MICHIGAN STATE UNIVERSITY

Alpha Presentation

DeepOven: Volume and Quantity Estimation in Cooking

The Capstone Experience

Team Whirlpool

Luke Kelly
Ryan Le
Heng (Andy) Liang
Karl Ma
Emily Rose

Department of Computer Science and Engineering
Michigan State University

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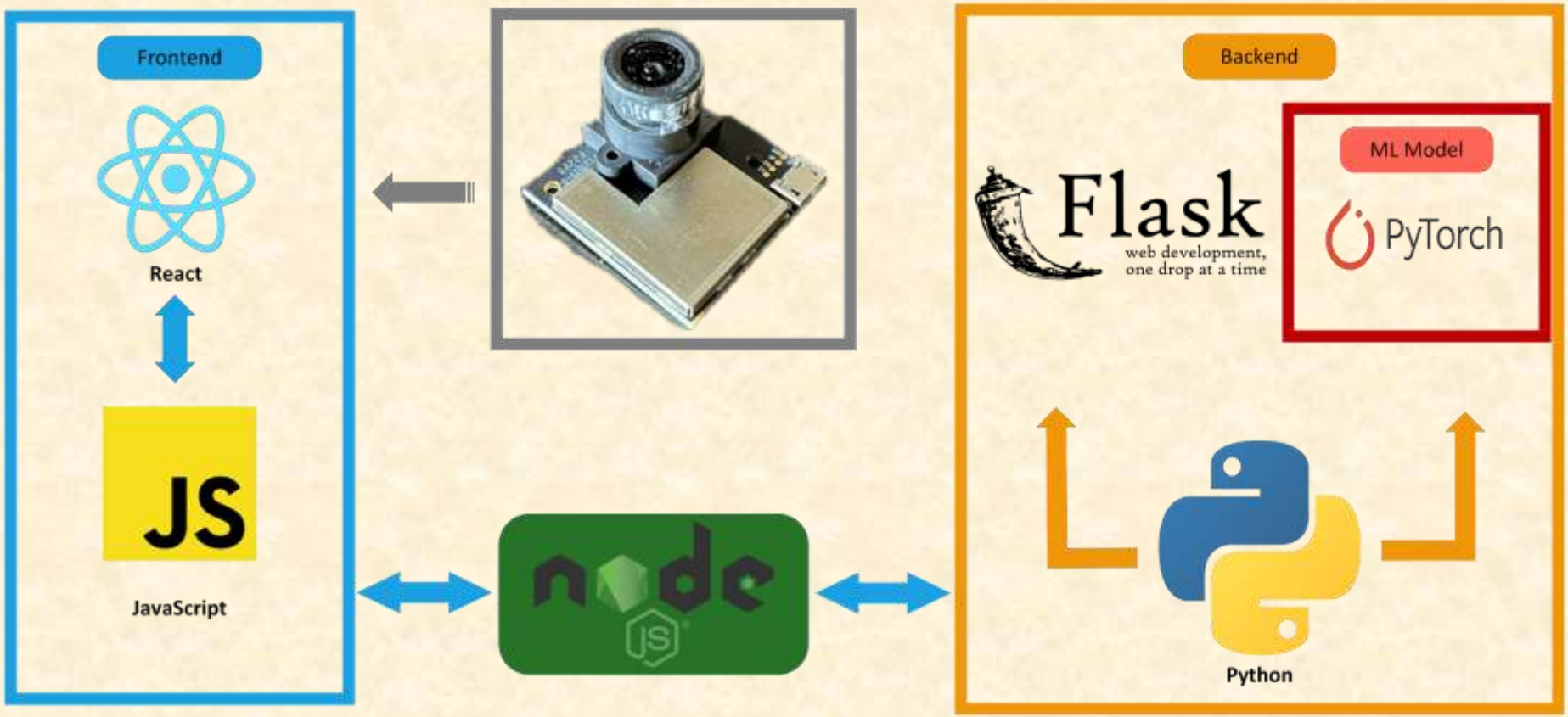
From Students…
…to Professionals

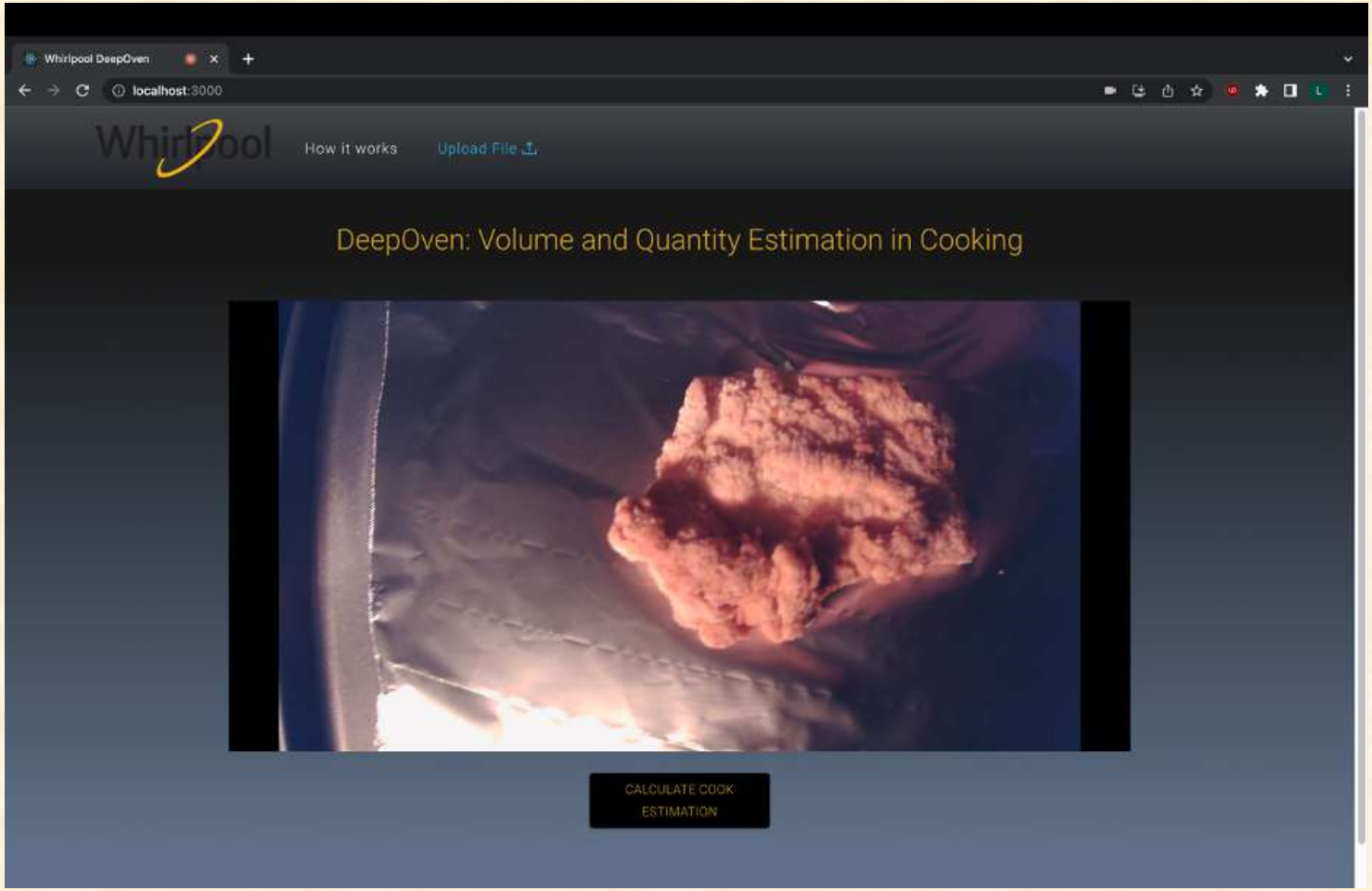
Project Overview

- Whirlpool is creating a smart oven to make cooking easier and more enjoyable for customers
  - Livestream view of the cavity from the Whirlpool mobile app
  - Food recognition
  - Doneness detection
  - Initial cook time estimation
- DeepOven is a proof of concept that initial cook time can be estimated
- Software can detect food volume, quantity, and rack level using a camera inside the oven cavity.
- These variables will be used in conjunction with Whirlpool's existing algorithms to calculate an initial cook time estimation
- **Visualization of the food volume, quantity, and rack level will be displayed through the web for the Whirlpool development team**

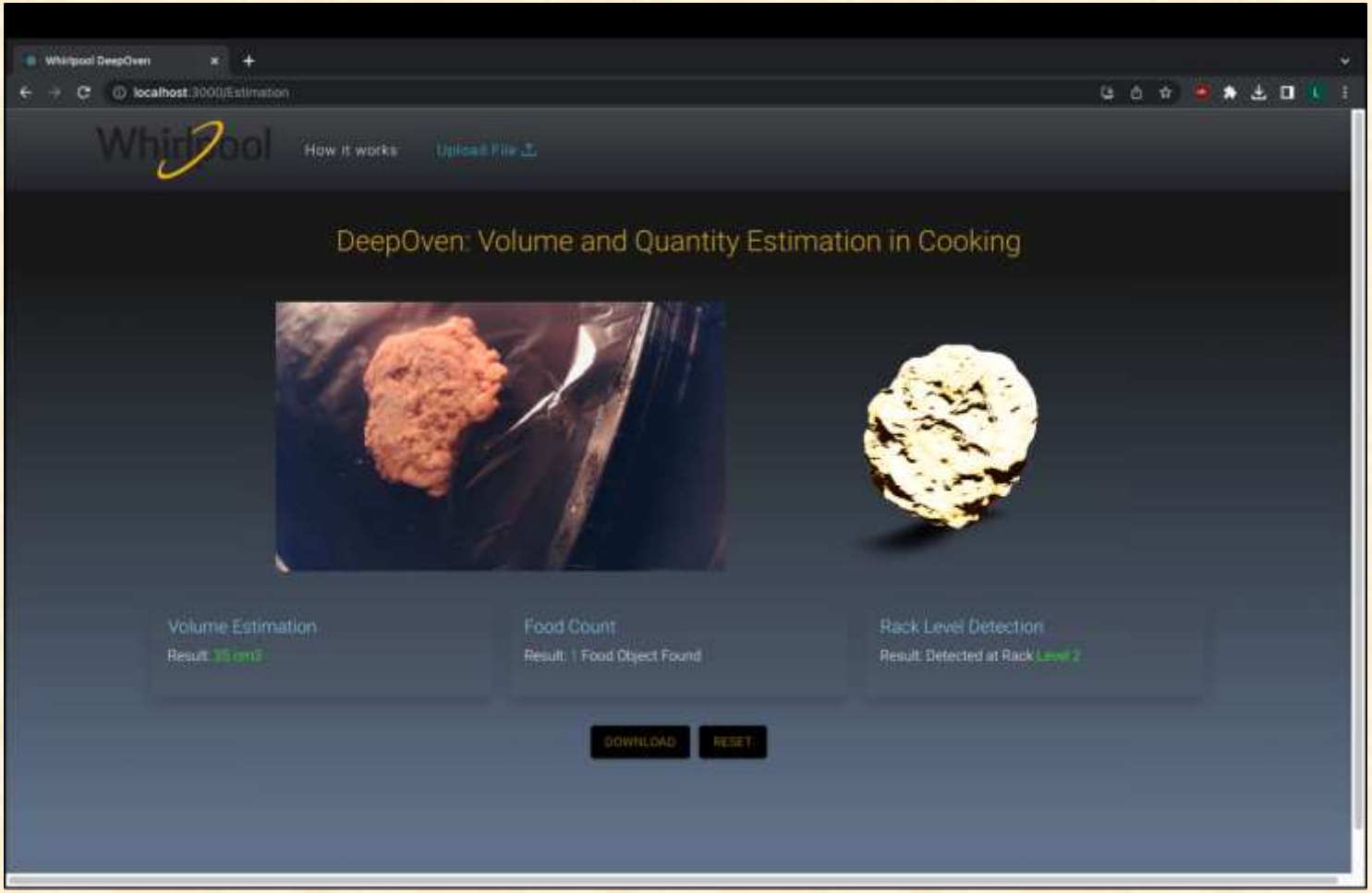
System Architecture



Home Screen

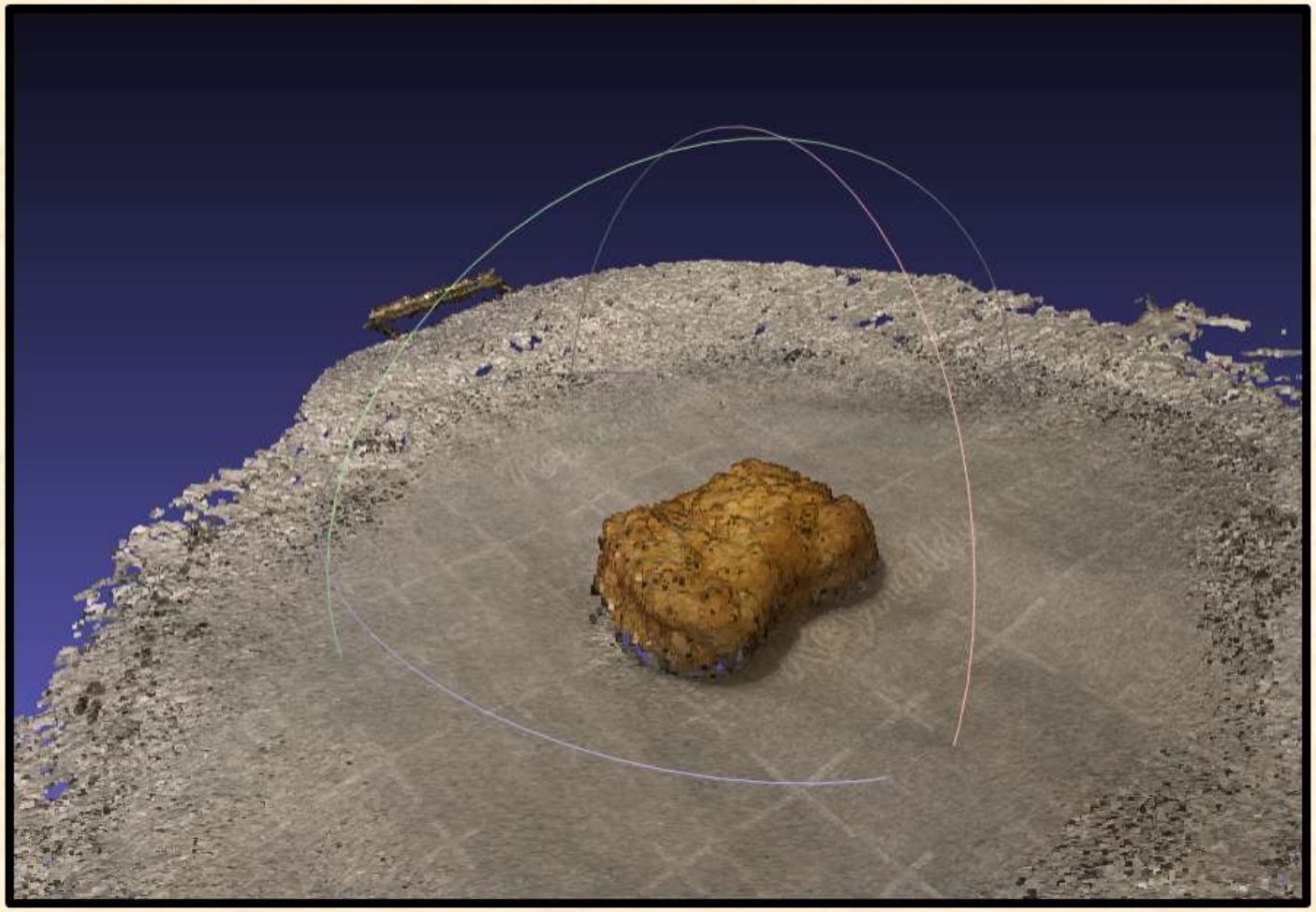

Whirlpool DeepOven
localhost:3000
How it works
Upload File
DeepOven: Volume and Quantity Estimation in Cooking
CALCULATE COOK ESTIMATION

Calculation Results Screen



YOLOv8 Quantity Detection

3D Point Cloud Rendering



What's left to do?

- Create 3D point cloud meshes of food to train the 3D reconstruction model
- Annotate more images of the oven cavity to train our YOLOv8 quantity detection model to be more accurate
- Provide more training data for the rack level detection CNN model to improve accuracy

Questions?