

DIRECT

A portable low-cost fundus camera + AI-based software + supporting web app to facilitate data collection.

Problem

Diabetic Retinopathy (DR) is the leading cause of blindness not only in the USA but also in developing countries. **370 million people** worldwide suffer from diabetic retinopathy, glaucoma, or macular degeneration. The good news is **early detection reduces blindness by 95%**. The detection requires capturing a high-quality fundus (the back of human eyes) image. However, current fundus cameras cost \$20k on average, the current clinical used fundus camera requires **trained medical professionals** to operate. According to our secondary and primary research, we found that ophthalmologists are very short-handed in developing countries. Also, economic hardships and lack of knowledge are keeping diabetic patients away from getting the test done early.

Solution

The proposed solution is a portable low-cost **fundus camera** with AI-based **software** + supporting **web app** to facilitate data collection.

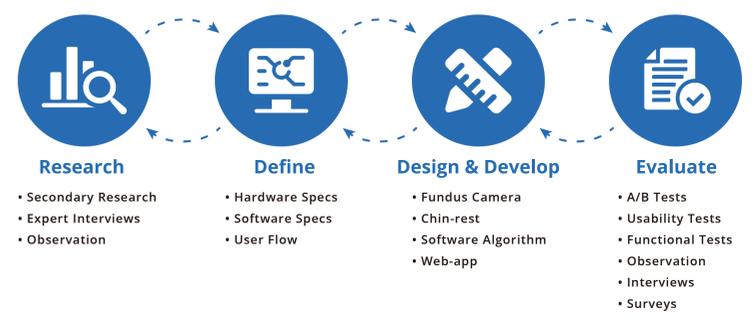
Long term goal: Build a low cost and easy to use solution for untrained and trained medical volunteers to detect diabetic retinopathy in US and developing nations.

Short term goal: Improve the existing prototype to facilitate data collection to train the AI model.

Process

We started this project with a proof-of-concept design and development, but we still did a lot of research to narrow down our scope. We learned that our immediate goal is to facilitate the data collection through using a fundus camera to take images for medical staff in clinics.

After we defining the hardware and software specs as well as the main user flow, we divided our work into three parts: hardware, software and web app and made great efforts on designing and developing them. Three rounds of evaluation helped us a lot on measuring the success and re-defining the design goals, which enabled us to iterate and get the final workable version!



User Flow

