MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Spatial IoT Connections Using Apple Vison Pro

The Capstone Experience

Team Launch

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From Students…
…to Professionals

Project Sponsor Overview

- Previously Vectorform, NTT Data acquired our client in 2022 and merged them with several other companies to form what is now Launch
- Launch looks to deliver exceptional software with the speed of a startup and the systems focus of a mature business- for both consumer and enterprise use
- Developed innovative solutions for brands such as Mitsubishi, Epic Games, Arsenal, Rivian and Ford

Launch by NTT DATA

NTT DATA

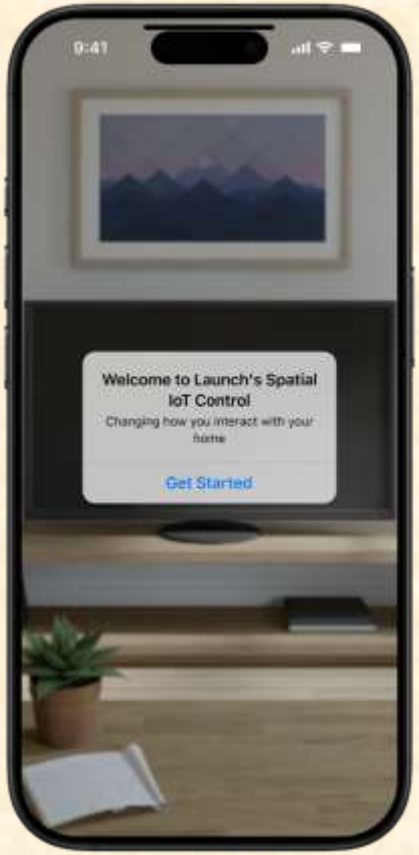
Project Functional Specifications

- Pioneer the future of smart home interaction
- With an augmented reality application
- Through IoT connections
- Built seamlessly on iOS an Apple Vision Pro

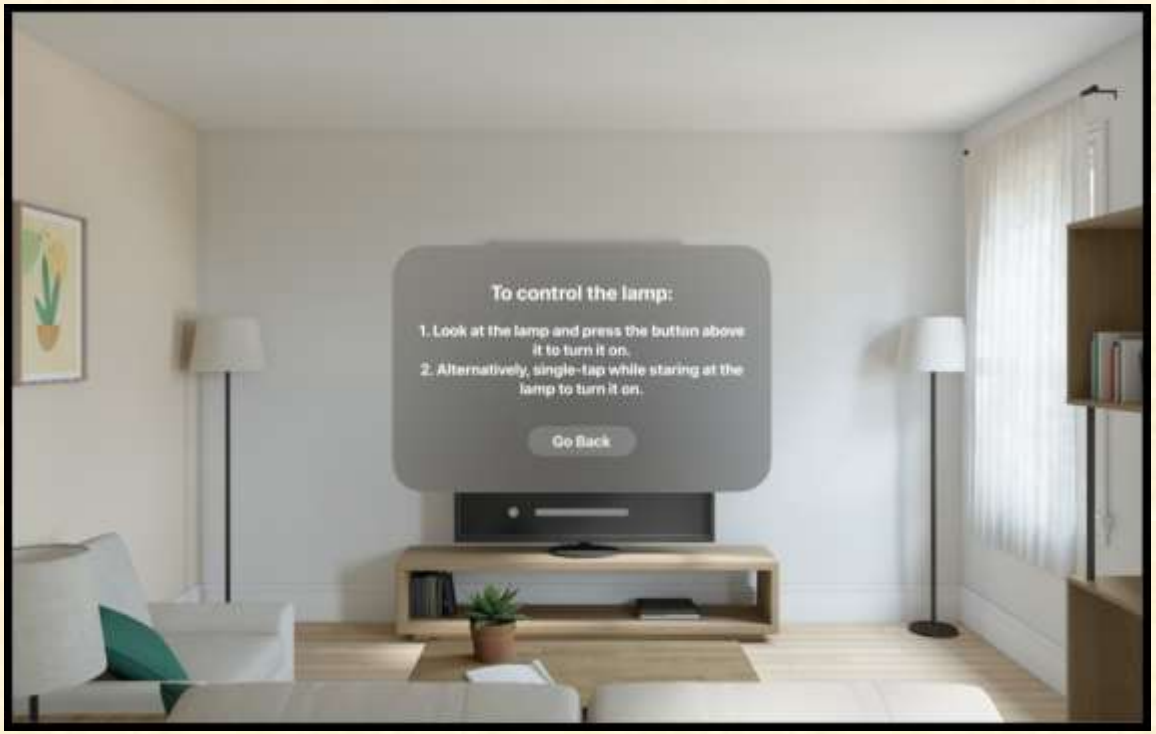
Project Design Specifications

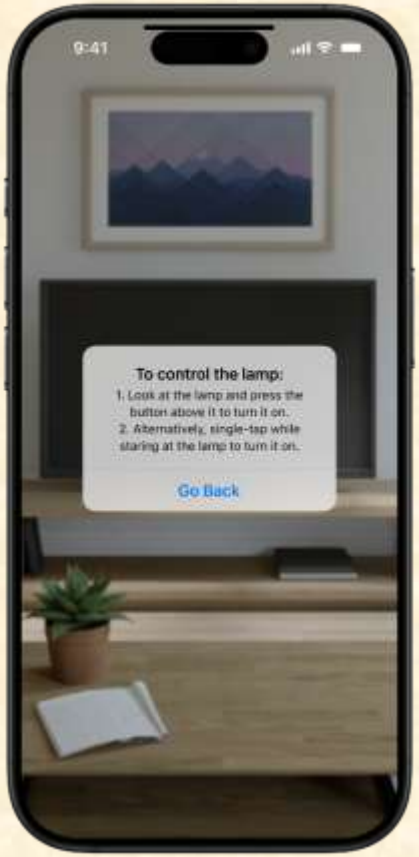
- Applications for both iOS and visionOS
- Similar user experience across platforms
- Minimalistic or futuristic feel
- Controlled from within an AR view
- Used to track and interact home devices

Screen Mockup: Getting Started



Screen Mockup: Instructions Window





Screen Mockup: Controlling a Device

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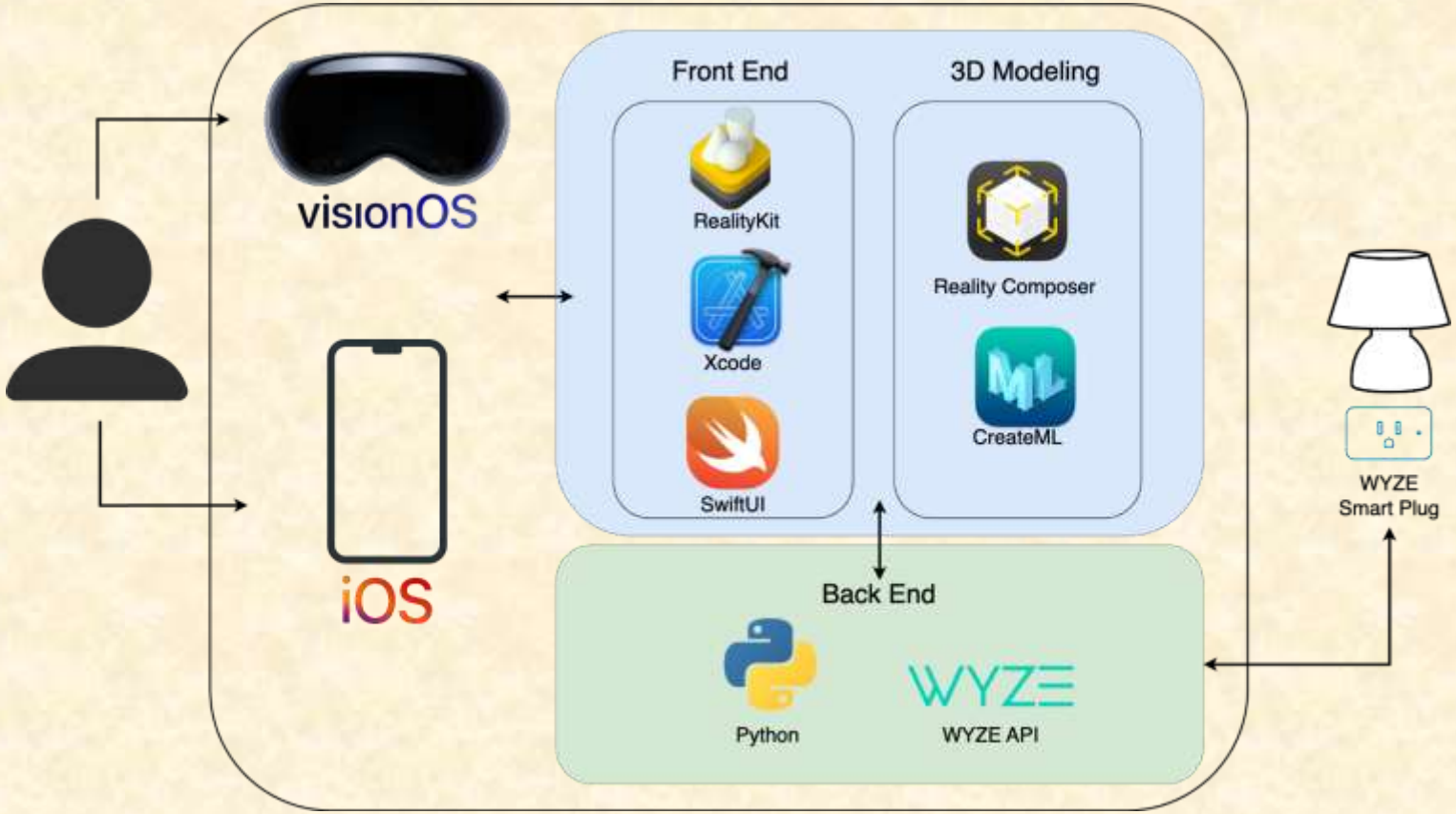
Project Technical Specifications

- Providing an augmented reality experience using the RealityKit API and SwiftUI for parallel visionOS and iOS applications
- Creating models and training them using RealityComposer and CreateML
- Connecting to Wyze smart devices using Python

Project System Architecture



Project System Components

- Hardware Platforms
  - Apple Vision Pro & iPhone
  - Wyze Smart Devices
- Software Platforms / Technologies
  - visionOS / iOS
  - Reality Kit
  - Wyze API
  - PythonKit

Project Risks

- Wyze API
  - Most smart home brands do not provide publicly documented APIs for their products, making IoT control difficult
  - Test and utilize unofficial Python API for Wyze at home devices – Wyze smart plugs currently being used for control of lamp
- Platform Consistency
  - Developing parallel features between visionOS and iOS applications made difficult due to different platform implementations
  - iOS and visionOS teams will work closely to ensure implementations can be consistent on both applications
- Lack of Eye-Tracking Data
  - AVP headset does not provide eye-tracking data to developers, making it impossible to differentiate between two devices that the user is simultaneously viewing
  - Differentiate between devices via always-on attached UI displays – display an attached menu as soon as the AVP starts tracking each device
- Tracking Objects with Rotational Symmetry
  - Tracking symmetrical objects in visionOS is currently not possible, causing some objects to be un-trackable or making the object's bounding box un-orient during tracking
  - Multi-View Modeling allows for several different views of an object to be modeled, making recognition easier for the AVP. Create modeling procedures to recognize and capture specific or reoccurring features of each object to broaden the angle and distance you can interact with your device from

Questions?