Robot Activity Support Voice Control Module

Spring 2019

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Background

- Center for Advanced Studies in Adaptive Systems (CASAS)
- Smart Homes to assist elderly patients in need of additional care
- Robot Activity Support (RAS)
- Interactive Robotic assistant
- Only control is through attached tablet
- In need of more intuitive controls for RAS

Solution Approach

Project Specification

- Create Voice Control For RAS
- Project Requirements
  - Voice Recognition Framework
  - Connection to Middleware
  - Voice Commands (Come Here, Go Away, etc...)
  - Audible and visual User Feedback
  - Quick Installation in under 30 minutes

Functionality

- Custom Modules: “Come Here”, “Go Away”, “Go To *Location*”
- Store various values in Redis
- Send/Receive Messages to/from middleware
- Audio and Visual Feedback

Challenges

- Finding a suitable voice module
- Jasper initial setup on Raspberry Pis
- Learning CASAS middleware
  - Publishing commands
  - Simultaneous running of middleware connection and Jasper
- CI Docker Containment
- Integrating the Sound measurer

Future Work

- Define new modules depending on need
- Update Jasper to Python 3
- Redo sound measurer
- More robust testing
- More sophisticated and user friendly TTS

Acknowledgments

This project was completed with the assistance of Dr. Aaron Crandall, Dr. Brian Thomas, and the CASAS research group

Technology Utilized

- LED Blinkt GPIO Strip
- USB Conference Mic
- USB Speaker
- Raspberry Pi Model 3B+