Assistive Technology for People with Vision Loss

Bryan Wolynski, O.D., F.A.A.O.
June 15th, 2023
Visual Impairment and Blindness in Adults in the United States

The number of people in the US who are blind or visually impaired is predicted to double by the year 2050.


Aging Eye Disease
Eye Disease/Vision Loss can happen at any point in life
Early stages - asymptomatic - delaying treatment
Eye Exams versus Low Vision Exam

- **Comprehensive Eye Exams** (Ophthalmologist or Optometrist)

- Glaucoma, Macular Degeneration, Diabetic Retinopathy and Cataracts

- **Referred to specialist** (Ophthalmologist, Retina, Glaucoma Specialist)
  - Functional Vision Complaints or Vision Loss → Low Vision Specialist

- Low Vision is a **functional loss of vision** that cannot be improved upon with conventional glasses, medication or surgery.

- **Low Vision Optometrist**: Evaluate the extent of visual impairment, develop strategies to maximize remaining vision to meet an individual's goals, to improve performance of daily activities, increase independence and quality of life, which includes **assistive technology**.
Evolution of Assistive/Accessible Technology

1914 – Optophone

TODAY

• Accessible Mainstream Technologies
  • Smart Phones, Tablets, Computers
• Computer Vision
• Machine Learning
• Artificial Intelligence
Magnification and Contrast

- MAGNIFIERS
  - *READING
- TELESCOPES
  - DISTANCE VIEWING
- SUNGLASSES / FILTERS
  - CONTRAST
Desktop (CCTV) Electronic Magnification
Handheld (Portable) Electronic Magnification
Wearable Electronic Magnification Devices
Computers Operating Systems

• **Accessibility Features:**
  - Magnification (Magnifier & Zoom)
  - Screen Readers (Narrator & Voice-Over)
  - Speech Recognition / Dictation
  - Large Cursor / Display
  - Contrast
  - Keyboard Customization (shortcuts)
  - Braille Display

• **External Software:**
  - JAWS / Zoom Text / Fusion
your iPhone for your individual needs.

**VISION**

- **VoiceOver**
  - Status: Off

- **Zoom**
  - Status: Off

- **Magnifier**
  - Status: Off

- **Display & Text Size**

- **Motion**

- **Spoken Content**

- **Audio Descriptions**
  - Status: Off

**PHYSICAL AND MOTOR**

- **Touch**

- **Face ID & Attention**

- **Switch Control**
  - Status: Off

**Other Settings**

- **Larger Text**
  - Status: On

- **Button Shapes**
  - Status: Off

- **On/Off Labels**
  - Status: Off

- **Reduce Transparency**
  - Description: Improve contrast by reducing transparency and blurs on some backgrounds to increase legibility.
  - Status: Off

- **Increase Contrast**
  - Description: Increase color contrast between app foreground and background colors.
  - Status: On

- **Differentiate Without Color**
  - Description: Replaces user interface items that rely solely on color to convey information with alternatives.
  - Status: Off

- **Smart Invert**
  - Status: Off
Phone Options!

Blind Shell

- Tactile Buttons
- Voice Control
- Screen Reader
- Object Tagging
- SOS Button

RealSAM Pocket

Click a button and ask for what you want using natural speech.
Smart Phone Apps

Cost vs. Free
Multifunctional Apps

• **Seeing AI App:** (Only on iOS)

• **Envision AI:** (On iOS and Android)
  - Read text, Recognize Bar Codes, People, Currency, Color, Find Objects, Describe Scenes
  - App Free
Sighted Assistance

Volunteers - Free

Trained Agent – Subscription
Audio Devices – No WiFi

• OrCam Read & MyEye

• LyriQ Auto Reader
Smart Home Technology

Amazon Alexa

Google

Apple Home
Tech Talk

212-769-6276
Register for Tech Talk

Third Tuesday of every Month

www.lighthouseguild.org
Lighthouse Guild provides exceptional services that inspire people who are visually impaired to attain their goals.
Thank you.

wolynskib@lighthouseguild.org

212-769-6276