**“Transcript”**

**AI-Based Assistive Technology for the Physically Disabled and the Elderly: Opportunities, Challenges, and Ethical Implications**

# Slide 1: Title Slide

Good Afternoon, my name is Fahad Saleh and I will be presenting my PowerPoint under title “AI-Based Assistive Technology to the Physically Disabled and the Older People”. This PowerPoint will address how artificial intelligence could support persons with physical disabilities and older adults. We shall discuss how the available AI technologies can enhance independence, safety, and quality of life. During the presentation, I will mention the possibilities of such emerging technologies, ethical consequences, and their application and practical usage challenges. Thanks so much. It would be great to explore this field, which is essential and growing.

**Slide 2: Introduction**

The world has adopted assistive technologies more readily than before, with the two issues of an ageing population and the development of awareness among the masses towards integrating people with disabilities, contributing to this phenomenon. An increasingly evolving force in that direction is Artificial Intelligence (AI). Artificial intelligence offers a chance to lead a more independent life using data acquisition and analysis gathered through intelligent operations and predictive algorithms that individuals with limited movements, senses, or mental abilities can use. The given presentation is devoted to the critical analysis of the present situation, the benefits of applying AI to assistive technology, and the risks and innovations of its application.

**Slide 3: Research Aims and Questions**

The fundamental purpose of this study is learning how the AI-based assistive technologies might help the elderly population and persons with physical disabilities. In particular, we are going to address the following main questions:

* What are the AI applications in the area of assistive technology?
* What are the practical impacts of these tools on the users?
* What obstacles and ethical issues should be tackled to realise this implementation?

This study can help the general conversation on inclusion, access, and ethical innovation in health care and everyday life by addressing these questions.

**Slide 4: Background and Context**

The rapidly growing aging society is one of the prime movers for developing intelligent assistive solutions. With increased life spans, independence becomes a significant priority in people’s lives. Various tools meant to support mobility, communication, personal care, and home management are being integrated with AI. In this case, Human-Centered Design is significant, so these technologies should be technically sound, generally accessible, and straightforward to use. Socio-technical integration refers to how any AI system interacts with the social and organisational conditions of the users.

**Slide 5: Methodology and Source Selection**

This presentation fills the body of literature with a thorough review of scholarly journals, recent case studies, and systematic reviews. Relevance to AI, disability studies, and assistive technologies was a criterion for selecting sources. We depended heavily on peer-reviewed databases and extensive recent research released in 2022- 2025. The methodology would apply a qualitative mode of analysis, namely thematic synthesis, user needs, and technology evaluation.

**Slide 6: Overview of AI-Based Assistive Technologies**

After assistive technologies, AI-based technologies are diversified and dynamic. They include:

* Body-mounted gadgets that track vital signs and falls.
* Intelligent navigation and voice-controlled wheelchairs.
* Voice assistants are adapted to non-verbal people.
* Smart prosthetics that change to the terrain and task.
* Cognitive aid applications that help with decision making and starting with the memory by relying upon Natural Language Processing (NLP).

These technologies are changing the classical paradigm of care by decreasing the reliance on a human care provider and allowing the users to address their conditions more autonomously.

**Slide 7: Use Cases in Vision and Hearing Assistance**

AI has enhanced two essential senses: vision and hearing. There are already wearable devices in the field of vision assistance that can recognise objects in real-time, navigate using GPS, and describe scenes with large language-vision models. When it comes to hearing, the AI-powered hearing aids can remove background noise, identify the speech patterns, and react in real-time to the acoustic conditions. The tools significantly enhance the way the user of the tool perceives and engages the world, particularly in a crowded area or a new territory.

**Slide 8: AI for Health and Safety Monitoring**

The AI monitoring systems can observe the user’s behavior and predict inevitable health accidents that may turn out as an emergency. As an example, such tools provide the possibility to:

* Monitor an abnormal motion presaging a fall or a cerebral accident.
* Check the heart rate, temperature, or glucose level in the blood.
* Activate real-life signals to the caregivers through mobile applications.

Predictive analytics allows users to predict the beginning of a health decline, allowing them to take preventative action instead of reactive action. Such systems enhance health results and provide peace of mind to users and their friends and relatives.

**Slide 9: Needs of Target Populations**

Various groups of users have multiple needs. Older people might need simplified interfaces with minimal complexity, whereas those with physical impairments might need technologies that depend on the given impairment. To be as effective as possible, such technologies should be:

* Intuitive
* Reliable
* Customisable to individual physical and cognitive capacities

Inclusive design proves to be essential. The involvement of the end users, caregivers, and healthcare professionals in the development cycle allows health technologies to focus on real-life issues rather than speculative ones.

**Slide 10: Benefits and Innovations**

The list of benefits of AI in assistive technology is long. They include:

* More autonomy in general cooking, hygiene, and movements.
* Improved emotional health condition via robotic companions and social interaction platforms.
* Adaptive systems that adapt to the user’s behaviour and give them feedback on specific user behaviours.
* Automation of everyday activities to reduce the caregiver burden.

They help promote a feeling of control and self-worth in the users, crucial to their mental well-being and life outcomes.

**Slide 11: Ethical Considerations**

There will be immense advantages, but the ethical aspect should not be disregarded. These include:

* Privacy threats were connected with the gathering of data and monitoring.
* Prejudice in any AI code that can ultimately discriminate against some user groups.
* Transparency in decision-making processes.

Also, ethical issues concerning the substitution of human contact by robots exist. While robots and AI can help alleviate loneliness, they cannot emulate and enable empathy and human connection. A balanced view is necessary to ensure that the technology does not undermine but enhances meaningful social interaction.

**Slide 12: Barriers to Adoption**

Several challenges prevent widespread adoption of AI-based assistive technologies:

* High initial and maintenance costs make them unaffordable for many.
* Elderly users may lack digital literacy, making usage difficult.
* Infrastructure gaps, such as unreliable internet or a lack of smart home integration, hinder full functionality.

Policy intervention, public funding, and community training programs need to address these barriers to ensure equity and inclusion.

**Slide 13: Policy and Regulation Gaps**

The existing degrees of regulatory oversight of assistive technology AI are unstable and spread out. What is missing:

* Scaled safety and accessible standards.
* Ethics of the application of AI to sensitive populations.
* Laws that safeguard the independence and confidentiality of the user information.

Governments and international institutions need to develop policies that are all-inclusive, enforceable, and implementable guidelines and precise compliance instruments for AI developers and service providers so that their operations are sustainable in the long run.

**Slide 14: Critical Evaluation and Synthesis**

The academic literature is enormously interested in the possibilities of using AI-powered assistive technologies. Nonetheless, this reality can hardly be achieved due to the infrastructure, funding, or deficiency in user training. Most research is performed in countries with the highest technological development level, alone in underserved communities or low-income ones. Emotional and psychological effects are also poorly researched, as they are crucial in achieving user satisfaction and well-being. These gaps in the study should be bridged to have an all-around view of the technological influence.

**Slide 15: Conclusion**

In summary, AI-assistive technology is another revolutionary step in elderly care and treating people with physical disabilities. It is widely successful because of its ethical design, affordability, and inclusive innovation. Interdisciplinary cooperation between engineers, healthcare providers, policymakers, and users can create systems that are not only technically efficacious but also socially responsible. AI can excellently disrupt lives, but only care should be taken when using it with empathy and foresight.

**Slide 16: Recommendations and Future Directions**

To move forward, we recommend the following:

* Prioritise Human-Centered Design in all stages of development.
* Provide funding and subsidies to ensure equitable access.
* Develop international regulatory standards for AI in assistive contexts.
* Increase training for users and caregivers.
* Promote further research in underserved regions and on psychological dimensions of AI use.

Future directions should focus on integrating AI with other emerging technologies, such as augmented reality (AR), robotics, and brain-computer interfaces, to expand the possibilities for inclusive living.

**Slide 17–19: References**

Sources used in this research include publications from recent scholarly articles, systematic reviews, and journals from 2025 to 2022. They include significant contributions of Bastola et al. (2025), Pancholi et al. (2024), Bint Khalid et al. (2024) among others. The written report or bibliography may include complete references along with the request.

**References**

Almufareh, M. F., Kausar, S., Humayun, M., et al. (2024). A conceptual model for inclusive technology: Advancing disability inclusion through artificial intelligence. *Journal of Digital Responsibility, 3*(1). <https://doi.org/10.57197/JDR-2023-0060> (Accessed: 04 July 2025).

Baig, M. S., Gillani, S. A., Shah, S. M., Aljawarneh, M., Khan, A. A., & Siddiqui, M. H. (2024). AI-based wearable vision assistance system for the visually impaired: Integrating real-time object recognition and contextual understanding using large vision-language models. *ArXiv*. <https://arxiv.org/abs/2412.20059> (Accessed: 04 July 2025).

Bastola, A., Wang, H., Boroujeni, S. P. H., Brinkley, J., Moshayedi, A. J., & Razi, A. (2025). Driving toward inclusion: A systematic review of AI-powered accessibility enhancements for people with disability in autonomous vehicles. *IEEE Access, 13*, 61384–61415. <https://doi.org/10.1109/ACCESS.2025.3555923> (Accessed: 04 July 2025).

Bint Khalid, U., Naeem, M., Stasolla, F., Syed, M. H., Abbas, M., & Coronato, A. (2024). Impact of AI-powered solutions in rehabilitation: Recent improvements and future trends. *International Journal of General Medicine, 17*, 943–969. <https://doi.org/10.2147/IJGM.S453903> (Accessed: 04 July 2025).

Brotosaputro, G., Supriyadi, A., & Jones, M. (2024). AI-powered assistive technologies for improved accessibility. *International Transactions on Artificial Intelligence, 3*(1), 76–84. <https://doi.org/10.33050/italic.v3i1.645> (Accessed: 04 July 2025).

Chemnad, K., & Othman, A. (2024). Digital accessibility in the era of artificial intelligence—Bibliometric analysis and systematic review. *Frontiers in Artificial Intelligence, 7*, 1349668. <https://doi.org/10.3389/frai.2024.1349668> (Accessed: 05 July 2025).

Das, S. (2025). Navigating accessibility rights in the age of AI with special reference to assistive technologies—Challenges and opportunities. *International Journal of Creative Research Thoughts (IJCRT)*. <http://dx.doi.org/10.2139/ssrn.5196816> (Accessed: 05 July 2025).

Giansanti, D., & Pirrera, A. (2025). Integrating AI and assistive technologies in healthcare: Insights from a narrative review of reviews. *Healthcare, 13*(5), 556. <https://doi.org/10.3390/healthcare13050556> (Accessed: 05 July 2025).

Huq, S. M., Maskeliūnas, R., & Damaševičius, R. (2024). Dialogue agents for artificial intelligence-based conversational systems for cognitively disabled: A systematic review. *Disability and Rehabilitation: Assistive Technology, 19*(3), 1059–1078. <https://doi.org/10.1080/17483107.2022.2146768> (Accessed: 05 July 2025).

Kirongo, A. C., Huka, G., Bundi, D., Kitaria, D., & Muchiri, G. (2022). Implementation of AI-based assistive technologies for learners with physical disabilities in areas of innovation and special schools: A practical design thinking approach. *African Journal of Science, Technology and Social Sciences, 1*(2), 73–76. <https://doi.org/10.58506/ajstss.v1i2.124> (Accessed: 05 July 2025).

Krishnan, R., & Manickam, S. (2024). Enhancing accessibility: Exploring the impact of AI in assistive technologies for disabled persons. *Nafath, 9*(25). <https://doi.org/10.54455/MCN2505> (Accessed: 05 July 2025).

Lee, J., & Jung, J. (2024). Empirical case study of AI service and application for people with disabilities. In *International Conference on Conceptual Modeling* (pp. 5–20). Springer. <https://doi.org/10.1007/978-3-031-75599-6_1> (Accessed: 06 July 2025).

Müftüoğlu, Z., Kızrak, M. A., & Yıldırım, T. (2021). Privacy-preserving mechanisms with explainability in assistive AI technologies. In *Advances in Assistive Technologies: Selected Papers in Honour of Professor Nikolaos G. Bourbakis – Vol. 3* (pp. 287–309). Springer. <https://doi.org/10.1007/978-3-030-87132-1_13> (Accessed: 06 July 2025).

Olawade, D. B., Bolarinwa, O. A., Adebisi, Y. A., & Shongwe, S. (2025). The role of artificial intelligence in enhancing healthcare for people with disabilities. *Social Science & Medicine, 364*, 117560. <https://doi.org/10.1016/j.socscimed.2024.117560> (Accessed: 06 July 2025).

Pancholi, S., Wachs, J. P., & Duerstock, B. S. (2024). Use of artificial intelligence techniques to assist individuals with physical disabilities. *Annual Review of Biomedical Engineering, 26*. <https://doi.org/10.1146/annurev-bioeng-082222-012531> (Accessed: 06 July 2025).

Ran, M., Banes, D., & Scherer, M. J. (2022). Basic principles for developing an AI-based tool for decision-making for assistive technology. *Disability and Rehabilitation: Assistive Technology, 17*(7), 778–781. <https://doi.org/10.1080/17483107.2020.1817163> (Accessed: 06 July 2025).

Zdravkova, K. (2022). The potential of artificial intelligence for assistive technology in education. In *Handbook on intelligent techniques in the educational process: Vol. 1 recent advances and case studies* (pp. 61–85). Springer. <https://doi.org/10.1007/978-3-031-04662-9_4> (Accessed: 06 July 2025).