

Smart Home

Jake Palandri - z5313097

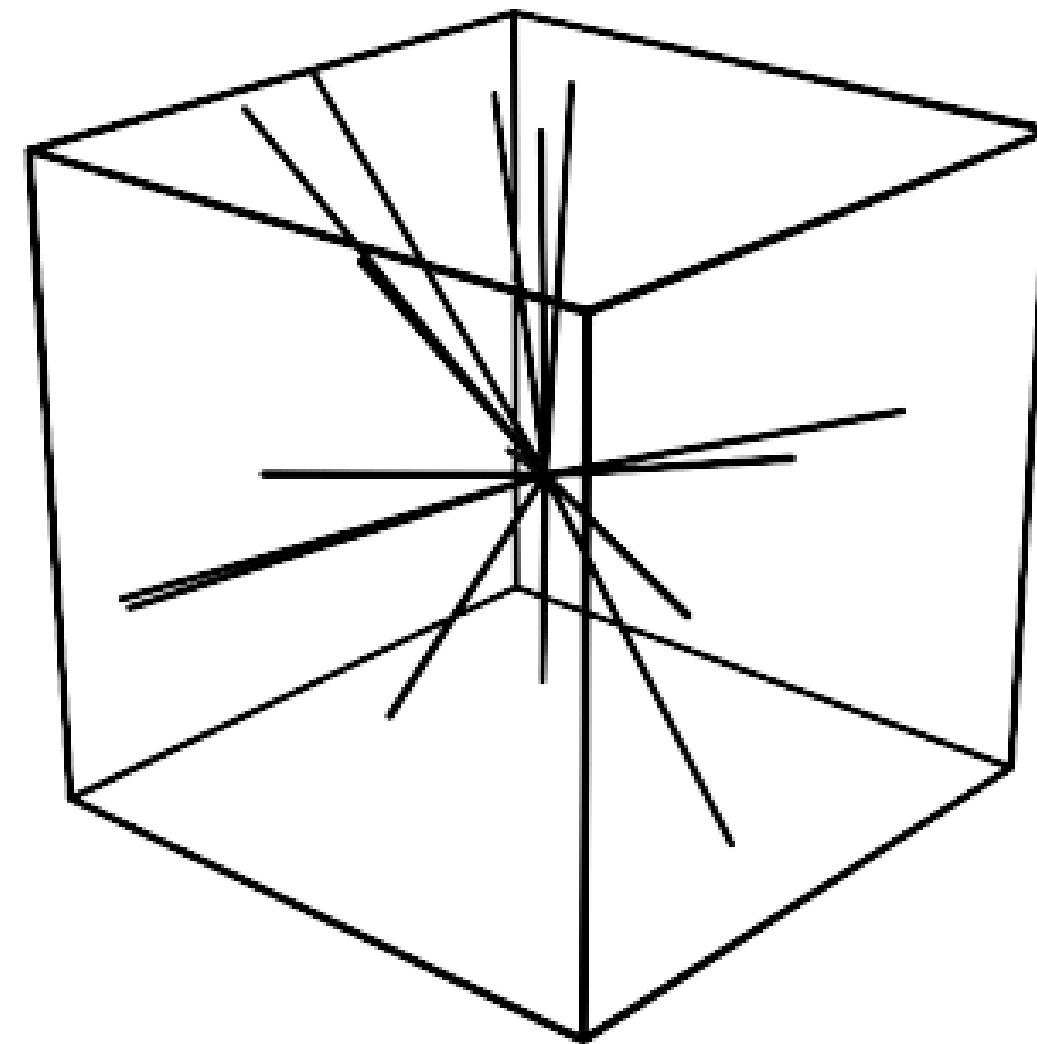
Outline

- Thesis B Recap
- New functionality
- Final Tech Stack
- Demonstration
- Addressing the problem
- Future Work

YOLOv8 Pose Estimation



Vector-Bounding Box Intersection



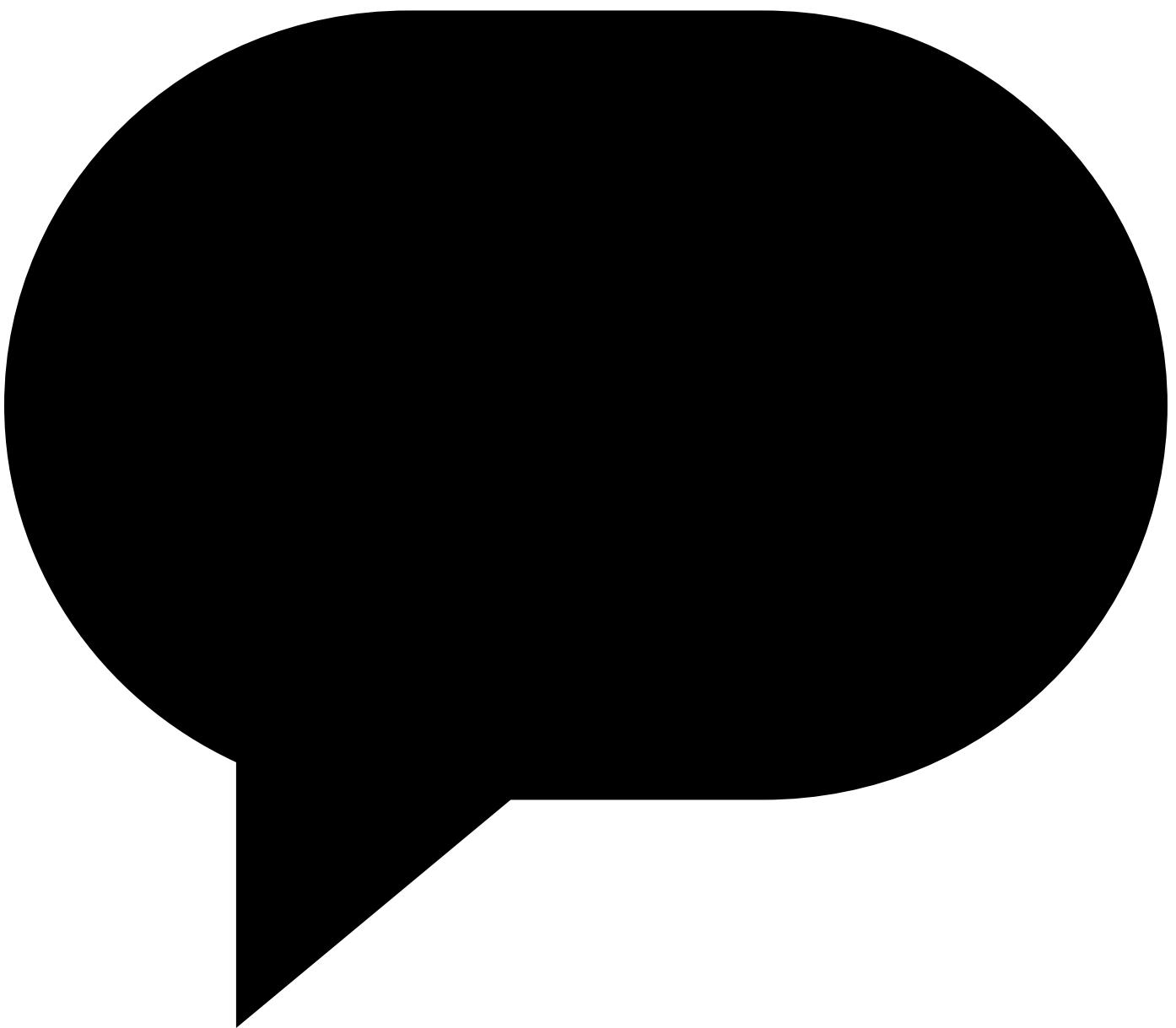


Home Assistant

Speech To Text

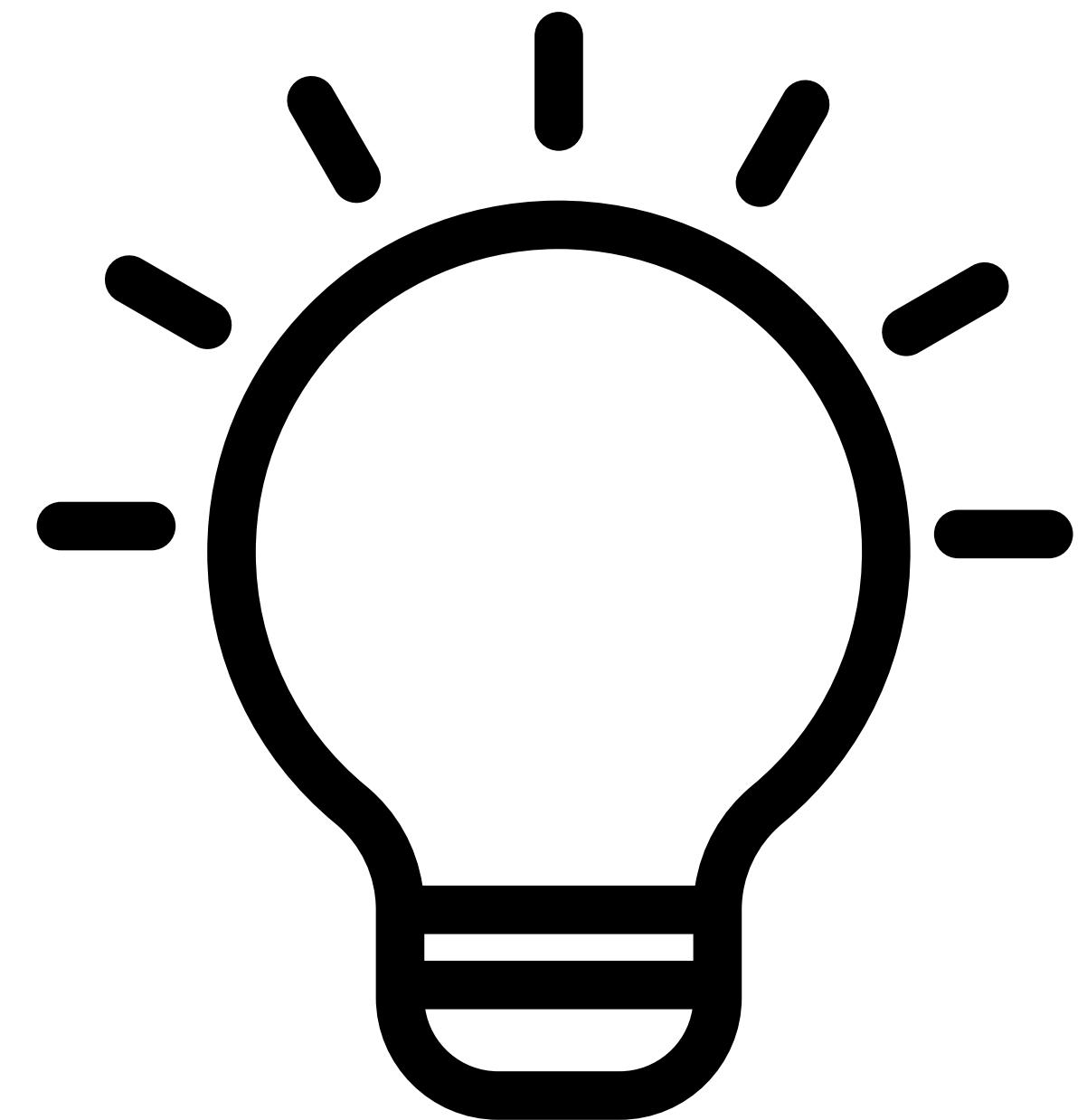


Accuracy



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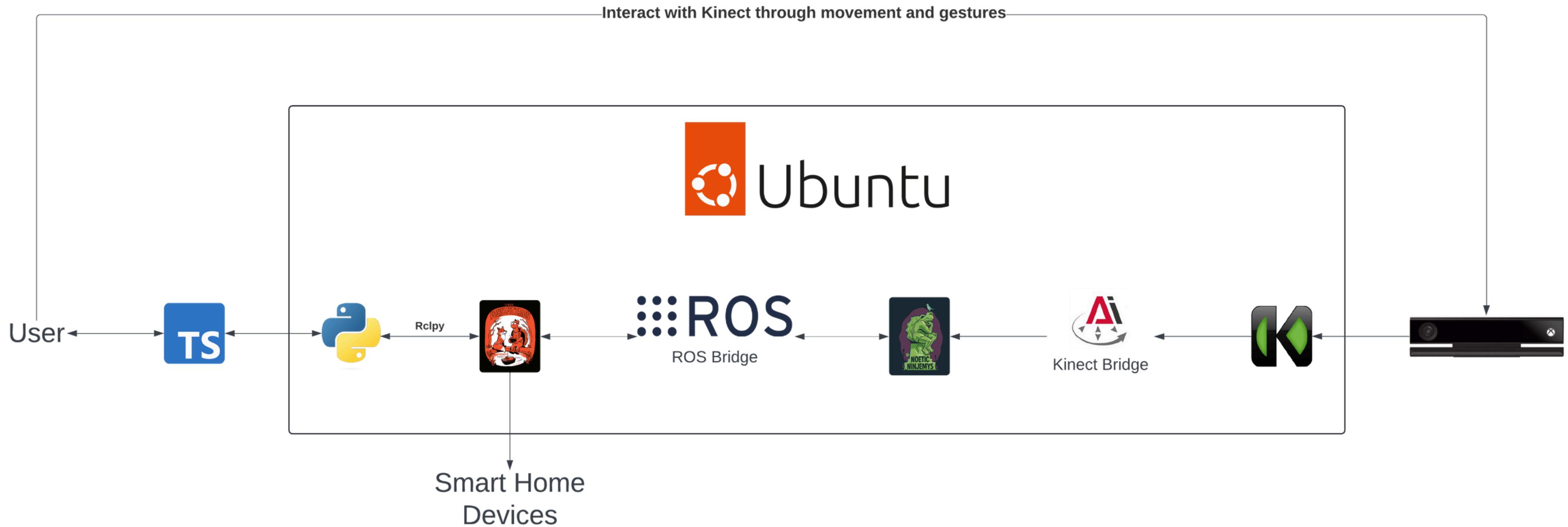
Execution Speed



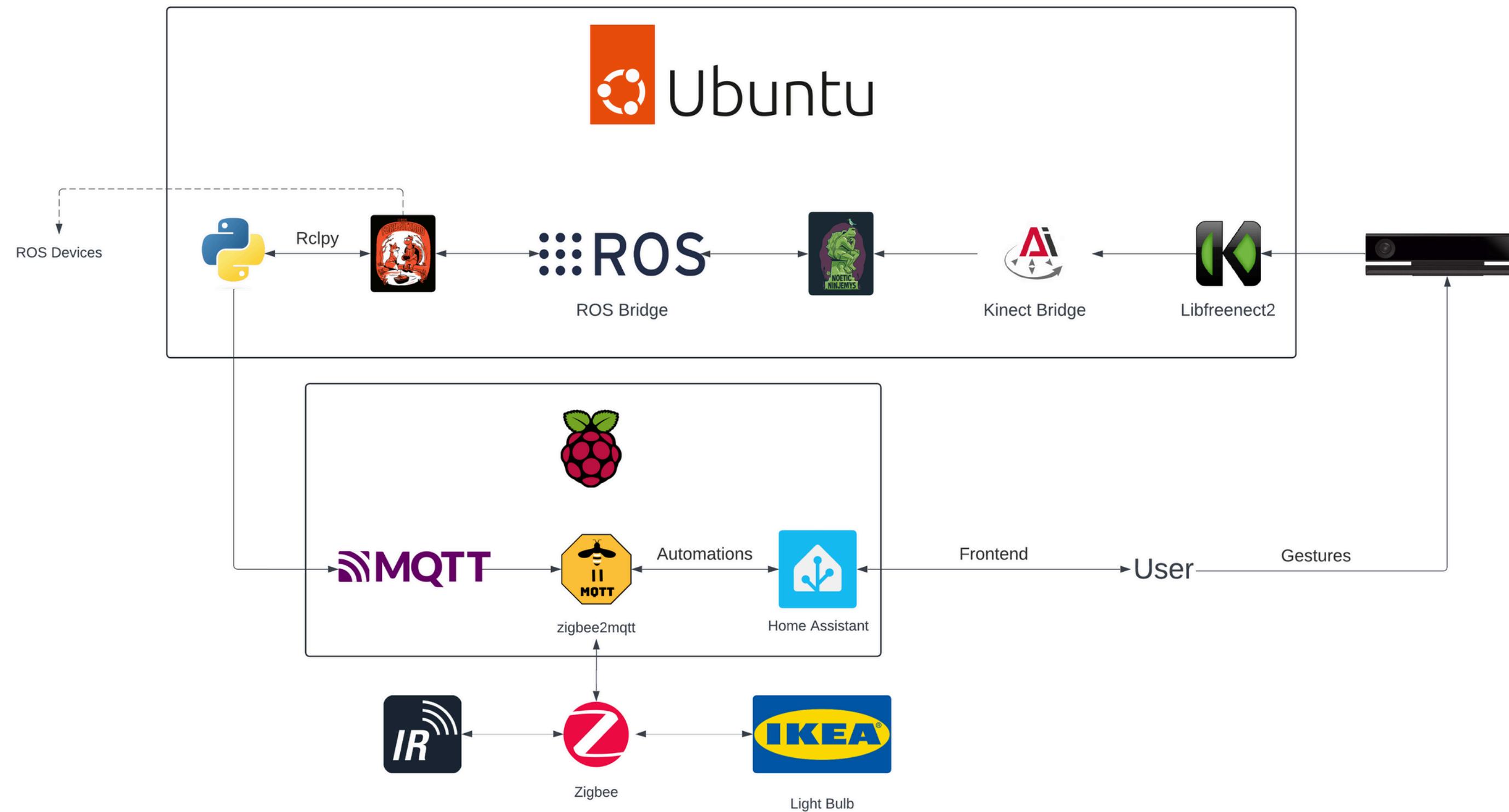
Synchronisation



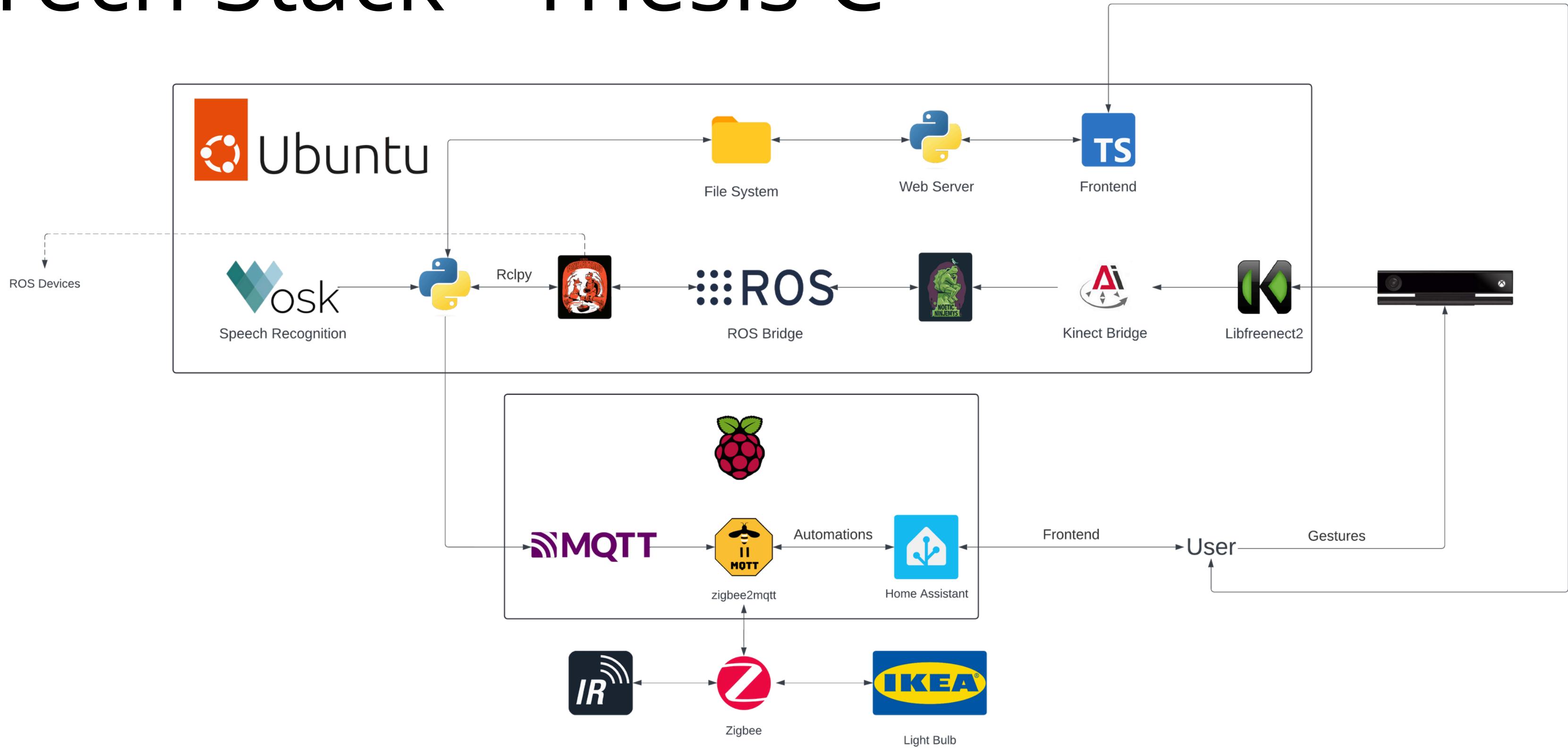
Tech Stack - Thesis A

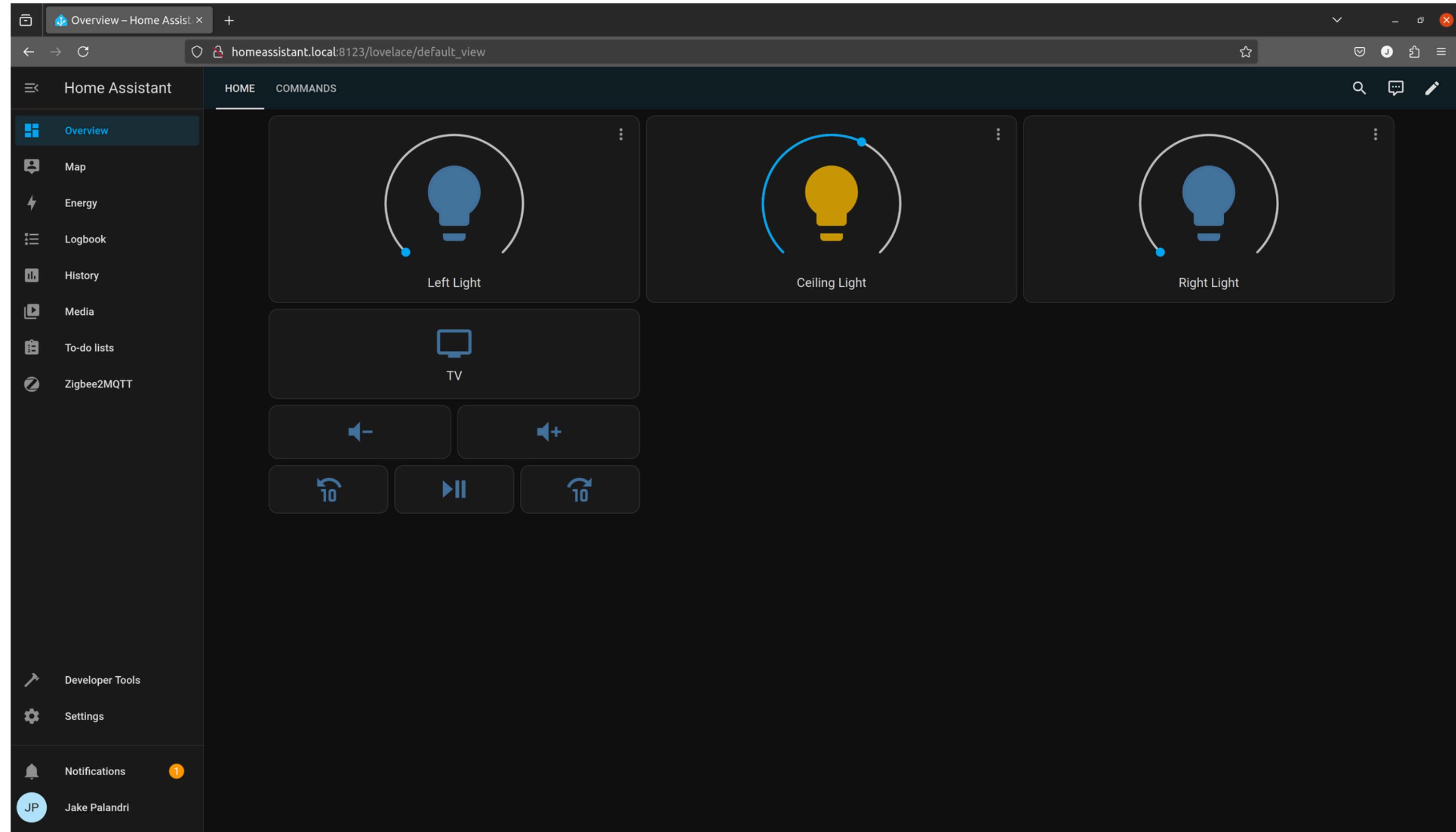


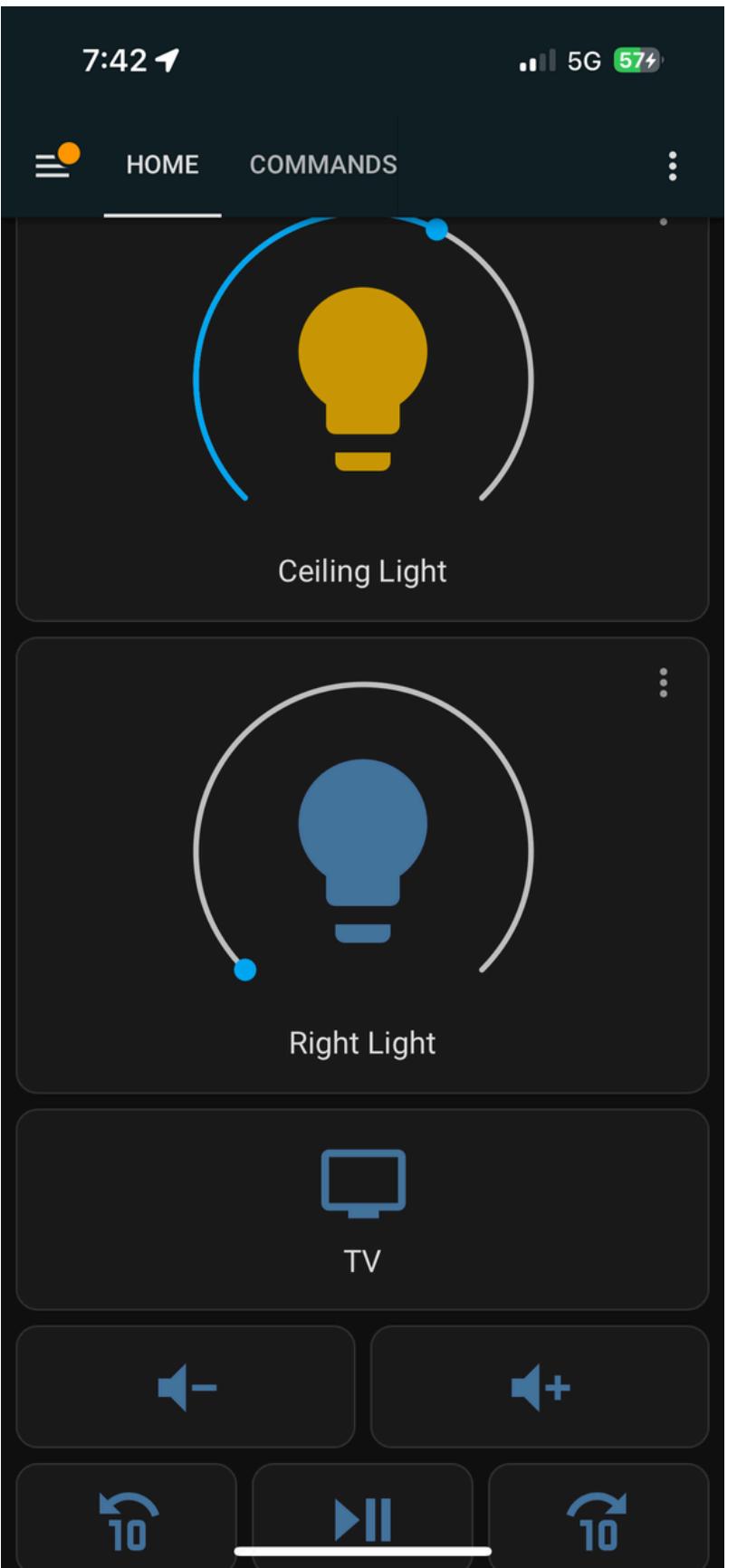
Tech Stack - Thesis B



Tech Stack - Thesis C







Settings – Home Assistant

homeassistant.local:8123/config/automation/dashboard

Home Assistant

Automations Scenes Scripts Blueprints

Overview Map Energy Logbook History Media To-do lists Zigbee2MQTT Developer Tools Settings Notifications (1) Jake Palandri

Filters Group by Category Sort by Last triggered

Search 30 automations

Name ↑ Last trigger...

Name	Last trigger...	Never	⋮
Voice TV Volume Up	Never	Never	⋮
Voice Light Left Toggle	Never	Never	⋮
Voice Light Right Toggle	Never	Never	⋮
Voice Light Ceiling Turn On	Never	Never	⋮
Voice Light Left Turn On	Never	Never	⋮
Voice Light Right Turn On	Never	Never	⋮
Voice Light Left Turn Off	Never	Never	⋮
Voice Light Right Turn Off	Never	Never	⋮
Voice Light Left Brightness Up	Never	Never	⋮
Voice Light Right Brightness Up	Never	Never	⋮
Voice Light Ceiling Brightness Down	Never	Never	⋮
Voice Light Left Brightness Down	Never	Never	⋮
Voice Light Right Brightness Down	Never	Never	⋮

+ CREATE AUTOMATION

Overview – Home Assistant

homeassistant.local:8123/lovelace/commands

Home Assistant

HOME COMMANDS

Overview

Map

Energy

Logbook

History

Media

To-do lists

Zigbee2MQTT

Developer Tools

Settings

Notifications

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Smart Home Command Interface

[View Device Commands](#)

Add New Device Type

Device type:

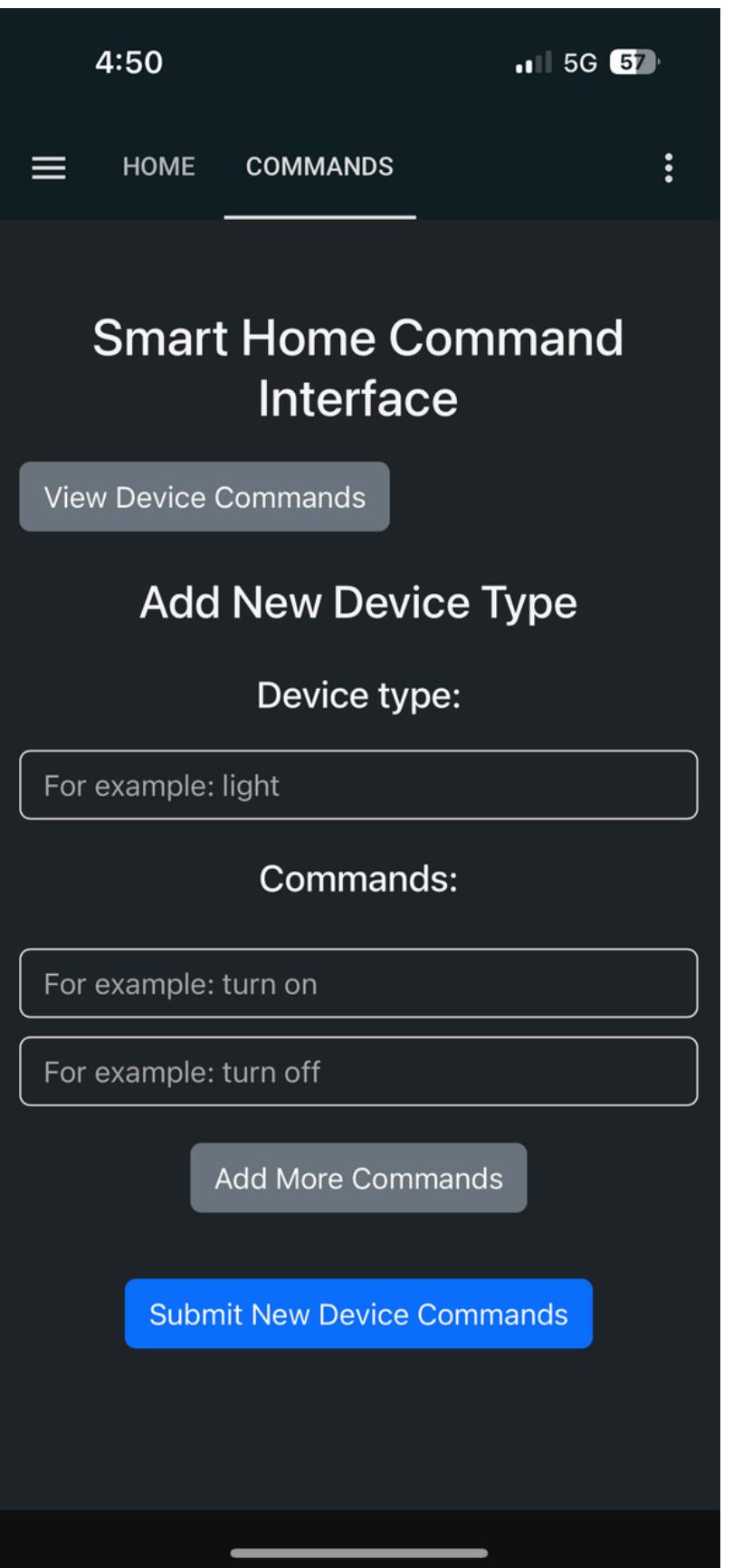
For example: light

Commands:

For example: turn on

[Add More Commands](#)

[Submit New Device Commands](#)



Demo

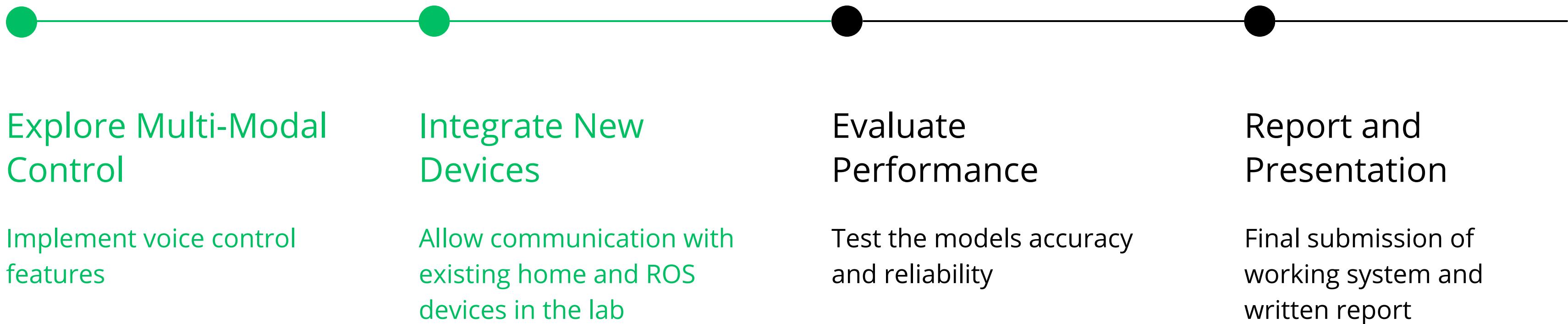
Aim

Create an intelligent environment where a user's movements can accurately predict how to control devices within the home locally to increase convenience, safety and security

Problems with Smart Homes

- Interoperability
- Accessibility
- Requirement for internet access

Timeline



Evaluation

CRITERIA	RESULT
Rate of True Positives	60%
Rate of False Positives	5%
Rate of False Negatives	40%
Execution Speed	2-3s
Convenience	Increased Conditionally

Future Work

- Typeless voice commands
- Precise vector/device intersecting
- Storing known device locations
- Automate adding devices
- Pose recognition in the dark
- Advanced commands with variables

Thank you!

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