

Motivation

According to the National Fire Protection Association, they estimate that there is one home fire-related death that occurs every three hours.

What is Augmented Reality?

Augmented reality happens when computer generated images, holograms, are overlaid over your physical environment. Some examples consist of Pokémon Go, Snapchat filters, and more.

What is the Fire-Bot?

The fire-bot is an autonomous rover that will deploy in a burning building and provide data that is crucial to first responders such as scream detection, person detection, temperature, air quality, and more. The rover is currently in the prototype phase.

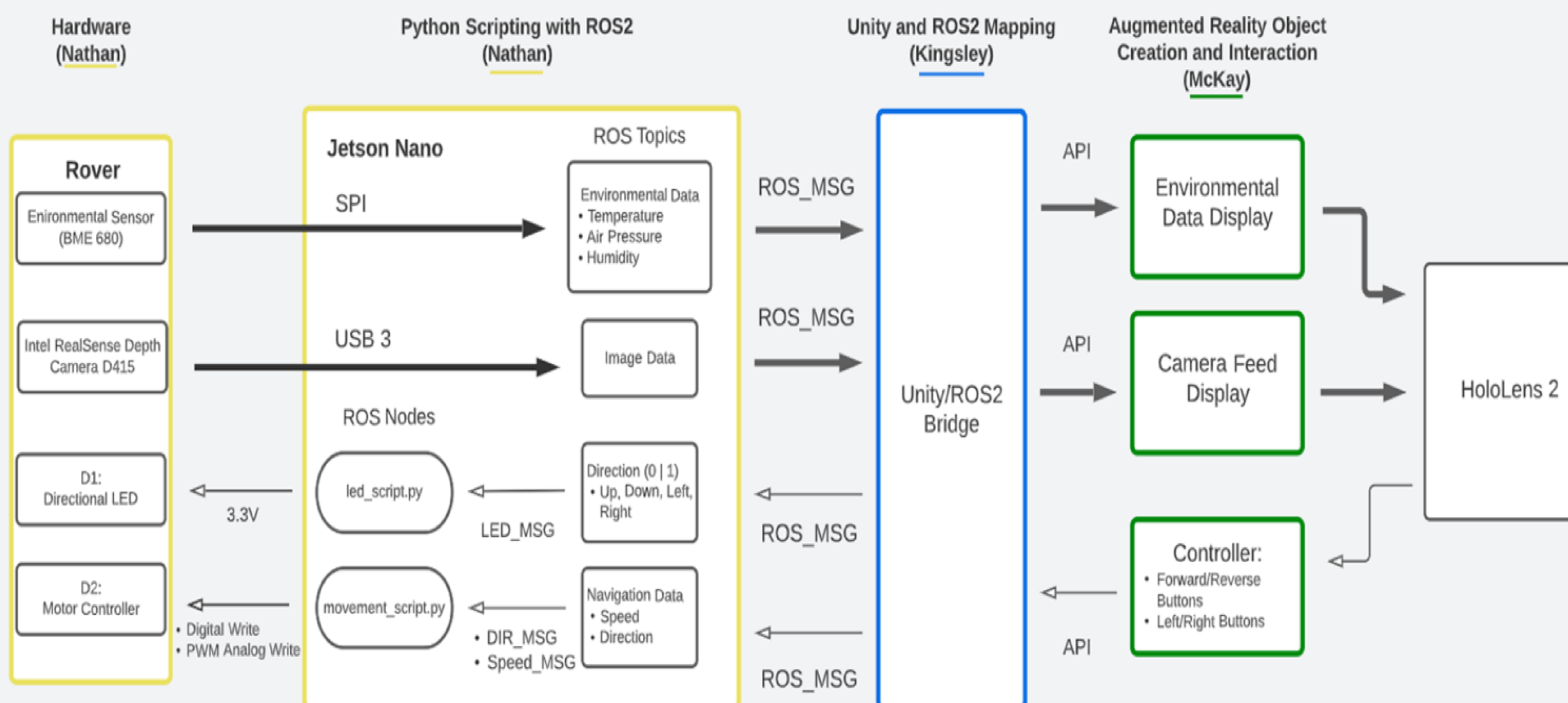
The Project

Our project will utilize a HoloLens 2 headset to create a holograms for the user to interact with and control the fire-bot remotely

E1.02 – Augmented Reality Controller Project Overview

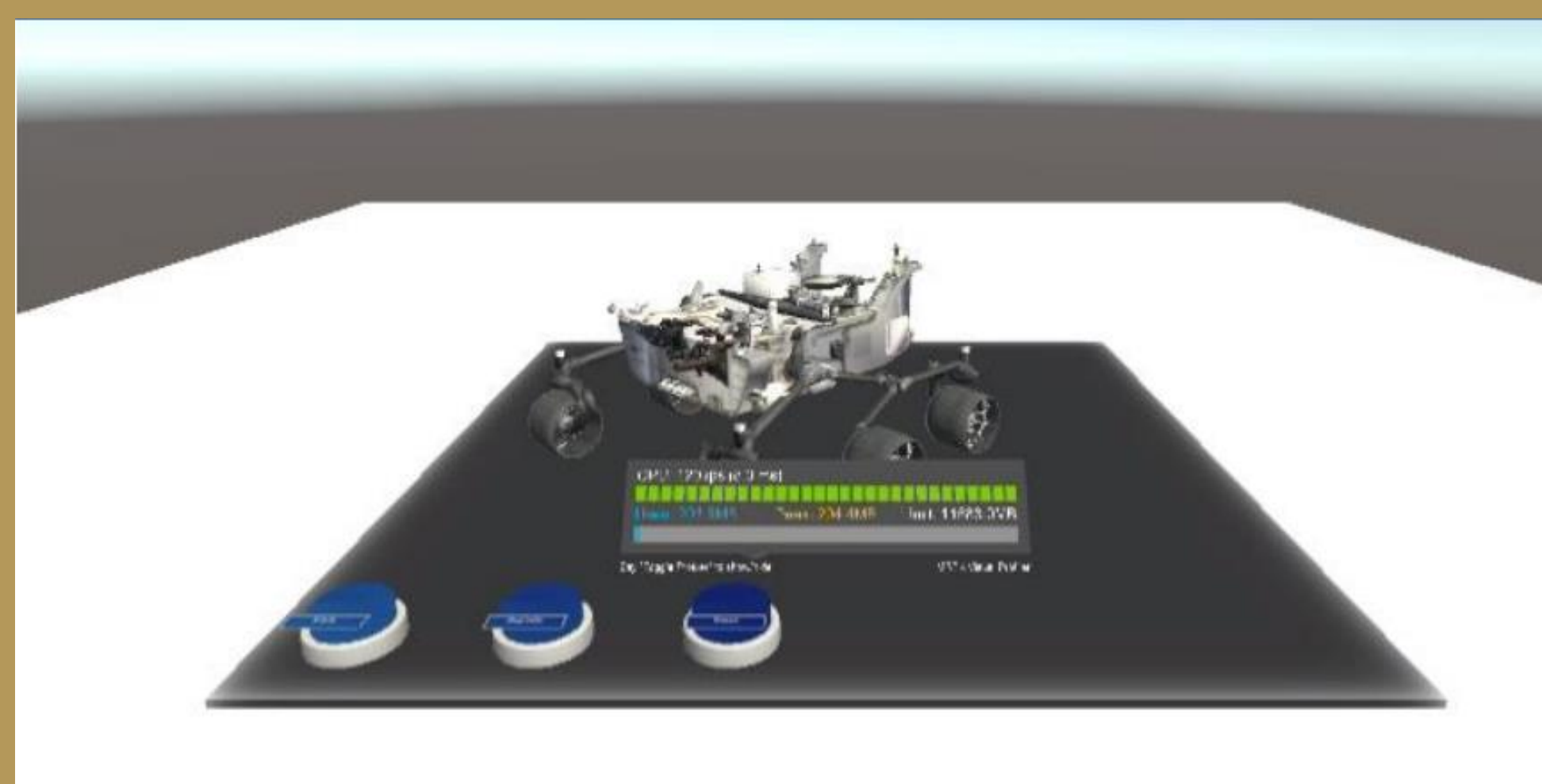
An augmented reality controller to provide first responders the opportunity to teleoperate a fire-bot. This will allow them to control the autonomous fire-bot in case of malfunction or special use cases

Block Diagram



Progress and Future Plans

D1 Progress



- Developed interactive holograms
- Established a ROS bridge for communication
- Created a system in ROS2 that imitates the rover's movement

D2 Plan

The team has done the necessary work to get past the learning curve of the project. The plan is to implement the camera feed functionality, sensor reading, and complete teleoperation of the fire-bot by Feb 13 to begin testing as soon as possible. The team plans on providing a working demo for a user to control the fire-bot via HoloLens for Senior Design Day next semester.

Team Hologram



Kinglsey Nathan McKay

Requirements

- Control the fire-bot's movement remotely via the HoloLens 2
- Provide a camera feed to the user
- Show Environmental Data from the BME module on the fire-bot

Characterization Plan

- User testing for hologram interaction
- Latency tests from user input to fire-bot movement
- Testing communication metrics
- Hardware characterization for BME module and Intel depth camera

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