horizontal line

**CPTS484**

**Young & Simple Revised Plan**

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10/14/2018

Team URL: <https://github.eecs.wsu.edu/CptS484Fall18/RepYoungSimple/tree/v1.0>

Theia: Navigation System for he blind

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# **1. Introduction**

## **1.1 Project overview**

With the aid of an automated navigation system fewer people can be involved while the job of navigating the blind will be more efficient using a developed system. Dijkstra’s shortest-path algorithm is an exemplary example for finding the shortest route in a weighted graph: before the algorithm was invented it was nerve-racking to enumerate each route in a weighted graph, and also the application of Dijkstra’s shortest-path algorithm makes it much faster to do the job well. Thus a smart-phone application that automatically navigates the blind can significantly increase the effectiveness and efficiency and the blind will absolutely feel happier in the future.   
There are existing technologies that do the job of navigating the blind. However disadvantages of those technologies include lack of user-friendliness, that is, the tools that help the blind are actually expensive and cumbersome and difficult to learn to use. It would be a much greater idea to think in the perspective of softwares rather than hardwares because a smartphone, for example an iphone, is much more lightweight than a bag of heavy equipment. Considering the features of a smartphone, information of local environment can be inputted through images and sound via the embedded camera and microphone.

Although there are some advanced functions in this app and it can help blind people locate easily, it still has some shortcomings. Firstly，it is difficult for administrator or some backstage staff to update the map every day, which may cause blind people get in troubles. As we all know, a navigation system can be updated every few months or even once a year, that is because the map for outside roads changes occasionally and people can easy to switch the way. However, it is difficult for blind people to choose the way. What is more, this app is designed to guide blind people on the indoor route and the map for indoor roads may always change. In this case, blind people may lose the location because of some strange ways and they may feel nervous. Secondly, this app may not turn out ot be sensitive. In order to guild blind people to know the information of the route, this app must give the following road information and guidance 5 to 10 seconds in advance so that blind people can make judgments in advance. However, the signal is bad in some corners of the room, which may bring some problems. Once there is an obstacle on the line, this indoor navigation might not report the information immediately. Finally, to build up this indoor navigation system, it may cost lots of money. In order to reduce the cost and make the app available to every blind user in the world, we must reduce the cost of production and maintenance.

## **1.2 Project deliverables**

The project is scheduled to be complete by Dec. 9.

The following are the deliverables for the project:

|  |  |  |
| --- | --- | --- |
| Week/Deliverable | Team Leader | Deliverable Description |
| 1 | Yuzhu Feng | Project Plan |
| 2 | Yuzhu Feng | Requirements Specification |
| 3 | Yuzhu Feng | WRS |
| 4 | Yuzhu Feng | WRS |
| 5 | Yuzhu Feng | WRS |
| 6 | Yuzhu Feng | WRS |
| 7 | Yuzhu Feng | WRS |
| 8 | Yuzhu Feng | Tech Specs |
| 9 | Yuzhu Feng | Coding Practice |
| 10 | Yuzhu Feng | Implementation |
| 11 | Yuzhu Feng | Revision |
| 12 | Yuzhu Feng | Final Revision |
| 13 | Yuzhu Feng | Final Submission |

In current society, there are already various kinds of navigation applications that assist people to travel from one place another, but people especially the blind with disabilities do not have as easy access to these convenient softwares in their daily lives. Currently there are a lot of available access techniques. However, there hasn’t been an integrated automated system designed for the blind and thus our project is designed for the blind: it can identify the structure inside the building; pinpoint the location of the blind inside the building, and advice them to safely move from a room to another, even tell users to stop at the right place to turn. It can protect the blind people's safety and prepare emergency calls and contact information after detecting a fall when the software lost people's locations. The other version of the software is designed for building managers to ensure that blind people can get specific changes to the building's interior, such as classroom repairs and damage to stairs, to protect their safety. There are a lot of blind people in the world who need help.

## **1.3 Evolution of this document**

Revision and Meeting Record are included in the WRS.

## **1.4 Reference**

## **1.5 Definitions, acronyms, and abbreviations**

# **2. Project organization**

## **2.1 Process model**

In our project we are going to use the prototyping model because the prototyping model is adaptable to changes.

### **2.2 Organizational structure**

Our team consists of three people: Yuzhu Feng, Lei Shang, Tianyu Miao.

### **2.3 Organizational boundaries and interfaces**

### **2.4 Project responsibilities**

For primary responsibilities per phase, please refer to section 2.2. Ultimately the entire project team is responsible for the successful delivery of the product.  
 Team member assignments per deliverable according to expertise. Team members shall help each other and learn from each other.

# **3. Managerial process**

## **3.1 Management objectives and priorities**

We are using the prototype model for our project development.

In applications for the blind, the interface uses the simplest design, because blind people can't get information and operating software functions through the mobile interface.The interface information will display the blind personal information when the blind person may be in danger. When the passerby sees the information on the screen of their mobile phone, they can provide them with the necessary help.

Another software for users other than the blind, we will provide simple navigation information on the interface. We will contact the blind and keep an eye on the blind people's information as the main goal. Let these users get timely access to the location and information of the blind person.

**3.2 Assumptions, dependencies, and constraints**

See WRS

## **3.3 Risk management**

## **3.4 Monitoring and controlling mechanisms**

We are aiming at an automated system integrated on a smartphone that helps navigate the blind and thus contribute to a better society.

|  |  |
| --- | --- |
| Risk | Monitoring and Controlling |
|  |  |
|  |  |
|  |  |
|  |  |

# **4. Technical process**

## **4.1 Methods, tools, and techniques**

The IDE we’ll use to develop our project will be Android Studio. We’ll use Java as our main programming language.

## **4.2 Software documentation**

This section will be addresses in subsequent versions.

## **4.3 Project support functions**

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