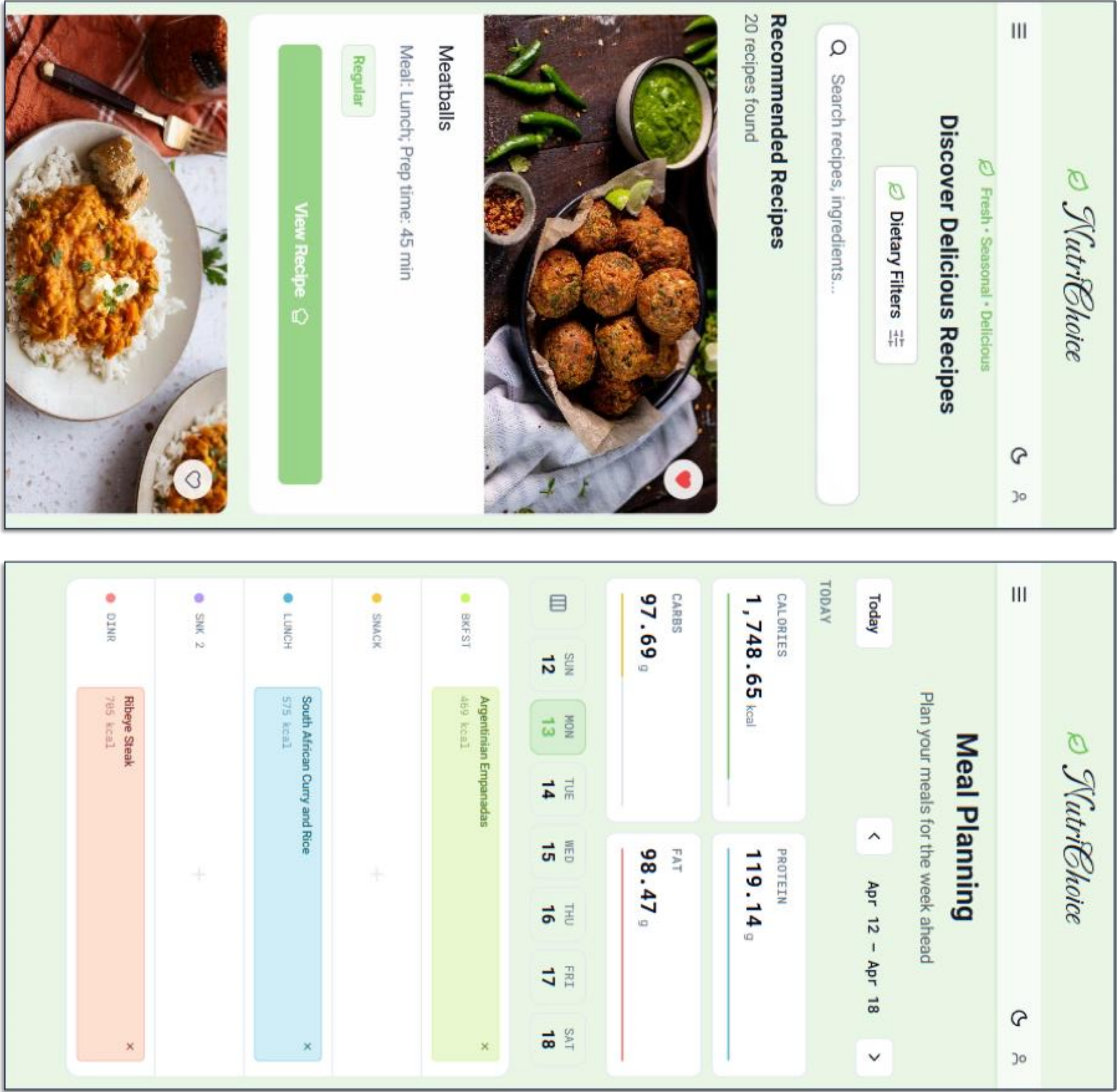
Implementation Highlights

Token Authentication and secure IDs: Users are authenticated via tokens rather than sessions, and public IDs use UUIDs to prevent accessing unauthorized data.

Immutable Ingredient Database: Ingredient nutritional values cannot be edited or deleted once saved to ensure accurate and consistent nutritional value calculations.

Automatic Nutrition Calculation: Nutritional totals are automatically calculated from ingredient quantities.

Direct to Storage File Upload: Images are stored directly in the Supabase Storage via signed URLs.



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