1/21/20 Shopping Cart Video Notes

- Team Begins by doing research
  - Go into the field, talk to people directly involved
- Features by importance
  - 安全第一
  - 盗み
  - 35 mph speeds in windy
- Once field research is done, reconvene & share findings
- Leadership is based on skills, not experience

1/27/20 Product Research

2 main products

1. WeWalk ($499.99)
   - Obstacle detection
   - Bluetooth phone pairing
     - Navigation
     - change settings
   - 5 hr battery
   - 30 cm handle
   - 252 g handle

2. smart CANE
   - Obstacle detection
   - GPS Navi
   - Object narration
     - items, friends, family, documents, etc
   - Emergency contact button
   - location sharing
   - Light level & surface wetness detection

1/28/20 Interview with SDS

- Overhead obstacle detection
- Wayfinding
  - hard to determine exact space
  - uses apps to determine location in GPS, but that's another device
- wrong kind of feedback (audio NG, Vibration ok)
- Generally make cane too heavy
- Apple watch integration
- Giving more feedback about location
- Adjust verbosity/feedback for user
- Vibration alts
  - Apple Watch's Taptic Feedback
    - simple rhythmic taps, less cognitive taxing
  - Human CPU Interaction @ Rochester
    - Look around App
      - Uses internal gyroscope to determine direction
  - Microsoft "Soundscape"

- Want to be safe & confident, not run into people/things
- focus on a certain type
- Accessibility apps
  - iPhone (Voice Over) & Android (Talk Back) screen readers

2/4 Meeting

2/4 cont

P: issues

- Power management
- Power on/off somewhat slowly, risk of SD corruption

- Aggie map has markers for many useful things
- Check slack, watch video

2/11 Proposals Day 1

Smart Lot

- unclear on user interaction
- unclear on software end
- Privacy concerns with camera
- ~~tracking~~ tracking all parking lot movement

Smart Cane

頑張れ

Braille Converter

- awkward grammar
- visual aids needed

2/13 Presentations Day 2

Smart Thermometer

- Logging of private user data?
- Complicated Level 2 diagram

Cyber Security

- What is ICS?
- What is HMI?
- DAQ? PLC?
- Too many acronyms
- Unclear on user interaction

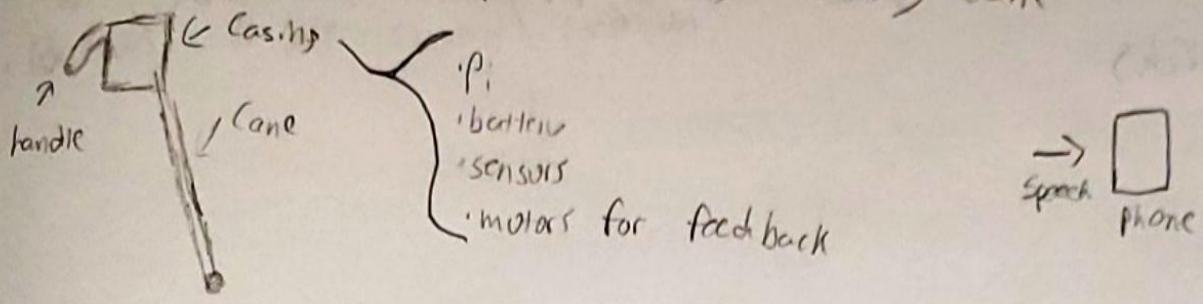
2/25 Meeting

2/23/20
KO/

- Should be Pi Cameras & ultrasonics in storage
- set up dev environment, research software.

Plan of action

Attachment / Casing to place on any existing cane



- Account for constant 左右 movement of cane

-Outdoor → Access ible Friendly Navigation (Aggie Map) → obstacle detection • Overhead • FOV detection	• Simple sensors take care of lower ground + Above. • Camera to provide extra/ backup info + more detailed info other sensors can't provide • Until hardware arrives, - Aggie Map - Test phone camera on PVC pipe to simulate operating environment. Take those images & plug into object detection algorithms - Build object detection algorithms
次回: • Test images • Concrete ideas for app design/UI • GPS Data not precise, find ways to narrow down • Bring a chart of to-do's, at meeting can dole out responsibilities	

2/27 Meeting

Hardware / component testing

Get Pi set up

Have ultrasonic, cameras, Pi, GPS module, SD cards

9/3 Meeting (surprise)

- Get AGSCMaps API, contact University to get it.
- GPS tech is accurate to ~3 m, this civilian limit unless we get real expensive
- Emergency Button
- Toggle buttons for feedback type
- Button to set current location

3/20 Stock of My components

1x RPi

4x Cameras
- 2x basic
- 2x w/Lenses

3x Ultrasonic Sensors

1x GPS Module

2x Ribbon cables
- 1x long
- 1x short

1x Pi power cable

4x SD cards
- 1x functional
- 3x broken

3/21 To-Do's This Week

1. Component Testing
2. CDR
3. Extended bibliography
4. Meet with team to discuss roles for new quarantine construction

3/22 Post Spring Break Meeting + CDR Planning

- Ways to work around
- Only 1 set of hardware, new Quarantine means we can't all be together, only 1 can work on hardware at time.
- focus on software? Software alternatives?

- Expanded Bibliography Due 3/26 Midnight
- Upload CDR Powerpoint + Video by 3/24 Midnight
- CDR report due 3/31
- Test current components + battery life

4/8 YOLOv3 Research

- Downloaded YoloV3 onto Pi
- Even using tiny, takes ~36 seconds to process 1 image
- V2 took ~45 seconds, but didn't error
- Intel Neural Stick 2 ($79.30) can bring time from 32 seconds to 571 milliseconds or slightly less than 2 fps.
- NCSU also greatly complicates code

4/14 Tensorflow Discovery

- Youtube Video shows ~2 to 4 FPS object recognition
- Using USB powerup the NS2 can get to ~12 FPS

	Regular	L.R	NS2
P13	1.37 FPS	2.19 FPS	12.9 FPS
P14	2.17 FPS	4.68 FPS	34.4 FPS

- NS2 greatly increases performance, but is expensive

4/20 | Demo Planning

- Tensorflow setup on Pi, gets around 1~2 FPS
- Can recognize objects on screens like laptops, bring up multiple images on laptop, record screen through webcam to show off both physical setup

4/28 / Video Planning

- 4 minutes max
- Final PPT planning too
- Simple, might be able to reuse footage
- record simple ~30 sec demo recognizing