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Drawbacks (Challenges) and Desires (Future Prospects) in Adoption of AI assisted tools by visually incapacitated people- A ground study from Belagavi, Karnataka

Shilpa Gavade [1], Dr. Manoj Kumar[2]
[1]Research Scholar, Department of Computer Science and Engineering, Asian International University, Imphal West, Manipur
[2]Professor, Department of Computer Science and Engineering, Asian International University, Imphal West, Manipur

Abstract: A lot of technological advantages and advancements are going on world-wide including the sector of healthcare. Many important studies from around the globe have given important insight about how artificial intelligence techniques can be used for healthcare and can be used by nursing professionals to make life easy and live-able for people having various type of disabilities. Despite of all these facts this area was a lesser explored in the region of Belagavi, Karnataka, India. Research was undertaken in this region to explore how integration of Artificial Intelligence (AI) in healthcare and nursing have led to betterment of visually incapacitated people of Belagavi region. From a famous Blind school 400 respondents were chosen for the study. Not all people who know about AI were willing using AI in real life due to several reasons. Those reasons have been explored in details along with what all things users of Belagavi actually want from AI to make their life better have also been discussed.

Keywords- Visually impaired, Deep learning, machine learning, AI assisted apps, indoor-navigation, accuracy, reliability

1. Introduction

Eyes are an important part of the important organ that helps human beings to observe and see the world and have a perception of the world (Boyce, 2022). Eyes also help people in performing different day-to-day tasks, including domestic work and official work. Visual impairment can cause a lot of inconvenience in life of visually challenged people. There is a need to focus on the requirements of people that are visually incapacitated. With the advent

of digital age, life of visually impaired, people have changed significantly making their life more livable and convenient.

Deep learning and machine learning technology use has significantly increased to ease life of visually impaired. People with visual impairment can now access artificial intelligence based assisted devices that are of great help. AI devices and tools also help in detection of eye diseases and development of visual aids. Early and accurate diagnosis of any kind of ophthalmic disease by a qualified concern doctor will help in appropriate treatment. When taken in initial stages, it enhances chances of early and total cure.

2. Literature Review

Bhola & Vishwakarma (2024)- Due to rapid advancement and widespread adoption of technology, Artificial Intelligence (AI) has become an integral part of daily life. Cameras and vision-based sensors, in particular, have emerged as powerful tools for addressing various real-time challenges. One of the most significant applications of these technologies is **Indoor Human Activity Recognition (HAR)**, which plays a vital role in smart homes, elderly care, assisted living, and human behaviour analysis. It enables the detection of abnormal activities such as falls, slips, and instances of domestic violence, thereby enhancing safety and well-being. The growing impact of indoor HAR in real-world scenarios has attracted considerable interest from both academia and industry.

Lawtone-Bowles (2024)- this research work focuses on combination of Apple intelligence and artificial intelligence to enhance learning experience of disabled students. Researchers imply that AI is able to create accessible personalized and effective environment and environment for students suffering with disability. Tools like adaptive learning platform, virtual simulation, speech to text application, can support disabled students by addressing unique needs of disabled students and enable them to overcome both physical and cognitive obstacles. Also, AI in healthcare education offers real time assistance.

Zhang et al. (2024) - In the field of geriatric care smart wheelchairs are a new addition that provide high quality care/ service and greatly enhances quality of care. The smart nursing wheelchairs have greatly enhanced nursing function which assist in changing of position, transferring bedding, and use of toilet which has greatly reduced workload on nursing staff and improved quality of care. Wheelchairs can be incorporated with several types of

ultrasonic sensors, LiDAR, RGB-D due to which wheelchairs have been rendered autonomy and safety and have become excellently capable of meeting various patient needs.

Tiwary& Mahapatra, (2023)- Recent advancements in image understanding and Automatic Image Captioning (AIC) have stimulated significant research interest in leveraging Artificial Intelligence (AI) to assist visually impaired individuals. AIC combines computer vision and Natural Language Processing (NLP) techniques to automatically generate natural language descriptions of images. This study presents a novel deep learning-based assistive technology designed to help blind and visually impaired people identify food items during online grocery shopping.

3. Methodology

This study is based on Belagavi district of Karnataka state, India. 400 people who were either blind or who were taking care of blind family members were considered in present study. Study participants were selected by random sampling method from Masheshwari Blind school. Data was collected with help of self-made questionnaire and gathered information was analysed using SPSS 2.0.

4. Results

Results along with three main research questions have been presented below-

Q 1. Have you ever received wrong or misleading information from an AI tool that affected your safety or independence?

Table 1: Have you ever received wrong or misleading information

Issue Category and count	Percentage	Description	Key Risks / Consequences	Examples / Evidence
Hallucinations (95)	24%	AI confidently provides wrong or fabricated information	Users act on incorrect data since they cannot visually verify	Wrong pattern description, misidentified objects, fake names

Safety Risks (82)	20%	Errors in object detection, navigation, and hazard identification	Physical injury, health complications, getting lost	Wrong obstacle detection, misread medicine labels
Reduced Independence (68)	17%	Over-reliance on flawed AI reduces user's own verification habits	Decreased critical thinking, increased dependency	Self-blame, extra time spent cross-checking
Inconsistent Performance (55)	14%	Poor results in low light, bad angles, or complex scenes	Unreliable daily usage	Varies with lighting and image quality
Accessibility & Usability (42)	11%	Poor screen reader support and complex app interfaces	Frustration and difficulty in using the tool itself	Unlabeled buttons, confusing navigation
Privacy Concerns (35)	9%	Camera-based tools continuously capture and send visual data	Risk of data misuse and loss of privacy	Images of personal spaces being processed
Cultural & Contextual Bias (3)	5%	Limited understanding of Indian contexts,	Inaccurate descriptions for users in	Misinterpretation of local items, Kannada text

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		local objects, or languages	India	

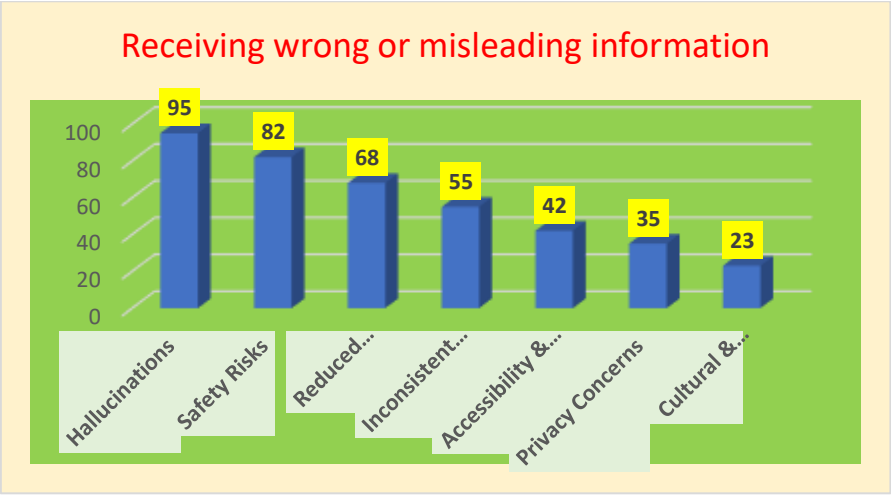

Fig. 1: Have you ever received wrong or misleading information (bar graph)

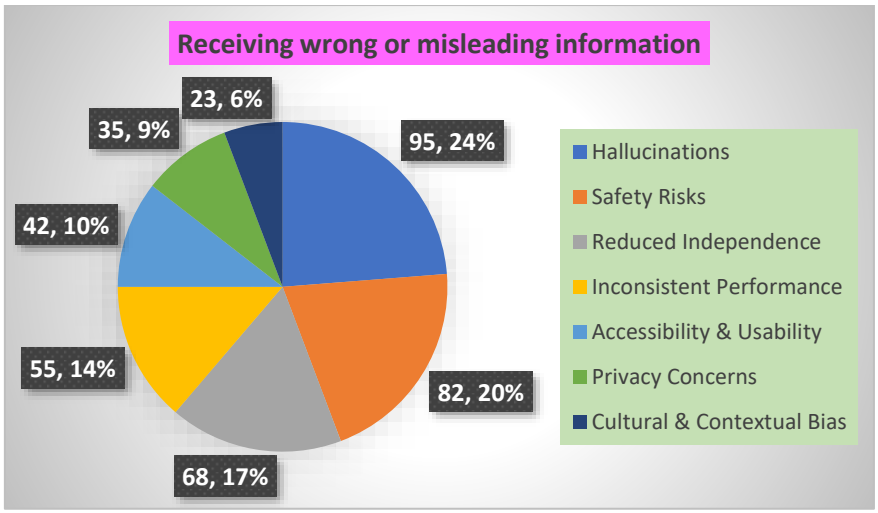

Fig. 2: Have you ever received wrong or misleading information (pi chart)

From table 1 and fig. 1 and fig. 2 out of all 400 respondents 24% reported hallucinations, 20% reported safety risks, 17% reported reduced independence, 14% reported inconsistent performance, 11% reported accessibility and usability, 9% privacy concerns and 5% reported cultural factors.

Q 2. What new or improved AI features would help you the most? (Select top 5 or describe freely)

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Table 2: What new or improved AI features would help you the most

Rank	Feature	Number of Respondents	Percentage
1	Better indoor navigation (room-level, obstacle avoidance)	85	21%
2	Real-time, highly accurate scene description	72	18%
3	Wearable AI glasses optimized for blind users	68	17%
4	Offline AI capabilities	52	13%
5	Integration with smart home / IoT devices	40	10%
6	Automatic document summarization in natural voice	28	7%
7	Personalized learning / tutoring assistant	20	5%
8	Emotion / facial expression recognition	16	4%
9	AI-powered braille translation or generation	12	3%
10	Social interaction support (conversation prompts)	7	2%

Total Respondents: 400 (100%)

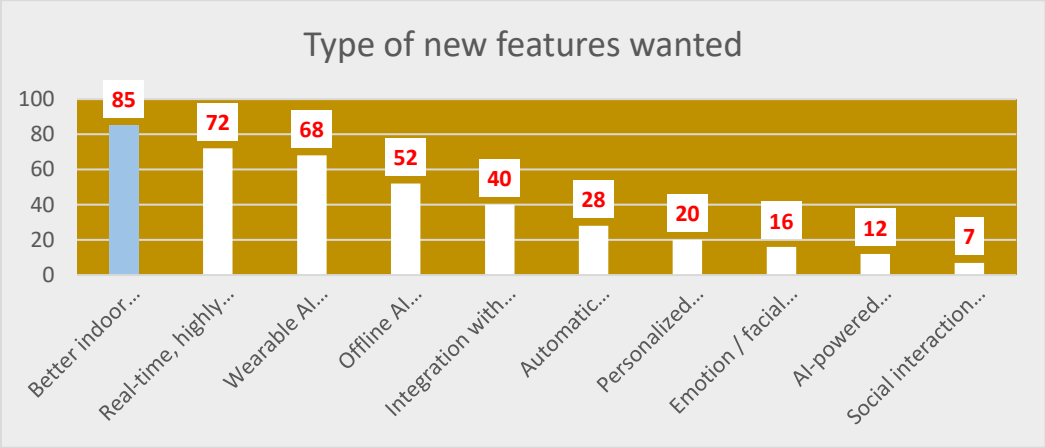

Fig. 3: Type of new features wanted (bar graph)

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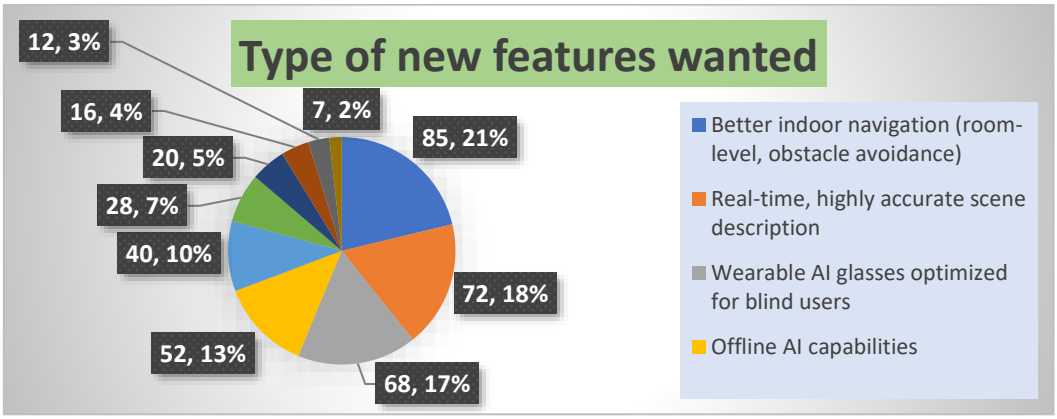

Fig. 4: Type of new features wanted (pi chart)

As can be seen from table 2 and figures 3 & 4 in the survey of **400 blind men** from Belagavi, **Better indoor navigation** remains the top desired feature (21%), followed by real-time scene description (18%) and wearable AI glasses (17%). Features focused on mobility, safety, and practical independence together account for **69%** of responses. Offline AI capabilities was desired by 13% respondents, 10% people wanted Integration with smart home / IoT devices,7% wanted Automatic document summarization in natural voice, personalized learning / tutoring assistant was wanted by 5% people. Emotion / facial expression recognition (4%), Social interaction (2%) and braille-related features (3%) received the lowest preference.

Q3. How important is each of the following? (Rate 1–5)

- Speed of response
- Accuracy / reliability
- Privacy (data not stored or shared)
- Voice quality & natural conversation
- Affordable or free access
- Works well with existing screen readers

Table 3: Importance of different workable factors

Rank	Feature	Number of Respondents	Percentage
1	Accuracy / reliability	128	32%
2	Affordable or free access	92	23%

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3	Works well with existing screen readers	68	17%
4	Speed of response	44	11%
5	Privacy (data not stored or shared)	36	9%
6	Voice quality & natural conversation	32	8%

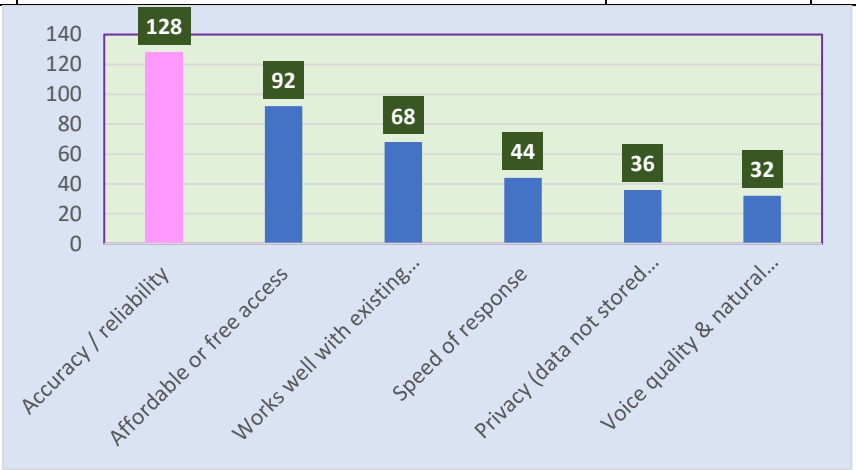

Fig. 5: Importance of different workable factors (Bar graph)

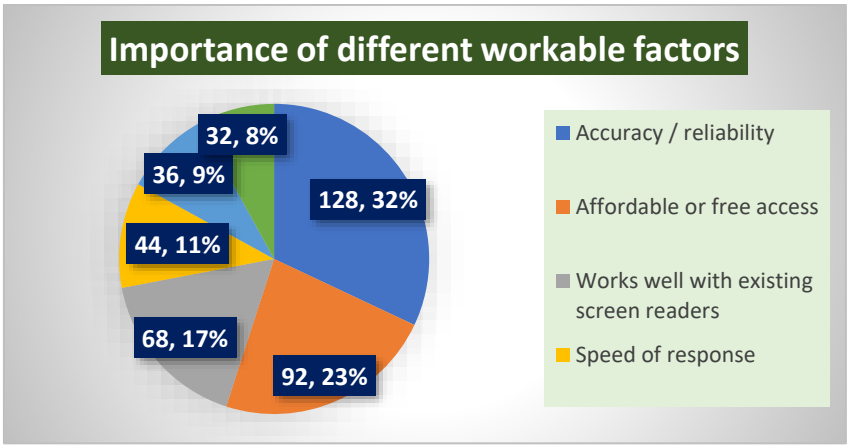

Fig. 6: Importance of different workable factors (pi chart)

Aa seen in table 3 and fig 5 and fig 6 in the survey of **400 visually incapacitated people** from Belagavi, a**ccuracy / reliability** was considered the most important factor by the highest number of respondents (**32%**), followed by a**ffordable or free access** at **23%**. Together, accuracy and affordability accounted for **55%** of responses, showing that trust and economic accessibility are the dominant concerns. Practical integration with screen readers (17%) also received notable importance, while advanced features like voice quality and privacy were

given lower priority. For blind people in Belagavi, ensuring AI tools are **correct and affordable** matters more than other aspects when evaluating importance.

5. Discussion

In present research work many challenges were encountered which one hindering people of Belagavi from learning the use of AI assisted tools from their impaired vision. Several important reasons have been discussed below

Common Issues with AI Tools for Blind Users

Blind and low-vision (BLV) users widely used AI-powered tools like **Be My AI** (from Be My Eyes), **Seeing AI** (Microsoft), Google Lookout, and general LLMs (ChatGPT, Gemini, etc.) for object identification, navigation, reading documents, shopping, cooking, and more. While these tools were greatly found to enhance **independence**, they had several potential risks described below-

1. Hallucinations (Fabricated or Wrong Information) AI models were found to describe things that were not at all there or misidentify objects/colours/patterns.

- It has been observed that Be My AI wrongly described a raincoat pattern as "hearts and stars" instead of "clouds and raindrops," or misidentified a dog breed and assumed it was a guide dog when it wasn't. In resume editing, it replaced a real name with a fictional one. Researches have shown hallucination rates in visual question answering (VQA) tools can be around 24**%** even with good images. Blind users can't visually double-check, so they sometimes trust the confident-sounding output.

2. Impact on Safety

- **Navigation & Mobility**: Wrong obstacle detection or distance judgment can lead to falls, collisions, or getting lost.
- **Medication & Food**: Misreading expiry dates, medicine labels, or cooking instructions can cause health risks.
- **Street Crossings / Public Spaces**: Incorrect identification of traffic lights, vehicles, or hazards.
- Present research has highlighted 20% safety risk when AI "sounds certain while guessing," it creates false confidence, which is especially dangerous for blind users who rely heavily on it.

3. Impact on Independence

- 17% visually incapacitated people reported that over-reliance on flawed AI can reduce critical thinking or verification habits.
- Many users develop workarounds (re-asking the same question, cross-checking with multiple tools, searching Google, or asking follow-ups), but this takes extra effort and time.
- Some users self-blame ("I must have taken a bad photo") instead of doubting the AI, leading to repeated errors.
- Accessibility barriers in the AI apps themselves (unlabelled buttons, poor screen reader support) add frustration.

4. Other Challenges

- Inconsistent performance was reported by 14% visually incapacitated people in present study across lighting, angles, or complex scenes.
- Privacy concern were reported by 11% visually incapacitated people with camera-based tools.
- Bias in training data (e.g., cultural or contextual misunderstandings for users in India).
- High trust in "detailed" descriptions despite errors, especially with image tools.

6. Conclusion and future prospects

In present survey of **400 blind men** from Belagavi, **better indoor navigation** was the top desired feature (21%), followed by real-time scene description (18%) and wearable AI glasses (17%). Features focusing on mobility, safety, and practical independence together accounted for **69%** of responses. Social interaction (2%) and braille-related features (3%) received the lowest preference. Therefore, AI development for blind users in regions like Belagavi should prioritize navigation, scene understanding, and wearable solutions to deliver the maximum benefit in daily life. Some promising workable options are described below that if well executed will surely make life easy and convenient for visually incapacitated people of Belagavi.

1. Google Lookout (Assisted Vision) App

- **Key Features**: AI-powered object recognition, text reading (OCR), scene description, currency/food label identification, and exploration mode using the phone camera.
- **Kannada Support**: Fully added in early 2024 — one of the most accessible and free options for Kannada speakers.

- **Relevance**: Excellent entry-point for Android users in Belagavi. Works offline for some features and integrates with TalkBack screen reader.
- **Availability**: Free on Google Play Store.

2. Smart Vision Glasses (SHG Technologies / Vision-Aid)

- **Key Features**: Wearable AI glasses with real-time text reading (books, signs, labels), object/face recognition, navigation cues, scene description, and Kannada song identification (demonstrated in user videos).
- **Kannada Support**: Strong multilingual Indian language support, including Kannada, alongside Hindi, Tamil, Telugu, etc. Designed for Indian contexts.
- **Impact**: Made-in-India solution (Bengaluru-based), more affordable than international options. Pilots and distributions via Vision-Aid target visually impaired users across Karnataka. Models like SVG Ultra emphasize sleek design and real-world reliability.
- **Relevance for Belagavi**: Practical for students and daily mobility; partnerships could enable subsidized access.

3. Bhashini AI (Government Initiative)

- **Key Features**: OCR for printed Indian language documents (including Kannada), TTS for audiobooks, translation (text/voice), and assistive tools for visually challenged users. "Gift of New Abilities" project specifically developed Kannada OCR + TTS for accessing books/documents.
- **Kannada Support**: Core focus — used by hundreds in Karnataka for education and accessibility.
- **Relevance**: Free/public resources ideal for schools/NGOs in Belagavi. Integrates with broader digital India efforts for government services in local languages.

4. Sarvam AI (Bulbul TTS & Vision)

- **Key Features**: High-quality natural TTS (multiple voices, expressive), STT, and Vision models for image captioning/OCR/handwritten text. Supports screen reader integration.
- **Kannada Support**: One of 11+ Indian languages with strong performance.
- **Relevance**: Developer-friendly APIs for custom apps; useful for building or enhancing local tools. Excellent for educational content narration.

5. Envision AI / Ally (App & Glasses)

- **Key Features**: Advanced OCR, scene description, document scanning, object recognition. Works with glasses for hands-free use.
- **Kannada Support**: Text reading and interface in Kannada (part of broad Indian language coverage).
- **Availability**: Free/paid tiers on iOS/Android; hardware options.

6. Other Supporting Tools

- **Microsoft Seeing AI**: Strong general features; limited or no full native Kannada voice support (relies on device TTS). Best combined with Kannada system voices.
- **Be My AI (Be My Eyes + GPT)**: Image descriptions; benefits from multilingual improvements but English-primary. Useful supplement.

References

1. Bhola, G. and Vishwakarma, D.K., 2024. A review of vision-based indoor HAR: state-of-the-art, challenges, and future prospects. *Multimedia Tools and Applications*, *83*(1), pp.1965-2005.
2. Boyce, P.R., 2022. Light, lighting and human health. *Lighting Research & Technology*, *54*(2), pp.101-144.
3. Lawtone-Bowles, N. 2024. Use of Apple Intelligence (Ai) and Artificial Intelligence (Ai) iLawtone-Bowles, N. (2024). Use of Apple Intelligence (Ai) and Artificial Intelligence (Ai) in Healthcare Education for Disabled Students.n Healthcare Education for Disabled Students.
4. Tiwary, T. and Mahapatra, R.P., 2023. An accurate generation of image captions for blind people using extended convolutional atom neural network. *Multimedia Tools and Applications*, *82*(3), pp.3801-3830.
5. Z. Zhang, P. Xu, C. Wu, and H. Yu. 2024. Smart Nursing Wheelchairs: A New Trend in Assisted Care and the Future of Multifunctional Integration. *Biomimetics*, vol. 9, no. 8, 2024, doi: 10.3390/biomimetics9080492.