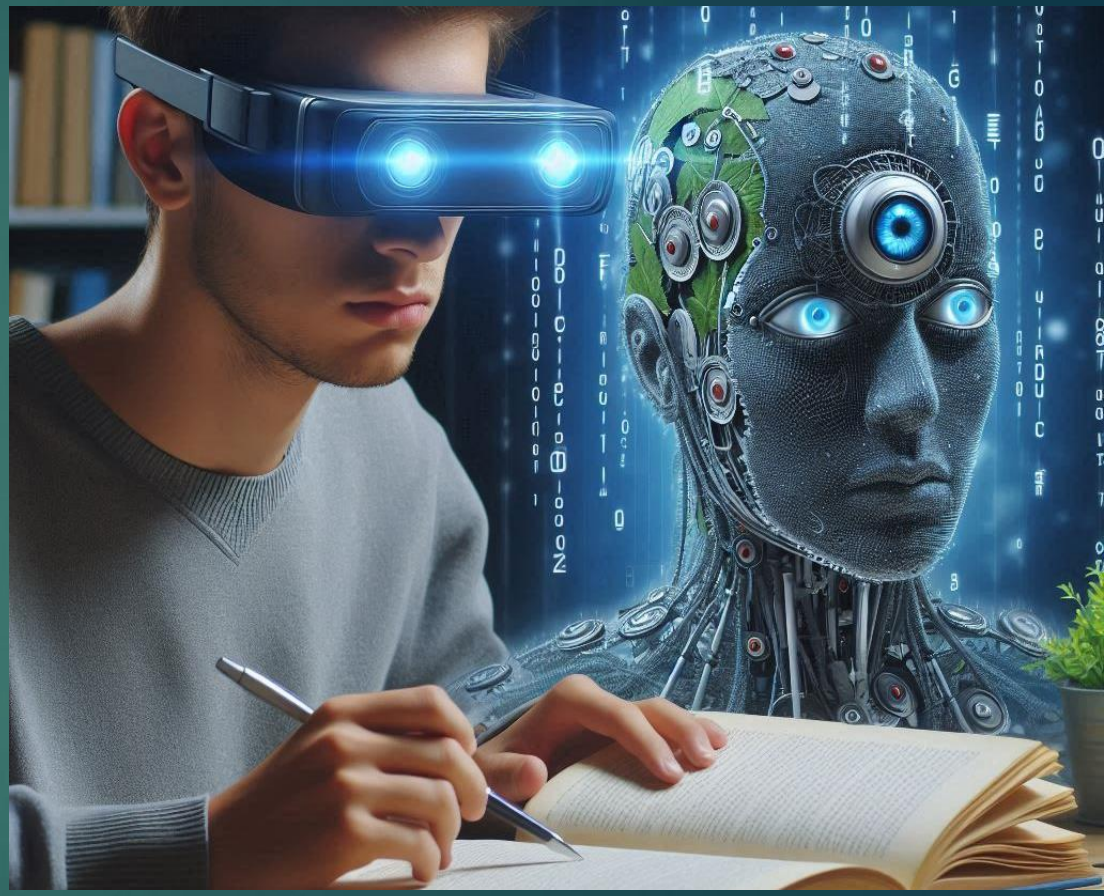
# BREAKING BARRIERS: AI TOOLS FOR ACADEMIC LIBRARIES TO IMPROVE EQUITABLE ACCESS TO INFORMATION RESOURCES FOR VISUALLY IMPAIRED USERS



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# Quick Facts

| Category wise Population of Divyangjan | | | | | | |
|---|---|---|---|---|---|---|
| **Disability** | **Total** | **%** | **Male** | **%** | **Female** | **%** |
| **In Seeing** | **5033431** | **18.8** | **2639028** | **52.4** | **2394403** | **47.6** |
| In Hearing | 5072914 | 18.9 | 2678584 | 52.8 | 2394330 | 47.2 |
| In Speech | 1998692 | 7.5 | 1122987 | 56.2 | 875705 | 43.8 |
| In Movement | 5436826 | 20.3 | 3370501 | 62.0 | 2066325 | 38.0 |
| Mental Retardation | 1505964 | 5.6 | 870898 | 57.8 | 635066 | 42.2 |
| Mental Illness | 722880 | 2.7 | 415758 | 57.5 | 307122 | 42.5 |
| Any Other | 4927589 | 18.4 | 2728125 | 55.4 | 2199464 | 44.6 |
| Multiple Disability | 2116698 | 7.9 | 1162712 | 54.9 | 953986 | 45.1 |
| **Total** | **26814994** | **100** | **14988593** | **55.9** | **11826401** | **44.1** |

Census of India -2011

# Education Level of VIPs

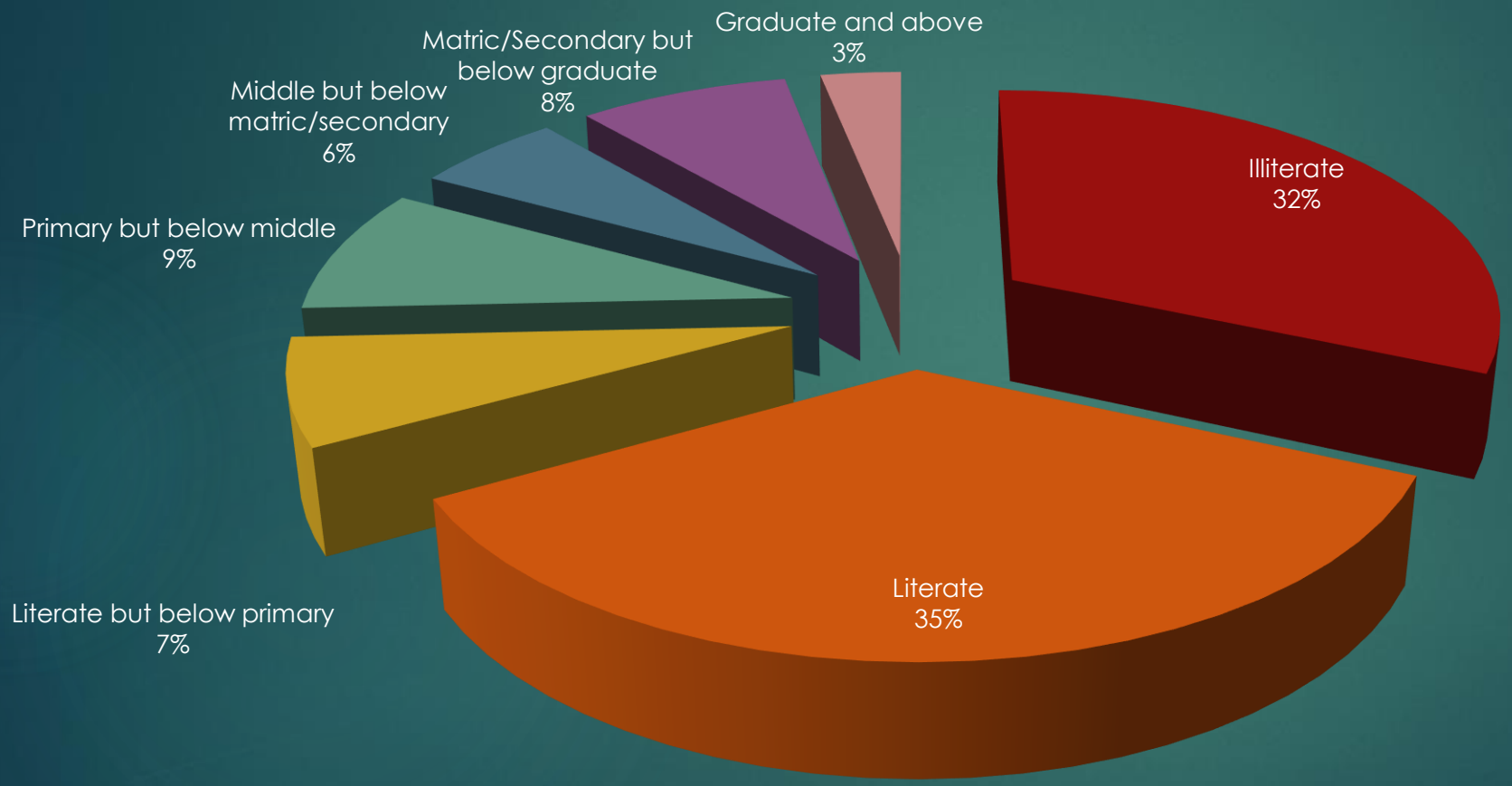



Table C 29, Census of India -2011

# Challenges Faced by VIPs

| | |
|---|---|
| Inaccessibility of Physical Spaces | • Navigation issues<br>• Lack of support staff |
| Shortage of Accessible Formats | • Scarcity of adaptive format of resources<br>• Digital inaccessibility |
| Technological Barriers | • Lack of assistive technologies<br>• Outdated or non-compatible systems |
| Cost of Assistive Devices | • High Cost of Assistive Technologies<br>• Limited Availability in Libraries |
| Social Barriers | • Lack of awareness<br>• Limited community support |

# AI-Powered ATs for Academic Libraries

# Seeing AI

- Developed by Microsoft Corporation in 2012.
- Assist VIPs in understanding who and what is around them.
- Use the device's camera to offer detailed descriptions of the surroundings.
- Empower VIPs to access a wide range of library resources independently.
- Available in 16 languages
- Operating system: Android, iOS, iPadOS


Source: Microsoft Designer

# Features

- Object Recognition
- Text Reading
- Scene Description
- Barcode Scanner
- Facial Recognition
- Color Identification
- Handwriting Recognition
- Light Detection

# Be My Eyes

- Free Danish mobile app launched in 2015 by Hans Jørgen Wiberg
- Make the world more accessible for VIPs
- Connects VIPs with sighted volunteers through video calls.
- Assist VIPs in various tasks such as finding books, reading titles, and navigating library physical space.
- Available in over 180 languages.

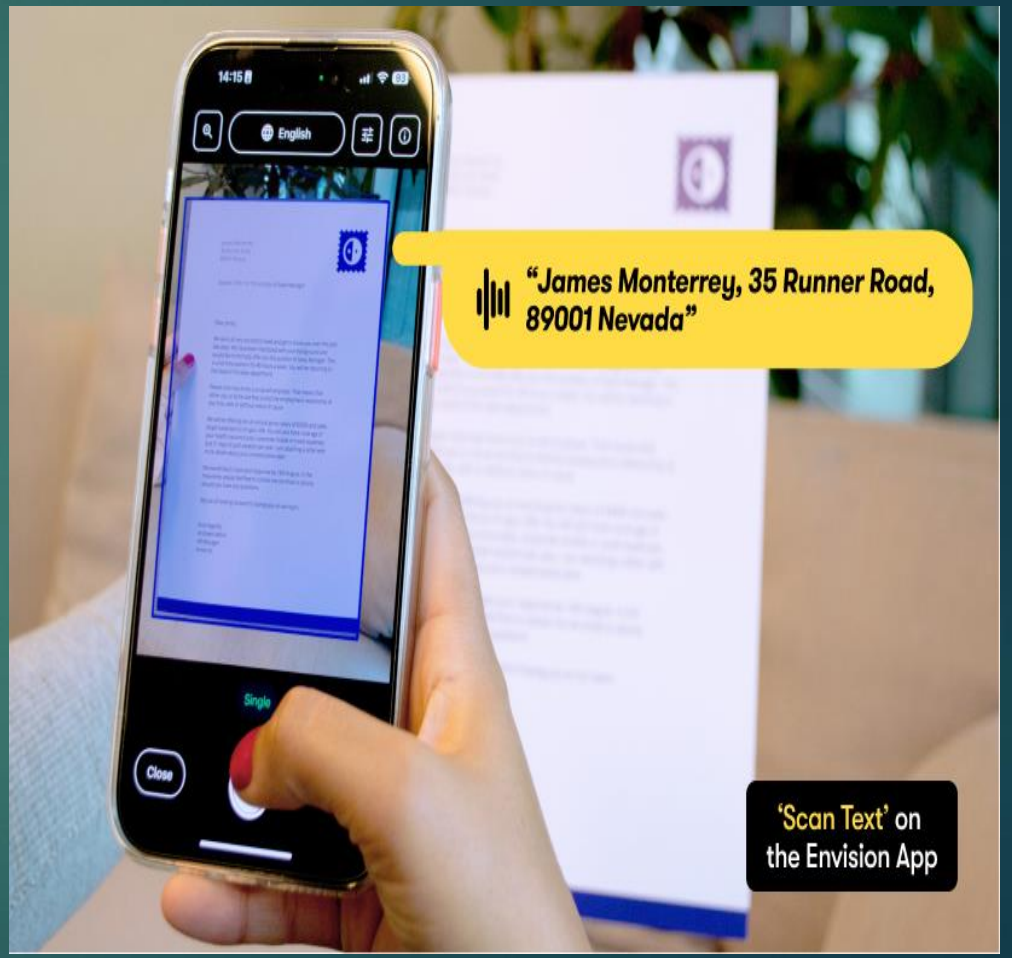

Source: Microsoft Designer

# Features

- Real-Time Video Assistance
- Task Support
- Global Volunteer Network
- Free to Use
- 24*7*365 Support
- User-Friendly Interface

# Envision AI

- Free visual assistance app founded by Karthik Mahadevan and Karthik Kannan in 2017.
- Uses ML and AI to recognise text, handwritten notes and other types of visual information
- Use your smartphone's camera to speak out written / handwritten information.
- Describe surroundings and objects, and even tell you who's nearby.
- Empower VIPs to access everyday visual information for themselves.
- Can read text in over 60 languages.




Source: Letsenvision.com

# Features

- Text Recognition
- Document Scanning
- Object Recognition
- Barcode Scanning
- Face Recognition
- Scene Description
- Image Descriptions

# TapTapSee

- Mobile app developed by Dominik Mazur and Brad Folkens in 2012.
- Helps VIPs to identify objects by using their device's camera.
- VIPs can take photos; the app verbally describes the objects or text captured.
- Can identify printed text from images and read it out loud.
- Assist VIPs in capturing images of library resources and can read them out loud.
- Uses cloud computing to process and recognise images.
- Provides accessibility for users across major mobile platforms.

Source: Microsoft Designer

# Features

- Text Recognition
- Object Identification
- Voice Feedback
- Multi-angle Recognition
- Cloud-based Analysis
- Simple Interface

# Lookout

- AI-powered app developed by Google in 2019.
- Help VIPs to understand their surroundings by using their smartphone's camera.
- Can read printed or handwritten text in real-time, including signs.
- Helps users identify objects or text around them as they point their phone's camera.
- Some features can be used without an internet connection.
- Users can interact with Lookout via Google Assistant for hands-free assistance.



Source: Youtube.com

# Features

- Text Recognition
- Object Identification
- Scene Description
- Works Offline
- Multiple Modes
- Currency Recognition
- Food Label Recognition
- Integration with Google Assistant

# Smart Glasses

- Utilizes AI technology to interpret visual information and convey it audibly to VIPs.
- Helps VIPs to comprehend their surroundings, including objects and people, without needing external assistance.
- Enables VIPs to navigate independently by providing real-time feedback on their environment.
- Assists in reading text, identifying objects, and recognising individuals autonomously.
- Examples: IrisVision electronic glasses, Acesight, NuEyes Pro, MyEye2, and AIRA.

Source: Moneycontrol.com

# Features

AI-Powered Wearable Device

Enhances Environmental Awareness

Facilitates Independent Mobility

Text and Object Recognition

Promotes Autonomy

# PeopleLens

- AI-powered wearable headset developed to help blind or visually impaired individuals recognise people and space around them.
- Aims to enhance autonomy in navigating social and public spaces
- Continuously updates users on the location and movement of people around them.
- Provides spoken feedback to the user, guiding them on the orientation and proximity of others.
- Facilitates smoother social interactions by letting VIPs know who is present without assistance.

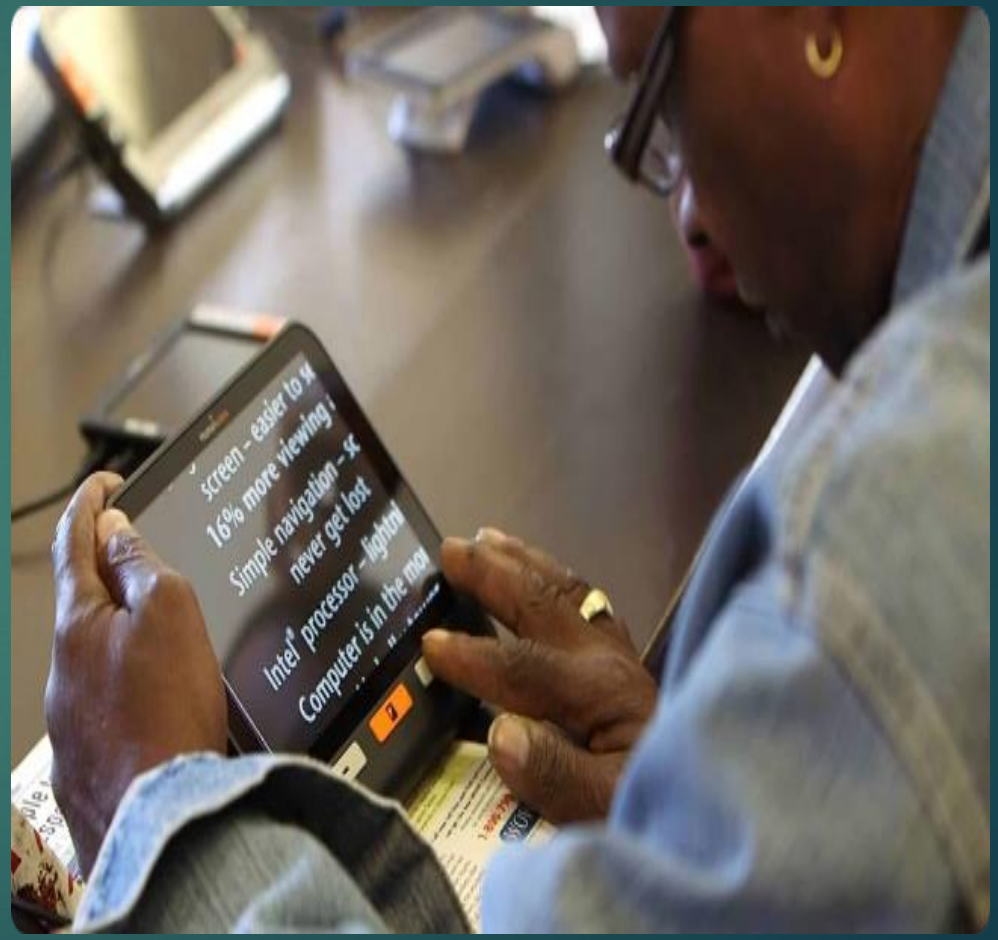

Source: Microsoft.com

# Features

- Person Recognition
- Face Identification
- Real-Time Updates:
- Voice Feedback
- Social Interaction Aid
- Headset-Based System
- Supports Independence

# Benefits of AI in Academic Libraries

- Enhanced Information Accessibility
- Automated Text-to-Speech
- Personalized Search Assistance
- Real-Time Object Recognition
- Adaptive Learning
- Natural Language Processing (NLP)
- Increased Autonomy
- Improved Navigation
- Instant Feedback and Updates



Source: Gamma

# Challenges in Implementing AI Tools

- Accuracy and Reliability
- Integration and Compatibility
- Customization and Personalization
- Data Privacy and Security
- Training and Support

Source: Gamma

# Conclusion

Source: Gamma

AI-driven tools empower VIPs to access, navigate, and engage with library resources more effectively.

Promising enhanced accessibility and personalised support.

AI tools signify a significant step towards inclusivity and autonomy for VIPs.

Integrating AI tools in academic libraries creates a more inclusive environment, enabling VIPs to participate actively in their academic pursuits.

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Thank you
so much !