

Seeing AI  
(Developed by: Microsoft)

**HEURISTIC EVALUATION**

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# Introduction

Seeing AI is an app developed by Microsoft that's been making waves in the accessibility community. It's specifically designed to assist individuals with visual impairments in navigating the world around them more independently. One of its standout features is its ability to read printed text aloud, which comes in handy for tasks like reading signs, labels, or documents. Additionally, the app can describe scenes captured through the device's camera, offering users insights into their surroundings. Its object recognition feature is particularly useful, as it can identify objects and even their colors, aiding users in better understanding their environment. Another impressive aspect is its ability to recognize faces, providing users with valuable information about the people they encounter. Overall, Seeing AI is a powerful tool that's revolutionizing accessibility for those with visual impairments. It's available for download on both iOS and Android devices.

Application link: https://apps.apple.com/us/app/seeing-ai/id999062298  
  
Why Seeing AI?  
I chose to evaluate the Seeing AI app for heuristic evaluation due to its significant impact on improving accessibility and usability for individuals with visual impairments. Seeing AI offers a comprehensive set of features specifically designed to assist users in navigating their surroundings more effectively. Its functionalities, such as text recognition, scene description, object recognition, person recognition, and currency recognition, address key challenges faced by individuals with visual impairments in their daily lives. By conducting a heuristic evaluation of Seeing AI, I aim to identify any usability issues or areas for improvement within the app's interface and interaction design. This evaluation will not only contribute to enhancing the user experience of Seeing AI but also provide valuable insights that can inform the design and development of future accessibility-focused applications for blind commute.

A person holding a phone

Description automatically generated

# Heuristics Used

For the heuristic evaluation of the Seeing AI App, Neilson’s heuristics were used, which are as follows:

* Visibility of System Status
* Match Between System and the Real World
* User Control and Freedom
* Consistency and Standards
* Error Prevention
* Recognition Rather Than Recall
* Flexibility and Efficiency of Use
* Aesthetic and Minimalist Design
* Help Users Recognize, Diagnose, and Recover from Errors
* Help and Documentation

# Findings and Recommendations

## Visibility of the System Status

**Description:** Users should be kept informed about what's happening within the system through appropriate feedback in a reasonable amount of time.

**Issues:**

* *Delayed Feedback:* Users often experience delays in receiving feedback from the app, especially noticeable in tasks like color detection. For instance, when swiftly moving the phone from one object to another, the app may struggle to provide real-time feedback, occasionally announcing the color of the previous object instead. This delay undermines user confidence and disrupts the fluidity of interaction.
* *Limited Detection Range:* Another issue arises when the app fails to detect people at 7-8 steps ahead. Users rely on the app for real-time information about their surroundings, and this limitation hampers their ability to navigate safely and confidently.

**Recommendations:**

* Enhance Responsiveness: It is imperative to address the app's responsiveness to user inputs. By prioritizing real-time feedback, particularly in dynamic scenarios like color detection, users can navigate with greater ease and confidence. Improvements in processing speed and feedback prioritization are essential to ensure a smoother user experience.
* *Expand Detection Range:* Efforts should be made to extend the app's detection range for identifying people at greater distances. By enhancing the app's ability to recognize individuals further ahead, users can better anticipate obstacles and navigate their surroundings more effectively, thereby improving overall usability and safety.

## Match Between System and Real World

**Description:** The system should use language, concepts, and processes familiar to users, aligning with their mental models and real-world experiences.

**Issues:**

* *Lack of Visual Feedback for Touch Interactions:* Users may encounter situations where the app fails to provide visual feedback upon executing touch interactions. For instance, when tapping on buttons or menu items, users do not receive any visual confirmation that their touch has been acknowledged. This absence of visual cues creates uncertainty regarding the successful execution of the intended action.
* *Lack of Error Feedback:* The app lacks clear error messages to inform users when errors occur, such as the inability to detect QR codes or recognize products during searches. For instance, if the app fails to identify a scanned QR code or product, users do not receive any notification or feedback regarding the issue, leaving them unsure about the cause of the failure.

**Recommendations:**

* *Incorporate Visual Feedback for Touch Interactions:* It is recommended to implement visual cues such as button highlights, animations, or audio messages whenever a user performs any action. These cues should provide immediate feedback to users when interacting with touch-sensitive elements within the app.
* *Provide Informative Error Messages:* Error messages should be descriptive, explaining the nature of the error encountered, such as "No QR code detected" or "Product not found." Additionally, they should offer guidance on possible next steps or troubleshooting tips.

## User Control and Freedom

**Description:** Users should have the ability to easily navigate through the system and recover from errors without feeling trapped or forced into undesirable actions.

**Issues:**

* *Absence of Clear Exit Options:* Users encounter difficulty finding clear exit pathways within the app's interface. For example, when accessing the "Recognizable People" feature, users are prompted to take three pictures without prior notification. This lack of preemptive information can result in user confusion and frustration. Moreover, once engaged in this mode, users may struggle to navigate back to the main menu or the previous screen due to the absence of a clearly defined pathway.

**Recommendation:**

* *Implement Clear Exit Paths:* It is imperative to incorporate clearly labeled exit or cancel options within various features or screens of the app. This entails integrating universally recognizable icons or gestures for navigation purposes, such as a designated "back" button or swipe gesture to facilitate a return to the previous screen.

## Consistency and Standards

**Description**: The app's design and behavior should be consistent with user expectations, established conventions, and industry standards to minimize cognitive load and enhance predictability.

**Issues:**

* *Inconsistent Error Handling:* Users encounter inconsistencies in error handling within the app. For instance, when selecting the "Read Document" option without detecting any document, the app notifies users with a message stating, "No document detected." However, similar scenarios arise with options like "Short Text" or "Currency," where the app fails to provide a corresponding notification when no text or currency is detected. This lack of consistency in error handling can lead to user frustration and uncertainty regarding the app's behavior.

**Recommendation:**

* *Ensure Consistent Error Handling*: It is crucial to establish a uniform approach to error handling across all features of the app. In instances where functionalities fail to detect content, such as documents, text, or currency, implement clear and informative error messages to notify users of the issue and offer guidance on potential actions to address it.

## Error prevention

**Description:** The app should anticipate and prevent user errors by offering safeguards, confirmation dialogs, and clear instructions, minimizing the likelihood of mistakes and the need for corrective actions.

**Issues:**

* *Lack of Clarity in Document Editing Options:* Users scanning a document and attempting to edit it encounter ambiguity within the app's interface. Despite being presented with an option to delete the document, users are not explicitly informed that this action will delete all pages. This lack of clarity increases the likelihood of accidental deletion of important documents due to users not fully understanding the implications of their actions.
* *Delayed Response to Camera Movement:* Following users' movement of the camera away from the short text they intended to capture, the app continues to audibly read the text for a few seconds. This delayed response can be perplexing for users, potentially leading them to believe that the app is still processing the text despite the camera having moved away.

**Recommendations:**

* *Provide Clear and Explicit Information about Deletion Options:* When presenting users with options to edit or delete documents, it is imperative to clearly indicate the consequences of each action. For instance, when offering the option to delete a document, explicitly state that it will remove all pages of the document. Additionally, consider implementing confirmation dialogs to ensure users fully comprehend the implications of their actions before proceeding.
* *Improve Responsiveness to Camera Movements:* Enhance the app's responsiveness to camera movements by promptly ceasing text recognition and auditory feedback when the camera is no longer focused on the desired text. This ensures a smoother user experience and reduces confusion regarding the app's behavior.

## Recognition rather than Recall

**Description:** The app should minimize the user's memory load by making objects, actions, and options visible and easily recognizable, rather than requiring users to recall information from memory.

**Issue:**

* *Lack of Persistence for User Settings:* Users encounter a lack of persistence in the app's handling of user preferences or settings across sessions. Upon closing and reopening the app, it fails to recall the user's previously selected preferences, such as language or currency selection. For instance, if a user sets the language to Spanish or chooses a specific currency, the app resets to default settings upon reopening.

**Recommendation:**

* *Implement Settings Persistence Across Sessions:* It is imperative to enhance the app's functionality to retain user preferences and settings between sessions. This can be achieved by leveraging local storage or cloud-based synchronization mechanisms to store and retrieve user-selected options, such as language preferences and currency selections. By implementing settings persistence, the app can deliver a more seamless and personalized experience for users, eliminating the need for repetitive configuration and enhancing overall user satisfaction.

## Flexibility and Efficiency of Use

**Description:** The app should accommodate a wide range of user skills and preferences, allowing both novice and expert users to interact with the system efficiently.

**Issues:**

* *Limited Customization Options:* Users encounter a lack of flexibility in customizing the app's interface or workflow to suit their individual preferences or needs. The absence of options to rearrange menu items, adjust text size, or customize shortcut keys restricts users from tailoring the app to their preferred usage patterns.
* *Absence of Shortcuts or Power User Features:* The app fails to provide advanced shortcuts or features designed to streamline interactions for experienced or frequent users. Notably, there are no keyboard shortcuts, gesture-based commands, or advanced search functionalities available to expedite navigation or access frequently used features.

**Recommendations:**

* *Enhance Customization Options:* Expand the app's customization capabilities to empower users to personalize their interface and workflow according to their preferences. Introduce features such as customizable menus, adjustable text sizes, theme options, and shortcut customization.
* *Implement Power User Features:* Introduce advanced shortcuts, gesture-based commands, and search functionalities to cater to the needs of experienced or frequent users. Enable users to perform tasks more efficiently by providing quick access to commonly used features and actions. Additionally, consider implementing customizable workflows or task automation features to further streamline user interactions and improve productivity.

## Aesthetic and minimalist design

**Description:** The app's interface should be visually appealing and free from unnecessary clutter, presenting only essential information and controls to users.

**Issues:**

* *Lack of Sufficient Contrast:* Visually impaired individuals may encounter difficulty reading and interacting with content within the app's interface due to inadequate contrast between text and background elements. Insufficient color contrast can render text blurry or indistinct, particularly impacting individuals with low vision or visual impairments such as color blindness or reduced visual acuity. This deficiency in contrast poses accessibility barriers and may prevent individuals with varying degrees of visual impairment from effectively utilizing the app.

**Recommendations:**

* *Enhance Color Contrast for Improved Readability:* It is essential to increase the contrast between text and background elements within the app's interface to enhance readability for visually impaired individuals. Implement high-contrast color combinations that adhere to accessibility standards, ensuring clear distinguishability between text and its surrounding background. Additionally, consider incorporating adjustable contrast settings or high-contrast modes to cater to individuals with diverse visual acuity and color perception needs.

## Help users recognize, diagnose, and recover from Errors.

**Description:** The app should provide clear and informative error messages, as well as guidance on how to resolve issues, to help users recognize, diagnose, and recover from errors effectively.

**Issues:**

* *Inefficient Document Search Processing:* Users experience inefficiency when initiating a document search within the app. Upon clicking the screen to begin the search, the app immediately starts processing, even in the absence of a document.
* *Inaccurate or Missing Error Messages during Scanning:* Users encounter inaccuracies and inconsistencies in error messaging when scanning products or other items. The app fails to provide accurate or informative error messages, sometimes displaying incorrect messages or no message at all.
* *Lack of Currency Detection Feedback:* Users selecting a specific currency setting, such as Euro, may encounter issues when presenting a different currency, such as US dollars, for detection. The app either fails to detect the currency altogether or provides no indication of the discrepancy. This absence of feedback undermines users' confidence in the app's currency detection capabilities and compromises the accuracy of currency-related tasks.

**Recommendations:**

* *Implement User-Triggered Document Search Confirmation:* Introduce a confirmation prompt or mechanism to confirm user intent before initiating document search processing. Instead of immediately commencing processing upon user interaction, prompt users to confirm their action, ensuring genuine intent. This approach prevents unnecessary processing and waiting for non-existent documents, thereby enhancing efficiency and user experience during document searches.
* *Enhance Error Messaging for Scanning:* Improve the accuracy and clarity of error messages displayed during scanning processes. Ensure error messages accurately reflect the scanning status and provide informative guidance on potential issues or troubleshooting steps. Implement error messages for common scenarios such as product detection failures, enabling users to understand and address scanning errors effectively.
* *Provide Currency Detection Feedback:* Enhance the app's currency detection capabilities to accurately detect and provide feedback on detected currencies. When a detected currency does not match the selected currency setting, notify the user of the discrepancy and prompt them to confirm or adjust the currency selection accordingly.

## Help and Documentation

**Description:** The app should offer readily accessible help resources and documentation to guide users through its features and functionalities.

**Issues:**

* *Inefficient Document Search Processing:* Users experience inefficiency when initiating a document search within the app. Upon clicking the screen to begin the search, the app immediately starts processing, even in the absence of a document.
* *Inaccurate or Missing Error Messages during Scanning:* Users encounter inaccuracies and inconsistencies in error messaging when scanning products or other items. The app fails to provide accurate or informative error messages, sometimes displaying incorrect messages or no message at all.
* *Lack of Currency Detection Feedback*: Users selecting a specific currency setting, such as Euro, may encounter issues when presenting a different currency, such as US dollars, for detection. The app either fails to detect the currency altogether or provides no indication of the discrepancy.

**Recommendations:**

* *Implement User-Triggered Document Search Confirmation:* Introduce a confirmation prompt or mechanism to confirm user intent before initiating document search processing. Instead of immediately commencing processing upon user interaction, prompt users to confirm their action, ensuring genuine intent.
* *Enhance Error Messaging for Scanning:* Improve the accuracy and clarity of error messages displayed during scanning processes. Ensure error messages accurately reflect the scanning status and provide informative guidance on potential issues or troubleshooting steps.
* *Provide Currency Detection Feedback: Enhance* the app's currency detection capabilities to accurately detect and provide feedback on detected currencies. When a detected currency does not match the selected currency setting, notify the user of the discrepancy and prompt them to confirm or adjust the currency selection accordingly.

# Conclusion

In conclusion, the heuristic evaluation of the Seeing AI app has shed light on several key areas for improvement, aiming to enhance its usability and accessibility for blind users. Identified issues such as the absence of guidance for first-time users, ambiguity in feature terminology, and the lack of voice assistance underscore opportunities for refinement to better serve the diverse needs of the user base. Addressing these challenges and implementing the recommended solutions can significantly elevate the user experience, offering clearer navigation pathways, improved feature comprehension, and enhanced accessibility through voice command functionality.

Moreover, prioritizing the development of comprehensive help documentation, ensuring accessibility of help features, and integrating contextual assistance within the interface emerge as crucial steps toward fostering a more inclusive and user-friendly app. By continuously iterating and enhancing guided by the principles of usability and accessibility, the Seeing AI app stands poised to empower blind users in their daily lives, fostering greater independence and engagement with digital technologies.

**THE END**