

Team Turn Up

April 18, 2019



Team Members



Nicholas Kafasis
CSE



Harold Healy
EE



Ryan Walsh
CSE



Rahaun Perkins
CSE

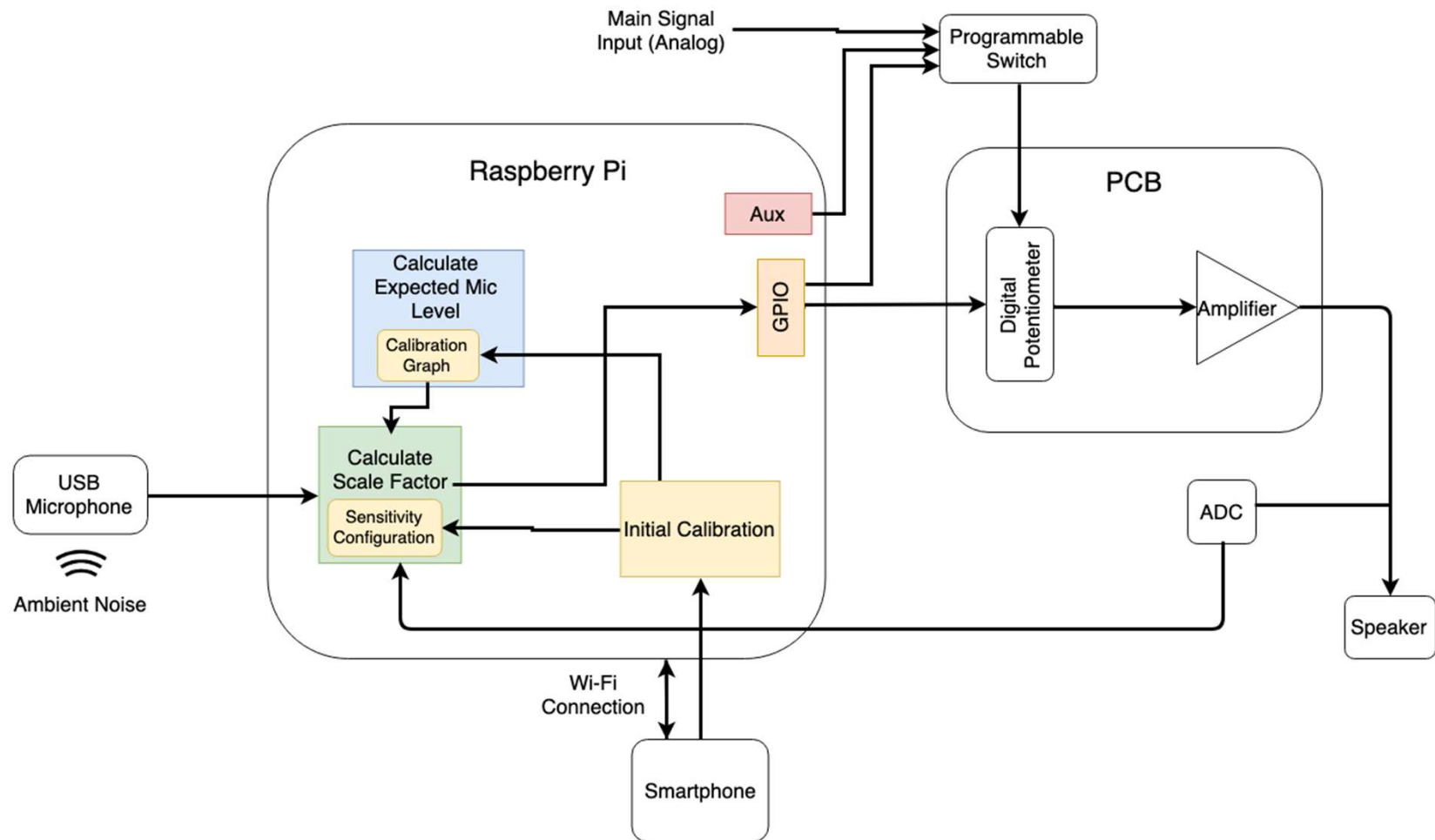
Problem Statement

- In environments with dynamic noise levels, frequent volume adjustments for Speakers and TVs are a nuisance.
- Our system will be an intermediary device that regulates the volume of audio devices based on levels of ambient noise in a room.

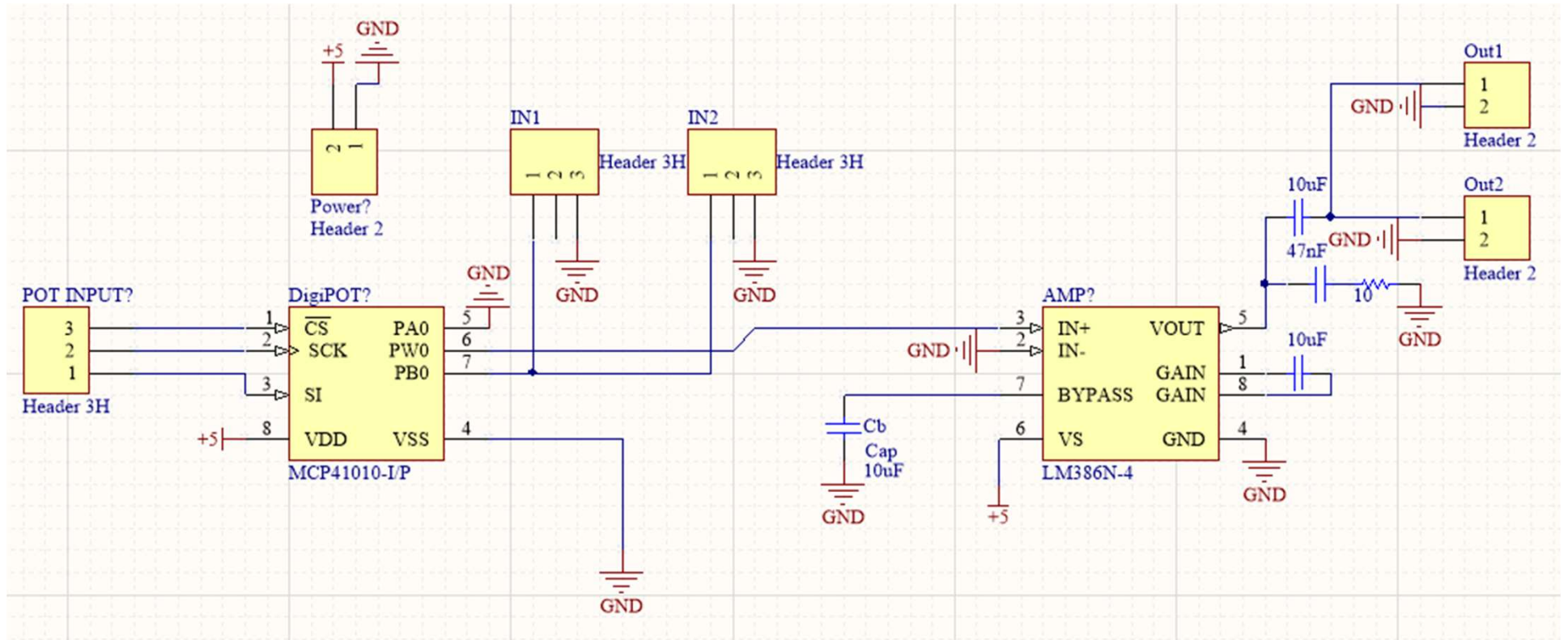
Specifications

- System will have a full range of sensitivities for volume adjustment (1-5)
- System will adjust volume steadily
- System will have a simple user interface via an iOS app
- System will function within 15 ft radius of microphone

Our Solution: Block Diagram



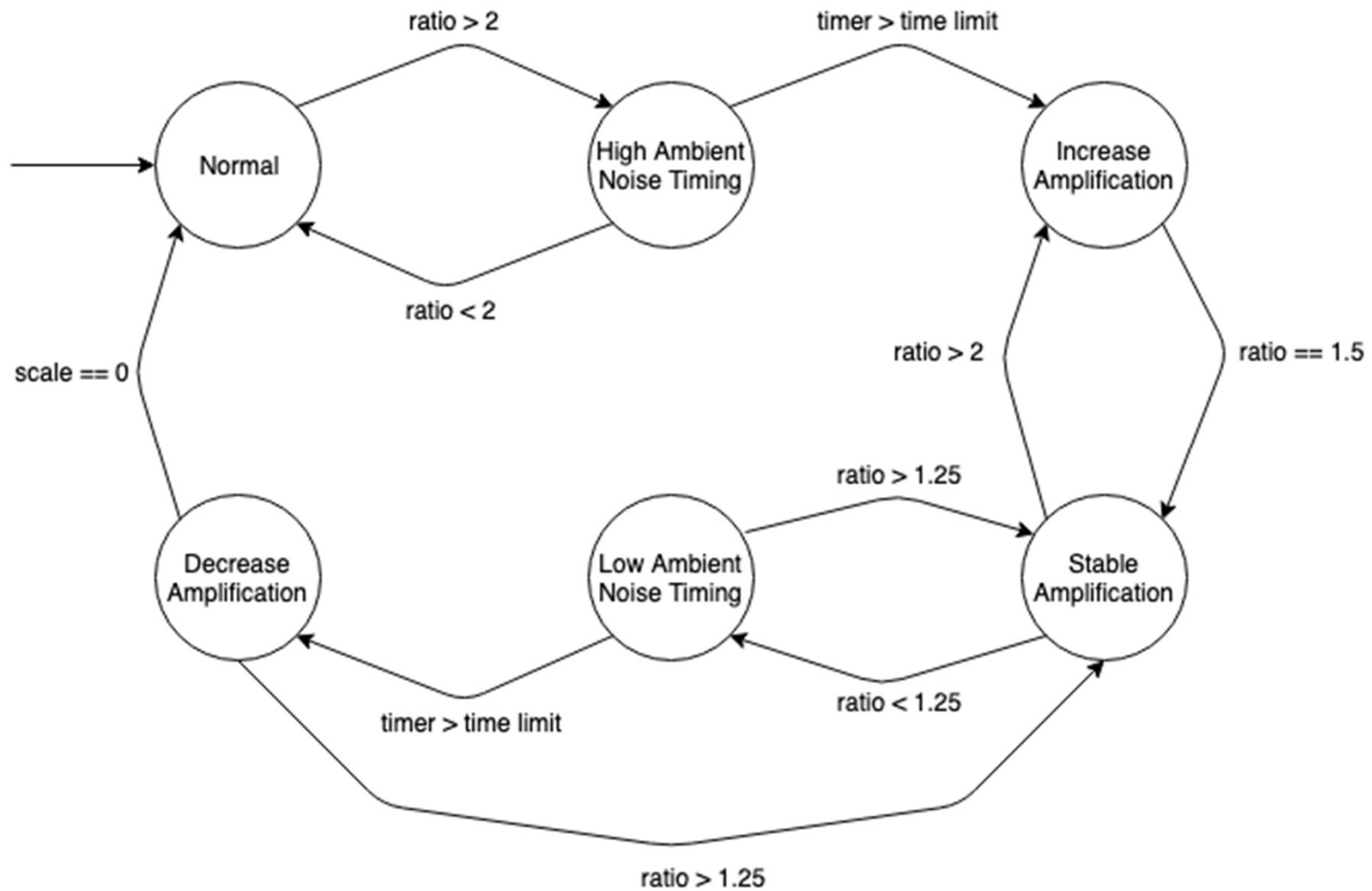
PCB



Sensitivity and Threshold

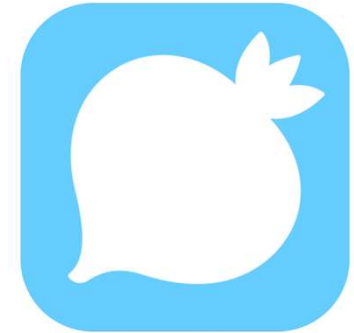
- Sensitivity set by changing reaction time
 - Range of 1 to 5
 - 5 adjusts volume after 0 seconds of mic input greater than expected
 - 1 adjusts volume after 8 seconds of mic input greater than expected
- Threshold set at a constant 2

FSM



iOS Application: User Interface

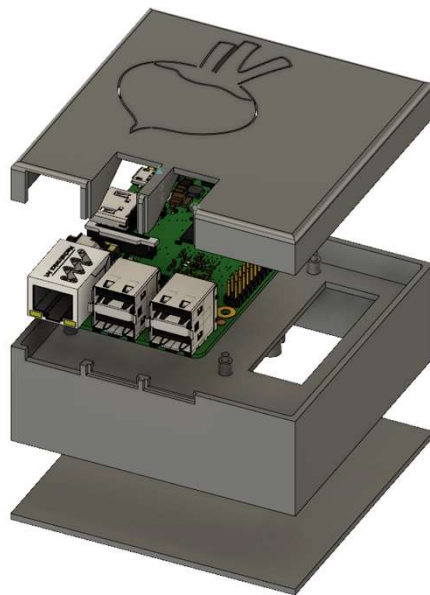
- Walks user through setting up a device in an effortless fashion
- iOS app user flow - 5 stages:
 - Welcome Page
 - Device Discovery
 - Calibration
 - Added load calibration capability
 - User Settings
 - Now just sensitivity setting
 - Run Stage
 - Added start/stop capability



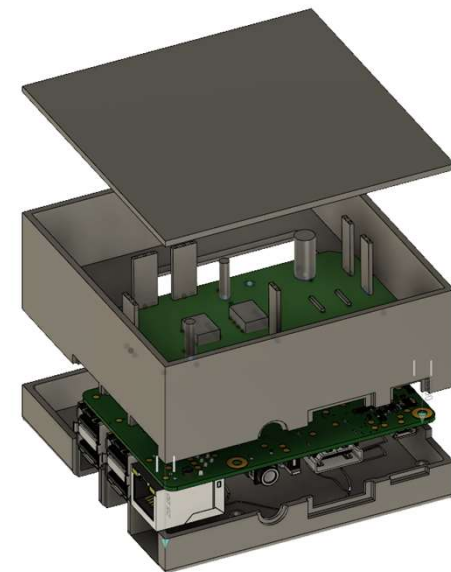
Enclosure

- Designed in Autodesk Fusion 360, to be 3d printed in M5

Top View:



Bottom View:



Cost

- Raspberry Pi: \$35
- PCB: \$26 (3.19x1.66) or (5.3 sq inches)
- Cables (USB/AUX): \$10
- SD Card: \$7
- Enclosure: ~\$15
- Microphone: \$75

- Total: \$168

DEMO

Thank you

Questions?