

Smart Fridge Food Management System

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Problem

An American family of four throws out 14% of their food annually, which can cost around \$589.76 each year. Perishables account for most of this waste. The root cause of this waste is that food is simply not used.

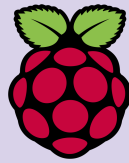


Idea

In order to address this issue, our team ideated a software and hardware solution that tackles one of the core sources of this issue: food management. By building on the recent boom of the Internet of Things, we can develop a smart home system using IoT principles.

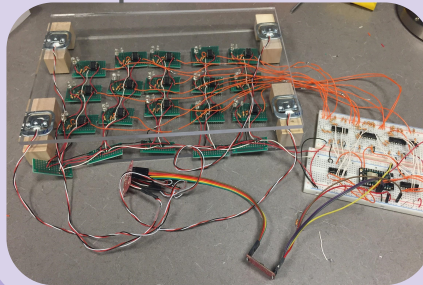
Integration

Raspberry Pi publishes data to cloud



Databases hold fridge contents, grocery list, expiration dates, and food locations on shelf

Food prediction model identifies inserted and removed foods



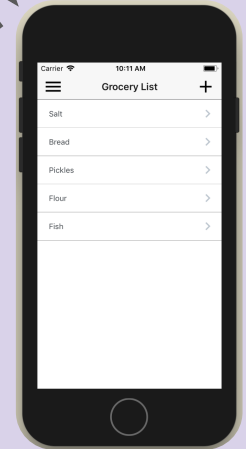
LED array and scale detect location and weight of foods

Photon board controls sensors and reads data

App shows item freshness and quantity

Notifications alert users when food is going to spoil

Grocery list in-app that communicates with the fridge databases



Design

We created an insertable refrigerator shelf that will autonomously track freshness and frequency of the foods. In conjunction with a cloud service and mobile app, the product also gives suggestions on food close to expiration.

Results

Integration between each individual component with the core cloud services proved successful. Data transfer functions from end to end, with sensor data propagating through the Raspberry Pi and AWS to the app. Initial testing of the prediction model successfully used weight and shape to identify several distinct test objects.