

Deliverable B

GNG 1103 – Engineering Design Faculty of Engineering – University of Ottawa

NEEDS

Prioritizing: 5 = high priority and 1 = lowest priority

Basic needs

To make smart glasses more accessible to networks 5

Justification:

Having access to networks improves the functionality and safety of the glasses through continuous access to key information.

To decrease latency / lower the response time 5

Justification:

Extremely important since the targeted users are people with visual impairment and a quick response time is necessary to make sure the warnings and instructions are given on time.

To adapt to different network conditions 3

Justification:

It needs to be able to switch between different network environments to make everything seamless.

Safety features

To warn the user of potential surrounding hazards and detect obstacles 5

Justification:

Obstacle detection can help with safety and independence.

To help the user safely navigate streets 3

Justification:

The ability for Smart Glasses to assist users navigating various environments and routes ultimately ensures their safety.

To give voice warnings to the user 5

Justification:

Voice warning provides a quick method to notify the user about important information.

To offer heads-up display 2

Justification:

Augmented reality/on-screen warnings to make sure the user is aware of any changes to the surroundings.

BENCHMARK

Technical benchmark		Similarities
Ray Bans Smart Glasses	Smart Assistance Glasses	Voice control
Oculus Rift	VR Glasses	Camera, AI assistance, 4K display
Envision AI	AI Algorithm	AI assistance for Obstacle detection
User Benchmark	Pros	Cons
Ray Ban Smart Glasses	<ul style="list-style-type: none">• Good camera Quality• Easy to use	<ul style="list-style-type: none">• AI function has difficulty functioning• Captured pictures is off to the center
Oculus Rift	<ul style="list-style-type: none">• Fast refresh rate• great sound quality• 110-degree display	<ul style="list-style-type: none">• Battery life is short• Grainy visual quality
Lenovo Think Reality A3	<ul style="list-style-type: none">• Sturdy• Good camera quality	<ul style="list-style-type: none">• Software can use further development

NEW ISSUES

After interpreting and analyzing the client meeting, we were able to establish some of their needs. On top of that, there was quite some information which remained unknown. Firstly, the application which is to be developed seems to have a lot of weight on its wireless and networking abilities due to its capability of live streaming. This means that it needs to stay connected to the internet, especially 5G, which would result in higher power consumption. If the application design is based on a smart glass, which is to be worn for continuous hours in a day, it appears to be a major obstacle in the development and longevity of the product. Besides connectivity, the application would heavily rely on cameras to gather information, which could be a potential cause for battery drainage. While mentioning cameras, it is worth noting the lack of privacy for the bystanders who are not first-hand users but are the input for the applications; it raises privacy concerns for people who are being monitored by the cameras and being processed by the application. Another important thing to note is the availability of bandwidth, especially 5G. Due to the application being connected wirelessly, there may be issues such as unpredictable bandwidth speeds or even lack of bandwidth, which needs to be addressed. Furthermore, it is important to keep in mind that the rate of adaptability of networks in different network environments would be different when stationary compared to when moving at faster speeds like in a vehicle. This means that the ability to adapt needs to be fast enough to make sure that the data is lossless from and for both ends, the user and the operator.

PROBLEM STATEMENT

Shabodi needs a way to help applications quickly access networks to improve Smart Glass Assistance for visually impaired individuals by lowering the response time and improving communication between the user and the worker/AI.

SOURCES

- https://www.iot83.com/in-depth-analysis-aep-vs-traditional-iot-platforms/#Key_Differences_between_AEPs_and_Traditional_IoT_Platforms-Use_Cases
- https://makerepo.com/project_proposals/472.advanced-network-applications