

Project Idea – Group 3

Blind Mobility Aid

Karthiha Rajakesarirajah - 301369092

Matthew Lerch - 301306062

Fengbin Yang - 301415223

Victor Omorodion - 301349947

Our project idea is to improve upon the Blind Navigation Aid that one of our group members, Karthiha Rajakesarirajah, completed for her undergraduate degree. In short, her Navigation Aid is a wearable device that gave haptic feedback to the user based on what direction they had to follow. This design was useful in loud environments, where listening to a GPS device is difficult.

As a group, we will improve the device in phases, focusing our attention on Phase 1 to begin and work our way toward Phase 3. Below are the phases for improvement.

Phase 1: Obstacle Detection using YOLO software

Phase 2: Crosswalk detection using YOLO software

Phase 3: Improve the navigation by utilizing satellites or Google Maps

We may add more phases in the future if we get these phases completed early.

Engineering Method Attainability:

1) Identifying a Problem

Our problem is that visually impaired individuals have a difficult time navigating noisy environments. Safety is also a big concern for the visually impaired, and we can address that with proper obstacle detection and crosswalk tracking.

2) Concept

There's lots of research done about blind navigation aids, and our group has already researched into one on GitHub. The "third eye" created by "nandutejaswini" has many components that we would like to try building off of, like object detection through ResNet (we would use YOLO) and a GPS

3) Planning

Our group's objectives are listed in the list above. Our group is also a hardworking set of individuals that have various strengths within the group.

4) Design

We have an existing design schematic, some code and her entire undergraduate report, so our group has a good head-start. We also have her documentation.

5) Development

All of us are good at different topics related to engineering. Combining our efforts should make creating a prototype less of a challenge.

6) Launch

In the end, we expect to improve Karthiha's original device for reliable obstacle detection, crosswalk information & detection, and possibly improving the navigation using Google Maps or another such GPS system.

