

Team CodeBusters

You See

Version 1.3

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Revision History

Date	Version	Changes	Editor
11/04/21	1.0	Creation, Prototype	Jerry, Nebil, Zack
11/04/21	1.1	Preliminary Requirements, Issues	Nasif, Samuel
11/12/21	1.2	WRS, Traceability Matrix	Jerry
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YouSee

1. Introduction

1.1 Purpose

This document is meant to record the effects of our team in defining the problem domains, goals, requirements, and specifications for the YouSee app. By recording all this information in one document, all stakeholders will share the same understanding of why and how we are developing the YouSee application.

1.2 Scope

Blind people should be able to navigate indoors, from one location in a building to another location in the same building or a different building. For example, a blind student or a blind visitor may need to go from one classroom to another classroom, from one office to a lab, from a lab to a classroom or a washroom, etc. To reach the destination location, a blind person may need to figure out what the source (starting) location is, walk in the hallway, turn at the right place, continue to walk, and stop at the destination location. Safety would be an important concern, which implies, for example, detecting obstacles and avoiding collisions. The time that it takes to reach the destination might also be a concern, especially if there isn't much time available to reach the destination. Familiarity with the route to be taken may also be a concern, among other things.

Blind people traditionally have used a dog, a cane, possibly with the help of braille indicators on the wall – oftentimes beside doors. These aids may be used together since they could be complementary to each other. There seems to be a great need for blind people to have some aid that can think, see, hear, and speak.

Our team will build a smartphone app called YouSee. The app will be a way for volunteers to assist blind people navigate indoors using video calls. Users will be able to choose if they are a blind person or willing to volunteer. This will lead to a volunteer and blind person pair being matched to allow the volunteer to help the blind person by acting as their eyes and ears using the phone's camera.

1.3 Definitions, Acronyms, and Abbreviations

- Android OS: An operating system for mobile phones developed by Google.
- iOS: Apple mobile operating system created and developed by Apple Inc.
- App: Application, typically referring to mobile applications.
- UTD: University of Texas
- PIG: Problem Interdependency Graph,
- UML Class Diagram: Unified modeling language, used to structure a software system's classes, attributes, and relationships among objects.
- Sequence Diagram: Depicts the scenario of how objects interact between each other while carrying out their functionality.
- FR: Functional Requirement, a description of the service that the software must offer.
- NFR: Non-Functional Requirements, a description of behaviors that the software must uphold.
- DI: Domain Issues, problem areas that are addressed in the software system.

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1.4 References

UTD's Official Site: <http://www.utdallas.edu/>

UTD Campus Map: <http://www.utdallas.edu/maps/>

UTD Office of Accessibility <http://www.utdallas.edu/studentaccess/>

Dr. Chung's website: <http://www.utdallas.edu/~chung/CS4351/syllabus.htm>

1.5 Overview

This document includes an introduction to the YouSee app, followed by preliminary definitions of the domain, functional, and non-functional requirements. It then contains a list of issues with each element of these three defined fields. Afterwards is a section stating the world surrounding the application and then a section which includes the formal requirements and specifications. There is a short section containing a link to a prototype and then a section of the application mockups. The final section lists the references used in the creation of this document.

2. Positioning

2.1 Business Opportunity

Indoor Navigation is very important for those with visual impairments. The business model will try to explore a completely new space, as there is still no clear leading entity in for this need as most people focus on transporting people from one location to another, but neglect what happens when they get to the location. Our primary users are those with visual impairment who will be able to request for help and get connected to a volunteer by video chat that will help them get to their desired location indoor.

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2.2 Problem Statement

The problem of	The inability to navigate indoors
affects	Those with visual impairments
the impact of which is	Exclusion and unnecessary difficulties for those with visual impairments
a successful solution would be	<p>An application that would help the user connect to a help who would try to successfully navigate them indoors to their desired destination</p> <p>The application would enable users to see route navigation before visiting and prevent them from having to use trial and error to find accessible routes.</p> <p>The application would help those visiting and living on campus feel more confident getting around campus.</p> <p>The user will be able to browse floor plans of buildings on campus and see accessible entrances and exits.</p>

2.3 Product Position Statement

For	People who are visually impaired
Who	Require help to navigate indoors
The (product name)	is a smartphone application (YouSee)
That	Provides the user the ability to navigate indoors by the help of a 3 rd party.
Unlike	Current navigation applications, such as Google Maps, that do not provide navigation indoors and does not allow the user to choose routes based on accessibility
Our product	Provides someone to help the user get to their desired location indoors

3. Stakeholder and User Descriptions

3.1 Target Demographic

The key demographic of the YouSee application is those with visual impairments and would need help navigating indoors. YouSee purpose is to help users navigate via video chat to volunteers who would guide them. Thus, the target demographic of this application may include, but is not limited to:

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- Old people
- Blind/Visually impaired People
- Good Samaritans

It is also assumed that users will be technologically literate and have a device, typically a smart-phone, that is connected to the Internet.

3.2 Stakeholder Summary

Name	Description	Responsibilities
Dr. Chung	The staff whose aim is to make sure that we come up with the best possible software within the constraint given that would provide an ideal solution to the problem at hand; helping blind people navigate indoors.	<ul style="list-style-type: none"> - Provide templates for project documents - Provide information to help make the process easier and more efficient - Monitor project progress
University of Texas at Dallas Research Team	The research team is always waiting for a breakthrough and when this becomes one, they would want to integrate it to further take it to the next level when we are done with the course.	<ul style="list-style-type: none"> - Develop projects requested by UTD Officials - Improve upon existing projects - Ensure development meets professional standards

3.3 User Summary

Name	Description	Responsibilities	Stakeholder
Old People	People tend to lose their sight the older they become and even if its not a complete loss of sight they would require help to navigate indoors sometimes	<ul style="list-style-type: none"> - Opens the App - Provide feedback 	YouSee
Good Samaritans (Volunteers)	People can decide to volunteer and help when available through video chat with indoor navigation	<ul style="list-style-type: none"> - Provide help with indoor navigation - Provide feedback 	YouSee

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3.4 User Environment

Because YouSee is an indoor navigation application, the primary user environment will be any indoor location.

Currently, the app is supported on Android and IOS devices. The application also utilizes architecture that makes it portable, would not render it obsolete and make it easy to adapt to the latest technology.

3.5 Stakeholder Profiles

3.5.1 University of Texas at Dallas Officials

Representative	Dr. Lawrence Chung
Description	Dr. Lawrence Chung is a lecturer at the University of Texas at Dallas who is currently teaching a course in Requirements Engineering.
Type	<ul style="list-style-type: none">- Ph.D. in Computer Science- Multiple awards and published work
Responsibilities	<ul style="list-style-type: none">- Monitoring the progress of the YouSee Project- Provide feedback on software development and documentation
Success Criteria	<ul style="list-style-type: none">- Functional application prototype- Adequate software documentation
Involvement	Dr. Chung is acting in a supervisory capacity, making sure the development of the application as part of a course project.
Deliverables	Project Feedback
Comments / Issues	None

3.5.2 Customer Care

Representative	
Description	An individual that will assist users of the app to get to their destination or troubleshoot faults.
Type	<ul style="list-style-type: none">- Skilled Professional in Information Tech, Computer science or another related field- YouSee project member

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Responsibilities	- Ensure that the system can provide the guidance necessary to get the user to their indoor destination
Success Criteria	- The success is completely defined by the ability for the Customer Care group to eliminate negative customer complaints about getting support while using our system.
Involvement	We will have internal Customer Care members on our project team to help evaluate our design and guide our vision
Deliverables	End user support manuals
Comments / Issues	None

4. Product Overview

4.1 Product Perspective

The YouSee Application is a standalone product that at most utilizes the GPS capabilities available in almost all current smartphones. YouSee is created by University of Texas at Dallas students for people who need help navigating indoors. Users can download and run the application on their Android and IOS - compatible devices. When the application is downloaded and installed, users can select from several of the features provided by the YouSee application to help improve their experience.

4.2 Summary Of Capabilities

Customer Benefit	Supporting Features
User can easily get to their destination	Users can place call to volunteers through the app
Emergency response	App can send out an SOS in the case of an abrupt disconnect that satisfies preset conditions, like a fall.
Users can find their location	Locate user via GPS technology to approximate their location

4.3 Assumptions and Dependencies

YouSee relies on a data connection for it to be fully functional. Hence, users will need to have an Internet connection via either mobile data or wireless Internet to use the application. This also assumes that the user's device will have GPS capability. YouSee is available for IOS and the Android platform. It is assumed that initial users would be using an android device or IOS.

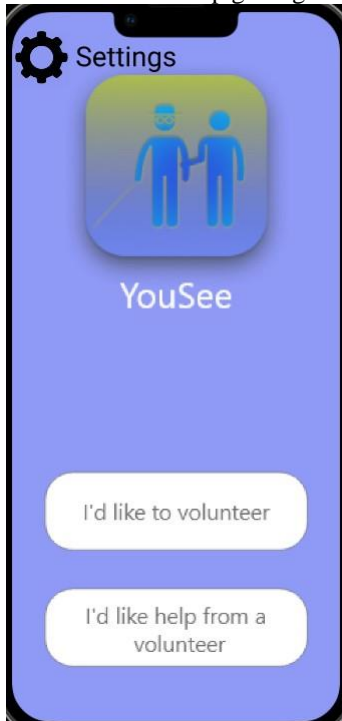
4.4 Cost and Pricing

The price of the application will be free. Our project has not incurred any costs, as the work has been done by students for a class project. Also, putting it on the IOS App store should come without any added expense.

5. Product Features

5.1 Like to Volunteer

This feature allows users to choose if they would like to be a volunteer, which entails providing assistance for those who need help getting to an indoor location.



When the feature is selected it leads to a page, that looks for matches



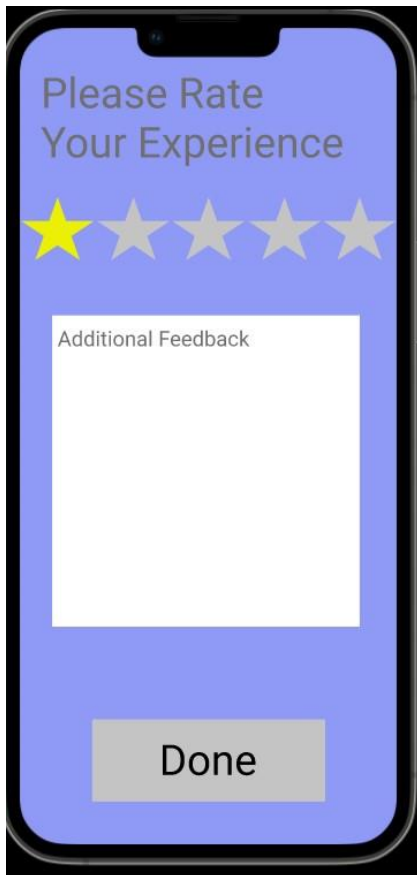
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The user can decide to go back if the search is taking too long or if unforeseen events come up and decide they no longer want to volunteer.

When a match is found, the volunteer and the user in need of help is connected as shown in below



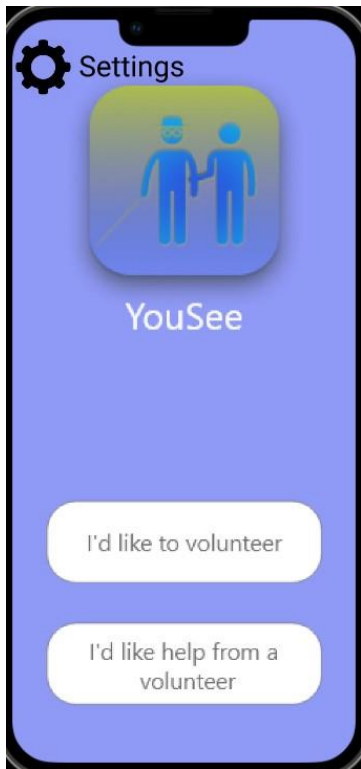
When the call is over, the user is allowed to give feedback on the help given by the volunteer



5.2 Help from a volunteer

This feature allows users to choose if they would like to be a volunteer, which entails providing assistance for those who need help getting to an indoor location.

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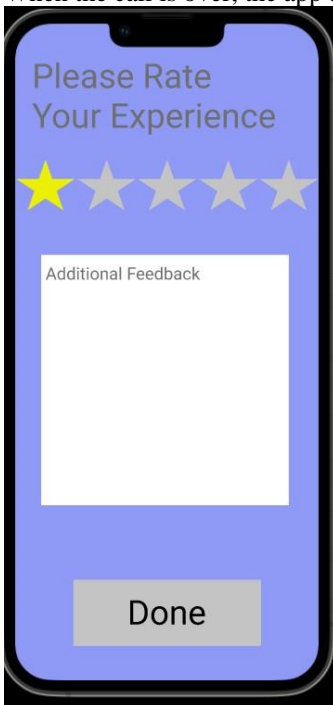


Then the app finds a pair and connects them with a suitable volunteer

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When the call is over, the app then asks the user for feedback on the help just gotten.



6. Constraints

6.1 Internet

An Internet connection will be required for the application to help place a call to a volunteer. The App would pin the last location of the device in the event there's a disconnect from the Internet (Wi-fi or Mobile data)

6.2 Security

Security for YouSee includes authentication, access control, data integrity, and data privacy. Security is ensured by the phone's security mechanism, as far the phone can be unlocked the app can be used, inherently adding to accessibility.

7. Other Product Requirements

7.1 System Requirements

An IOS device is presumed and required to run the Application. The device must be running IOS operating system version 14.1 or newer

An Android mobile device is presumed and required to run the Application. The device must be running Android operating system version 10.0 (Quince Tart) or newer.

The Application always requires an active data connection or Wi-Fi.

7.2 Environmental Requirements

The Application shall utilize standard IOS and Android error reporting frameworks to communicate information about unexpected execution results (such as unhandled exceptions/crashes/bugs etc.).

7.3 Performance Requirements

Performance requirements in the context of the end-user's device are outlined as part of the Nonfunctional Requirement Specifications; *The application shall be able to detect camera damage if the damage makes the app unusable (NFR 1.5)*

8. Documentation Requirements

8.1 User Manual

None. The application is self-explanatory.

8.2 Setup Guide

Setting up the application is straightforward, it just needs to be downloaded from the app store and play store on an IOS and Android device respectively, when done launch the application.

8.3 Online Help

Any updates or information regarding the YouSee application be found online at: <https://personal.utdallas.edu/~jsh170830/> .