LITERATURE SURVEY

Within thought piece, we shall use social model of disability [19] which originated within the UK in the 1970s. In the document Fundamental Principles of Disability [22], UPIAS (Union of Physically Impaired Against Segregation) defined disability not as an impairment of the body or brain, but as a "relationship between people with impairment and a discriminatorysociety."The influence of Marxist thought and labour movement traditions is clear in the work of UPIAS and in Capital, Karl Marx [15] defined capital and labour not as things but as relationships. That is, the social model implies that it is society which disables individuals by the constructs which it places around us, and that it is because society is not inclusive that individuals are disabled.

More than a billion people live with disability and there is a need to explore how AI technologies can affect this diverse group. AI research can be a force for good for disabled people as long as they are not marginalised. A roadmap which includes AI and ethical issues has yet to be developed according to the Alan Turing Institute [1].The creation of a network of experts and resources for AI and inclusion could help to address the "unmet need of assistive products crucial …… to implement the UN Convention on the rights of persons with disabilities" [25].

A number of authors have written on the topic of disability, AI, and ethics (justice, or fairness). We shall summarise recent developments in this area below. It is to be hoped that these developments lead to a more inclusive, and hence ethical in my view, approach to the design of AI systems for those with disabilities, including myself.

Bennett and Keyes [2] present two case studies, one on decision-making and the other on AI for the visually impaired to demonstrate how through failures to consider structural injustices in their design, they are likely to result in harm not addressed by a "fairness" framing of ethics. They call on

researchers into AI ethics and disability to "move beyond simplistic notions of fairness, and towards notions of justice."

White [24] discusses fairness for people with disabilities, identifying some of the central problems, and took a philosophical perspective motivated by a concern for social justice, emphasizing the role of ethics. Lillywhite and Wolbring [14] identified many ethical issues within AI and machine learning as fields and within individual applications. They also identified problems in how ethics discourses engage with disabled people.

Coeckelbergh [4] proposes four objections to introducing AI in health care. First, a robot is able to deliver care, but it will never really care about the human. Second, AI cannot provide "good care", as true care requires empathetic contact with humans. Thirdly, AI may be able to provide care, but in doing so violates the principle of privacy, "which is why they should be banned". Finally, AI technologies such as robots provide "fake care" and are likely to "fool" people by making them believe that they are receiving genuine care.

Trewin [20] argues that fairness for disabled people is different to fairness for other protected attributes such as age, gender, or race, because of the extreme diversity of disabilities, and suggests ways of ensuring fairness for disabled people in AI applications.

Floridi et al. [10] report the findings of AI4People, an initiative designed to lay the foundations for a "Good AI Society". They introduce the opportunities and risks of AI for society and present ethical principles that should underpin its development and adoption. If adopted, these recommendations would "serve as a firm foundation for the establishment of a Good AI Society." In 2019, Techshare Pro held a panel on; "Ethics, Machine Learning and Disabilities" which was chaired by Ability Net and included the Head of Public Engagement at the Ada Lovelace Institute [21].

In [8], the High-Level Expert Group on AI presented Ethics Guidelines for Trustworthy Artificial Intelligence. According to the Guidelines, trustworthy

AI should be: "lawful—respecting all applicable laws and regulations, ethical—respecting ethical principles and values, and robust—both from a technical perspective while taking into account its social environment". OpenAI is an AI research and deployment company based in San Francisco. Their mission is to ensure that AI benefits all of humanity. In [17], OpenAI released a charter that will guide the AI development in acting in the best interests of humanity.

Therefore, it seems that there are many initiatives which are striving to solve the problems, and address the issues, inherent in developing AI systems which are fair and ethical for, and serve the needs of, those with disabilities.

It is true that AI technologies have the potential to dramatically impact the lives of people with disabilities. However, widely deployed AI systems do not yet work properly for disabled people, or worse, may actively discriminate against them. Guo et al. [12] identify how AI may "impact particular disability constituencies if care is not taken in their design, development, and testing." This is something which Laura and I, have both experienced, in our day-to-day lives and our interactions with, and use of, simple AI systems. The diaries which we have prepared and presented below demonstrate this.

Closer to home, in terms of my own disability, Yozbatiran et al. [26] use data from one subject to demonstrate the feasibility, safety, and effectiveness of robotic-assisted training of upper extremity motor functions after incomplete spinal cord injury. Developments such as this give me some hope that advanced AI technology may yet assist in my further recuperation.