# Project Deliverable D

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**Abstract**

Prototyping is an incredibly important part of the design process, it allows the client to see where the designers are headed, as well as provide feedback to focus the designers. For the designers, it allows them to test out their ideas against the clients criticism and feedback.

In this document we outline the prototypes we created, and how they might function, as well as document the process of creating them. We have digital drawings of possible appearances of the glasses, providing concrete examples of our ideas and how the functionality of the glasses will work with different designs. We also have block diagrams in place of written code, both because we don't have the ability to write the code properly at the moment, and to make it easier to understand the basic premise of what that code will do.

## Table of Contents

# 1 Introduction

This deliverable will display the prototypes that we have developed as a group, it includes design and block diagrams. Each prototype will be clearly labelled and explained to allow the reader to make informed decisions about our product development.

# 2 Prototype Designs

## 2.1 Final Prototype

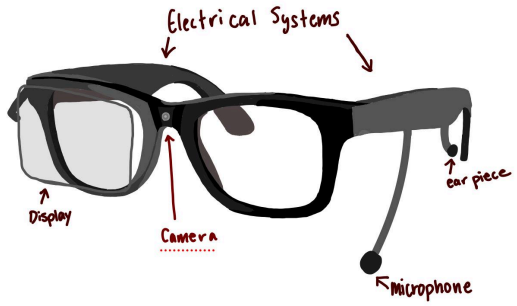



Figure 1. Final Prototype

The final prototype includes most of the features on the outside. The microphone hangs down near your mouth so you can clearly be heard and the earpiece connects to your ear so only you can hear the message. The microphone will include features that block out the background noise from the workplace so that your voice will be heard and understood better. The Display would use a reflector to redirect the light from the projector onto the display for the user to see. The display is only in front of one eye so it doesn't block your whole field of vision. The features are included on the outside of the glasses so manufacturing and repairs can be done easier and all the systems are spread out for an even weight distribution. All of the features would be durable and up to safety standards in any of the factories where they will be used. This is our final prototype at the moment, but after our client meeting with Shabodi we will tweak and edit the design according to their feedback

## 2.2 Prototype by Ace

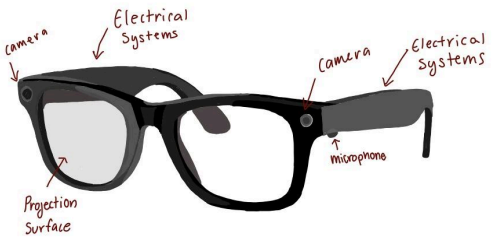



Figure 2. Prototype by Ace

The third prototype would be the most advanced and the most compact. All of the electrical systems would be separated inside the arms to distribute weight evenly. One side would have the speaker and one side would have the microphone. The cameras would be on both sides to give a larger field of view and the display would be right on the lens. An issue with these would be if you wear prescription lenses you would have to wear contacts since the display lens would not be customizable.

## 2.3 Prototype by Megan

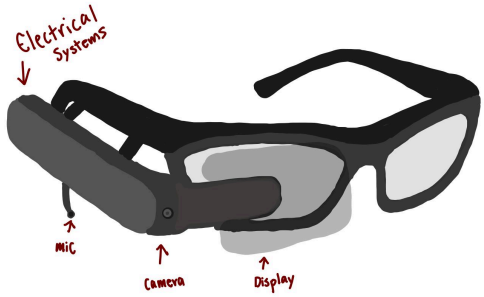



Figure 3. Prototype by Megan

This second prototype is similar to the first but much more sleek and durable. The hardware would still be placed on one side but it would not be removable to make it more secure and durable. The glasses could be safety glasses depending on the factory's safety needs and requirements. The glasses would include a camera on the front, a display, and a mic and speaker that hang down slightly towards your face. The electrical systems would be hidden in the side arm making the whole system water and temperature proof. If the user using these works in a humid, wet, or cold environment these glasses would last and not cause any issues. The arm would have easy access using a side panel for maintenance and repairs. One issue would be the weight of the one arm again but these frames would be much stronger and able to handle the weight.

## 2.4 Prototype by Madison

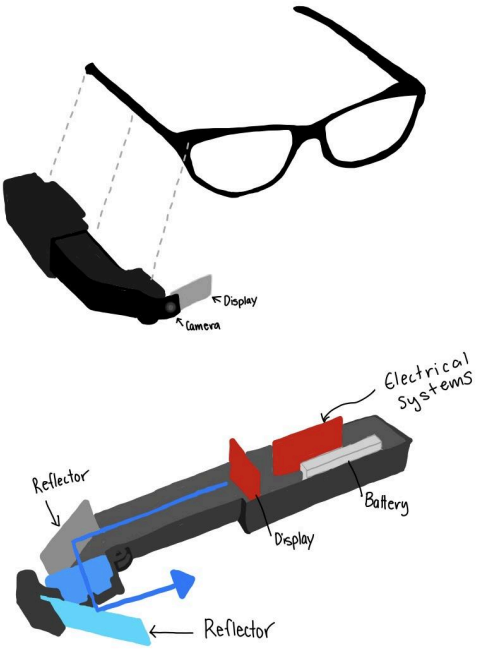
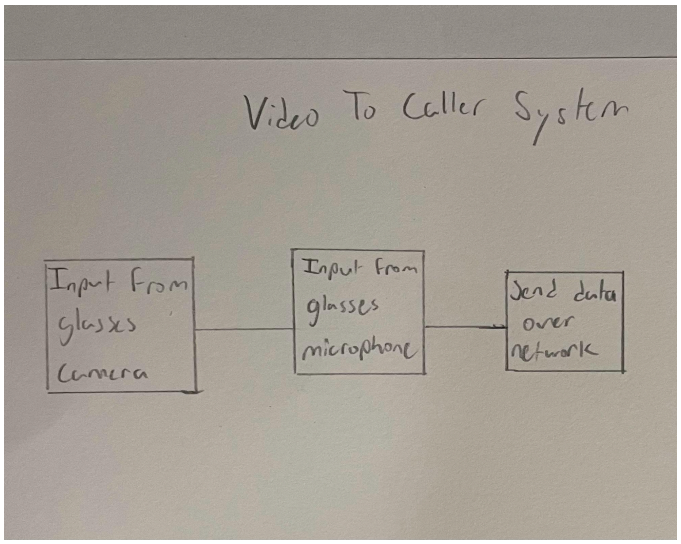



Figure 4. Prototype by Madison

The first prototype is a frame with the hardware attached. The glasses frame could be the user's prescription glasses or a pair provided by the workplace. The hardware would be placed on the outside with a quick attachment process. The first image demonstrates the external view of the glasses. The second image demonstrates a technical view of the side arm and the internal components. This side arm would include the battery, camera, microphone, electrical systems, and the displays and reflector. Not shown are the microphone which would be faced down to hear your voice and the speaker that would be conveniently placed by your ear. Some pros of the prototype would be that the user could use their own prescription glasses and the ease of attachment. If the hardware is causing you issues you would just need to switch the outside hardware to another set temporarily. A con would be the weight. Since all the hardware is placed on one side the unbalanced weight could cause pain and an uncomfortable feeling to the user.

# 3 Block Diagrams

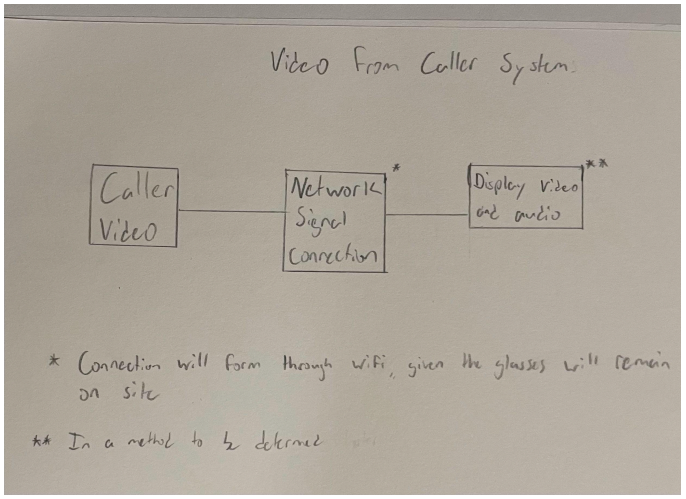
## 3.1 Video to Caller System




This block diagram presents how the system will share the video it collects with the caller. It is a straightforward process, similar to how a video call on a smartphone would work.

Figure 5. Block diagram 1

## 3.2 Video from Caller System




This table shows an incoming call from a caller, and what network would be used.
We believe using a business' wifi network would be simplest, given the glasses will be company property and never leave the property.
We will design the system to incorporate wifi connection, rather than 5G or other data

Figure 6. Block Diagram 2

## 3.3 Voice Command System

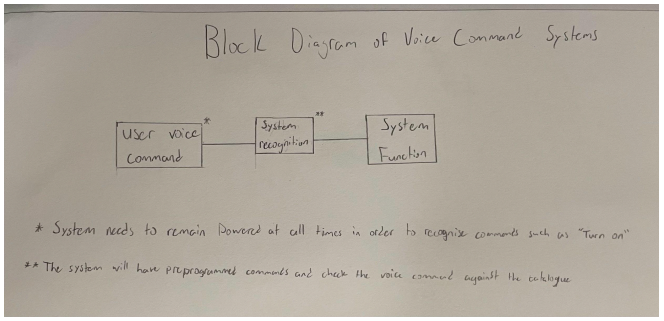



Figure 7. Block diagram 3

Voice commands are going to be the hardest to implement, as it requires every other system to be working properly.
Provided it does work properly, the glasses will need to remain powered at all times in order to receive and output the commands.
There will also be a list of pre recognized commands within the glasses, such as "turn on", "call X", and "turn up volume"

## 4 Meeting Notes

October 9th, 2024

Ace made block diagrams of the systems inside the glasses (audio, visual/ video, cameras).
He made rough drafts on lined paper, and final drafts on sketch paper.
The diagrams should be annotated with functions, and he will write an overview.

Megan made digital sketches of the glasses.
She based some on the arduino data glasses we looked at, and we added a camera.
Including a front view and inside view of the attachment with labels.
She also based some of the Ray Bans glasses. We think these will be ideal to base our product off.

Madison took the meeting notes and started the technical document.

During the process of making the prototypes we also came up with the idea to try and have our glasses meet safety standards.

## 5 Trello Link

https://trello.com/invite/b/66e9a835bf964951fd908861/ATTI7e4cb97e86644ba022c365d10a9f29acD940830F/gng-1103-course-project

## 6 Conclusion

In conclusion, we are going to base our project around the prototype labelled *Figure 1. Final Prototype* because we believe it is what will best fit our clients needs. We will use the systems outlined in the *Block Diagrams* section of the report as the basis for the internal functions of the glasses.

## 7 References


Arduino Data Glasses for my multimeter. Instructables. (2017, September 22). https://www.instructables.com/Arduino-Data-Glasses-for-My-Multimeter/

Greenwald, W. (2024a, May 21). Viture Pro XR Glasses Review. PCMAG. https://www.pcmag.com/reviews/viture-pro-xr-glasses

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