Project Plan Presentation
AI-Powered Precision Cooking with TasteLogic

The Capstone Experience

Team Whirlpool

Darayus Daboo

David Wasilewski

Frank Puglise

Lauren Funk

Pavel Shevchenko

Aaron Ngo

Department of Computer Science and Engineering

Michigan State University

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From Students…
…to Professionals

Project Sponsor Overview

- Whirlpool Corporation is a leading multinational company that manufactures home appliances
- Headquartered in Benton Harbor, MI
- "Be the best kitchen and laundry company, in constant pursuit of improving life at home"

Project Functional Specifications

- It can be overwhelming to determine the best way to cook varying food items.

- It requires either previous knowledge, trial and error, or time spent researching recipes

- An on-product system that capitalizes LLM and Machine learning to create a better user experience

- Simplifies cooking by providing user preference cooking attributes
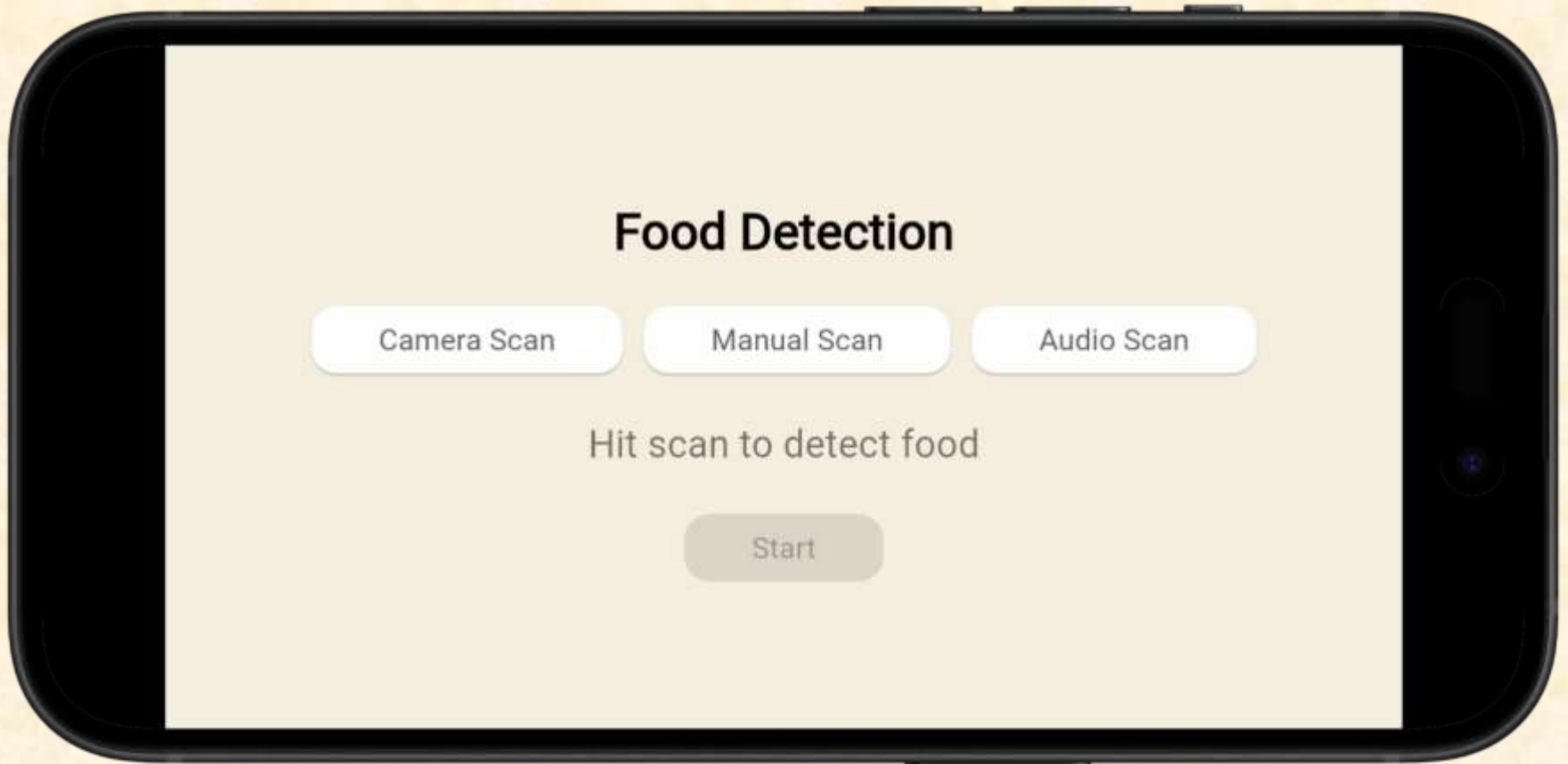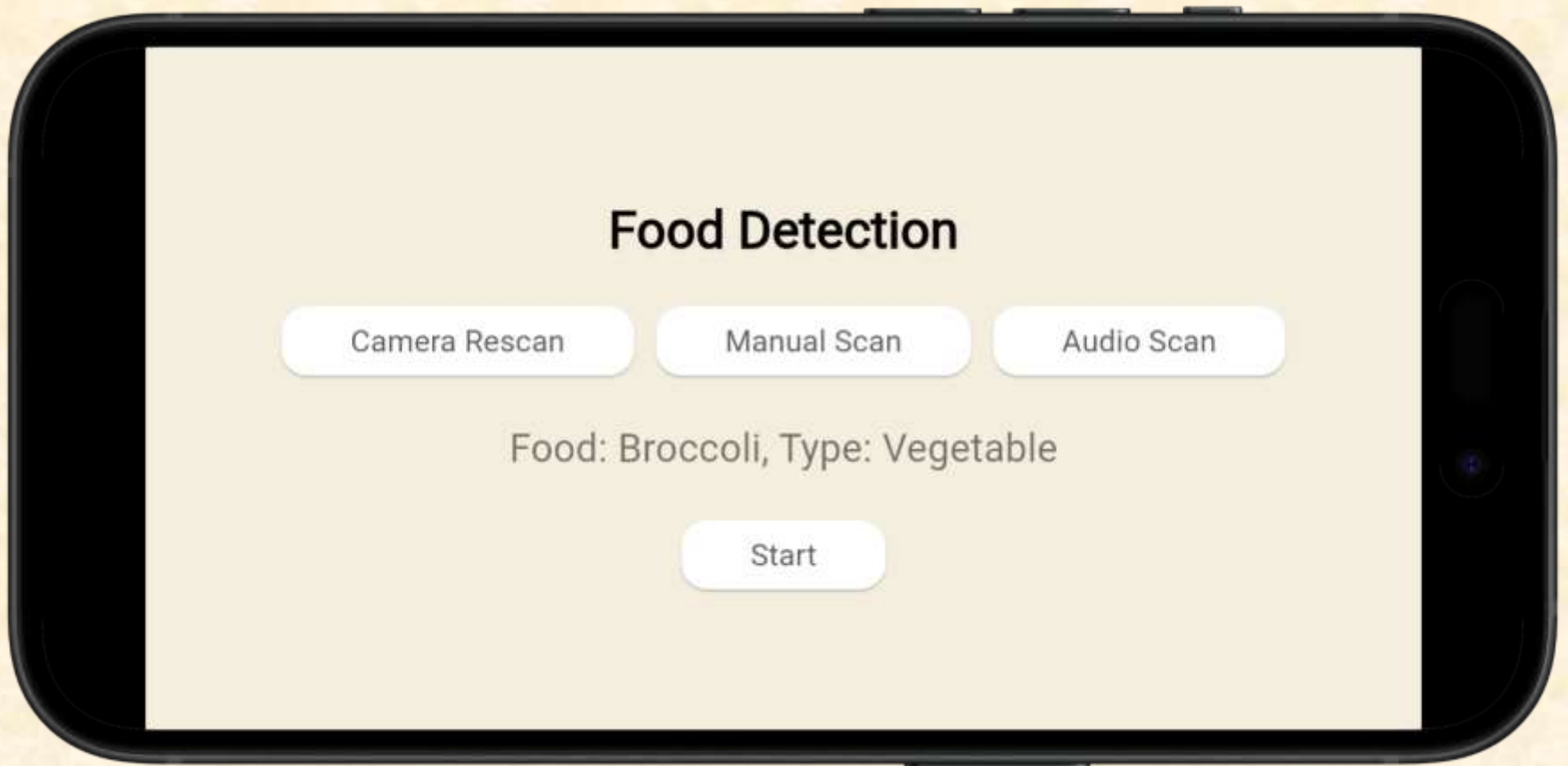
Project Design Specifications

- Smart Cooking Assistant: Recommends optimized cooking settings

- Multi-Food Identification: Supports manual, verbal and camera input

- Adaptive Cooking Cycles: Modifies cooking parameters using AI-driven adjustments

- User Feedback Loop: Collects feedback on cooking outcomes to refine future recommendations

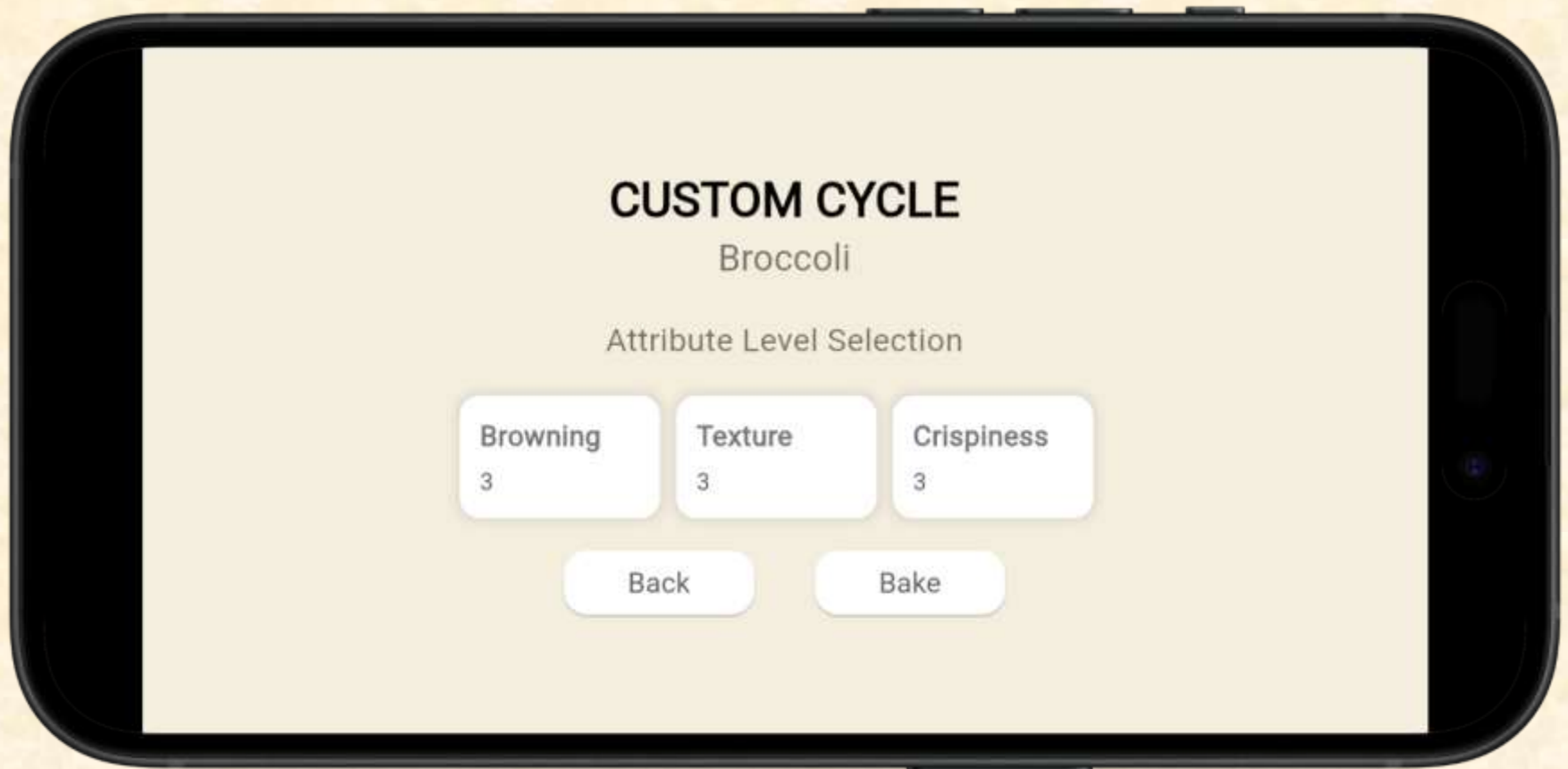- User Interface: Android HMI to interact with the User

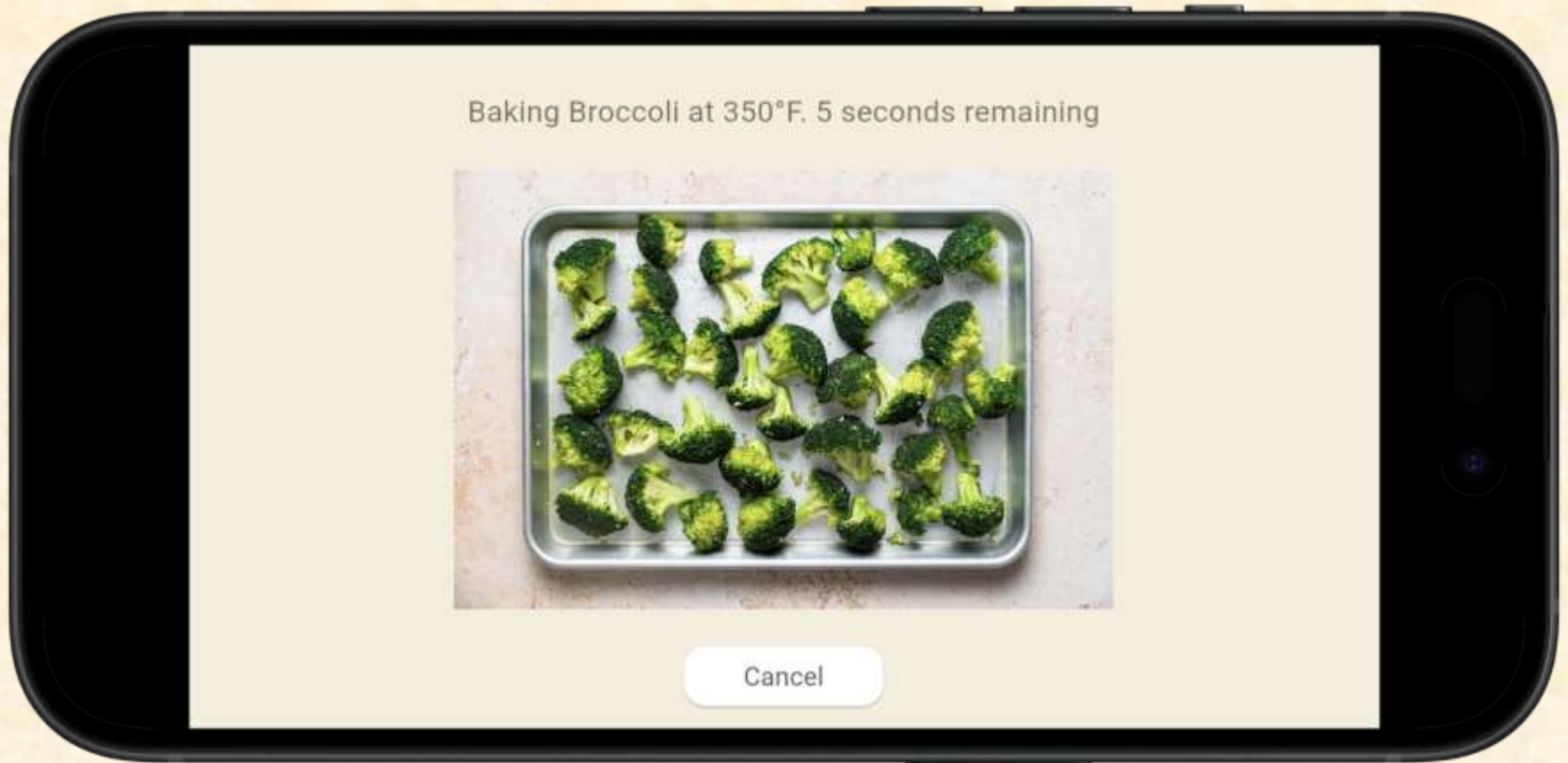# Screen Mockup: Food Detection

Screen Mockup: Food Detection

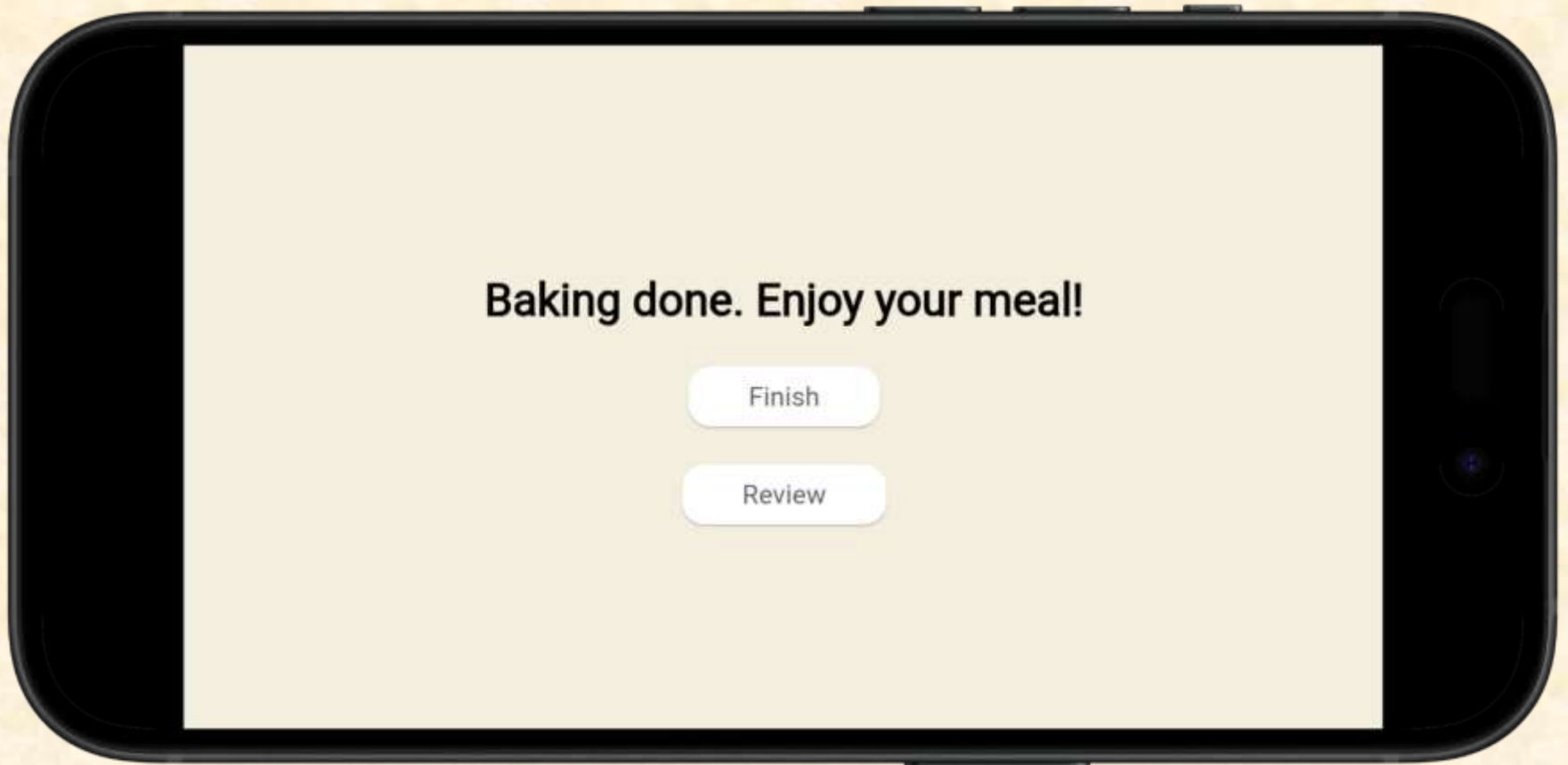# Screen Mockup: Customization

Screen Mockup: Customization

Screen Mockup: Baking in Progress

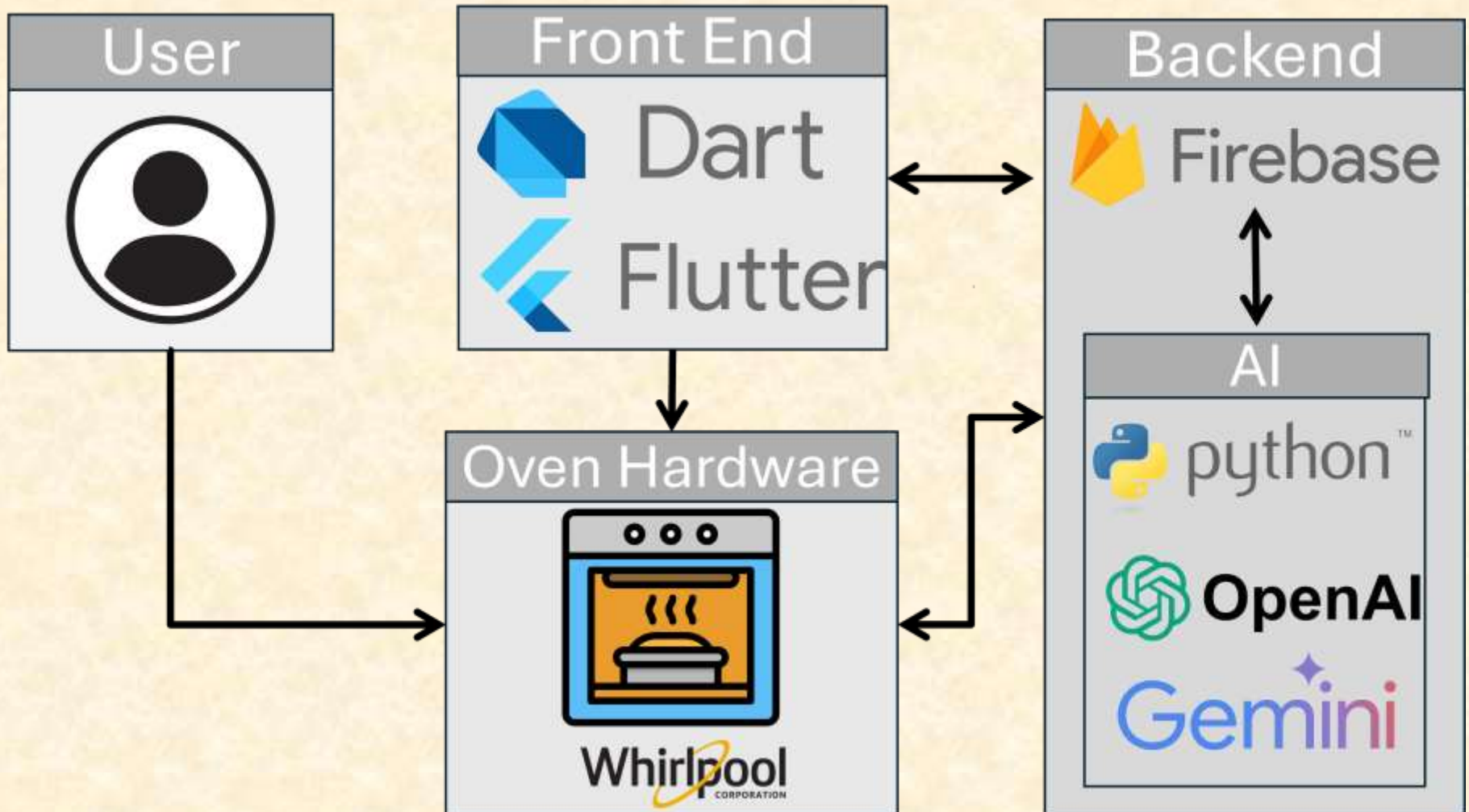# Screen Mockup: Baking Finished

Project Technical Specifications

- Frontend: Flutter & Dart for Android HMI

- Backend: Utilizes Firebase for database functions

- AI: OpenAI/Gemini for generative capabilities

- Machine Learning: Process user feedback to improve cooking cycles

- User-Input: Manual, verbal and camera-based identification

Project System Architecture

Project System Components

- **Hardware Platforms**
  - Whirlpool Oven
  - Camera w/ Raspberry PI
- **Software Platforms / Technologies**
  - Frontend
    - Dart
    - Flutter
  - Backend
    - Firebase
    - Python
    - OpenAI & Gemini APIs

Project Risks

- Accuracy and Testing of LLM Agents
  - Description: LLM agents in TasteLogic must precisely and accurately determine relevant food doneness
  - Mitigation: Extensive testing with multiple LLM's to ensure the best fit as well as standardization of the results
- Recipe Research and Development
  - Description: TasteLogic must contain a variety of attributes for a selection of food types as well as a 5-point scale for each attribute
  - Mitigation: Each food type will have to be extensively tested for each attribute
- Handling Oven's Hardware
  - Description: The components of the oven are perplexing. Combined with a lack of hardware experience, the connectivity between software and hardware pose a challenge.
  - Mitigation: Research into camera vision implementing as well as procedures to upload software into the Android HMI.

Questions?

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