EC601 Project 3
Accessibility in App Design

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I. INTRODUCTION

As a whole, society and technology are designed for the most general user, meaning somebody who is without motor, visual, auditory, or any other common disability. In doing this, the designers have to consider the fewest variables while also satisfying the maximum number of users. However, as a rule, making products inaccessible or outright unusable for the very large minority of potential disabled users, about 25% of US adults, is not only a poor economic decision, but also an extremely unethical one [1]. Users who may not be as able-bodied as the average individual deserve the right to utilize the luxuries and utilities provided by modern technology, and it is the responsibility of the designer to create a platform that is usable to the best of their abilities. Additionally, these features can even impact non disabled users, enhancing their experience with the product. These accessibility features often take many different forms depending on the use of the application or device, but most commonly they fall into three categories, visual, mobility, and auditory assistance.

II. COMMON ACCESSIBILITY FEATURES

Apple is widely regarded as one of the most accessible big technology companies, having pioneered features that are considered commonplace in all devices while also implementing other features that even still are difficult to find if not unavailable in other products [2] [3]. Additionally, with iOS being one of the leading operating systems for smartphone application development, Apple urges developers to create accessible apps and even requires a base level for apps to be publishable [4]. To support developers they have many tools available that increase an applications accessibility [5]. Other tech giants like Microsoft and Meta also provide similar tools and have similar requirements for applications to be published on their platforms.

A. Visual Assistance

Visual aid sections often have the largest variations in available settings because they are largely simple to implement, affect a wide range of user disabilities, and are the most common user disabilities. Common settings found in this tab focus on color, magnification, and auditory queues. Seen in Figure 1 are the vision focused accessibility features in Windows 11. These features aid users with poor to no vision as well as users who have some degree of color blindness. "Dark Mode"

was initially a feature that was implemented to assist users in this category, but it was quickly co-opted by the general population because it enhanced certain user's experiences as a whole.
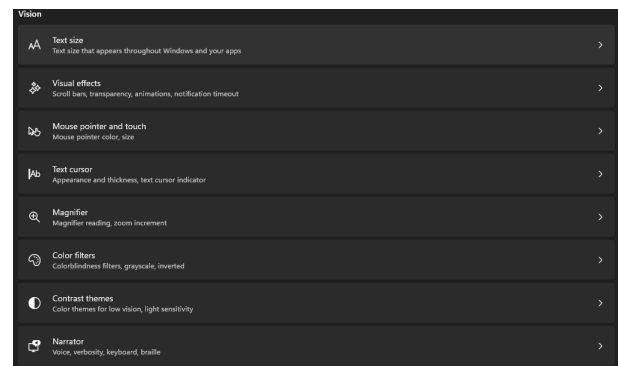

Fig. 1: Vision accessibility features in Windows 11 setting's "Accessibility" tab.

B. Mobility Assistance

The second largest accessibility category affects users that require some degree of mobility or interaction assistance. Common settings in this tab focus on mouse and keyboard interaction while also enabling other ways to utilize the device. Figure 2 shows the interaction focused accessibility features in Windows 11. The intended users of these features are users who do not possess the fine motor skills required to control a mouse and keyboard easily. "Voice Typing" was initially a feature that was developed to aid this category of individual, however it has been found to be extremely useful for the general population in products like "Siri" and Apple's "CarPlay."
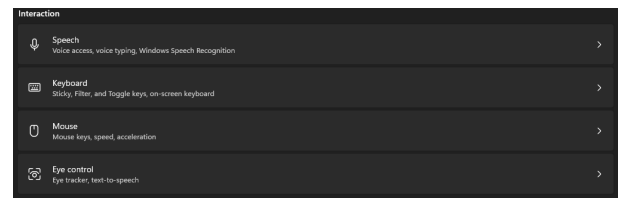

Fig. 2: Interaction accessibility features in Windows 11 setting's "Accessibility" tab.

C. Auditory Assistance

The final most common accessibility category affects users that require some form of auditory feedback to utilize their device easily. The most common settings in this category revolve around visual queues for the user. Figure 3 shows the features available in Windows 11 that are focused on hearing related fields. The intended user of these tools are those who cannot hear as well as the average user. Other common features that are not shown in Figure 3 include non-auditory queues like vibration for a phone call alert. Closed captioning is a feature that has largely been developed for hearing disabled individuals, however it is extremely useful in environments where audio is unable to be played and individuals who struggle with focus deficits as well.
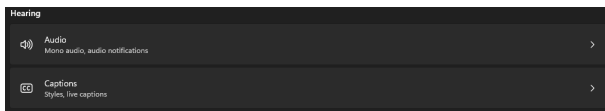

Fig. 3: Hearing accessibility features in Windows 11 setting's "Accessibility" tab.

III. App Case Study: Seeing AI

Seeing AI is an application designed by Microsoft that can be utilized by iOS and Android smartphones that utilizes the user's camera to have real time video to speech feedback for blind and visually impaired users [6]. The app utilizes ChatGPT to identify what it is looking at and then describes it to the user. On top of day to day public use, the AI has the ability to implement facial recognition and is able to remember and identify the user and individuals close to the them as well as identify emotions based on facial features. The app's features include the real time recitation, but it is also able to recite text and documents to the user, ranging from small blocks of text, large documents, barcodes, and digital screens [6]. At the time of writing this, the application has 576 reviews on the Apple App Store with a 4.3 out of 5 star rating, with an overwhelming majority of them being 5 star reviews. Most reviews come from visually impaired individuals who claim they use the app every day with great success. However, they do cite small issues with things like digital screens and unclear text like expiration dates, saying the AI has difficulty reading them correctly, often repeating itself. Other reviews of the app published by different media outlets and blogs corroborate these claims, but overall conclude that it is a promising technology that provides a great use for artificial intelligence to enhance the day to day lives of impaired individuals [7].

IV. Conclusion

In conclusion, accessibility is an important feature for a designer to keep in mind when creating his or her product. Not only will it allow a large group of individuals to use the product, it may also improve the experience of users who would otherwise be considered fully able individuals. Products like Seeing AI, Apple's AirPod Pro with built in hearing aids, and

small accessibility additions to operating systems are necessary additions to keep in mind as technology continues to advance.

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