

Artificial Intelligence and Ethical Considerations in Neurotechnology

Dr. Rita Luthra, President, Women's Health and Education Center (WHEC) (rita@womenshealthsection.com)

Abstract

For artificial intelligence (AI) to have beneficial impact on global health, especially in low- and middle-income countries, ethical considerations, regulations, standards and governance mechanisms must be placed at the center of design, development and deployment of AI-based systems. The safe deployment of new technologies, including AI, can help the world to achieve the Sustainable Development Goals (SDGs). Ethical considerations in neurotechnology is essential. AI is already playing a role in diagnosis and critical care, drug development, disease surveillance, outbreak response, and health-systems management. Future of education & health sector is digital.

Sustainable Development Goals (SDGs) need a boost. The biggest and largely unexplored opportunity for artificial intelligence (AI) to help the digital economy and digital divide is to integrate human ability into its solutions. Working with the world's most vulnerable population puts an enormous responsibility on AI practitioners to be ethical, transparent, and international, in how we implement AI technologies. AI can address the skills deficits in health and education sectors. AI applications offer enormous opportunities for the developing world to bridge the digital divide and create an inclusive society. Although 80% of the population in developing countries owns a mobile phone, still more than 1.7 billion people, mostly women, do not own one.¹

Anecdotally, there are more mobile phones in the developing world than adults. There are increasing number of apps and services that are now being offered digitally. This widespread digitalization of human activity generates the truly massive data sets necessary for AI applications and solutions.

Artificial Intelligence Literacy & Sustainable Development Goals

The Women's Health and Education Center (WHEC), an *NGO of Economic and Social Council of the UN*, coordinates on public health with the UN System, especially with the WHO, UNESCO and ITU (International Telecommunication Union), and UNCTAD to promote best practices in this area.

We get involved in the capacity building, shape the research agenda and engage stakeholders in improving the ethical foundation for use of Big Data and AI in public health.

Developing global ethical guidance for UN Member States also requires an analysis of knowledge gaps and setting priorities for research to address these gaps.

We publish that on our educational platform routinely, and in our monthly newsletter *WHEC Update*. <http://www.WomensHealthSection.com>

Neurotechnology and Ethical Challenges

Neurotechnology is a fast-expanding field dedicated to understanding the brain and the technologies that interact with it. At the intersection of neuroscience, engineering, data science, information and communication technology and **AI**, neurotechnology can access, assess, and manipulate the neural systems of animals and humans. The sector is growing at an unprecedented rate, and with a neurological revolution on the horizon, societies must confront unique ethical concerns related to human identity, human dignity, freedom of thought, autonomy, privacy and wellbeing.

This progress is a cause for celebration, understanding and a reason for caution. We must safeguard ethical standards of neurotechnology and AI and ensure the full protection of human rights.²

The Women's Health and Education Center (WHEC) with its partners and UN Systems is building a framework to protect and promote human rights and fundamental freedoms. Groundbreaking developments in neurology offer unprecedented potential. But we should remain aware of its negative impact if it is employed for malicious purposes. That is why we must act now, to ensure it is not misused and does not threaten our societies and democracies.

In addition to the existing ethical frameworks regarding AI around the world, WHEC's initiative aims to bring a

¹ GSMA (2022). The Mobile Gender Gap Report 2022. Key findings in Low- and Middle-Income Countries; GSMA Head Office, London, UK.

² UNESCO (2023). Build a framework to protect and promote human rights and fundamental freedoms. The International Conference on Ethics of Neurotechnology. UNESCO's Headquarters Paris 13 July 2023

globally accepted normative instrument that focuses not only on the articulation of values and principles, but also on their practical realization, via concrete policy recommendations, with a strong emphasis on inclusion issues of gender equality and protection of the environment and ecosystems.

UNESCO has delivered global standards to maximize the benefits of the scientific discoveries, while minimizing the downside risks, ensuring that they continue to a more inclusive, sustainable, and peaceful world.³ The rapid rise of AI has created many global opportunities in health and education sectors, from facilitating healthcare diagnoses, in enabling human connections through social media and creating labor efficiencies through automated tasks. At present, AI has already started to compound on top of existing inequalities, resulting in further harm to already marginalized groups.

Neurotechnology-based interference with brain activity can be very effective, allowing for successful treatment of brain disorders. This approach complements traditional pharmaceutical treatment.

However, changes to personality can also be an unintended side effect. How far should we go when cognitive and emotional alterations of a person could result from an intervention? Which kinds of risks are acceptable? Does our “self” change into another one by these interventions?

Does our notion of legal “responsibility” change with change of the brain activity? Are we the same person we were before the operation and before the stimulation?

Why A Global Action is Needed for Ethical Implementation of AI?

The protection of human rights and dignity is the cornerstone of the work of the United Nations. Ethical recommendations in this document, are based on the advancement of fundamental principles such as transparency and fairness, always remembering the importance of human oversight of AI systems. However, what makes these recommendations exceptionally applicable are its extensive Policy Action Areas, which allow policymakers to translate the core values and principles into action with respect to data governance,

environment and ecosystems, gender, education and research, and health and social wellbeing, among many other spheres.

While values and principles are crucial to establish a basis of any ethical AI framework, recent movements in AI ethics have emphasized the need to move beyond high-level principles and toward practical strategies. The next few years will see a need for elaborating ethical and legal framework that stimulate and regulate responsibility on both the human and artificial side (including the machine’s manufacturer) such that a man-machine complex can be safely integrated into daily life (Kellmeyer et al, 2016).⁴

Policy Recommendations

1. Member States should implement policies to raise awareness about anthropomorphizing (humanizing) of AI technologies that recognize and mimic human emotions, including in the language used to mention them, and assess the manifestations, ethical implications and possible limitations of such anthropomorphizing, in particular in the context of robot-human interaction and especially when children are involved.
2. Encourage and promote collaborative research into the effects of long-term interaction of people with AI systems paying particular attention to the psychological and cognitive impact that these systems can have on children and young people.⁵
3. Member States should encourage research on the effects of AI technologies on health systems performances and health outcomes.
4. Member States, as well as stakeholders, should put in place mechanisms to meaningfully engage children and young people in conversations, debates and decision-making with regard to the impact of AI systems on their lives and futures.
5. Member States should, according to their specific conditions, governing structures and constitutional provisions, credibility and transparently monitor and evaluate policies, programs and mechanisms related to ethics of AI, using a combination of quantitative and qualitative approaches.
6. Processes for monitoring and evaluation should ensure broad participation of all stakeholders,

³ UNESCO (2021). Recommendation on the ethics of artificial intelligence.. Programme and meeting document. Available @ <https://unesdoc.unesco.org/ark:/48223/pf0000381137> Last accessed 2 February 2024.

⁴ Kellmeyer, P., Cochrane, T., Muller, O. et al. The effect of closed loop medical devices on the autonomy and

accountability of persons and systems. *Camb. Q. Healthcare Ethics* 2016;25:629-633

⁵ Muller, O. Rotter, S. Neurotechnology: Current developments and ethical issues. *Front. Syst. Neuroscience* 2017;11:93. doi: [10.3389/fnsys.2017.00093](https://doi.org/10.3389/fnsys.2017.00093)

including, but not limited to, vulnerable people or people in vulnerable situations. Social, cultural and gender diversity should be ensured.⁶

7. In the interests of promoting best policies and practices related to ethics of AI, appropriate tools and indicators should be developed for assessing the effectiveness and efficiency thereof against agreed standards, priorities and targets, including specific targets for persons belonging to disadvantaged, marginalized populations, and vulnerable people or people in vulnerable situations, as well as impact of AI systems at individual and societal levels.
8. Data collection and processing should be conducted in accordance with the international law, national legislation on data protection and data privacy, and the values and principles suggested in this recommendations.
9. Member States should endeavor to employ effective AI systems for improving human health and protecting the right to life, including mitigating disease outbreaks, while building and maintaining international solidarity to tackle global health risks and uncertainties.
10. Member States should ensure that actors involved in healthcare AI take into consideration the importance of a patient's relationships with their family and with the healthcare staff.

Conclusions

In no other field is the ethical compass more relevant than in AI. These general-purpose technologies are reshaping the way we work, learn, interact and live. AI technology brings major benefits in many areas, but without ethical guidelines and frameworks, it risks reproducing real world biases and discrimination, fueling divisions and threatening fundamental human rights and freedoms. Taken together, these values, principles, policy action areas, and practical methodologies of the ethical considerations and recommendations, provide the need for AI literacy and ethics in health and education sectors, worldwide.

We are working with the UN System, the private sector, academic institutions, and civil society organizations to translate ethical recommendations into policies, actions and legislation. AI is already playing a role in diagnosis and critical care, drug development, disease

surveillance, outbreak response, and health-systems management. The future of education sector and health sector is – digital.

We must do what we can do, to promote universal access to these innovations, and prevent them from becoming another driver for inequality, in between the countries and/or within the country (urban/rural).

References

1. GSMA (2022). The Mobile Gender Gap Report 2022. Key findings in Low- and Middle-Income Countries; GSMA Head Office, London, UK.
2. UNESCO (2023). Build a framework to protect and promote human rights and fundamental freedoms. The International Conference on Ethics of Neurotechnology. UNESCO's Headquarters Paris 13 July 2023.
3. UNESCO (2021). Recommendation on the ethics of artificial intelligence. Programme and meeting document. Available @ <https://unesdoc.unesco.org/ark:/48223/pf0000381137> Last accessed 2 February 2024.
4. Kellmeyer, P., Cochrane, T., Muller, O. et al. The effect of closed loop medical devices on the autonomy and accountability of persons and systems. *Camb. Q. Healthcare Ethics* 2016;25:629-633
5. Muller, O. Rotter, S. Neurotechnology: Current developments and ethical issues. *Front. Syst. Neuroscience* 2017;11:93. doi: 10.3389/fnsys.2017.00093
6. Fuchs, T. Ethical issues in neuroscience. *Current Opinion Psychiatry* 2006 Nov;19(6):600-607

⁶ Fuchs, T. Ethical issues in neuroscience. *Current Opinion Psychiatry* 2006 Nov;19(6):600-607