ABSIR: Image Processing-Based And Machine Learning-Based Application For Blind And Color-Blind People

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Project ID: UQU-CS-2022F-06

Department of Computer Science, Umm Al-Qura University, KSA, 2023

ABSIR

Abstract

ABSIR is a comprehensive application designed to support visually impaired individuals with daily routines. It includes features such as object detection and customizable color filters for those with color blindness. ABSIR also prioritizes emotional and mental well-being by providing a supportive and encouraging voice. By enhancing independence, safety, and overall well-being, ABSIR offers practical solutions for recognizing objects, navigating unfamiliar spaces, and managing daily stress. Overall, ABSIR is a valuable resource that significantly improves the quality of life for visually impaired individuals.

objectives

- Help the blind and color-blind by facilitating their access to the information they need in Arabic.
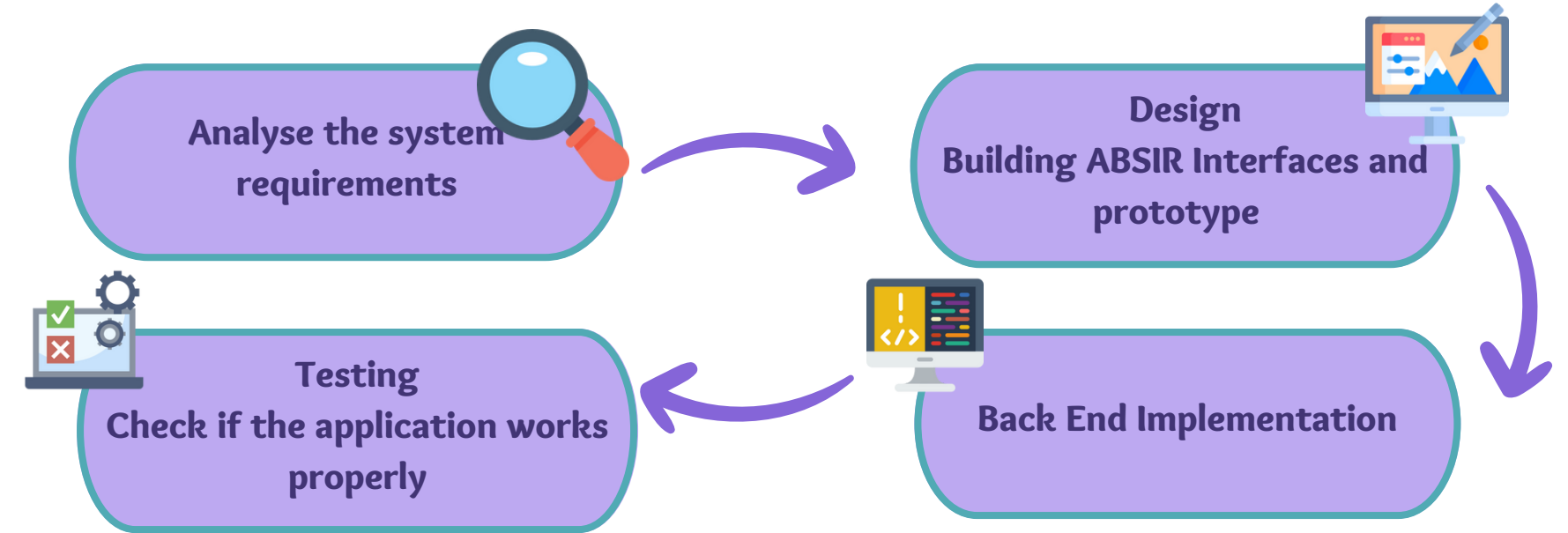- Help the blind to recognize things around them using object recognition.
- Help the color-blind see the image's color clearer using image processing.
- Provide a friendly voice for the user to offer mental and emotional support.

Results

OTP Interface | Register Interface | Register/Login Interface | Login Interface

Color Blindness Type Selection Interface | Image Capture Interface | Color Filtering Interface | Settings Interface

Voice Options Interface | Voice Recording Interfaces | Voice Recording Successfully interface | Object Recognition Interface

Contact

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References

Methodology

Waterfall Method

- Analyse the system requirements
- Design: Building ABSIR Interfaces and prototype
- Back End Implementation
- Testing: Check if the application works properly

Application Features

Describe Objects | Image Color Filtering | Friendly Voice

Development Tools

Flutter | Lucidchart | python | Android Studio | Figma | Visual Studio Code
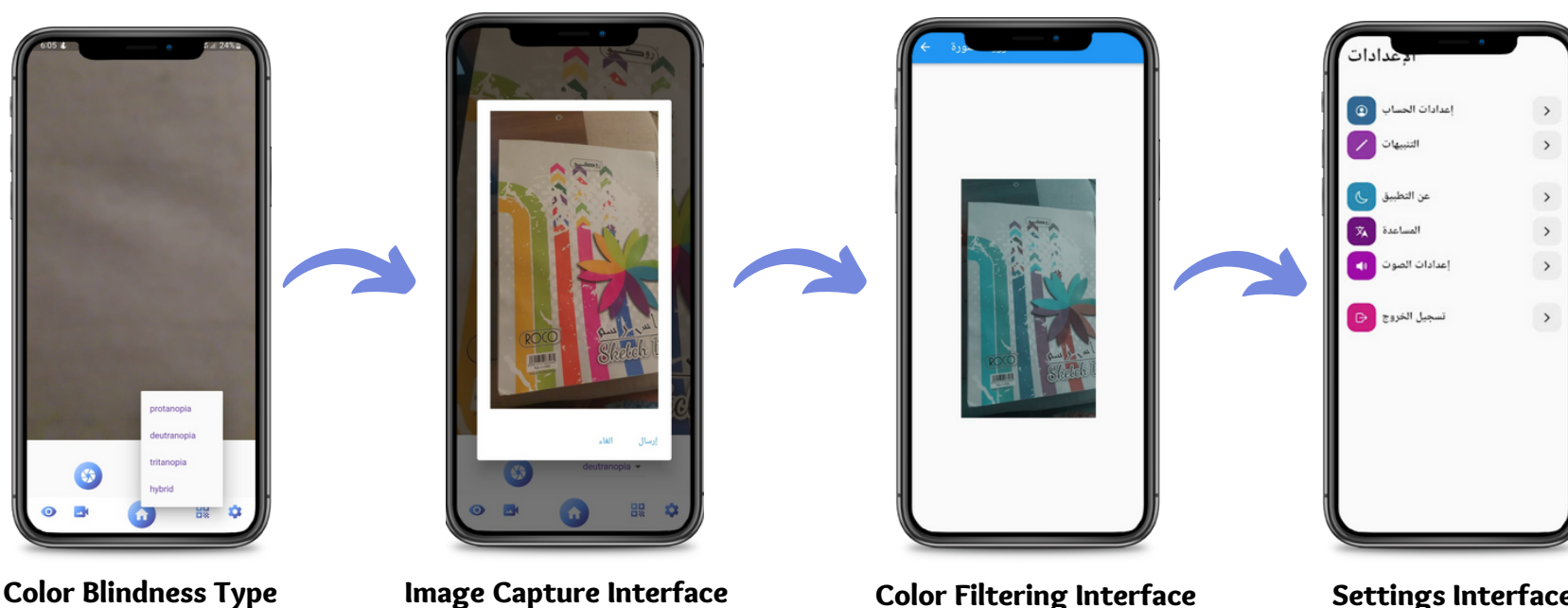
Conclusion

ABSIR is an innovative assistive technology application that utilizes machine learning and image processing to support individuals with visual impairments. It features real-time object recognition with clear text descriptions and pronunciation in Arabic, correction of color blindness, and personalized audio messages. ABSIR is user-friendly, accessible on both iOS and Android, and has the potential to greatly enhance the quality of life for its users.
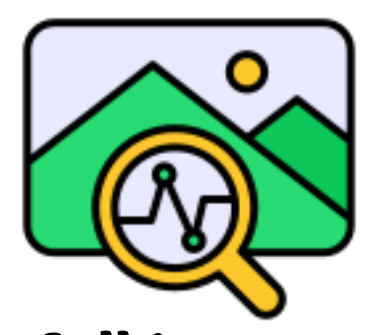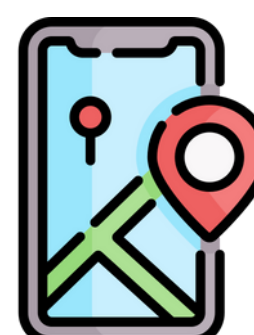
Future Work

text recognition | Color detection | full image descriptions

GPS integration | Scan QR code | Find object distance