



Beta Presentation

My VR Language Tutor

The Capstone Experience

Team Launch

Anh Dao

Evan Fioritto

Caleb Flosky

Nolan Jolley

Joseph Pacentine

Molly Thornber

Department of Computer Science and Engineering
Michigan State University

Fall 2025



*From Students...
...to Professionals*

Project Overview

- Gap between learning and applying a language
- Immersive VR language tutor
 - Scalable across skill levels
 - Conversations with AI-driven NPCs
 - Object identification
 - Sign reading
 - Pronunciation feedback
- Launch Innovation Lab
- Targeting public release



Team Member's Technical Tasks

Technical Tasks Assigned

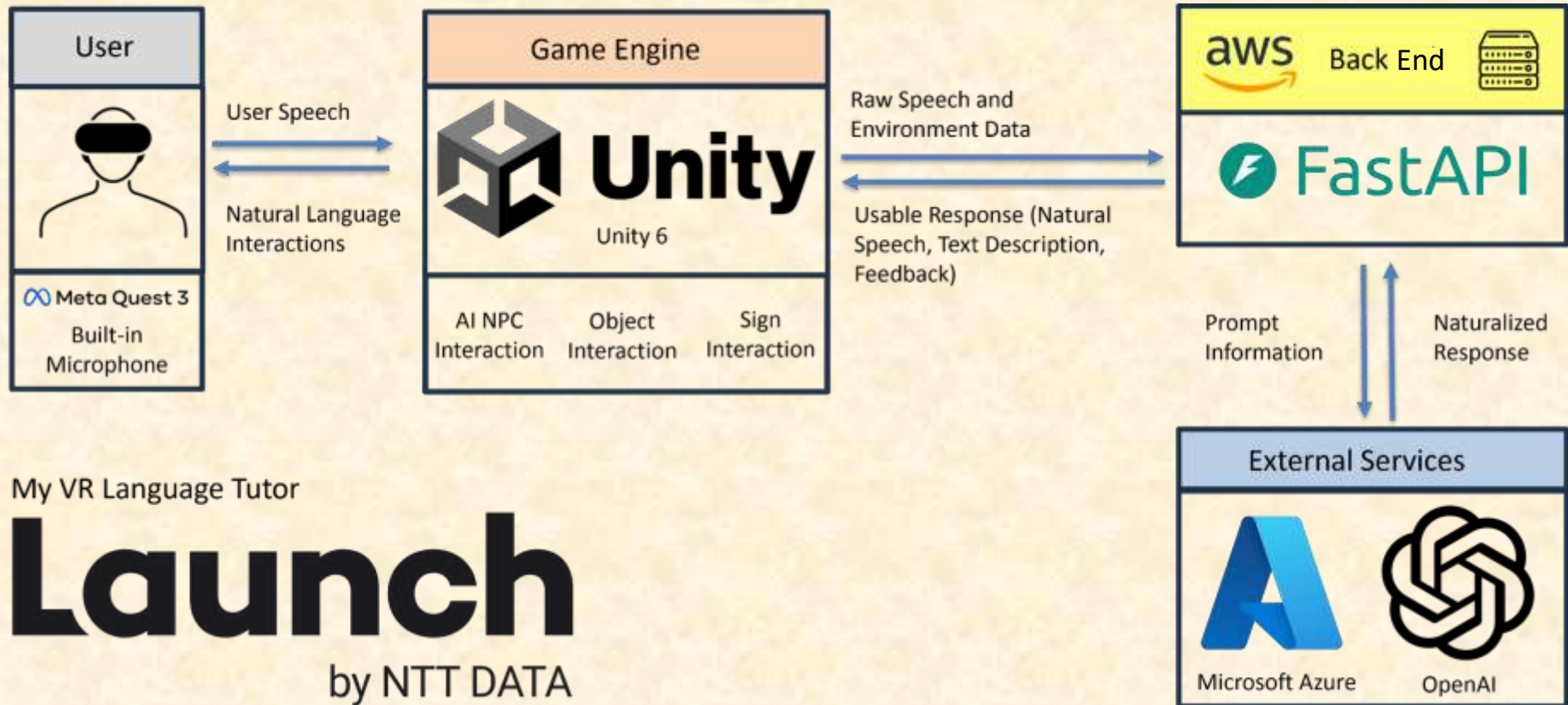
- Anh Dao
 - Design and Implement Backend API Endpoints
 - Architect and Maintain NPC Conversation Flow
 - Optimize Backend Performance to Reduce Latency
 - Implement Logging, Data Storage, Scoring, and Feedback Pipelines
- Evan Fioritto
 - Scene Setup/Voice Input Unity Integration Logic and Endpoints
 - Microphone Utility Algorithms for Compression
 - Designing and Populating NPC UI and Transcript
 - Admin Analytics Dashboard
- Caleb Flosky
 - Unity XR Setup and VR Hands
 - Grabbable and Animated Object System
 - NPC Unity Logic
 - File Save Data and Scene Summarization
- Nolan Jolley
 - Level Load and Language Management Unity Integration
 - Sign System/UI and Locale-Based Sign Generation
 - Action Object System/UI LLM Evaluation
 - Native Language Functionalities
- Joseph Pacentine
 - Object Interaction Logic/UI
 - Objects/Navigation System and UI
 - Interaction State Machine
 - Interaction Feedback Grading System and UI
- Molly Thornber
 - Azure API Integrations
 - NPC Conversation Pipeline
 - Object-Oriented Back End Refactor
 - Caching System

Technical Tasks Completed

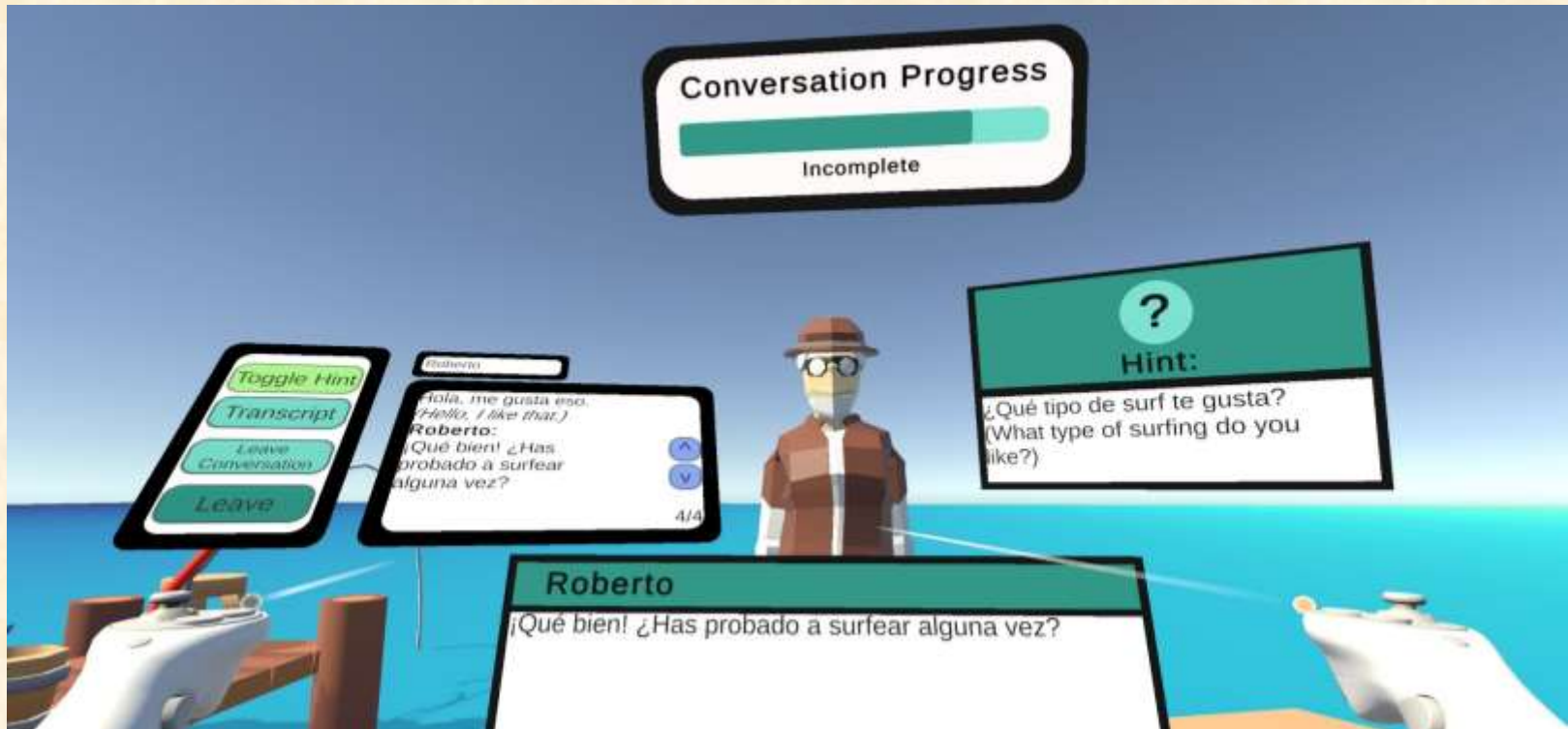
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System Architecture



NPC Interaction



Object Interaction



Sign Interaction



Score Summary



What's left to do?

- Stretch Goals
 - Admin Dashboard
 - Free Roam/Objective Mode
 - NPC Lip Sync
- Other Tasks
 - Expand UI Localization
 - Additional Language Support

Questions?

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