**WEEKLY REPORT and MEETING AGENDA**

Report #: 4 Project Name: GUIDE

Date: 10/15/2024 Prepared by: Diana Canchola

**Agenda for the meeting**

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

**Overall accomplishments since last meeting**

1. Decoded LiDAR and Depth Camera data from the Pico
2. Enabled communication between sensors and microcontroller
3. 3D printed first iteration of handle
4. Python code to interpret raw data and convert to distances from LiDAR text file

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

| Task description | Assigned to | Completed? |
| --- | --- | --- |
| Receive data directly from depth camera and LiDAR instead of files | Jack Couture Noah Kilpatrick | in progress |
| Establish dual UART connection on Pico | Jack Letsinger | in progress |
| Develop c++ code to read distance measurements from LiDAR | Jack Couture  Diana Canchola | in progress |
| CAD model for walking stick handle | Alyan Tharani | yes |
| CAD model for sensor housing | Alyan Tharani | no |

**Plans for next period**

1. Continue CAD modeling for the cane attachment using angle adjuster
2. Begin development of code to aggregate both LiDAR and depth camera
3. Continue building breadboard prototype
4. Convert python code to c++ for LiDAR data
5. Test multiple UART connections communicating to and from the Pico

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

| Task description | Assigned to |
| --- | --- |
| Receive data directly from depth camera instead of CSV files | Jack Couture Noah Kilpatrick |
| Aggregate LiDAR and Depth Camera | Jack Couture  Diana Canchola |
| CAD model for sensors casing | Alyan Tharani |
| Breadboard Prototype | Jack Letsinger  Ryan Wu |
| Enable multiple UART communication on Pico | Jack Letsinger |

**Project management status**

1. Hardware On-Track
   1. Working towards breadboard prototype with clear finish
   2. Resolved issues with UART connection on Pico, now
   3. CAD model is making good progress and second iteration is being printed
      1. Testing for the handles haptic vibrations was tested
   4. Parts for angle adjusting sensor housing have been ordered
      1. CAD model will be worked on in the meantime
2. Software Focus
   1. We have decoded LiDAR data from the Pico and are working towards interpreting it
   2. Developed python script to extract distance data
   3. Soon will have developed LiDAR c++ code
   4. With breadboard prototype we can alter the code to receive directly through the Pico

**Minutes from previous meeting**

Meeting 10/10/2024 Notes

* Met with professor for weekly update
* Held feedback session for first 3D CAD handle
  + Add filler to ⅓ of the handle to create snug fit into the cane
  + Move Pico to the other end of the handle to allow for more room
  + Shift battery to the top wall of the cane instead of on the side for more space
  + Adjust power button measurements to align
* Brainstormed decoding the LiDAR data in txt files

Actions/Next Steps

* Solder the haptic sensors for testing purposes
* Test the rumblers for haptic design on 3D printed handle
* Make changes to CAD of handle
* Begin brainstorming and gathering potential parts for the angle adjustment of the sensors
* Decode LiDAR data being outputted by the Pico

Meeting 10/11/2024 Notes

* Soldered the haptic sensors for testing purposes and tested on the 3D printed handle.
  + Good responses from vibrating sensors despite 3D printed walls
  + Need to test all 4 haptic sensors with components
* Continued adding changes to CAD model for handle
* Tested UART bridge for allowing communication to and from the Pico
  + Ran a script triggering LED response on the Pico depending on the electronic sensors

Actions/Next Steps

* Develop program to trigger haptic response at different frequencies
* Purchase pole angle adjuster to begin brainstorming sensor casing which will be 3D printed
* Convert Pico output of electronic data into a more readable format
* Using the decoded Pico output, develop code to output distance measurements from the LiDAR