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Project Specification 1 App description

FoodLens Overview

FoodLens is an iOS nutrition tracking application that combines machine learning-powered food recognition with nutritional coaching. The app will track what the user eats, logging nutritional values but it also learns the user's patterns and provides personalized recommendations to help you achieve a balanced diet.

Problem Statement

There are apps that log this data for users, but most users use it primarily for calories and only see numbers, so they don't understand what the numbers mean. They need a personal nutritionist that understands their habits and provides tailored advice.

App Aproach

FoodLens will use two machine learning systems: computer vision to identify foods from photos, and predictive analytics to analyze eating patterns over time. The app could act as a personal nutrition coach, identifying deficiencies, detecting overconsumption, and suggesting specific foods to create a more balanced diet.

Data Source & Integration

FoodLens will integrate with a reliable food database API, such as the USDA FoodData Central (free, authoritative data) or Nutritionix (branded foods and UPC lookups). This will allow the app to provide accurate nutritional values for both whole ingredients and packaged foods.

Core Features

- Take/choose a photo → identify food/ingredient(s)
- Fetch per-serving nutrition (calories, macros, common micros)
- Manual search + barcode scan fallback
- Save entry to local log (can edit/delete)
- daily totals & macro ring
- Trends: weekly/monthly macro split, top foods, sodium/sugar flags
- Smart suggestions ("swap ideas" based on your history) based on goals
- HealthKit sync (read weight; write nutrition)
- Basic allergies/preferences filter (vegetarian, halal, etc.)

Technology Stack

We will be using SwiftUI + PhotosPicker, Vision + Core ML for on-device classification, AVCaptureSession or VisionKit for Barcode, SwiftData, HealthKit, and USDA FoodData Central/Nutritionix for the api.