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Adjusting Augmented Reality Text Display for People with Presbyopia

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ABSTRACT

Current augmented reality (AR) devices set the focal length to a default that enables normal viewing but is unsuitable for users that need reading glasses. To read text displayed via AR, the user needs to move the glasses. This disclosure describes software that provides a setting that enables a user to specify that they use reading glasses. The user can then choose interface options via a sub-setting for voice or text. The software can be made available via an application programming interface (API). Providing the settings via an API and/or a device operating system can improve the accessibility of AR applications without requiring individual app developers to modify their applications.

KEYWORDS

- Augmented reality
- Presbyopia
- Text display
- Text readability
- Focal distance
- Navigation

BACKGROUND

Augmented reality (AR) technology is used for gaming, navigation, and other applications. In many AR applications, text is viewed by the user via AR glasses or another AR device. A large proportion of adults above the age of 45 have presbyopia, a condition that requires reading glasses.

However, with current AR glasses, the focal length is set to a default that enables normal viewing. Users that need reading glasses cannot read the text displayed in AR without moving the glasses or other device. For example, many games have text that needs to be read which people with presbyopia cannot read easily. While software is available to exercise eyes to improve eyesight and reduce the need for reading glasses, no solution is available for users having presbyopia to read text displayed in AR.
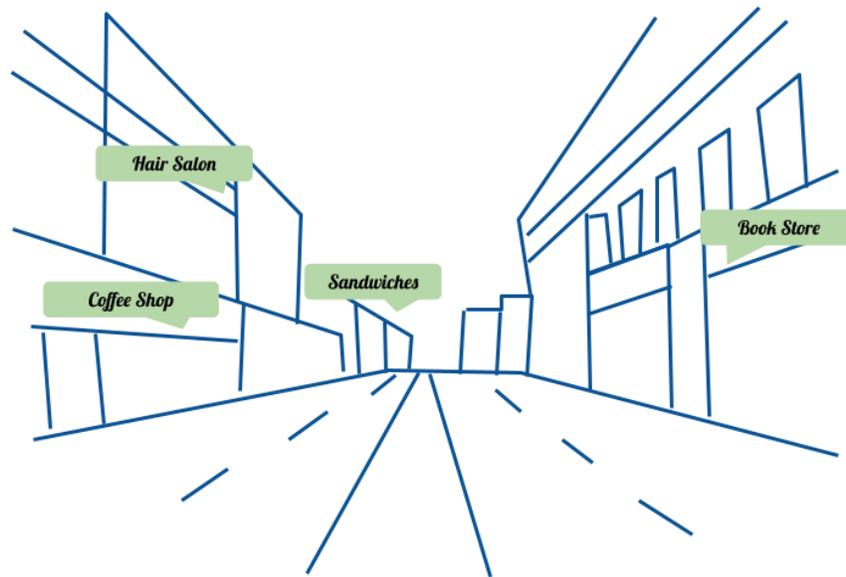

Fig. 1: Augmented reality navigation

Fig. 1 shows an example of AR navigation. As can be seen, the user's field of view is augmented with labels for various commercial establishments in their field of vision. However, due to the font type, size, and placement, the text may not be readable for users who need reading glasses.

DESCRIPTION

This disclosure describes software, e.g., made available via an application programming interface (API), that provides a setting that enables a user to specify that they use reading glasses. The user can then choose interface options via a sub-setting for voice or text.

When the user chooses the text option, the view of text on the glasses is automatically adjusted such that the text is viewable by the user with presbyopia. For example, the font and font size may be selected for ease of viewing by people with presbyopia. When the user chooses the voice option, all text from the interface is removed. Instead, the text is read out via a speaker.
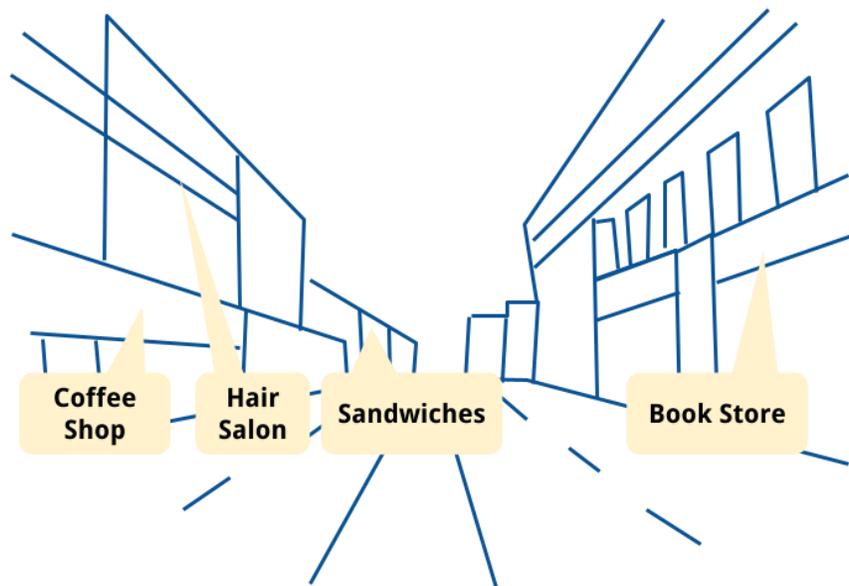

Coffee Shop   Hair Salon   Sandwiches   Book Store

Fig. 2: Augmented reality navigation with improved text readability

Fig. 2 shows an example of AR navigation where the AR display is adjusted based on the user's preferences. As can be seen, the labels are shown at a focal distance that is readable, and the font type and size is adjusted for improved readability.

With the increasing use of AR and the need for reading text displayed via AR (particularly in navigation applications), the described techniques can improve any AR product

that displays text. Providing the settings via an API and/or a device operating system can improve the accessibility of AR applications without requiring individual app developers to modify their applications.

CONCLUSION

This disclosure describes software that provides a setting that enables a user to specify that they use reading glasses. The user can then choose interface options via a sub-setting for voice or text. The software can be made available via an application programming interface (API). Providing the settings via an API and/or a device operating system can improve the accessibility of AR applications without requiring individual app developers to modify their applications.

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