

Vision Tech

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Abstract: *Navigational independence remains a major challenge for visually impaired individuals due to limited access to real-time environmental feedback. This paper introduces Vision Tech, a mobile application designed to assist visually impaired users with navigation, information retrieval, and text reading using real-time audio and visual processing technologies. The system offers three key modes: Navigation Mode, which provides step-by-step directions and obstacle detection using object recognition; Assistant Mode, which allows users to ask general or environment-related questions via voice input; and Reading Mode, which uses OCR (Optical Character Recognition) to convert printed or written text into speech. Vision Tech leverages smartphone cameras, text-to-speech engines, and voice recognition systems to deliver an intuitive, real-time assistive experience. In Navigation Mode, computer vision techniques detect and announce obstacles to ensure user safety. Reading Mode helps users read signs, books, and labels aloud, while Assistant Mode offers contextual information using a natural language interface. This application demonstrates the potential of AI and mobile technologies in enhancing daily independence for the visually impaired. By integrating multiple assistive functionalities into a single platform, Vision Tech offers an accessible, voice-driven solution tailored for real-world usability and safety.*

Keywords: Vision Techigation, visual impairment, assistive technology, object detection, OCR, voice assistant, text-to- speech, computer vision, accessibility, mobile application.

