MICHIGAN STATE UNIVERSITY **Beta Presentation Everyday Agent The Capstone Experience** Team Launch Will Bray-Cotton Deirdre Eusebi Swabhan Katkoori **Gregory Lis** Anthony Oo Palina Skakun Department of Computer Science and Engineering

Michigan State University

Spring 2025



From Students... ...to Professionals

Project Overview

- Wearable device
- Track personal items through object detection
- Al assistant
- Demonstrates functionality on a compact device

Team Member's Technical Tasks

Technical Tasks Assigned

- Will Bray-Cotton
 - Implemented CNN environment prediction model
 - Server/ Raspberry Pi API & integration
 - Raspberry Pi hardware construction and error handling
- Deirdre Eusebi
 - Integrated Azure Speech API for the speech to text feature
 - Wake up word and listening functionality for follow up questions
 - Integrated Google Calendar API for the reminders feature
- Swabhan Katkoori
 - Object detection integration and implemented CV strategies
 - Developed activity classification and connected to project
 - Improved frame handling and resolved bottleneck issues
- Gregory Lis
 - Created a dynamic database protected inside an isolated thread
 - Object detection and Everyday Agent architecture/ integration
 - Raspberry Pi hardware and interfaces (GPS, LED controller, voice bonnet
- Anthony Oo
 - Text to speech integration with predicted and address location
 - Spacy NLP to classify if personal item/ general query
 - Azure OpenAl integration w/ memory for queries and classifying
- Palina Skakun
 - App front end and back end (login, dashboard, chatbot)
 - Connect iOS (Swift) back end to project's back end and database
 - Text to speech script with keyword extraction and NLP

Technical Tasks Completed

- Will Bray-Cotton
 - Implemented CNN environment prediction model
 - Server/ Raspberry Pi API & integration
 - Raspberry Pi hardware construction and error handling
- Deirdre Eusebi
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 - Spacy NLP to classify if personal item/ general query
 - Azure OpenAl integration w/ memory for queries and classifying
- Palina Skakun
 - iOS app front end and back end (login, notifications, chatbot)
 - Connected the app to project with Flask REST API w/ complex SQL joins
 - Real-time speech recognition system with Azure keyword extraction

System Architecture



App Dashboard

7:25		.ul 🗢 🗖
Hey Will, Need help findin Recent Items	g something?	Ŀ
Wallet Cost Ho Last see	use near the Remi Moreh 20, 2025	918
Reys Music St Last serie	tudio cear the Lan March 20, 2026	
Airpod Office C Letters	ulticles near the C March 20, 2026	hargar
c	hat with Agent.	
Your Items		
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Last Known Lo	cations	5



The Capstone Experience

Chat with Everyday Agent

Back		< Back
Chat with Ever	yday Agent	Chat with Everyday Agent
	Where is my laptop?	What is the recipe for brownlee?
Your laptop was last se room near notebook.	en in study	Here's a classic recipe for homemade brownies:
That was at Wells Hall, Cedar Rd C110, East La 48824, USA. What are yo	619 Red nsing, MI	### Ingredients: - 1/2 cup (1 stick) unsalted butter - 1 cup granulated sugar - 2 large eggs - 1 teaspoon vanilla extract - 1/3 cup unsweetened cocoa powder - 1/2 cup all-purpose flour - 1/4 teaspoon salt - 1/4 teaspoon baking powder - 1/4 teaspoon baking powder - Optional: 1/2 cup chocolate chips or nuts (walnuts or pecans)
Airpod	Cellphone	### Instructions:
Glasses	Keys	1. "Preheat the Oven": Preheat your oven to 350°F (175°C). Grease a 9x9-inch baking pan or line it with parchment paper.
Laptop	Wallot	2. **Melt the Butter**: In a medium saucepan over low heat, melt the butter. Remove from heat and let it cool slightly.
		Atik anyming.

Locating Personal Item



Predicted Location

Hi Agent, where are my keys?

> Your keys are in a bedroom at 3700 Starlight Lane, Lansing, MI 48911, USA. Near it you will find a lamp and a table!

Hey Agent, they aren't there!

> Based on past data, I predict that the keys might be in the kitchen with objects like a stove and plate nearby!

What's left to do?

- Features
- Stretch Goals
 - OpenvSLAM to improve environment detection accuracy
 - Lighting adjustment for object detection
 - Hand tracking for object verification
 - Improve the Pi's case
- Other Tasks
 - Bug fixes for end user (connection, detection, long term reliability)
 - Review documentation
 - Ensure code follows a uniform standard

Questions?

