**WEEKLY REPORT and MEETING AGENDA**

Report #: 5 Project Name: GUIDE

Date: 10/29/2024 Prepared by: Diana Canchola

**Agenda for the meeting**

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

**Overall accomplishments since last meeting**

1. Finished Breadboard Prototype
2. Depth Camera Python Script
3. 3D Printed New Handle
4. 3D Model of Electronic Housing
5. CDR Completion

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

| Task description | Assigned to | Completed? |
| --- | --- | --- |
| Breadboard prototype handoff | Jack Letsinger Ryan Wu Jack Couture | yes |
| Receive data directly from depth camera and LiDAR instead of files | Jack Couture Noah Kilpatrick | yes |
| Establish dual UART connection on Pico | Jack Letsinger | yes |
| Develop python script to decode depth camera data | Jack Couture |  |
| CDR Presentation and Report | Team | yes |
| CAD model for walking stick handle | Alyan Tharani | yes |
| CAD model for sensor housing | Alyan Tharani | yes |

**Plans for next period**

1. Begin development of code to aggregate both LiDAR and depth camera
2. Use depth camera for object recognition
3. Brainstorm AI/ML solutions to verify detection using the two sensors
4. Print electronic housing 3D design
5. Integrate breadboard prototype into the walking stick

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

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

**Project management status**

1. Hardware On-Track
   1. Completed breadboard prototype
   2. CAD model is making good progress and second iteration is complete for GUIDEs handle
   3. Received angle adjuster in the mail
   4. 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. All code is now in python our chosen language
   3. Depth camera data has been interpreted

**Minutes from previous meeting**

CDR Report

Hardware

* Working breadboard prototype
* Pinout diagram
  + Battery
  + LiDAR
  + Depth Camera
  + 4 Haptic sensors
* CAD model of Handle with components inside
  + 3D renderings and actual handle
* CAD model of electronic sensor housing
  + 3D renderings

Software

* Depth Camera python script
* LiDAR python script
* Compare data of the LiDAR and Depth camera together
* Plots that show the data for both sensors

Meeting Notes

* Pico GPIO pins for adjusting voltages are not well supported, might add resistors to make the vibrations less
  + Create pulses to turn on and off the voltage being supplied to the haptic sensors
* Haptic Sensors pulse pattern could change with the type of object seen by GUIDE
  + Incorporate AI/ML into the software prototype and classify objects using the depth camera
* 3D sensor housing debate on which sensor should go above the other or side by side.
  + Need to purchase a go pro angle adjuster