Literature Review Outline

Research Topic: AI-based assistive technology for the physically disabled and/or the elderly

What is the focus and aim of your review? Who is your audience?

- How assistive technology can improve a disabled persons quality of life?
- What are the benefits of AI based assistive technology?
- What are the ethical, legal and social concerns relevant to assistive technology more specifically AI based assistive technology?
- What are the drawbacks to assistive technology (E.G cost, negative perception etc)
- The target audience is the disabled, the elderly and their carers
  - The goal is to educate them on the assistive technologies available to them

Why is there a need for your review? Why is it significant?

- Because some people with disabilities may not be aware of the assistive technologies available to them
  - Possible reasons for this; they were diagnosed later in life so may not have been aware of their disabilities, they were unaware of the assistive technologies, they may have server mental deficiencies so may be unable to understand the information that has been provided to them on assistive technologies in the past
- Assistive technologies could help to safeguard the vulnerable from being exploited by people who may look to exploit them
- Assistive technologies could improve the quality of life for people with severe disabilities
- Assistive technologies can help people who struggle with daily activities of life and may allow them to become more independent

What is the context of the topic or issue? What perspective do you take? What framework do you use to synthesise the literature?

- The context of the topic is going to be centred around how assistive technologies can improve vulnerable people's quality of life allowing them to be more independent
- While I will mainly be looking at the perspective of how assistive technology has improved their life, I will also touch on the drawbacks of assistive technology such as the overreliance on it.
- I will be using Chris Hart's book on Literature Reviews (Hart, 2018) in conjunction with Harris Cooper's article on Literature Reviews (Cooper, 1988) for guidance when writing the literature review

How did you locate and select sources for inclusion in the review?

- Sources were located a series of key word search on Google scholar and Google. I also discussed assistive technologies with my DSA mentor as due to there experience working with people with disabilities, they were more aware of the types of assistive technologies available in the market today.
- Documents that weren't written or translated into English were excluded as that is the only language I can understand.
- Documents that didn't come from reputable sources were excluded as they haven't been checked for accuracy
- It was important to find academic articles that argued both for and against the use of AI assistive technologies
- Selected Sources:
  - Access to Artificial Intelligence for Persons with Disabilities: Legal and Ethical Questions Concerning the Application of Trustworthy AI (Joamets & Chochia, 2021)
  - Ethical issues in assistive ambient living technologies for ageing well (Panico et al., 2020)
  - Assistive Technologies for Improving Quality of Life (Lancioni & Signh, 2014)
  - Assistive technology for people with intellectual and developmental disabilities in the United States in Home- and Community-Based Services (Friedman, 2024)
  - Outcomes of assistive technology use on quality of life (Scherer, 1996)
  - Economic evaluation of healthcare technology improving the quality of social life: the case of assistive technology for the disabled and elderly (Shin et al., 2015)
  - Assistive technology: Impact on education, employment, and independence of individuals with physical disabilities (Stumbo et al., 2009)
  - Assistive technology: Interventions for individuals with severe/profound and multiple disabilities (Lancioni et l., 2012)
  - Using assistive technologies to improve lives of older adults and people with disabilities (Kowtko, 2012)
  - Assistive Technology for People with Autism Spectrum Disorders (Lang et al., 2014)
  - Assistive technology for people with developmental disabilities (Lancioni, 2017)
  - The use of everyday and assistive technology in the lives of older autistic adults (Zheng et al., 2022)
  - Assistive technology to support people with autism spectrum disorder in their autonomy and safety: A scoping review (Wohofsky et al., 2022)
  - Assistive technology and people with dementia (Cash, 2003)
  - Effectiveness of assistive technology in improving the safety of people with dementia: a systematic review and meta-analysis (Brims & Oliver, 2019)

- o Users of assistive technology: The human component (Brodwin et al., 2007)
  - o Maslow's hierarchy of needs (Maslow, 1943)
- Key word searches:
  - o The legal, social and ethical concerns of AI assistive technologies
  - o How Assistive technologies improve people with disabilities quality of life
  - o Assistive technologies for those with dementia
  - o Assistive technologies for those with autism
  - o Assistive technologies for the elderly
  - o Assistive technologies impact on self confidence
  - o How assistive technologies aid people with their daily activities
  - o The use cases for assistive technology for the elderly and disabled

How is your review structured?

- Introduction
- Key definitions
- The use cases of assistive technologies
- The pros and cons of assistive technology
- The legal, social and ethical issues of assistive technologies
- Assistive technologies impact on quality of life and self confidence
- Main findings
- Conclusion

What are the main findings in the literature on this topic?

- Assistive technologies help people with disabilities and the elderly regain their own independence improving their overall quality of life and self confidence
- Assistive technologies have use cases across all aspects of everyday life
- Even though there are tons of benefits to assistive technology particularly for the disabled and elderly there are some potential concerns to the technology such as overreliance on the technology and privacy concerns
- In less economically developed countries, the elderly and disabled don't have the access to assistive technologies
- Due to the cost those who have a genuine need for assistive technology may not have access to the technology

What are the main strengths and limitations of this literature? Are there any discrepancies in this literature?

- Every disabled person's disability will affect them differently
- Most of the literature is from the last decade
- Data was limited as excluded non-English sources
    - Different cultures view disabilities differently
- All sources were academic sources
    - No first-hand research
    - Those who have first hand experience will have different viewpoints compared to those who are using theoretical experience
- Sources demonstrate multiple viewpoints
- The medical field is constantly evolving so old sources may not be relevant
    - E.G. Aspergers got renamed to ASD due to the history of Hans Asperger and his links to the Nazis
- Due to the significant benefits of assistive technologies, there isn't as much literature on the negatives.

What conclusions do your draw from the review? What do you argue needs to be done as an outcome of the review?

- Everyone who struggles with a disability can benefit from assistive technologies
- There needs to be greater access to assistive technologies
- There isn't enough research from those who have first-hand experience with people with disabilities on assistive technologies
    - Inference is that there aren't enough disabled people in academia
- Greater emphasis should be placed on educating the elderly and disabled on assistive technologies

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