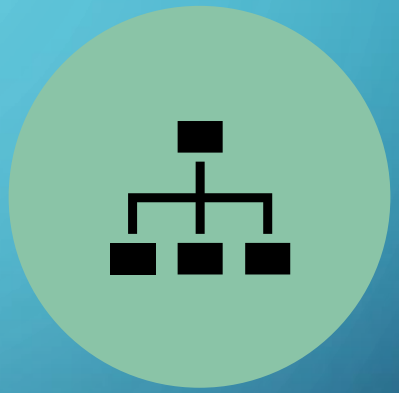
FRIDGEVISION: SNAPSHOT INVENTORY ASSISTANT



TEAM MEMBERS: NHA HUYNH, ELIJAH RAINES, TRIET LE, RICHARD RODRIGUEZ

TIER: TIER 1

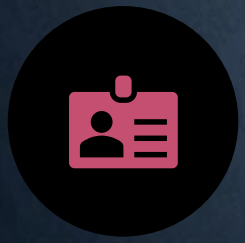
THE PROBLEM

- People often forget what's in their fridge, leading to food waste and duplicate purchases.
- Who Cares: Busy families, meal planners, sustainability advocates.
- Why is it Important:
- U.S. households waste $728 (single person) to $2,913/year (family of four).
- Reducing waste helps the environment.
- Saves time and money during grocery planning.

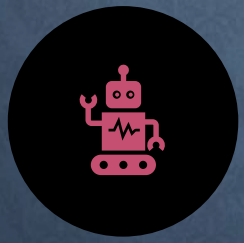
FRIDGEVISION: AUTOMATED SMART INVENTORY SYSTEM

- A compact camera module installed inside the refrigerator captures photos automatically each day (or upon door closure).
- Captured images are uploaded securely to a cloud storage folder for automated analysis.
- Using computer vision (YOLOv8), the system detects, classifies, and counts all visible food items.
- The inventory list is updated in real time — no manual input needed.
- Users receive notifications for low-stock items, soon-to-expire products, and inventory summaries via the companion app or dashboard.

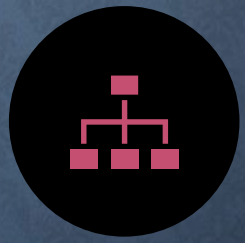
TECHNICAL APPROACH



- CV TECHNIQUE: OBJECT DETECTION



- MODEL: YOLOV8 (PRE-TRAINED, FINE-TUNED IF NEEDED)



- FRAMEWORK: PYTORCH OR ULTRALYTICS YOLOV8 REPO

- WHY YOLOV8: FAST, ACCURATE, AND DEPLOYABLE FOR REAL-TIME DETECTION.

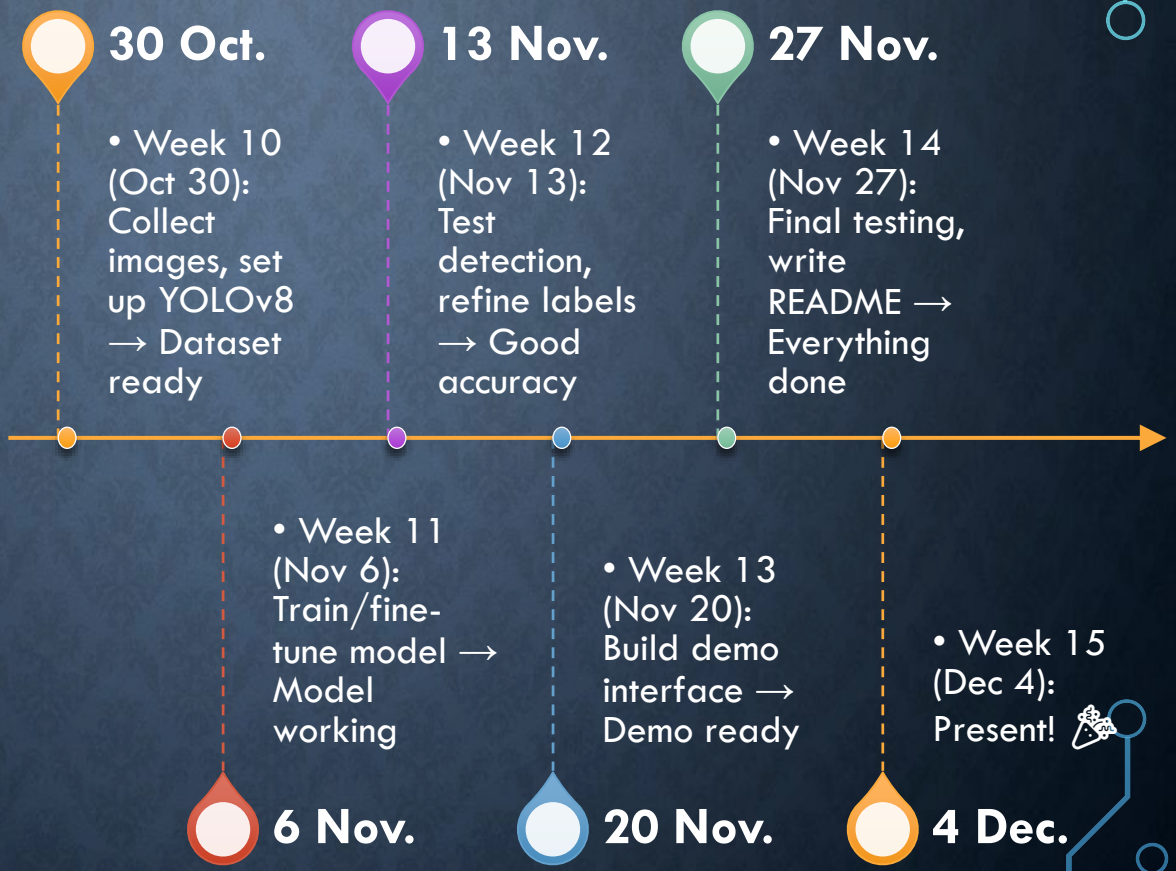
DATA PLAN

- Sources: Grocery Store Dataset, Open Images, custom fridge photos.
- Size: 500–1,000 images.
- Labeling Tools: Roboflow or LabelImg.
- Classes: Milk, Eggs, Vegetables, Bottles, Leftovers, etc.

SYSTEM DIAGRAM

- [Fridge Photo] → [YOLOv8 Detection] → [Item Count + Labels] → [Inventory List Output]

SUCCESS METRICS

- Primary Metric: Detection Accuracy (Target: 90%+)
- Secondary Metrics: Inventory completeness score = (Detected unique items / Actual unique items) ≥ 90% *This measures how well our system captures the full set of items (not just accuracy per items)*
- Processing time < 1 second/image
- Usability score from user feedback

WEEK-BY-WEEK PLAN