Problem Statement - Carb Capture

The Problem

People with diabetes need to carefully manage their insulin dosage based on their current blood sugar levels and the carbohydrate content of their meals. Often when eating meals, especially ones that are not homemade, diabetics must guess the amount of carbs that are in the food they are eating. Along with this, despite the availability of continuous glucose monitoring (CGM) devices like Dexcom, there is a need for an application that integrates this real-time data to assist users in determining the precise insulin dosage needed before meals. These three data points that Carb Capture will use can be extremely useful for calculating the carb-to-insulin ratios that differ from person to person. The problem we aim to solve is providing a streamlined, user-friendly solution that combines meal recognition through photos with real-time glucose data to suggest accurate insulin dosages, reducing the cognitive burden on users and potentially improving health outcomes.

Users

Who?

The primary users are people with diabetes, particularly those requiring insulin management (Type 1 and some Type 2 diabetes patients).

How many?

There are 2 million people in the US with Type 1 Diabetes. Ideally all of them could have access to a cheap and easy logging software. We are using a generous estimate of 10% the population, providing us with approximately 200,000 users. The potential user base includes millions of people with diabetes globally, especially those already using CGM devices like Dexcom or who are tech-savvy and looking for integrated digital solutions to manage their health.

Typical background and capability?

The user can have any education level. Any individual is welcome, but most are expected to have Diabetes. They must be capable of reading text and have basic smartphone knowledge to open the application. However, the app should also be accessible to those with minimal technical expertise. Users typically range from teenagers to older adults, encompassing a broad demographic.

What do they do?

A user will download the application from the Apple Store or Android Store on their smartphone. They will be expected to upload pictures of their food to receive a short description. There will be optional support to sign into their Dexcom account to retrieve their current insulin information and log their data. They log meals, monitor their blood glucose trends, possibly consult with healthcare providers, and adjust their lifestyles accordingly to maintain their health and prevent complications associated with diabetes. The proposed app would assist in these activities by automating parts of the process and integrating multiple functionalities into one platform.

Environment

Hardware: Phone, mobile device
Operating System: Android and IOS
User environment: Casual day to day use, wherever they are, during meals.
Standards: Provide reliable health estimates in an easy to use and convenient way.
Assumptions/ Risks: There is the possibility that the estimations are incorrect or slightly off, the blood sugars were unable to be received correctly through Dexcom, or the user entered their carb-to-insulin ratio incorrectly. Assume insulin sensor provide accurate data. Risk of providing wrong medical advice. Assume constant service availability.