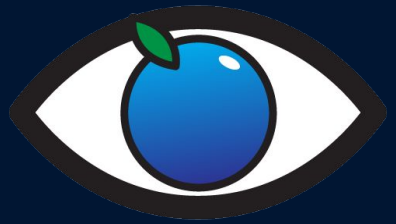
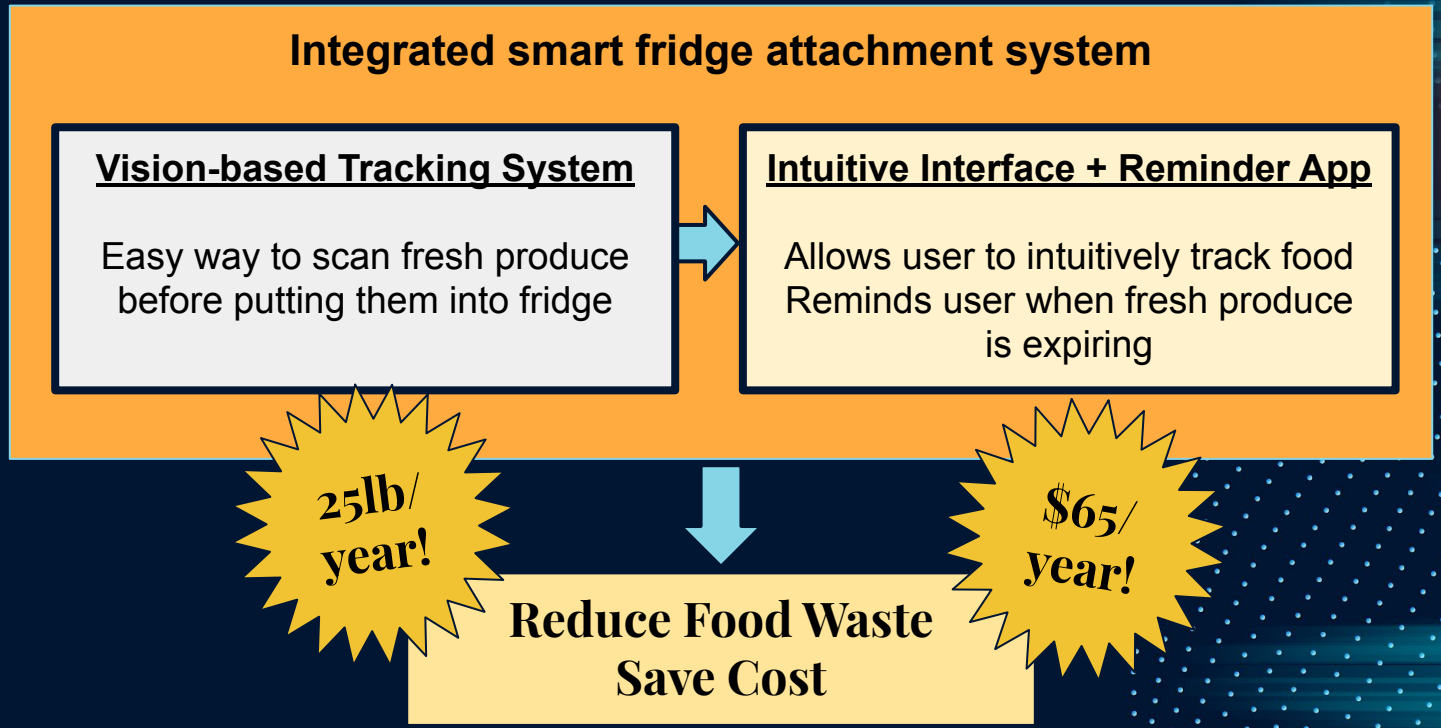


Fresh Eyes

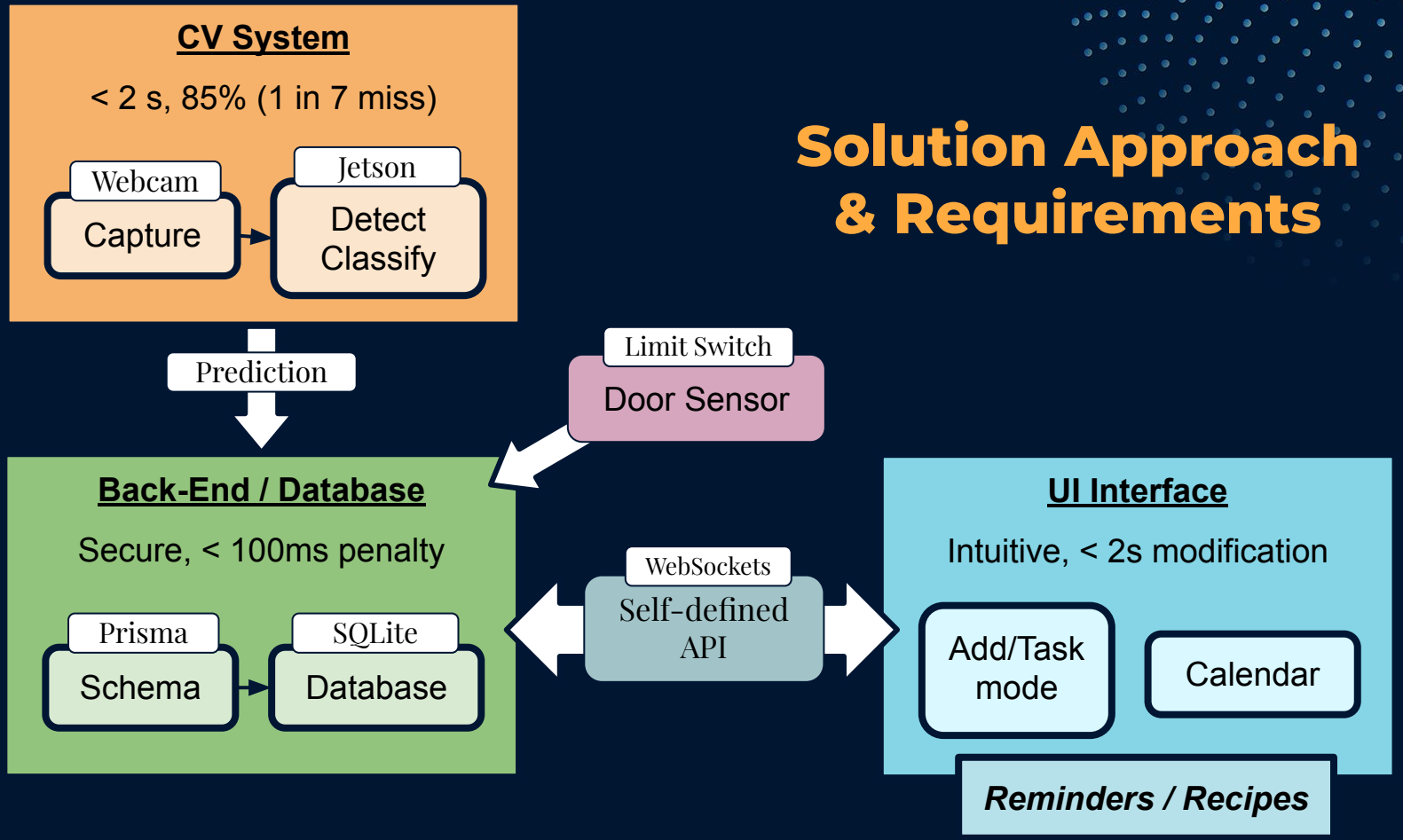
Team B3

Alex Strasser, Samuel Leong, Oliver Li

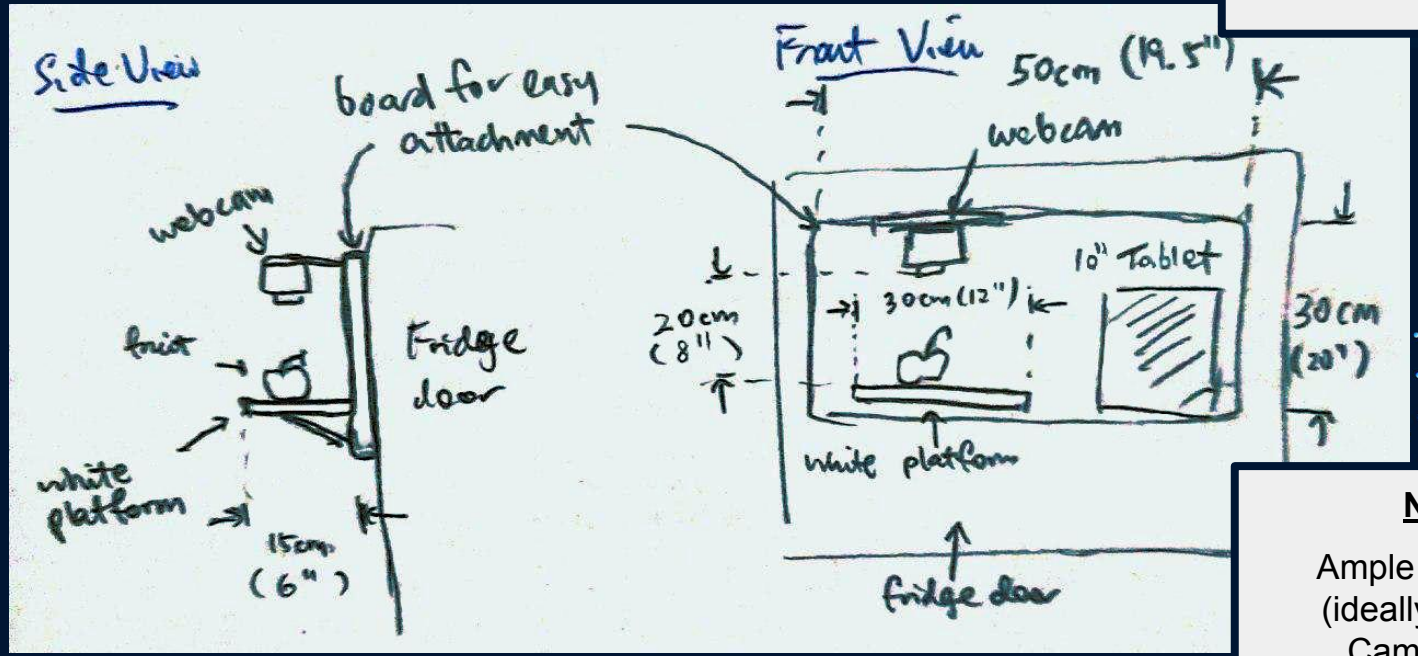
What is FreshEyes?



Solution Approach & Requirements



Fridge Attachment System



Integrated

Everything on one large board
Easily installed/removed with standard 3M tape

Non-intrusive

Ample Space: Fairly large (ideally foldable) platform
Camera on top allows ease-of-placement

CV Detection and Classifier

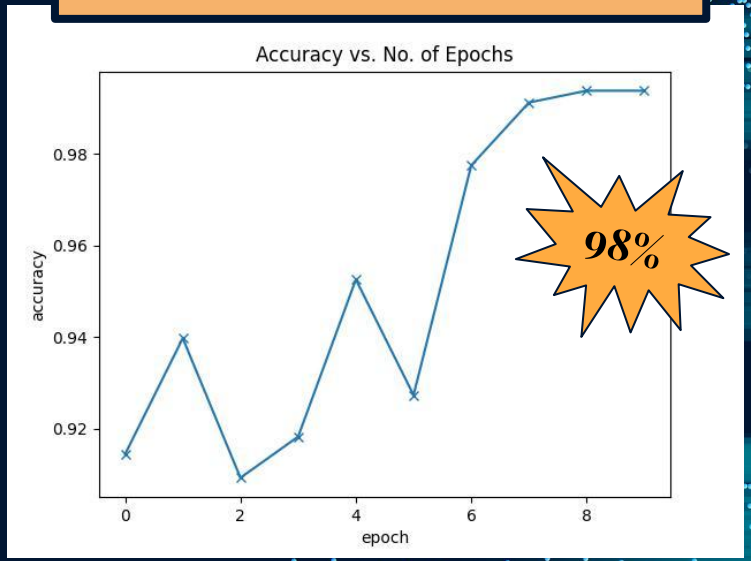
Basic White Background Segmenter

Platform will have white background
Check for changes in pixels
Basic white background subtraction with bounding box

*sample, not actual image/output

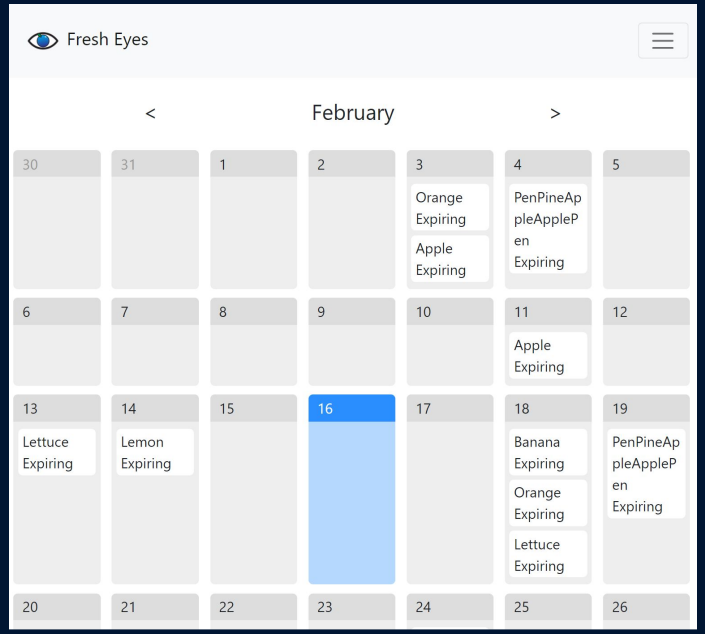
9 Layer ResNet CNN

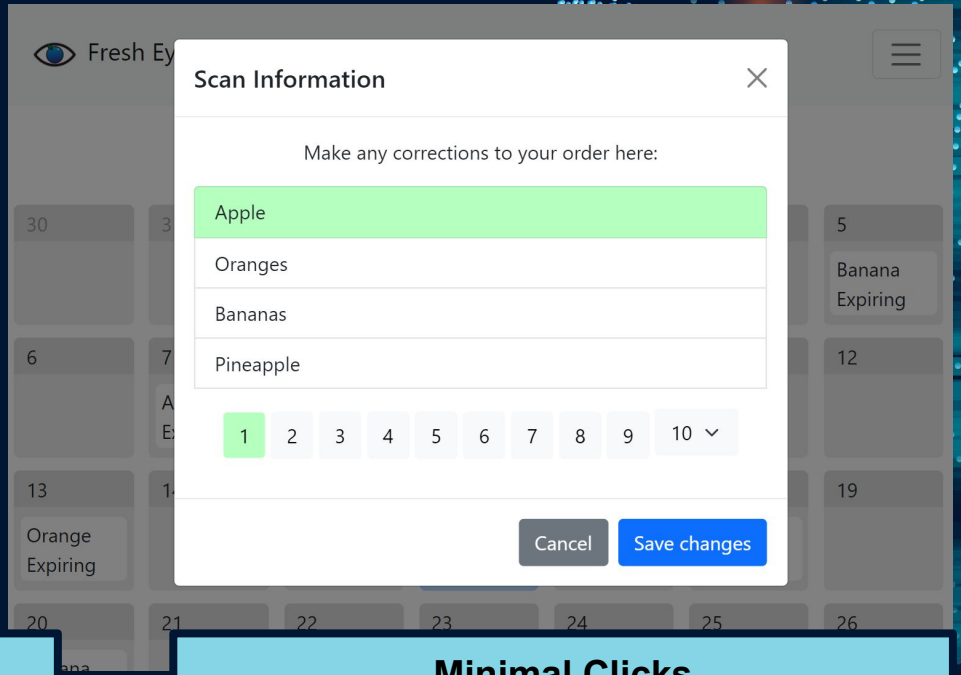
Currently 98% accuracy!
Need to test/train on real-world dataset



Intuitive UI

https://capstone.astrasser.com:2096/





Web-based UI

Since the UI is a website, it can be accessed from your phone, laptop, or the fridge tablet. Communication will be fluid between all components.

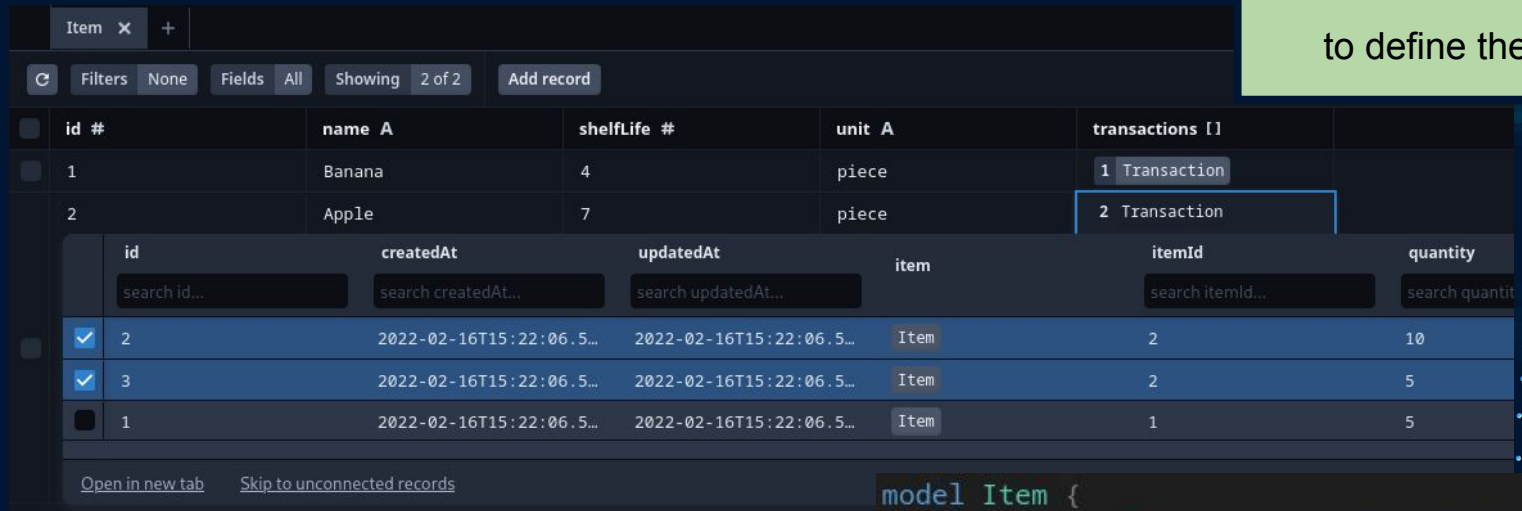
Minimal Clicks

We use an intuitive interface with limited dropdowns to minimize user clicks and interaction time

Back-End Database

Schema defined as code

We use an ORM library (Prisma) to define the DB schema




```
model Item {
  id           Int           @id @default(autoincrement())
  name         String
  shelfLife    Int // Number of days item can be stored
  unit         String
  transactions Transaction[]
}
```

Maximum deployment flexibility

We can easily switch between SQLite on dev environments and PostgreSQL on prod environments

Implementation Plan - Overview

CV System

Bought webcam, Jetson

Modified online CNN classifier

Writing our own detection/segmentation and optimised program for Jetson

Attachment System

To buy plywood for platform and support

Will build own basic platform

Back-End / Database

Self-defined API (schemas done)

Writing own code for database management

UI Interface

Bought tablet

Writing own web app (basic UI done)

Testing, Verification, and Metrics

CV System

Buy selection of fruits and vegetables

Test under simulated real-world conditions

85& accuracy, < 2s response

Interface (Front-Back-End + API)

Automated tests: Correctness of API endpoints

Feedback collection: Surveys on UX design, system performance, ease of use

Schedule

Samuel
- CV System
- Testing
- Helps with front-end

Alex
- Front-end
- Helps with CV system, back-end

Oliver
- Back-end, APIs, Hardware
- Administration

Q&A