A Common Ground for Human Rights, AI, and Brain and Mental Health

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16.1 Introduction

There is no shortage of dreams for implementing artificial intelligence (AI) in brain and mental health. Elon Musk's launch of Neuralink is just one of those recent dreams. The possibilities and potentials of AI in brain and mental health are numerous. However, there is also no shortage of fears and criticisms as many dreams of AI in brain and mental health unfold. As these potentials and fears have boiled, it has been the interdisciplinary job of ethicists, social scientists, computer scientists, legal experts, neurologists, and neurosurgeons, to name a few, to try and understand not only how to proceed but also how to understand each other. The current and future challenges of implementing AI in brain and mental health, which are of concern here, are to untangle not only the complexities of human rights but also some of the complexities of these fields working together. There is already extensive work on the implementation of human rights in AI and healthcare. The goal of this chapter is to unravel some of the complexities of guidelines, regulations, policies, treaties, and implementation of human rights for future development of ethical AI in brain and mental health.

To untangle, trail, and read the hundreds of documents, guidelines, regulations, policies, treaties, and ethics codes of AI, let alone healthcare, is an overwhelming assignment. It is an assignment that researchers in these areas are, quite frankly, unlikely to find time to do. It is an assignment that not many students in these fields are required to interpret. It is clear that there are several common threads between many of these documents, principles that require respecting human rights. The term "human rights" is often used but less often explained in detail. International human

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rights doctrines burgeon after the wake of World War II. The atrocities and disrespect humanity witnesses proves that this sort of regulation and rights for humanity needs to be manifested internationally. Subsequently, the Universal Declaration of Human Rights (UDHR) is proclaimed to be the "common standard of achievements for all peoples and all nations" on December 10, 1948 [1]. The declaration serves as a precedent for subsequent, national, international, and intergovernmental, covenants, charters, and conventions on human rights [2–8]. There are many treaties affirming human rights, and while many nations have signed these various treaties, not all have ratification, acceptance, or approval. A signature binds the nation to follow the treaty so as to not defeat the objective and purpose of the treaty but does not officially bind that nation to the treaty, like that of ratification or acceptance [9]. The United Nations provides documentation of the status of ratification for each nation and treaty in its UN Treaty Body Database [10]. In some countries, the UDHR, as many have realized, is fulfilled in name only. Nations also include inalienable rights in their constitutions, yet these are not always internationally reliable, as there are differences in adaptations.

Human rights-based approaches (HRBA) are surfacing as ways to frame international development, technology development, healthcare, and policy development, to name a few. Using a HRBA means that one does not internalize their development efforts as charity or philanthropic business, but as their duty-bearer obligation to acknowledge humans, as rights holders, claiming their human rights. In a HRBA, humans are not seen as passive subjects of development but as active partners in the process of development due to their being rights holders [11]. It is important to understand, as Broberg and Sano assert, that there is no "one-size-fits-all" HRBA [11]. These variations will play a vital role in the ethical development of AI in brain and mental health. Even if every corporation, nation, and continent were to adopt a HRBA in the development of AI in brain and mental health, there is a great likelihood that the human rights chosen as foundations for these approaches would not be uniform due to variations in culture, ideology, politics, institutions, and resources. Decades of contention between the United States and China pertaining to actualizing human rights provide several examples of how human rights are not globally uniform or implemented due to political, ideological, and cultural differences [12]. The United States Congressional-Executive Commission on China archives an extensive list of purported human rights issues in China. Some countries lack HRBAs due to deficiencies in institutions, resources, or capital devoted to human rights development. Universal human rights will only be achieved when all countries are able to participate in their development, yet the list of least developed countries (LDC), as of May 2021, lists 46 countries. Fortunately, there are efforts to integrate LDCs in the Human Rights Council. In 2012, the Voluntary Technical Assistance Trust Fund to Support the Participation of Least Developed Countries and Small Island Developing States in the Work of the Human Rights Council was established to promote participation from LDCs. The fund supports "activities designed to enhance the institutional and human capacity of least developed countries and small island developing States, to enable their delegations to participate more fully in the work of the Human Rights Council" [13]. A vital resource for a

HRBA is an authority (often a State) that will serve as a duty-bearer providing representation, courts, and law-enforcement for rights holders. HRBAs are not easily applied in scenarios where these resources are lacking. Another vital challenge with a HRBA is educating target groups of their rights, as rights holders, and encouraging them to claim them from duty-bearers, like the State. It should not be assumed that all rights holders are alike, there is no guarantee that once educated, a rights holder will claim their rights, want to claim their rights, or value the same rights. This yields questions like, what human rights principles should guide the developing policies of AI in brain and mental health internationally? Is it possible to develop an international policy of this sort? Should these human rights principles be the same in the developing policies of general AI? How should they be the same or differ?

AI's influence in healthcare is recognized by many. AI has altered the way physicians make clinical choices and diagnoses, and how patient information is stored and retrieved. AI assists physicians by parsing data quickly and more efficiently. AI must "learn" via large data sets that include patient demographics, medical information, lab results, images, and recordings to name a few. Data privacy and patient confidentiality regulations have addressed ethical concerns that have risen from these applications. AI is arguably influencing every sector of healthcare, from radiology to management and pharmaceuticals [14]. AI in healthcare is primarily used in two forms, machine learning and natural language processing, and is used in cancer, nervous system, cardiovascular disease research [15], in medical diagnosis, surgery, hospital management, and even virtual health assistants. However, as AI and brain–computer technologies are increasingly unified, new ethical concerns arise in the areas of AI in brain and mental health. As AI has surged into medical devices, the Food and Drug Administration in the United States has realized the pressing need to regulate AI in medicine. The Academy of Medical Royal Colleges has also realized the urgency of developing guidelines for ethical and safe AI for healthcare [16].

16.2 Human Rights in AI and Healthcare

The vastness of human rights can be overwhelming. Human rights not only have a long and complex history but have been, and still are, the subject of debate [17]. There is a generous number of human rights and a generous number of ways human rights can be interpreted and actualized. These varieties in interpretations can cause confusion and miscommunication. By 2003, human rights-based approaches to development had become so convoluted that the United Nations agencies were compelled to address their own discrepancies, as "each agency has tended to have its own interpretation of approach and how it should be operationalized" [18]. Thus, breaking down the fundamental background of human rights before interpreting the establishment of human rights in AI and healthcare is necessary.

The fundamental background of human rights, which is often overlooked, is the jurisprudence that serves as the foundation for human rights. It is rare to find the

mention of jurisprudence in literature pertaining to human rights in AI and somewhat more common in discussions of human rights and healthcare. Examining jurisprudence, as in the philosophy or theory behind law, is a crucial first step in understanding how human rights are applied and from where debates surrounding human rights stem. This is becoming increasingly important as the number of guidelines, ethics codes, and reports coming from nonlegal actors using the concept of human rights escalates. One could spend years defining various jurisprudence concepts and theories, but a quick jurisprudence tool is determining who is using the concept of human rights and identifying their background. In general, the concept of human rights is used by ethicists and legal scholars alike. Ethicists are often interpreting human rights from a moral natural law theory that see human rights as deriving from moral principles and the objective reality of being human. From this perspective, human rights are granted regardless of the State, political order, or positive law, because we are human we have human rights. Legal scholars, in contrast, do view human rights as positive laws that have been approved by a court or State. To avoid such generalizations, more effort should be put on communicating interpretations of human rights beyond the sentiment that they are "universally binding," as we have seen this is not always the case. Distinguishing who is using the concept of human rights is an important indicator of the underlying theories behind their use of the concept. How the concept is being interpreted has important implications for how the specified ethics code, report, or guideline can be actualized.

There is a prevalent consensus that AI already is and will continue to violate human rights [19–21]. The rights likely to be violated are antidiscrimination, freedom of speech, freedom of expression, right to privacy, right to equality, right to security of person, and the right to self-determination. These rights have been, and continue to be, challenged by our technologies, but a pressing concern is that our previous technologies were not as powerful nor have the reach of AI. Concerns are that the values of AI will not align with human values, this has been designated as the value-alignment problem. It has been predicted that AI will bolster the digital divide leading to significant economic and social inequalities. Yet, the power and reach of AI also delivers new positive potentials that humanity has never seen. Thus, we find ourselves trying to balance the concerns and excitement for AI. Using a HRBA has been proposed by several as the scale for this balancing act. Advocates for HRBAs see human rights as the solution that will stabilize the future of humanity and AI. Advocates propose that a HRBA should not only be a part of the regulation of AI but also a part of AI development [21]. Advocates of HRBA believe human rights should be the universally agreed upon values that guide AI development and regulation around the globe [19, 20, 22]. Developing AI to support and respect human rights values would ostensibly resolve the current and future violations of human rights. It would also address the potential social and economic inequalities created by AI, as certain human rights would provide legal language for defense against States and corporations [23]. The Asilomar AI Principles also assert that ethical AI is designed with human values, human dignity, human rights, human freedoms, and cultural diversity in mind [24]. These are aspirational and progressive

solutions that seek to benefit humanity. However, after closer inspection designing AI with these characteristics in mind raises its own ethical concerns and challenges.

Deciding which human values and rights to implement and who gets to decide which human values and rights to implement in AI is not an easy task. Fears of ethical imperialism have been vocalized as some AI companies have more money and power than others. There is also concern that different countries will either not design AI with human values in mind or will pick human values that do not align with theirs [21]. This has become a secondary iteration of the value-alignment problem. Not only does AI need to be designed with human values in mind but humans have to align their own values with each other. This second value-alignment problem has highlighted a major issue in implementing a HRBA for AI, that is, what happens when human rights values conflict, cannot be fully actualized, or cannot support every human right? If a certain AI application violates one human right but supports another, what is the solution? This is a problem Cansu Canca, founder of AI Ethics Lab, says can only be solved with the use of ethical reasoning. This becomes particularly important when considering AI in healthcare. If an artificially intelligent BCI will fulfill the right to equality and health, but violate the right to privacy and self-determination, what is the solution? Not only will the solution lead to a subjective answer, but the UDHR, and other regulatory frameworks, do not provide answers on how to go about choosing one human right over another. These decisions are made by using ethical theories like utilitarianism, deontology, or virtue ethics [25].

In 2005, Leslie London stated, "We live in an increasingly globalized environment, characterized by growing tensions between our technological capacities and the abilities of our social policies to meet basic human health needs." Statements like these are ostensibly timeless. Just a decade later, we are still struggling as academics, lawyers, ethicists, politicians, and scientists to cope with our increasingly technological society while maintaining the dignity and rights of the humans that live in it. Human rights in healthcare, similarly to human rights in AI, are debated and not always universally applied. It has been argued that the only example of protecting human rights in biomedical settings at an international level is the European Convention on Human Rights and Biomedicine of 1997. This is due to the convention's focus on developing human rights principles in the biomedical field that makes it such an ideal example [26]. However, its vague use of human dignity as a normative pillar of health law does not sit well universally. This is due, in part, to perspectives that see the normative pillar of health law as healthcare problems, focusing on "rules of civil, criminal and administrative law" [26]. There are also variations in perspectives on health law that stem from varying philosophical perspectives. For example, healthcare in the United States is primarily concerned with principles of self-determination and autonomy, whereas European healthcare is concerned with principles of human dignity and solidarity. There have always been philosophical differences, but there is also another major growing historical difference in outlooks towards healthcare. That is, definitions of health and those that are defining health are changing and in some cases have already changed [26]. Health, at one point in time, was defined exclusively by medical professionals and

physicians. The primary responsibility of physicians was to "cur[e] illnesses rather than satisf[y] individuals" [26]. Today, healthcare can be portrayed as a contracted service in which the patient decides, based on transparent information from their physician, how they would like their care to be actualized. It is then the ethical and legal responsibility of the physician to respect the patient's autonomy and follow through with their patient's decision.

At first glance, it may seem that the responsibilities and professional conduct of a computer scientist versus a healthcare professional are quite dissimilar. However, over time these two professions have started to resemble one another more and more, especially from a regulatory perspective. Medical professionals were once the authoritative voice for healthcare, just as computer scientists have been for computer science. The United States in the 1930s began thinking of patients as customers due to rising costs, then the 1960s entertained the patients' rights movement, and today medical professionals are subject to contractual obligations that if not fulfilled may lead to civil lawsuits [27]. While the relationship between medical professionals and patients is different than computer scientists and end users, both can be considered service providers. Medical professionals are obligated to execute good care that is skilled and competent and respects patients' rights. Some of those patients' rights include control over one's treatment, control over their information, the right to nondiscriminatory care, and the ability to cease care [27]. These patient rights are not wildly dissimilar from what citizens are asking of from AI regulation. Perhaps 1 day, rather than directing and defining computer science for themselves, it will be the ethical and legal responsibility of computer scientists to satisfy individual citizens and/or maintain the digital "health" of populations. If AI is to become just as critical to human society as medical care, there may be much more that can be learned about potential regulation of AI by comparing the professions of computer scientists and medical professionals currently, historically, and globally.

Regulation of AI in healthcare does have a growing global network. The International Medical Device Regulators Forum (IMDRF) is a voluntary forum consisting of representatives from Australia, Brazil, Canada, China, Europe, Japan, Russia, Singapore, South Korea, and the United States. The forum works to establish medical device regulatory harmony and convergence. Many instances of AI in healthcare can be defined under the term "software as a medical device" (SaMD). The term was officially defined by IMDRF, as "software intended to be used for one or more medical purposes that perform these purposes without being part of a hardware medical device," and several examples of what can and cannot be considered SaMD are provided [28]. While the forum is a promising step in the direction of global regulation, it only represents one sector of healthcare, medical devices. It is important to note that not all AI that is utilized in healthcare falls under SaMD classifications and regulations. AI that may handle workflow, clinical communication, and patient registration and visits and AI that searches and queries a database for records are not SaMD. Thus rendering the question, who or what is regulating these "other" AI in healthcare settings? It is likely that these AI systems are not regulated with the same global perspective in mind. Since IMDRF's work in SaMD in 2014,

individual nations have established and drafted their own regulatory frameworks for SaMD.

Discussions of regulations of SaMD have only recently come to the policy-making attention of the Federal Drug Administration in the United States [29]. However, these discussions are only commencing, as the discussion paper explicitly states, "This document is not intended to communicate FDA's proposed (or final) regulatory expectations but is instead meant to seek early input from groups and individuals outside the Agency prior to development of a draft guidance" [29]. The paper currently does not use a HRBA, or mention rights, instead focuses on manufacturers and risk management. In 2017, the EU passed The EU Medical Device Regulation, which also regulates SaMD, requiring that all manufacturers in the EU single market comply with the regulations by May 2020. The regulation is similar to the FDA regulation in prioritizing safety and risk management for the lifecycle of the device [30]. However, this regulation does mention subjects' rights in development and clinical investigations.

Some corporations and associations have also been active in regulating themselves and producing documentation of these regulations. IEEE, Institute of Electrical and Electronics Engineers, has published the second version of *Ethically Aligned Design* that is devised to "establish ethical and social implementations for intelligent and autonomous systems and technologies, aligning them to defined values and ethical principles that prioritize human well-being in a given cultural context" [31]. Citing several human rights treaties, the first principle of the document is for the consideration of human rights in design. Microsoft has also initiated a human rights impact assessment (HRIA) on their products, detailed in their *Human Rights Annual Report* [32]. The 2018 report mentions that a specific section of the HRIA will be dedicated to AI for the foreseeable future. It was found that, based on a "broad range of AI applications," human rights risks included nondiscrimination and equality; right to life and personal security; privacy, including protecting against unlawful governmental surveillance; freedom of thought, conscience, and religious belief and practice; freedom of expression and to hold opinions without interference; freedom of association and the right to peaceful assembly; right to decent work; and right to an adequate standard of living [32].

Human rights in AI and healthcare are broad topics that unfortunately cannot be fully detailed here. However, from this discussion, there are several key takeaways:

1. It is becoming increasingly important for authors to explicitly mention their interpretation of human rights, as the number of guidelines, ethics codes, and reports coming from nonlegal actors using the concept of human rights escalates.
2. Human rights and HRBA are being contemplated in the regulation of AI on corporate, national, and international scales. However, the success of using only a HRBA to regulate AI is unlikely to solve value-alignment problems.
3. Human rights have played an integral role in healthcare; however, the changing dynamics of the profession overtime have changed the obligations of medical professionals.

4. Regulations of AI in healthcare depend on the purpose of the AI. Some AI technologies used in healthcare are not considered medical devices, which promote changes in health, but rather tools that enhance medical knowledge. Software used for administrative purposes or to store, retrieve, transfer patient data are not categorized as medical devices and are thus regulated differently.

16.3 Future of Human Rights in Brain and Mental Health AI

It is an exciting time for AI in brain and mental health. AI can take on many forms in brain and mental health including artificial neural networks (ANN), machine learning (ML), natural language processing (NLP), machine perception, affective computing, virtual and augmented reality, robotics, implants, brain–computer interfaces (BCI), and supercomputing. While it is true that it is still inconclusive whether AI has more positive than negative outcomes in brain and mental health [33], the restorative capabilities of AI technologies for patients are beyond astounding. While AI and neuroscience have a shared history, we are in the advent of implementing AI in brain and mental health. This of course means that there are still many unanswered questions, ethical concerns, and unknowns. Thus far, there have been several documented benefits of implementing AI in mental healthcare. AI is simply better at some things, like not fatiguing or forgetting. AI has improved self-care and access to mental healthcare. AI has allowed for a greater customization of behavioral and mental healthcare. Finally, AI has numerous economic benefits, reducing labor costs and cost of healthcare in some cases [34].

With novelty comes advantages and disadvantages for regulation of AI in brain and mental health. An advantage is that several regulations that have been tried and tested in AI and healthcare are already developed and can be applied towards brain and mental health AI. A disadvantage is that current regulations of AI may not be suitable for the specificities of the field and reworking will be necessary. While there is a growing list of AI ethics guidelines globally [35], Rafael Yuste and Sara Goering assert that current ethics guidelines for AI are insufficient concerning developments in brain and mental health neurotechnologies. Specifically, new ethical concerns arise in the areas of privacy and consent, agency and identity, augmentation, and bias [36], and, as of late, these are not top concerns in general AI ethics guidelines, which are transparency, justice and fairness, and non-maleficence [35]. As neurotechnologies for brain and mental health continue to evolve, it is likely new ethical concerns beyond these will arise as well. Considering the current regulation status of AI and healthcare and emphases on human rights, it is likely that analyses of human rights will reveal itself for brain and mental health AI regulation. Brain and mental health AI also has the advantage of learning from what AI and healthcare have not done well, namely not including interdisciplinary and consumer/patient perspectives in the process of developing regulations. More work on lived patient experiences will greatly benefit the field. There is still only a small percentage of the human population that have experience living with brain and mental health AI on a daily basis. While we must anticipate the needs of future patients in brain and

mental health AI, we must beware that generalizing future human rights and ethics from this currently small percentage will most likely need revisiting if we wish to develop policies that suit the needs of an inevitably more dynamic group of patients in the future. Gilbert et al. have recorded some of the perceptions of lived experience with AI-enabled BCIs thus far. Their results pose interesting questions for applying human rights in brain and mental health AI.

Collecting insights from patients with AI-enabled BCIs found that the technology was able to satisfy the right to self-determination for some patients and violate rights to self-determination for others [33]. The subjective reality is that while some patients may feel their human rights are satisfied, others may feel that those same rights are violated. While lived experiences are subjective in nature, the varied results shed light on the potential violations of human rights and the need for patient perspectives. Many already established regulations could have benefited from the inclusion of a more perspectives. The following is a perspective on including human rights in brain and mental health regulation based on regulations of AI and healthcare.

Human rights are essential for the safety and care of patients. As such, human rights should play an integral role in the regulation of brain and mental health AI. However, human rights should not be the only values that are taken into consideration as, like we have seen, they are sometimes only supported in name, not practice. Thus, ethics still need to be a part of regulation. Ethics will prove to be very important for the regulation of those working in brain and mental health AI. An ethics code should be established that is specifically suitable for the field which acknowledges the variability of human rights globally and which acts as a safety net where human rights may not be developed, implemented, or supported. Human rights and ethics in this field should work together. A generalized definition of what the field is, including the variety of disciplines and studies involved, could spearhead the development of an ethics code. This definition would also determine the initial scope of the field, aptly identifying what is and is not a part of the field. Whoever is using and developing brain and mental health AI should regularly conduct HRIAs on their technologies and adjust their practices according to the human rights risks found. Brain and mental health professionals will need to continue working together nationally and internationally. Despite idealistic goals at the outset, AI's ability to influence the delivery of brain and mental healthcare will ultimately depend on the visions and resources from leaders and governments [37]. Thus, it is important to understand the goals of the field from within and be able to share the possibilities outward.

16.4 Conclusion

Human rights are dynamic and will continuously change. Throughout history, the rights of women, children, minorities, people of color, humans with disabilities, LGBTQIA, etc., have evolved and will continue to do so. The human right to health could very well be altered by developments in brain and mental health AI. Humanity could reach a point when the right to health "highest standard of physical and

mental health" means using AI. However, it is less clear to this day how access to AI is a right and in what circumstances. It is inevitable that the regulations of AI in brain and mental health will change and adjust according to technological and societal adaptations. There are not many shared global understandings for many terms and concepts discussed in this chapter. The terms health, human rights, AI, intelligence, and healthcare are all subject of international debate, and it is doubtful that there will ever be a true global consensus. It is not necessarily idealistic, philosophical, or political variations on a global scale that may hamper the ethical development of AI in brain and mental health, these have always been present. Ethical developments may be hampered by not acknowledging these variations, not learning from other perspectives, and failing to identify contrasting values, as there is no one-size-fits-all solution to regulation. These variations, rather than sinkholes, can be the common grounds that guide discussions and promote innovative policies and regulations.

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