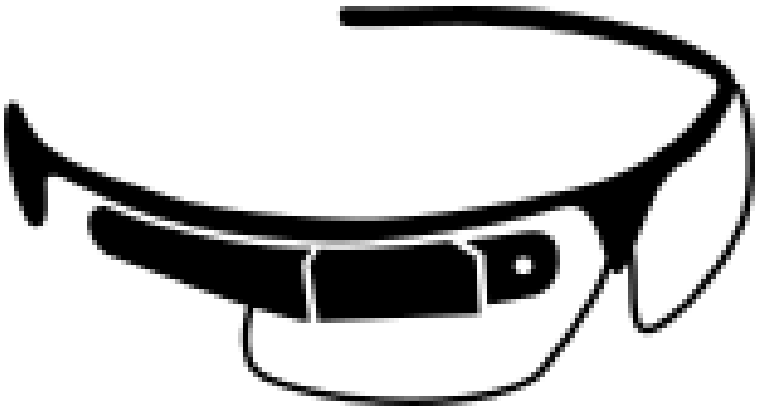
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
THE UNIVERSITY OF TEXAS AT ARLINGTON

SYSTEM REQUIREMENTS SPECIFICATION
CSE 4316: SENIOR DESIGN I
SPRING 2020



LOOKING GLASS (WIP)
LOOKING GLASS

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Revision History

Revision	Date	Author(s)	Description
0.1	3.19.2021	MS, AW, MA, SP	document creation
0.2	3.26.2021	MS	document completion

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1 Product Concept

Looking Glass application is a smart glasses software that aims to provide patrons with the ability to access the storied past of great art without needing to expand the physical space of a museum exhibit. Looking Glass easily allows museums to customize their art installations to provide thorough detail and varied mediums to educate viewers. It is intended for museums to create QR codes that allow their patrons to utilize the Looking Glass software to enhance their experience.

1.1 Purpose and Use

Looking Glass is installed on smart glasses by museums to scan QR codes placed around their exhibits in order to offer additional context and visual and audio mediums to learn about the art installations. It features a modular design by allowing exhibit owners to create their own QR codes and customize the information they provide to their patrons.

1.2 Intended Audience

The system is designed with museums and their patrons as the primary users, however due to the flexible and modular nature of the application it is capable of adapting to any other environments that allow users to walk through a visual exhibit.

2 Product Description

This section provides the reader with an overview of Looking Glass. The primary operational aspects of the product, from the perspective of end users, maintainers and administrators, are defined here. The key features and functions found in the product, as well as critical user interactions and user interfaces are described in detail.

2.1 Features & Functions

Looking Glass is software installed on smart glasses that allows the user to scan QR codes placed by an exhibit. Upon scanning the code, Looking Glass will provide the viewer with an audio visual experience custom created by the museum.

Looking Glass will contain a QR code creation side additionally, allowing the owner to customize what information and mediums they wish to provide to the viewer. All information will be stored on an external server for the viewer to access via scanning a code.

2.2 External Inputs & Outputs

Looking Glass will require owners to create their own QR codes to customize their exhibit experience. They will be able to upload textual, video, and audio sources that they may arrange to their liking. After creation, the exhibit will be able to place these codes around the artwork.

After exhibits are fully installed, patrons will be able to access the software via smart glasses. Upon activation, the Looking Glass will scan the QR codes which will open up the virtual exhibit experience. The user can then review the information at their leisure or decide to deactivate the current experience to go scanning for more codes.

2.3 Product Interfaces

Looking Glass will feature a minimal user interface, allowing users to sign in and begin scanning for QR codes. Upon scanning a QR code, depending on the decisions of the owner, Looking Glass will open different types of displays, such as text or video, as shown below in the interface mock-up.

3 Customer Requirements

3.1 Secure Network

3.1.1 Description

The system shall form a secure network connection to a database of information on the same wifi network in order to access data and contents of each exhibit.

3.1.2 Source

Looking Glass development team

3.1.3 Constraints

Stability of customer wifi network and maintenance therein.

3.1.4 Standards

N/A

3.1.5 Priority

Critical

3.2 Scan Mode

3.2.1 Description

The software shall be able to switch into a select to scan mode, allowing the user to only search for QR codes when a button is pressed.

3.2.2 Source

Looking Glass development team

3.2.3 Constraints

Limited mobility of end user trying to operate software via device.

3.2.4 Standards

N/A

3.2.5 Priority

Moderate

3.3 Google Glass Standards

3.3.1 Description

The product shall meet Google's standards for glass software and conform to any applicable standards of the android development kit.

3.3.2 Source

Google

3.3.3 Constraints

N/A

3.3.4 Standards

Android SDK and Google Glass SDK ToS

3.3.5 Priority

Critical

3.4 Museum Moderation

3.4.1 Description

The system shall provide a version for installation that allows access to a museum's content via the museum's discretion.

3.4.2 Source

Looking Glass development team

3.4.3 Constraints

Desire of museum to provide said access, and risk of user access when museums may desire to monetize.

3.4.4 Standards

N/A

3.4.5 Priority

Low

3.5 QR Code Engagement

3.5.1 Description

The system shall only attempt to access codes whenever the user is not actively engaged with another code in order to prevent new content to appear prior to the user being finished with the previous code.

3.5.2 Source

Looking Glass development team

3.5.3 Constraints

End user must have method for closing out previous code.

3.5.4 Standards

N/A

3.5.5 Priority

High

3.6 Closing QR Codes

3.6.1 Description

The system shall allow users to close out their QR codes by touch activation.

3.6.2 Source

Looking Glass development team

3.6.3 Constraints

Smart glasses must have touch controls.

3.6.4 Standards

N/A

3.6.5 PRIORITY

High

4 Packaging Requirements

4.1 API and Installation Executable

4.1.1 Description

The company shall provide API and installation executable to install software on user provided hardware.

4.1.2 Source

Looking Glass development team

4.1.3 Constraints

Ability of users to access platform API and desktop installation executable where they are stored.

4.1.4 Standards

N/A

4.1.5 Priority

Critical

4.2 Guidelines and Set-up Provided

4.2.1 Description

The company shall provide guidelines for initial set up of the system and QR codes to allow users to operate system fully.

4.2.2 Source

Looking Glass development team

4.2.3 Constraints

Contingent on end user's technical ability.

4.2.4 Standards

N/A

4.2.5 Priority

Critical

5 Performance Requirements

5.1 QR Code Scan Speed

5.1.1 Description

The system shall be able to scan a user intended QR code within 5 seconds.

5.1.2 Source

Looking Glass development team

5.1.3 Constraints

Lighting, room color, and other elements that modify readability of a QR code

5.1.4 Standards

N/A

5.1.5 Priority

Moderate

5.2 Distinguish QR Codes

5.2.1 Description

The system shall distinguish which QR code the user intends to scan when more than one is seen by the device.

5.2.2 Source

Looking Glass development team

5.2.3 Constraints

Steadiness of user input and consistency of user direction

5.2.4 Standards

N/A

5.2.5 Priority

High

5.3 QR Code Scan Distance

5.3.1 Description

The system shall be able to scan a QR code within six feet.

5.3.2 Source

Looking Glass development team

5.3.3 Constraints

Lighting, room color, and other elements that modify readability of a QR code

5.3.4 Standards

N/A

5.3.5 Priority

Moderate

5.4 Memory Usage

5.4.1 Description

The system's device hard memory usage will not exceed more than 20 gigs of storage.

5.4.2 Source

Looking Glass development team

5.4.3 Constraints

Limited data storage space of device used by the museum.

5.4.4 Standards

N/A

5.4.5 Priority

Moderate

5.5 RAM Usage

5.5.1 Description

The system shall not exceed RAM usage of more than 2 gigs of active memory.

5.5.2 Source

Looking Glass development team

5.5.3 Constraints

Limited RAM of the device used by the museum for the product.

5.5.4 Standards

N/A

5.5.5 Priority

High

5.6 Video Format

5.6.1 Description

The system shall only permit video formatting of mp3 files to streamline content creation.

5.6.2 Source

Looking Glass development team

5.6.3 Constraints

End user must utilize mp3 format to upload content.

5.6.4 Standards

N/A

5.6.5 Priority

Low

6 Safety Requirements

6.1 Epileptic Safety

6.1.1 Description

The system shall protect the user from epileptic triggers and refrain from imagery that may induce seizures.

6.1.2 Source

Looking Glass development team

6.1.3 Constraints

Additional customized content must comply with standards set by software

6.1.4 Standards

N/A

6.1.5 Priority

Moderate

6.2 Safety Guidelines

6.2.1 Description

The company shall provide safety guidelines to the museum user including a list of health requirements that limit who should access the software.

6.2.2 Source

Looking Glass development team

6.2.3 Constraints

Depends on willingness of museum to follow said guidelines

6.2.4 Standards

N/A

6.2.5 Priority

Low

6.3 Safety Warning

6.3.1 Description

The system shall display a health safety warning upon activation.

6.3.2 Source

Looking Glass development team

6.3.3 Constraints

Willingness of end users to read and comply with warning.

6.3.4 Standards

N/A

6.3.5 PRIORITY

Low

7 Maintenance & Support Requirements

7.1 QR Code Guidelines

7.1.1 Description

The company shall provide guidelines for updating and adding QR codes and additional content to an exhibit.

7.1.2 Source

Looking Glass development team

7.1.3 Constraints

Technical ability of end user to comprehend guidelines

7.1.4 Standards

N/A

7.1.5 Priority

Critical

7.2 QR Code Guidelines

7.2.1 Description

The company shall provide guidelines for updating and adding QR codes and additional content to an exhibit.

7.2.2 Source

Looking Glass development team

7.2.3 Constraints

Technical ability of end user to comprehend guidelines

7.2.4 Standards

N/A

7.2.5 Priority

Critical

8 Other Requirements

8.1 Data Storage

8.1.1 Description

The system shall not store or maintain any data processed such as the camera or location data to ensure end user privacy.

8.1.2 Source

Looking Glass development team

8.1.3 Constraints

Memory disposal process of device hosting software

8.1.4 Standards

N/A

8.1.5 Priority

Moderate

9 Future Items

9.1 Software Refinement

9.1.1 Description

Program updates shall be provided and pushed remotely by development team to improve accuracy and information presentation as they become available.

9.1.2 Source

Looking Glass development team

9.1.3 Constraints

End user requires internet access to acquire said updates.

9.1.4 Standards

N/A

9.1.5 Priority

Future

REFERENCES