
Robots for Disabilities

# Assistive Technology for Elderly

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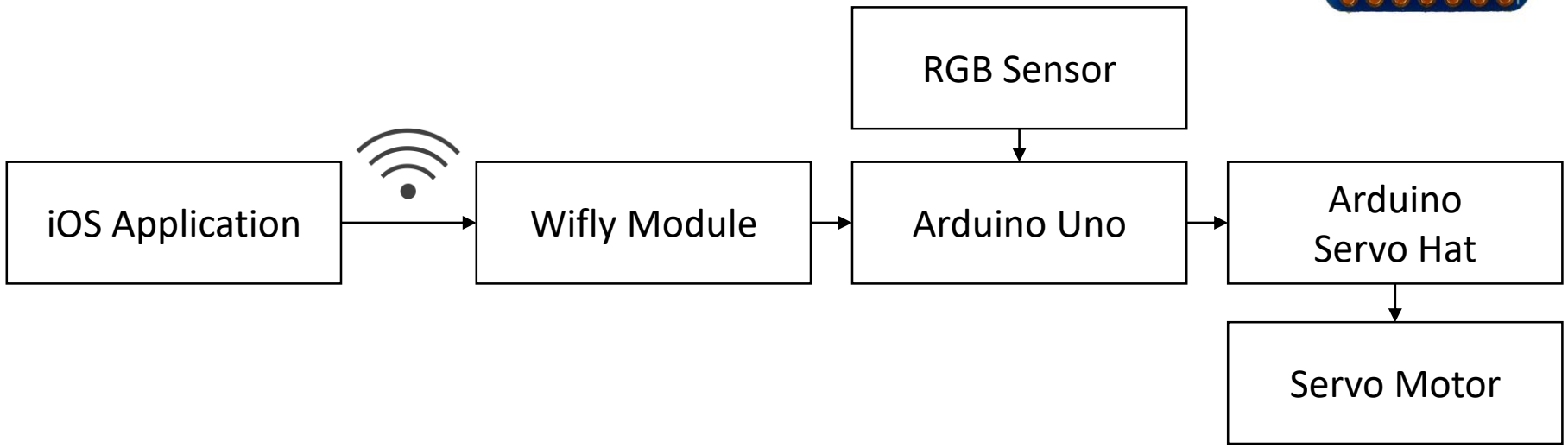
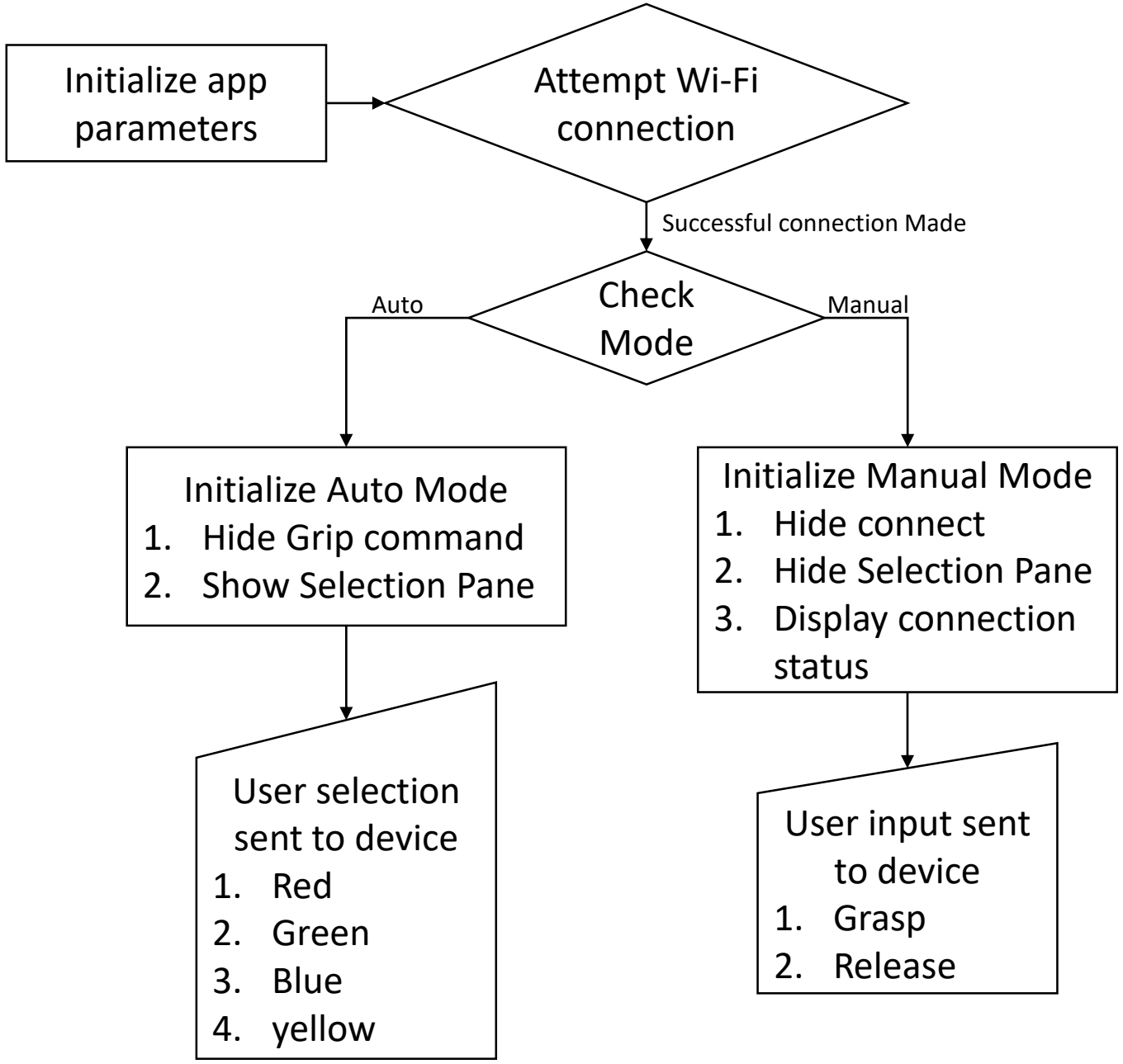
# Problem Statement

- Boxes in top shelf of a cupboard and on the floor
- Develop an assistive technology (also easy to use!)
- Modular
- Smart-connected

# V1.0

- Modular design
- Wi-Fi connectivity with Wifly shield
- Connects to iPhone app (item selection)
- Auto sensing with RGB sensor




# iOS App Layout

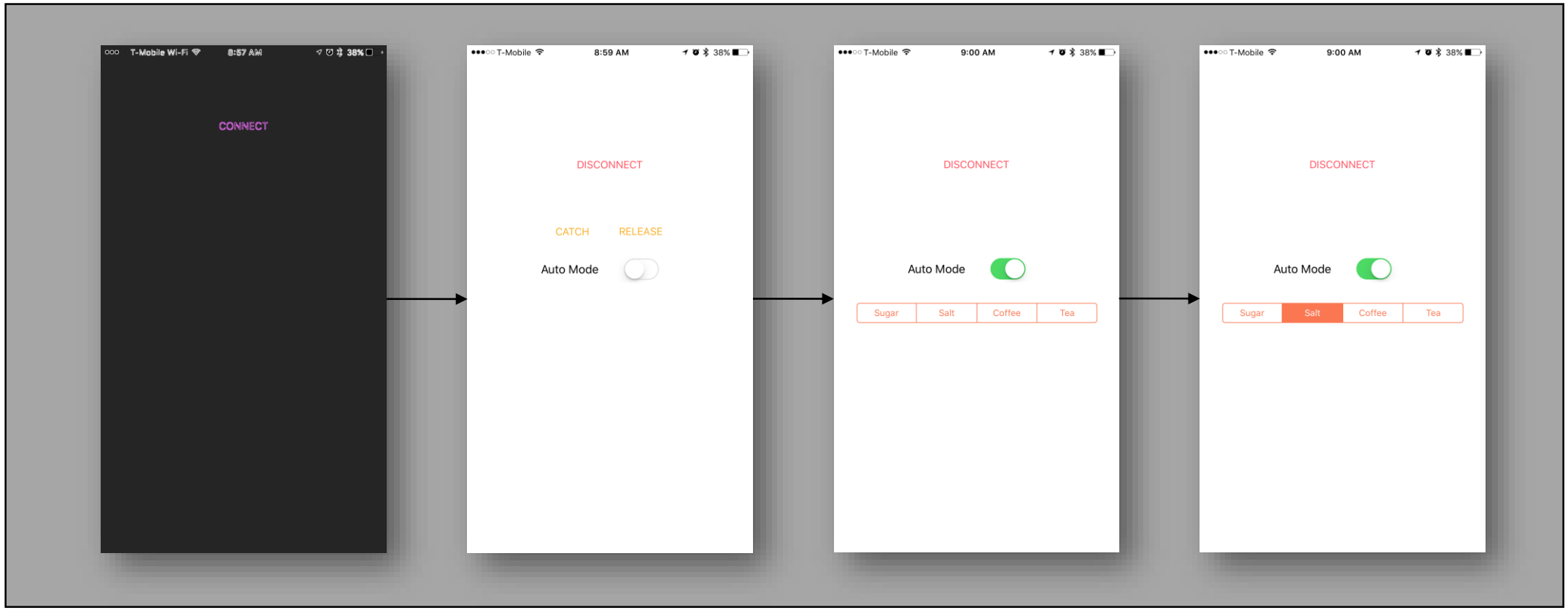
- iPad/iPhone
- Reliable auto-sensing
- Intuitive GUI

Connection

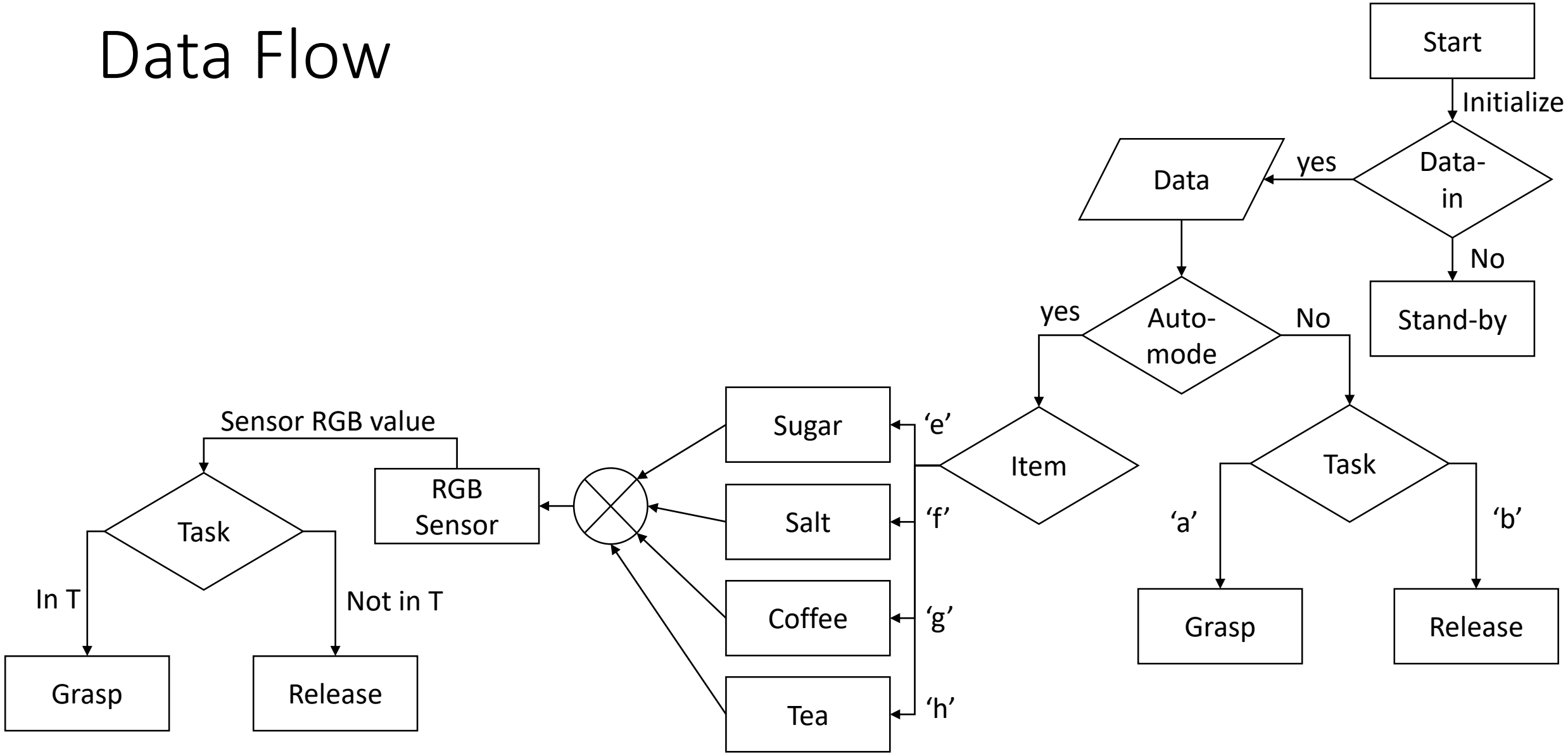
Manual Mode

Auto Mode

On Selection

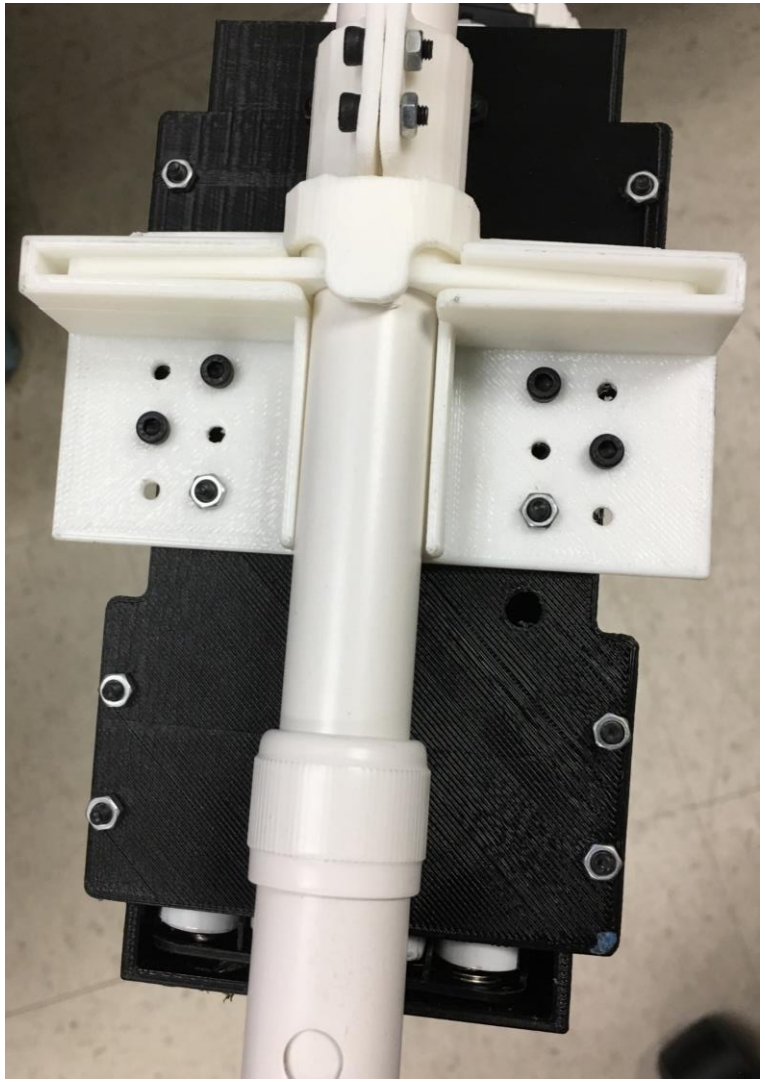


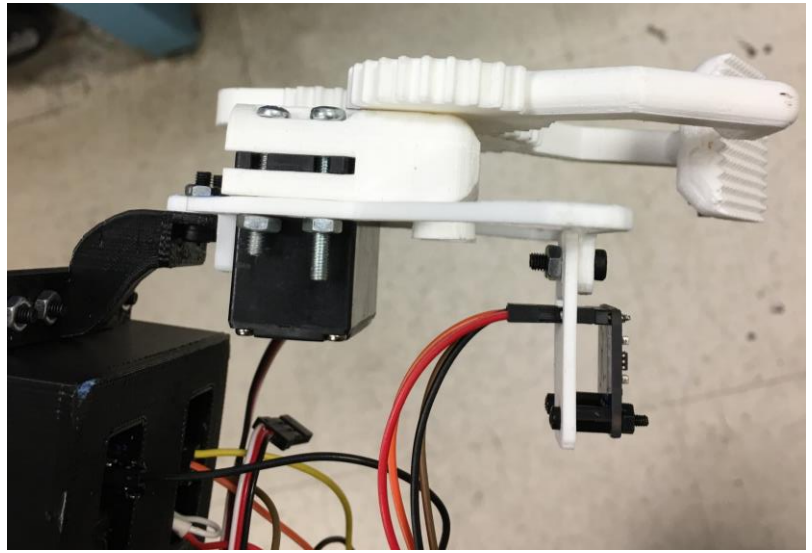
# Data Flow

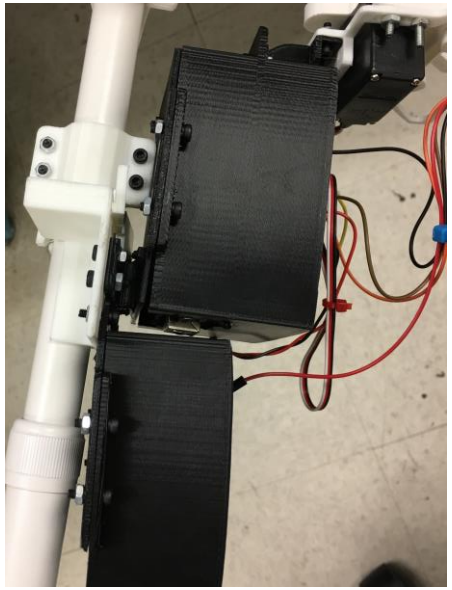

Start
Initialize
Data-in
yes
Data
No
Stand-by
Auto-mode
yes
No
Item
Task
'a'
'b'
Grasp
Release
'e'
'f'
'g'
'h'
Sugar
Salt
Coffee
Tea
RGB Sensor
Sensor RGB value
Task
In T
Not in T
Grasp
Release

# Effectiveness

- Very responsive iOS app
- Robust RGB sensor and grasping mechanism
- Fully modular assembly (no tools required)
- Connects to local network/ad-hoc/access point







# Drawbacks and Improvements

- Heavier than expected
- Its still arduino and RGB sensor
- Form factor reduction
- Not so attractive GUI
- Cost –
- BLE 3V conversion

| Item | Cost |
|---|---|
| Cane | $17 |
| Arduino | $15 |
| Wifly shield | $40 |
| RGB sensor | $6 + $6 |
| Assembly | Approx. $5 |
| Total | ~$90 |

# Thank you all!

*Some people, no matter how old they get, never lose their beauty – they move it from their faces into their hearts*