



Automation of Home Lighting with Learned BLE Positioning

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Overall Project Goals and Specific Aims

Project Objectives

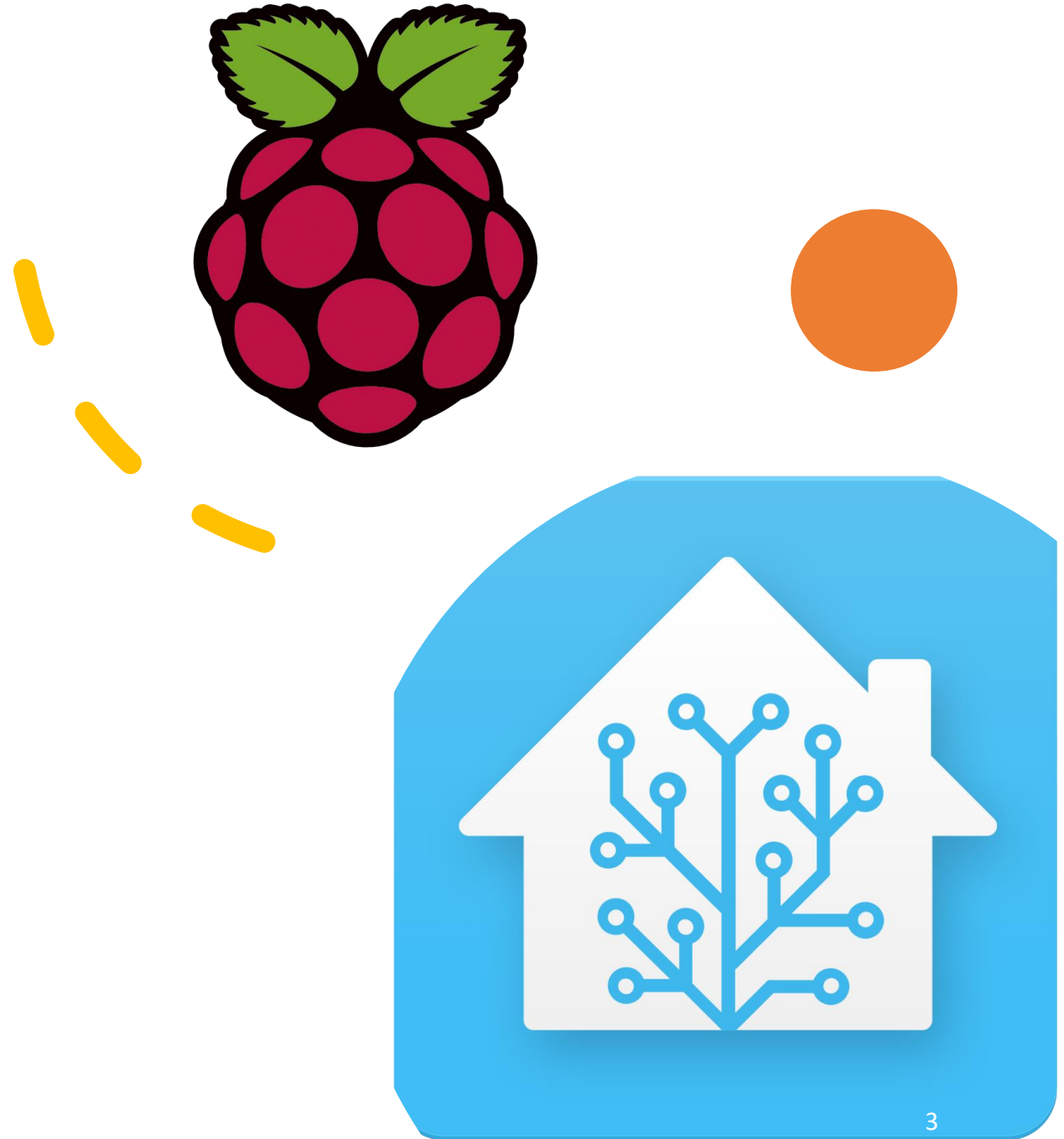
- Eliminate manually configured automations
- Minimize direct interaction

Deliverables

- Python and Arduino programs
- Log and video demonstration

Technical Approach

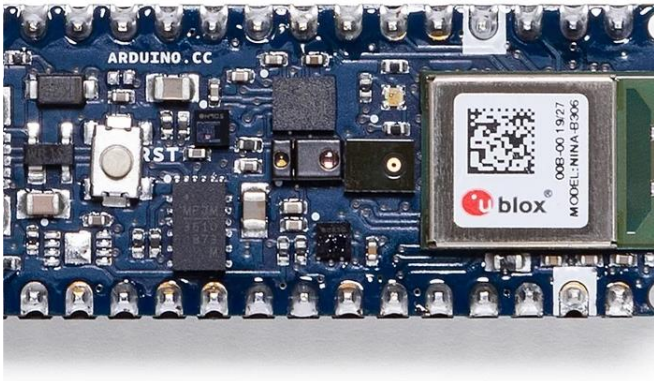
- Raspberry Pi 4 running Home Assistant Core
 - Lights connected via smart plugs





Technical Approach

- Arduino Nano 33 BLE Sense
 - Scans for nearby BLE devices
 - Reports discovered BLE devices and signal strengths to Raspberry Pi



Technical Approach

- Unsupervised learning
 - Input: nearby BLE devices and signal strengths
 - Output: correct light to turn on



Current Status



Home Assistant set up and running on Raspberry Pi



Smart plugs purchased and installed



Working BLE communication between Arduino Nano and Raspberry Pi

Next Steps



Timing and
IMU triggers

Unsupervised
learning of
position

Design
verification