Guidance Utility for Impaired Daily Experiences

(GUIDE)

# Description

GUIDE is an innovative walking stick for the visually impaired. GUIDE, through obstacle detection using a LiDAR, depth camera, and python algorithms can alert users through haptic vibrations of obstacles 2m away. GUIDE contains two main adaptations of the conventional white walking stick. The first is an adaptation of the handle where most of the electronics are stored. The second is a sensor mount that is angle adjustable to the user's height and holds the electronic sensors. This document describes the layout of our final deliverables.

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### Design

The Design folder is organized in three main sections, Hardware, Software, and 3D Modeling.

#### Hardware

This folder contains all the data sheets for the electrical components of GUIDE. Additionally, it contains system level diagrams and wire diagrams of our final prototype.

#### Software

This folder contains all the software used in the final design of GUIDE and all code used for testing. The software is found in the zip folder. Additionally, system level diagrams are in this folder for the software.

#### 3D Modeling

This folder contains images and Autodesk Fusion files of all our 3D printed parts implemented into GUIDE.

### Media

The Media folder contains two sections, one for GUIDE images and the other for GUIDE videos.

#### Photos

This folder contains images of the final GUIDE prototype. The images highlight each view of GUIDE and all components. Additionally, this folder contains a pdf version of the team poster used for the CSCE Capstone Expo.

#### Videos

This folder contains demo videos taken throughout the development stage for GUIDE. These demos highlight the beginning stages of testing our sensors. Additionally, this folder contains videos of the team testing the final prototype of GUIDE both indoors and outdoors.

### Reports

The Reports folder contains all of the documentation produced at each stage of our capstone project. From the proposal, to the final documents and weekly progress.

#### Proposal

This folder contains our problem statement, our proposal report, and proposal presentation. The problem statement includes the need for GUIDE, our main objectives and the beginning of generating our requirements. The proposal report contains our proposed work and our schedule for the semester. A presentation containing all the report contents is also located in the folder.

#### CDR

The CDR folder includes a report including the current development of GUIDE and any updates to the proposed design. This report highlights the system level implementation and integration of GUIDE. The presentation version of our report is also located in this folder.

#### Final Documents

The Final Documents folder contains the final report and the final presentation. The final report focuses on the implementation details of GUIDE and what was completed this semester. Additional documentation such as user manuals, experiments conducted, and analyzing results are also included in the report. The final presentation contains all details from the report.

#### Weekly Reports

The Weekly Reports folder contains all major accomplishments, plans, and notes for each week spent working on GUIDE. For the two weeks at the start of August, our team conducted and documented our own agendas. Once the team began meeting with the professor we documented using the specified format.

### Team Notebooks

This folder contains pdf versions of all our members' individual capstone notebooks.