**WEEKLY REPORT and MEETING AGENDA**

Report #: 7 Project Name: GUIDE

Date: 11/12/2024 Prepared by: Diana Canchola

**Agenda for the meeting**

1. Hardware Progress
2. Software Progress
3. 3D Modeling Progress

**Overall accomplishments since last meeting**

1. Soldered Haptic Sensors, Power Button
2. Detailed pinout for final Pico soldering
3. Depth Camera Python Script
4. LiDAR and Depth Camera working together
5. 3D Model of Electronic Housing

**Tasks completed by each team member since last meeting**

| Task description | Assigned to | Completed? |
| --- | --- | --- |
| Combine LiDAR data operating on a single python script with the Depth Camera | Jack Couture Noah Kilpatrick | yes |
| Brainstorm AI/ML solutions for utilizing both sensors | Jack Couture Diana Canchola | yes |
| Create plan for wiring components on the 3D prints and walking stick | Jack Letsinger Ryan Wu | yes |
| Refine 3D model for electronic housing after team and professor feedback | Alyan Tharani | in progress |
| Refine handle to attach to walking stick | Alyan Tharani | yes |

**Plans for next period**

1. Use depth camera for object recognition
2. Attach all 3D printed parts onto the walking stick
3. Begin testing with sensors on the walking stick

**Task assignment per team member (to be completed before the next meeting)**

| Task description | Assigned to |
| --- | --- |
| Depth Camera Object Recognition | Jack Couture Noah Kilpatrick |
| Brainstorm AI/ML solutions for utilizing both sensors | Jack Couture Diana Canchola |
| Add sensors to 3D printed handle and sensor housing | Jack Letsinger Ryan Wu |
| Refine 3D models based on team and professor feedback | Alyan Tharani |
| Solder final Pico | Ryan Wu |

**Project management status**

1. Hardware On-Track
   1. Soldered components for final integration
   2. Developed several options for attaching the walking stick handle
   3. Created first iteration of 3D printed electronic housing
      1. Attached to angle adjuster
      2. LiDAR below the depth camera
      3. Screw holes for the electronic sensors
2. Software Focus
   1. Working towards the software prototype
   2. Depth camera data has been interpreted and integrated with the LiDAR
      1. Working towards creating a joint distance measurement
      2. Working towards a “smarter” algorithm

**Minutes from previous meeting**

Meeting 11/05/2024 Notes

* Weekly report meeting with the professor
  + Want to talk more on the algorithm to make it smarter
  + Want to talk more once data is gathered
  + Methods for attaching the two halves of the handle
    - Velcro straps
    - Sowed zipper
    - Screws
* Integrating 3D printed parts onto the walking stick
  + The handle is now fully functional
  + The sensor housing attachment is complete and can attach to the manufactured angle adjuster
  + Soldered the haptic sensors with better quality wire to decrease breakage and heat shrinked the initial connection

Meeting 11/07/2024 Notes

* Better attached the angle adjuster to the walking stick with removable and wrappable velcro
* Soldered the Power Button to the Buck Converter with better wire to ensure secure connection
  + Power Button is a tight fit in the handle and is prone to breaking off
* Depth Camera working with the LiDAR
  + For every ~100 LiDAR scans there is a depth camera scan
    - LiDAR takes in ~100 scans and takes the average of those scans. It works independently until the depth camera gets scans

Battery Life tests show ~2 hrs of battery life  
Weights

* Walking Stick: 0.5lb
* Handle:
* Electronic Housing:
* Pico 2: 0.13lb
* Battery: 0.26lb
* Buck Converter: 0.006lb
* LiDAR: 0.011
* Depth Camera: 0.022
* 4 Haptic Sensors: Negligible
* Angle Adjuster: 0.19lb
* 3D Prints: 0.21

Total: 1.33lb