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Artificial Intelligence, Human Rights and Disability

Inteligência Artificial, Direitos Humanos e Deficiência

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Abstract

The use and proliferation of AI systems in our daily lives is an unavoidable reality. The debate is no longer about whether we should welcome this type of technology in our lives, but under what conditions and safeguards. Preliminary reports on the risks of using the AI system reveal discrimination to detriment of social groups in situations of vulnerability, and persons with disabilities are no exception to this phenomenon, very often through multiple discriminations. Persons with disabilities, as a group in a situation of social vulnerability, face a greater risk of violation of their fundamental rights and freedoms, which justifies adopting specific approaches based on the principle of equality and non-discrimination. From a specific approach towards the human rights of persons with disabilities, AI systems represent *prima facie*, both risks and benefits for their enjoyment and exercise. Among the risks, the key areas of infringement are those related to equality and privacy. Among the benefits, the key areas of impact are communication, personal assistance, and supports.

Keywords: Artificial Intelligence. Disability Rights. Human Rights. Emerging Technologies. Equality and Non-Discrimination.

Resumo

O uso e a proliferação de sistemas de IA em nossas vidas diárias é uma realidade inevitável. O debate não é mais sobre se devemos acolher esse tipo de tecnologia em nossas vidas, mas em que condições e salvaguardas. Relatórios preliminares sobre os riscos do uso do sistema de IA revelam discriminação em detrimento de grupos sociais em situação de vulnerabilidade, e as pessoa com deficiencia não fogem a esse fenômeno, muitas vezes por meio de discriminações múltiplas. As pessoa com deficiência, enquanto grupo em situação de vulnerabilidade social, enfrentam um maior risco de violação dos seus direitos e liberdades fundamentais, o que justifica a adoção de abordagens específicas baseadas no princípio da igualdade e não discriminação. Partindo de uma abordagem específica para os direitos humanos das pessoa com deficiência, os sistemas de IA representam prima facie, tanto riscos quanto benefícios para seu usufruto e exercício. Entre os riscos, as principais áreas de violação são aquelas relacionadas a igualdade e privacidade. Entre os benefícios, as principais áreas de impacto são comunicação, assistência pessoal e suporte.

Palavras-chave: *Inteligência Artificial. Direitos das Pessoas com Deficiência. Direitos Humanos. Tecnologias Emergentes. Igualdade e não Discriminação.*

Droids are not good or bad. They are neutral reflections of those who imprint them…
(Kuiil – The Mandalorian T01E07)[1]

1 Introduction

In the last quarter of a century, humanity has experienced a profound shift in technological development, the magnitude and consequences of which are only just seen.[2] The vertiginous evolution of interconnected computers and their use in the fields of neuroscience, genetics, algorithms and artificial intelligence basically caused this

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[1] The Mandalorian (Star Wars). Disney Studios. Jon Favreau. 2019. https://www.imdb.com/title/tt8111088/?ref_=nv_sr_srsg_0

[2] HARARI, Y. H. *Homo Deus: A Brief History of Tomorrow*, Harper Perennial, New York, 2017.

technological development. Some authors have described this phenomenon as a new Renaissance,[3] as a new Era in the history of humanity,[4] as life 3.0,[5]as the Era of singularity,[6] or as the Navacene.[7]

The world we are entering appears so revolutionary and changing that it can hardly continue to be addressed by the philosophical rules and principles developed during the Enlightenment.[8] Development of modern biology and the study of the human genome have opened the doors to genetic manipulation, which makes it possible to create, edit or discard embryos according to the expectations or wishes of the parents. Development of neuroscience has allowed not only to know the physical-chemical functioning of the human mind, but also its potential manipulation to influence the behavior of the individual. Algorithms govern what we know as "big data" and impact the searches and preferences of all users of digital content on the Internet. Artificial intelligence has replaced human intelligence in key tasks in the production of goods and services and in the free movement of people.

Innovations in the biomedical field are more and more emerging from the convergence of developments in different domains, including nanotechnology, cognitive science, and information technology. These technological advances are often referred to collectively as NBIC technologies (nano, bio, info, cogno). Because of this convergence, we can observe an increasing interaction between the life sciences and the engineering sciences. This interaction and convergence between different scientific and technological fields also raises additional questions about the implications of these developments for human rights and human dignity.[9]

In 2014, the Council of Europe (COE) organized an International Conference on "Emerging Technologies and Human Rights" aimed at identifying priority human rights challenges raised by emerging technologies and their convergence, while proposing interdisciplinary debate. The gathering concluded, *inter allia*, that science and technology have a growing impact on society and we should deal it as a matter of priority; that convergence brings together the medical and non-medical fields; and that current legal framework is inadequate to address issues that are constantly growing.[10]

One might conclude from the above that NBIC convergence is 'more of the same' in the sense that technological convergence normally drives innovation. However, there is something qualitatively new about NBIC convergence. Namely, a significant part of the new converging developments is taking place at the boundary between life and artificial life, between human and machine, in which thought and artificial thought, and intelligence and artificial intelligence are contained.[11]

There are already many studies addressing this intersection between technological development and human rights at the apex of which is the phenomenon of trans-humanism.[12] As Rafael de Asís points out, trans-humanism is regarded as a project to improve humanity in its physical, intellectual, emotional and moral aspects, thanks to science and biotechnology. It is a philosophy that aims to use technology to improve people's lives, increase intelligence, and make human beings happier and more virtuous.[13]

In a simplified way, we could say that in the ethical discussion that trans-humanism proposes, three great fields of technological development converge, which combined have the potential to provoke an evolutionary disruption of our species to create a new one.[14] These fields are those made up of genetic engineering, neuroscience, and artificial intelligence.

In this context, the present work aims to address a small portion of this mega-debate that the era of singularity proposes the impact of artificial intelligence systems on the human rights of persons with disabilities.

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3 GOLDIN, I.&KUTARNA, C. *Age of Discovery: Navigating the Risks and Rewards of our New Renaissance*, London, Bloomsbury, 2017.

4 REESE, B.*The Fourth Age: Smart Robots, Conscious Computers, and the Future of Humanity*, New York, Atria Paperback, 2020.

5 TEGMARK, M.*Life 3.0: Being Human in the Age of Artificial Intelligence*, London, Penguin Books, 2018.

6 ZURZWEIL, R.*The singularity is Near: When Humans Transcend Biology*, New York, Viking, 2005.

7 LOVELOCK, J. *Novacene: The Coming Age of Hyperintelligence*, London: Penguin Books, 2009.

8 In dissent PINKER, S. *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress*, New York, Viking, 2018.

9 "NBIC refers to four key technologies: nanotechnology, biology, information technology, and cognitive sciences", van Est, R. et al.*From Bio to NBIC convergence – From Medical Practice to Daily Life*. Report writtenfor the Council of Europe, Committee on Bioethics, The Hague, Rathenau Instituut, 2014.

10 https://www.coe.int/en/web/bioethics/international-conference-on-emerging-technologies-and-human-rights.

11 van Est, R. et al. *From Bio to NBIC convergence*… op. cit., p. 14.

12 O'CONNELL, M.*To be a Machine: adventures among cyborgs, utopians, hackers, and the futurists solving the modest problem of death*, London: Granta Books, 2018; Llano, F. *Homo excelsior. Los límites ético-jurídicos del transhumanismo*, Valencia: Tirant Lo Blanch, 2018.

13 DE Asís Roig, R. *Transhumanism and disability*, Sringer (forthcoming).

14 KURZWEIL, R. *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*, New York; Penguin, 2000.

2 Artificial Intelligence

Artificial Intelligence (AI) allows the development of computer systems capable of emulating and carrying out activities typical of human beings, such as perceiving, reasoning, learning and solving problems. The aim of an AI system is to perform tasks or solve problems with results similar or superior to those got by a human.[15] From social aspects such as solving legal conflicts, operating the financial system, monitoring human activity, or driving cars, ships or aircraft, to individual aspects such as financial management councils or music, film or video selection, the AI systems that coexist in our societies can perform different tasks or functions that were once carried out only by people.[16] Simply put, as David Cremer warns, "The AI revolution is coming, whether we like it or not."[17]

In this sense, Yuval Harari points out, "human beings have two types of abilities: cognitive and physical. During the industrial revolution, humans experienced competition from machines primarily in the realm of purely physical abilities. Meanwhile, our cognitive abilities were still far superior to those of machines. But in the 21st century, machines are getting smart enough to compete for these cognition-based jobs as well."[18]

In this way, the use of AI systems has, in a brief time, become a reality in the daily lives of the vast majority of people. Many believe that AI does not affect them in their daily lives but if you look for a job, carry out a financial operation, request access to specialized education, or purchase medical, life or civil liability insurance, most likely, the decision is influenced or determined by an AI system without you ever knowing.[19]

Three key concepts emerge when addressing AI systems, algorithms, big data, and AI itself. These concepts are closely related and often used synonymously. However, it is important to understand their particular characteristics, given that each one of them offers its own ethical-legal challenge, and all of them combined, pose even broader and more complex dilemmas.

Algorithms have become one of the major tools in the digital world today. Strictly, an algorithm is a sequence of precise instructions that always produce the same result.[20] Both a food recipe and directions to a place are algorithms, although the most common are mathematical algorithms that work under binary code in a computer.[21] The great qualitative and quantitative leap in the development and use of algorithms has occurred in the last two decades in which computers have exponentially multiplied their capacity to process data (Moore's Law),[22] added to the possibility of total interconnection through the Internet, which allows a constant feed of massive data (big data).[23]

Now, as Pedro Domingos points out, no computer in the history of humanity has had the learning capacity of the human mind, but this is changing. Current algorithms have achieved the unthinkable learn and improve, and to achieve this science has simply emulated the way the human mind works.[24] We often refer to this novel ability of algorithms as "machine learning" and is what allows the emergence of AI.[25]

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15 A definition of AI: Main capabilities and scientific disciplines.High-Level Expert Groupon Artificial Intelligence, EuropeanUnion, 2018.Available at: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56341

16 DE ASÍS ROIG, R."Robótica, Inteligencia Artificial y Derecho", *Revista de Privacidad y Derecho Digital*, NÚM. 10, Madrid, Abril-Junio, 2018, pp. 27-77.

17 CREMER, D. *Leadership by Algorithm: Who Leads and Who Follows in the AI Era*?, Hampshire, Harriman House, 2020.

18 HARARI, Y. N.*21 lessons for the 21st century*, London, Print Book, 2018.

19 CHACE, C.*The Economic Singularity: Artificial intelligence and the death of capitalism*, Kindle Ed., Three Cs, 2016; KASPAROV, G. & GREENGARD, M. *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins*, London, John Murray, 2018.

20 "…Put simply, AI describes a program that swallows data as its raw material and issues conclusions as its finished product. To do this, AI uses algorithms, a system of mathematical calculations that takes the data you enter, runs some computations on it, and produces useful findings as a result…" CREMER, D., *Leadership by Algorithm*…op. cit.

21 "…Mathematicians and computers have something in common – they both follow sets of logical rules to reach a desired outcome. The rules encoded into a computer are called algorithms. You can think of them as a bunch of "if-then" sentences that tell the computer how to behave. For example, your email filter may follow the rule, "if an email contains the word Viagra, then place it in the spam folder..."DU SAUTOY, M. *The Creativity Code: How AI is Learning to Write, Paint and Think*, London, Fourth State, 2019.

22 "…Some technologies evolve with a very distinct pattern in their development. In the world of computers, for example, we have observed that computing power grows by the same factor over a period of time, following a trend called exponential growth. More specifically, computing power has doubled every 18 months since the invention of the microchip. Scientists call this observation Moore's Law…"KAKU, M. *Physics of the Future: How Science Will Shape Human Destiny and Our Daily Lives by the Year 2100*, New York, Anchor Books, 2012.

23 "…If our gadgets keep following Moore's law, AI may surpass human intelligence within the next hundred years, making the possibility of a self-aware Skynet less remote…" HAWKING, S.*Brief Answers to the Big Questions*, New York, Bantam Books, 2018.

24 DOMINGOS, P.*The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World*, Basic Books, 2018.

25 "…Machine learning, therefore, owes no small part to the huge amount of data that is available today – 90 percent of which was created in the last five years! This mass of information, paired with the ability of programs to rewrite themselves using that information, has opened the possibility of machines becoming smarter than us…" DU SAUTOY, M., *The Creativity Code*…op. cit.

The second key concept to understand AI systems is "Big data". With the rise of Internet companies such as Facebook and Twitter, and the popularity of smart devices, we have become familiar with things such as our relationship statuses, comments, preferences and location being stored as data that can then be analyzed. This trend is part of the process of datafication–capturing information about the world as data. Because we can discover valuable insights from such data, we are likely to see the trend continue, with innovations in capturing data from sources we had not previously thought of as information.[26]

The availability and use of big data has generated significant repercussions in recent years.[27] Probably the first clue to the existence of big data were so-called Internet searches. Suddenly the entire world began to use the Google search engineen masse, imposing a verb to describe this action (to google).[28] Now googling, beyond its usefulness, leaves a trace of our digital activity, and that trace when associated with a specific person or subject transforms into information of great value to know his/her wishes or preferences.[29] With the advent and massification of so-called social networks -personal portals where people constantly register and consult information from their social environments- big data became one of the most valuable assets in the modern world.[30]

The last of the key concepts to understand the implications of AI systems is AI itself. As Rafael de Asís points out, "there is no single definition of Artificial Intelligence. Indeed, in this field, there are references to four definitions. Thus, Artificial Intelligence is a science that aims to create systems that, either, think like humans, act like humans, think rationally, or act rationally."[31] Likewise, some distinguish between narrow or weak AI, and general or strong AI, the latter being one of more versatile, adaptable and intelligent technology than human beings.[32]

Beyond the distinctions or variants of AI, for this work the concept of "AI systems" is referred as self-sufficient programs made up of a complex web of algorithms that are constantly fed by big data.[33] Algorithms are the DNA of AI systems, and big data is the energy that enables them to grow, develop and perform.

The technological development involved in implementing AI systems in our daily lives is brutal, as well as its predictions for the future of our species.[34] For example, Cathy O'Neill points out that algorithms were initially created to be neutral and fair by avoiding all-too-human biases and faulty logic. However, many of the algorithms used today, from the insurance market to the justice system, have incorporated the very prejudices and misconceptions of their designers. And since these algorithms operate on a massive scale, these biases lead to millions of unfair decisions.[35] Jammie Bartlett cautions that digital technology has brought undeniable benefits to humanity, but it also poses equally indisputable challenges to democracy. These challenges stem from certain tendencies of technologically driven social changes that are unfolding before our eyes–tendencies that are already eroding the essential pillars of democracy. If left unchecked, these pillars may eventually crumble, leaving a dystopian or totalitarian state in the rubble.[36] For his part, Stuart Russel concludes that the way we currently design AI is fundamentally flawed. We're

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26 Mayer-Schönberger, V. & CUKIER, K.*Big Data: A Revolution That Will Transform How We Live, Work, and Think*, London, John Murray, 2013.

27 Bartlett, J.*The People vs Tech: How the Internet Is Killing Democracy and How We Save It*, London, Ebury Press, 2018; SMITH, M. D. & TELANG, R.*Streaming, Sharing, Stealing*, Cambridge, MIT Press, 2017; Stephens-Davidowitz, S.*Everybody Lies: Big Data, New Data, and What the Internet Can Tell Us About Who We Really Are*, London, Bloomsbury Publishing PLC, 2018; FRANK, M. ROEHRING, P. & PRING, B. *What to Do When Machines Do Everything: Five Ways Your Business Can Thrive in an Economy of Bots, AI, and Data*, Somerset, John Wiley & Sons, 2017.

28 Due to the dominance of the Google search engine, to google became a transitive verb. The neologism commonly refers to searching for information on the World Wide Web using the Google search engine. Source: https://en.wikipedia.org/wiki/Google_(verb)

29 "…Of all the information giants on the market today, it is Google that has defined our current system of the world, the set of ideas that inform a society's technology and institutions, and shape the lives of its citizens…" GILDER, G. *Life after Google: The Fall of Big Data and the Rise of the Blockchain Economy*, Washington, DC Regnery Gateway cop, 2018.

30 "…The Four Horsemen – Amazon, Apple, Facebook and Google – dominate not only our online experience but the whole corporate world. The Four have become the world's most valuable companies. They've reached their success by appealing to our deep human desires while also engaging in some questionable practices. And while there's no doubt they'll be around for a while, at some point, one of Four might disappear, or a fifth horseman might arise. In the meantime, it's best to learn how to thrive in the world they've created…" GALLOWAY, S.*The Four: the hidden DNA of Amazon, Apple, Facebook and Google*, London, Corgi, 2018; SIMON, P.*Too Big to Ignore: the Business Case for Big Data*, Hoboken, Wiley, 2015.

31 DE ASÍS ROIG, R. "Robótica, Inteligencia Artificial y Derecho"…op. cit, p. 32.

32 REESE, B.*The Fourth Age...* op. cit.

33 "…AI-based systems can be purely software-based, acting in the virtual world (e.g. voiceassistants, image analysissoftware, search engines, speech and face recognition systems) or AI can be embedded in hardware devices (e.g.advanced robots, autonomous cars, drones or Internet of Things applications), A definition of AI: Main capabilities and scientific disciplines… op. cit.

34 Schmidhuber, J. True Artificial Intelligence will change everything, TEDxLakeComo, Nov. 2017, https://www.ted.com/talks/juergen_schmidhuber_true_artificial_intelligence_will_change_everything?utm_campaign=tedspread&utm_medium=referral&utm_source=tedcomshare; Research Priorities for Robust and Beneficial Artificial Intelligence: An Open Letter. January 2015. https://futureoflife.org/ai-open-letter/

35 O'Neil, C.*Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, New York, Penguin Books, 2018.

36 Bartlett, J., *The People vs Tech…* op. cit.

designing AI to be intelligent, but not necessarily to have humanity's best interests at heart. We therefore need to make the fulfillment of human goals AI's only aim. If we can successfully control super-intelligent AI, we'd be able to harness its immense power to advance our civilization and liberate humanity from servitude. But if we fail, we're in danger of losing our autonomy, as we become increasingly subject to the whims of superior intelligence.[37]

Despite the obvious and understandable risks posed by the exponential development of AI systems integrated into our daily lives, several experts agree that there are still properly human functions or tasks AI systems can not carry out, such as leadership,[38] empathy, or creativity.[39] Likewise, some experts point out that it is possible to implement an effective control method if acted on time.[40] In short, as the eminent physicist Stephen Hawking pointed out, "we must look at AI with critical eyes."[41]

3 Impact of AI on human rights

As stated above, implementing AI systems in our daily lives can have serious consequences for social equality, democracy and even in the very nature of our species. Yet, without prejudice to these eventual outcomes, AI systems can also have serious consequences for the enjoyment and exercise of human rights, such as the right to identity, to the freedom of thought and opinion, religious freedom, private property, privacy and family life, sexual and reproductive rights, due process, political rights, labor rights and free association union, to name just a few.

The question regarding the impact of AI systems on human rights poses an unprecedented challenge, not only for this specific normative subsystem but also for legal theory. For the first time in the history of humanity we have a non-human entity, nor represented by humans, such as a legal person, which has the possibility of deciding with legal effects. Thus, we are facing something non-human but which assumes a pseudo-legal subjectivity very similar to that of a human.[42]

Let us think about a concrete example that by the way is increasingly common in the business world today. A company has an AI system that carries out the entire hiring process of human resources. This includes the call for the position, the receipt of the candidates' documentation, to the election of the right person for the vacancy. Probably, in this process, there is some type of human intervention, and probably, the final decision with legal effects is communicated and signed by a formal employee such as the HR manager. But strictly, the entire hiring process is carried out by an AI system. Faced with this, in case of alleging some type of discrimination in the selection process, who would be the author and who would be legally liable?

Let us think of another example with incidence no longer in the sphere of civil or commercial transactions but in the sphere of the criminal law system. An AI system can carry out massive and permanent facial recognition surveillance through thousands of cameras in public space in order to detect persons with an arrest warrant issued by a judicial authority within the framework of a criminal investigation. Faced with this, the question arises whether this type of massive surveillance affects the privacy of all people, and regarding the person sought by the courts, if this type of intervention can violate of the principles of criminal prosecution, all of this, bearing in mind that these systems fail and make mistakes very often.

The above examples are just two of the many cases involving the use of AI systems and their impact on human rights. However, these two examples allow us to identify the two core pillars of legal impact on individual rights by AI systems, i.e. equality and privacy. This dual impact on human rights is frequently present because of the characteristics of AI systems, which, as explained above, require two constituent elements, algorithms and big data. The former reproduce the prejudices of their creators and the latter invade the sphere of individual privacy (personal data - private property).

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37 RUSSELL, S.*Human Compatible: Artificial Intelligence and the Problem of Control*, New York, Penguin, 2020.

38 The ability to lead is beyond the powers of AI.CREMER, D., *Leadership by Algorithm*… op. cit.

39 "…Until they become conscious like us, machines probably won't be creative like us. At the moment, we have no way of telling if or how machine consciousness will emerge. But when it happens, perhaps the art, music and literature created by conscious machines will provide us with the best insights into their artificial minds…" DU SAUTOY, M., *The Creativity Code*… op. cit.

40 DOMINGOS, P., *The Master Algorithm*… op. cit.; GILDER, G., *Life after Google*… op. cit.

41 HAWKING, S., *Brief Answers to the Big Questions*… op. cit.

42 o act. The recognition of the legal personality without legal capacity is consistent with the idea of a moral patient but not with a moral subject. Only the idea of legal capacity to act corresponds to that of a moral subject. DE ASÍS ROIG, R., "Robótica, Inteligencia Artificial y Derecho"…op. cit, p. 60.

Not that the tension between the technological development of AI systems and individual rights only affectson equality and privacy, but they are indeed the two pillars of affectation, and any other legal impact derives from such violations. As many studies, reports and academic works warn, the impact of AI systems on individual rights reveals discrimination in detriment to socially vulnerable groups such as gender, race, immigration status, or disability.[43]

As often happens when technological advances affectdaily life without sufficient time for their legal regulation, a series of general principles and guidelines of a non-binding nature have developed in recent years, mainly through consensus at both regional and international levels.

The 2018 Toronto Declaration, prepared by Amnesty International, Access Now, the Human Rights Observatory and the Wikipedia Foundation, among others, establishes three fundamental premises. First, that the ethics of artificial intelligence and how to make technology in this field human-centric must be analyzed through a human rights lens. Second, that when developing AI, States (public and private actors) must consider the new challenges that this technology poses for equality and representation of and impact on diverse individuals and groups. Third, that in the face of any discrimination, the States must guarantee access to an effective judicial remedy.[44] In a very similar sense uttersthe Declaration on Ethics and Data Protection in Artificial Intelligence adopted during the International Conference of institutions dedicated to data protection and privacy (ICDPPC) with two additional premises or principles, transparency and responsibility.[45]

Also in 2018, The Public Voice organization approved the Universal Guidelines for Artificial Intelligence, a document endorsed by 50 scientific organizations and over 200 experts from around the world.[46] The document outlines 12 principles which must be incorporated into ethical standards, to be adopted in national legislation and international agreements, and to be integrated into the design of the systems.

The EU has sketched several documents to address the ethical and legal aspects of AI systems. For example, on April 8, 2019, the EU Commission adopted the Ethics guidelines for trustworthy AI establishing 7 key requirements that AI systems should meet in order to be deemed trustworthy.[47] According to this text, the trustworthiness of artificial

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43 West, S.M., Whittaker, M. &Crawford, K. *Discriminating Systems: Gender, Race and Power in AI. AI NowInstitute*, 2018. Retrievedfromhttps://ainowinstitute.org/discriminatingsystems.html; DERTECNIA: Derechos Humanos, Diversidad y Tecnología, Universidad Carlos III de Madrid (https://dertecnia.com/); Raso, F. A., Hilligoss, A., et. al. *Artificial Intelligence & Human Rights: Opportunities & Risks*, Center for Internet & Society, Harvard, 2018. (http://nrs.harvard.edu/urn-3:HUL.InstRepos:38021439);Unboxing Artificial Intelligence: 10 steps to protect Human Rights, Consejo de Europa, 2019. (https://rm.coe.int/unboxing-artificial-intelligence-10-steps-to-protect-human-rights-reco/1680946e64)

44 The Toronto Declaration: Protecting the rightto equality and non-discrimination inmachine learning systems, 16 May 2018 by Amnesty International and AccessNow, and launched at RightsCon 2018 in Toronto, Canada. https://www.accessnow.org/cms/assets/uploads/2018/08/The-Toronto-Declaration_ENG_08-2018.pdf

45 ICDPPC, Declaration on Ethics and Data Protection in Artificial Intelligence, 40th International Conference of Data Protection and Privacy Commissioners, Tuesday 23rd October 2018, Brussels. 40th International Conference of Data Protection and Privacy Commissioners, Brussels (gencat.cat)

46 The 12 principles read as follow: 1) Right to Transparency. All individuals have the right to know the basis of an AI decision that concerns them. This includes access to the factors, the logic, and techniques that produced the outcome; 2) Right to Human Determination. All individuals have the right to a final determination made by a person; 3) Identification Obligation. The institution responsible for an AI system must be made known to the public; 4) Fairness Obligation. Institutions must ensure that AI systems do not reflect unfair bias or make impermissible discriminatory decisions; 5) Assessment and Accountability Obligation. An AI system should be deployed only after an adequate evaluation of its purpose and objectives, its benefits, as well as its risks. Institutions must be responsible for decisions made by an AI system; 6) Accuracy, Reliability, and Validity Obligations. Institutions must ensure the accuracy, reliability, and validity of decisions; 7) Data Quality Obligation. Institutions must establish data provenance, and assure quality and relevance for the data input into algorithms; 8) Public Safety Obligation. Institutions must assess the public safety risks that arise from the deployment of AI systems that direct or control physical devices, and implement safety controls; 9) Cybersecurity Obligation. Institutions must secure AI systems against cybersecurity threats; 10) Prohibition on Secret Profiling. No institution shall establish or maintain a secret profiling system; 11) Prohibition on Unitary Scoring. No national government shall establish or maintain a general-purpose score on its citizens or residents; 12) Termination Obligation. An institution that has established an AI system has an affirmative obligation to terminate the system if human control of the system is no longer possible.The Public Voice: Universal Guidelines for Artificial Intelligence, 23 October 2018, Brussels, Belgium. AI Universal Guidelines – thepublicvoice.org

47 The 7 key requirements read as follow: 1) Human agency and oversight: AI systems should empower human beings, allowing them to make informed decisions and fostering their fundamental rights. At the same time, proper oversight mechanisms need to be ensured, which can be achieved through human-in-the-loop, human-on-the-loop, and human-in-command approaches; 2) Technical Robustness and safety: AI systems need to be resilient and secure. They need to be safe, ensuring a fall back plan in case something goes wrong, as well as being accurate, reliable and reproducible. That is the only way to ensure that also unintentional harm can be minimized and prevented; 3) Privacy and data governance: besides ensuring full respect for privacy and data protection, adequate data governance mechanisms must also be ensured, taking into account the quality and integrity of the data, and ensuring legitimised access to data; 4) Transparency: the data, system and AI business models should be transparent. Traceability mechanisms can help achieving this. Moreover, AI systems and their decisions should be explained in a manner adapted to the stakeholder concerned. Humans need to be aware that they are interacting with an AI system, and must be informed of the system's capabilities and limitations; 5) Diversity, non-discrimination and fairness: Unfair bias must be avoided, as it could have multiple negative implications, from the marginalization of vulnerable groups, to the exacerbation of prejudice and discrimination. Fostering diversity, AI systems should be accessible to all, regardless of any disability, and involve relevant stakeholders throughout their entire life circle; 6) Societal and environmental well-being: AI systems should benefit all human beings, including future generations. It must hence be ensured that they are sustainable and environmentally friendly. Moreover, they should take into account the environment, including other living beings, and their social and societal impact should be carefully considered; 7) Accountability: Mechanisms should be put in place to ensure responsibility and accountability for AI systems and their outcomes. Auditability, which enables the assessment of algorithms, data and design processes plays a key role therein, especially in critical applications. Moreover, adequate an accessible redress should be ensured. Ethics Guidelines for Trustworthy Artificial Intelligence, High-Level Expert Group on AI, European Commission, 8 April 2019, https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai

intelligence (AI) is underlies on three components that must be satisfiedq2w throughout the entire life cycle of the system; i) *lawful* - respecting all applicable laws and regulations, ii) *ethical* - respecting ethical principles and values, iii) robust - both from a technical perspective while considering its social environment.

Council of Europe has also approved declarations along these lines. The Guidelines on Artificial Intelligence and Data Protection shape a series of general guidelines, and guidelines targeted for developers, manufacturers and service providers on the one hand, and for legislators and policy makers. The Declaration of the Committee of Ministers on the manipulative capacities of algorithmic processes of February 2019, highlights that, "sub-conscious and personalised levels of algorithmic persuasion may have significant effects on the cognitive autonomy of individuals and their right to form opinions and take independent decisions. These effects remain under-explored but cannot be underestimated. Not only may they weaken the exercise and enjoyment of individual human rights, but they may lead to the corrosion of the very foundation of the Council of Europe. Its central pillars of human rights, democracy and the rule of law are grounded on the fundamental belief in the equality and dignity of all humans as independent moral agents". Finally, the Recommendation Unboxing Artificial Intelligence: 10 steps to protect Human Rights of May 2019, underlies the need to carry out impact assessments on human rights in relation to artificial intelligence systems.As explained, there is already an incipient regulatory approach regarding the impact of AI systems on human rights, although for the moment, these are only non-binding guidelines or principles of interpretation. As Rafael de Asís shows, despite this proliferation, artificial intelligence continues to be disconnected from the rights discourse.[48]

4 Impact of AI on the rights of persons with disabilities

As referred above, indicators on the risks of use of AI systems reveal discrimination in detriment of social groups in situations of vulnerability, and people with disabilities are no exception to this phenomenon, very often through multiple discriminations.[49] In this sense, Rafael de Asísupholds that "the common and predominant treatment of disability, still centered on a medical model, presents a series of features that, if not acknowledged in the application of Artificial Intelligence, can aggravate the situation of discrimination of people with disabilities. We should not overlook that Artificial Intelligence applications function based on the data and information provided to them and, if they are not correct, they reproduce a discriminatory logic".[50]

Thus, the starting point to address the impact of AI systems on the rights of persons with disabilities lies in understanding that persons with disabilities, as a group in a situation of social vulnerability, face greater risk of violation of their fundamental rights and freedoms. This justify adopting specific approaches based on the principle of equality and non-discrimination.[51]

In normative terms, the UN Convention on the Rights of Persons with Disabilities (CRPD), whichcurrently makes up the highest universal standard for human rights protection of this social group, enshrines the aforementioned specificity approach.[52] The CRPD does not specifically address the use of AI systems in disability rights, yet it does not prevent several of its provisions from creating a minimum and universal protection framework. Likewise, although during its negotiation and adoption process (2001-2006), AI systems were not sufficiently developed to demand a need for regulation, the treaty has several references to the use of technology based on the exercise of the rights of persons with disabilities.[53]

Equality and non-discrimination undoubtedly make up the backbone of CRPD. One of the fundamental objectives of CRPD has been to adapt the relevant norms of existing human rights treaties to the specific context of disability. The right to equality makes up a basic pillar of the structure of the Convention and therefore has a crosscutting application in all its articles and from multiple approaches -as a purpose in art. 1, as a principle in art. 4, as a right in article 5, and as a guarantee in article 2-.

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48 DE ASÍS ROIG, R.,*Inteligencia artificial y derechos humanos*. Uc3m Workingpaper, Materiales de Filosofía del derecho, 20-04.2020. Universidad Carlos III de Madrid IA.

49 Whittaker, M., Alper, M., et. al. *Disability, Bias, and AI*. AI Now Institute, Nov. 2019. https://ainowinstitute.org/disabilitybiasai-2019.pdf

50 de Asis Roig, R.,*Discapacidad e Inteligencia Artificial*, 26 de diciembre 2019. https://pasocero243055203.com

51 Report of the Special Rapporteur on the rights of persons with disabilities, Bioethics and disability, A/HRC/43/41, 17 December 2019.

52 BARIFFI, F., *El Régimen Juridico Internacional de la Capacidad Juridica de las Personas con Discapacidad*, Ediciones CINCA, Madrid, 2014.

53 BARIFFI, F., et. al.*La Accesibilidad Universal en los Medios Audiovisuales de Comunicación*, Icono Imagen Gráfica SA: Ministerio de Educación de España, Madrid, 2008.

We can find CRPD's specificity approach in matters of equality and non-discrimination in the concept of disability based discrimination enshrined in art. 2, "any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field". This allows us to uphold an anti-discrimination criteriabased on the following characteristics.

First, it focuses on the discriminatory outcome and not on the will of the person. When CRPD uses the phrase "has the purpose or effect" it clearly denotes that intentionality is not a requirement, but the adverse effects of the rule, practice or conduct. This is of vital importance when addressing the discriminatory consequences of AI systems, while for CRPD, discrimination can result from the activity of the State, society, individuals, economic structures, or even from non-human entities.

Second, it includes discrimination not only against the person with a disability but also "on the basis of disability", i.e., the emphasis is on the phenomenon of discrimination rather than on the peculiarities of the person. In this way, CRPD also protects people socially perceived as people with disabilities, people who have had or may have a disability, and people associated or relatives of people with disabilities. This is also vitally important when addressing discrimination from AI systems, especially when they can predict or reveal a person's disability.

Third, it recognizes that the denial of reasonable accommodation is a form of discrimination. For the first time, a binding international human rights instrument recognizes that there is a positive duty of States and of society to take specific measures to adjust the environment of people with disabilities and allow them to be truly on equal basis with others. This approach is also highly relevant in AI systems, which must not only take disability into account as part of human diversity, but must also provide for and ensure adjustments or adaptations to the needs of people with disabilities.

Beyond the legal protection provided by CRPD's general anti-discrimination framework, the treaty also includes several provisions regarding the use, availability, development and affordability of new technologies to ensure the human rights of persons with disabilities. Article 2 defines "communication" encompassing all types of modes, means and formats, including information and communication technology. Article 4 establishes obligations on States Parties to "undertake or promote research and development of, and to promote the availability and use of new technologies, including information and communications technologies", and to "provide accessible information to persons with disabilities about mobility aids, devices and assistive technologies, including new technologies". Article 9 expressly recognizes that the obligation to ensure accessibility includes "new information and communications technologies and systems, including the Internet". Article 21 requires States Parties to adopt measures to encourage "the mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities". Article 22 addressing the right to privacy, expressly complies States Parties to "protect the privacy of personal, health and rehabilitation information of persons with disabilities on an equal basis with others".

Consequently, from a specific approach towards the human rights of persons with disabilities, AI systems can pose, *prima facie*, both risks and benefits for their enjoyment and exercise.

4.1 Risks of AI systems

As mentioned above, the use of AI systems in people's daily lives shows multiple rights violations, but which can be strictly grouped into two fundamental areas of human relations, i.e. equality and privacy. The risks to the rights of persons with disabilities also project in the same areas, only with greater vulnerability and lack of protection. Studies on this phenomenon refer to it as "AI-Bias".

In this sense, Joan Pahisa, an expert in technology,provides two examples showing the grays in the dangers of AI affecting the areas of equality and privacy of persons with disabilities. According to his view, these examples represent a problem and a dilemma. The problem is having data that not only reflects reality, but also a society with equal opportunities for all. The dilemma, if we do not collect data on people with disabilities, either for data protection reasons or because of the lack of data, the algorithms can never learn from them. But similarly, if we do not use data properly, as long as the algorithms consider them as negative variables, providing them can further stress the inequalities.[54]

[54] Pahisa, J., *Amenazas para las personas con discapacidad de una IA que no considere esta diversidad*, Columna de Opinión, cermi.es semanal N° 377, 07/02/2020. http://semanal.cermi.es/noticia/articulo-opinion-inteligencia-artificial-potencial-romper-peligro-barrera-joan-pahisa-doctor-informatica-fundacion-once.aspx

As a recent report points out, like discourses on diversity and inclusion disability has been largely omitted from the AI-bias conversation, even as disabled people are affected by these issues in differing ways across axes of identity. Persons with disabilities have been subject to historical and present-day marginalization, much of which has systematically and structurally excluded them from access to power, resources, and opportunity. Such patterns of marginalization are imprinted in the data that shapes AI systems, and embed these histories in the logics of AI. Recent research demonstrates this, showing that social attitudes casting disability as bad and even violent are encoded in AI systems meant to "detect" hate speech and identify negative/positive sentiment in written text. These findings fit an established pattern. Those who have borne discrimination in the past are most at risk of harm from biased and exclusionary AI in the present. And when these discriminatory logics are reproduced and amplified by AI systems, they are likely to be read as authoritative, the product of sophisticated technology.[55]

Because of the above, reality shows that persons with disabilities are very often not recognized, as persons, by AI systems. This is known as the "Reverse Turing Test", when a person has to show their humanity to a machine, in this case, to an AI system.[56] A journalist, in an opinion article published in September 2020, demonstrated how the voice recognition systems of Netflix and Amazon Prime streaming platforms were not capable of recognizing the voice of Franco, a person living with Down syndrome. The journalist pointed out that Franco, "as other people like him, has a diction that is not identical to that of the rest of the members of his family, which is not an obstacle to communicate with them or with their friends, but it does with a smart television".[57]

Another area especiallydelicatefor the rights of persons with disabilities is employment. In the last two decades, disability rights activism has acknowledged that social inclusion depends, to a large extent, on real, effective and equal access to inclusive education and regular employment got in an ordinary work environment. As a result, non-discrimination in employment has probably been the area of greatest normative development on the rights of persons with disabilities both at domestic and at regional and international levels. Several national legal systems have legislated in order to avoid the repeated and systematic discrimination that persons with disabilities face when seeking regular employment on an equal basis with others.

Progress achieved in employability of persons with disabilities may render useless if the trend of using AI systems to perform hiring processes in large and medium-sized companies continues. Particularly, one of the greatest advances made in this field was to consider "impairments" as personal data or information, and therefore, not susceptible to being weighed in a selection process for a job. Now, current AI systems have the functionality of detecting through voice reading, facial recognition and other human behavior data, when the candidate has, has had, or may have a disabling impairment.[58] As long as we do not force companies to reveal the code embedded in the AI system, this technological functionality puts the entire legal anti-discrimination labor system atsubstantial risk.

In short, and in a broad sense, we can conclude that current AI systems represent the following risks for the enjoyment and exercise of rights by persons with disabilities: a) The use of AI systems to identify and eventually discriminate against persons with disabilities; b) The creation of AI systems based on standardized models that exclude or do not consider the diversity of persons with disabilities; c) The design of AI systems that are based on or nurtured by data that include stereotypes and prejudices regarding disability; and d) The use of AI systems that do not allow the participation or decision-making of persons with disabilities. To the above we can add the derivations on the use of AI systems in genetic engineering, and more particularly, on the gene-editing of the human genome.[59]

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55 Whittaker, M., Alper, M., et. al. *Disability, Bias, and AI*...op. cit. p. 8-9.

56 NAKAMURA, K., "My Algorithms Have Determined You're Not Human: AI-ML, Reverse Turing-Tests, and the Disability Experience", en*ASSETS '19*: The 21st International ACM SIGACCESS Conference on Computers and Accessibility Pittsburgh PA USA October, 2019. https://doi.org/10.1145/3308561.3353812

57 Balmaceda, T., *Inteligencia artificial y discapacidad: cuando los algoritmos son herramientas de exclusión*, Columna de Opinión publicada en portal del periódico La Nación. 7 de Septiembre de 2020. https://www.lanacion.com.ar/tecnologia/inteligencia-artificial-discapacidad-cuando-algoritmos-son-herramientas-nid2443173/

58 "…Troublingly, HireVue also has a patent for an AI system designed to identify disabled people based on their speech, mannerisms, tone, and other physical markers. HireVue's system proposes to diagnose interview subjects as disabled, without consent, based on methods that arenot scientifically grounded. It uses a neural network to "detect" similar features across multiple videos of people who identify as disabled, finding patterns of behavior, speech, tone, or other markers that correlate across videos of disabled people. The system is then used to detect disability—or, at least, to identify these same patterns—in subsequent job-candidate videos…". Whittaker, M., Alper, M., et. al. *Disability, Bias, and AI*...op. cit. pp. 16-17.

59 Even though these technologies (AI systems and gene-editing) have not been subjected to clinical trials yet, the risk of a new eugenics towards persons with disabilities is really worrying. BARIFFI, F., *El Futuro de la Discapacidad en los Albores de la Evolución Artificial*, Columna de Opinión, cermi.es semanal Nº 379, 21 de febrero de 2020. http://semanal.cermi.es/noticia/opinion-francisco-bariffi-profesor-investigador-universidad-mar-plata-futuro-discapacidadalbores-evolucion-artificial.aspx

4.2 Benefits of AI systems

Not everything is negative regarding the use of AI systems for the rights of persons with disabilities. This type of technology is called to radically change human relationships and provide human beings with greater comfort and quality of life. From this approach, AI systems also offer important benefits and opportunities to advance in the realization of the rights of persons with disabilities, especially in relation to the areas of "communication", "supports" and "personal assistance".

Technology has allowed certain groups within the disability community access to greater and better rights. Both in relation to persons with sensory and motor impairments, technology has offered, from the very origin of the medical model, a tool for social integration. However, history has shown that such approach only allowed the integration of a very minority group, and on the contrary, it prevented the inclusion of persons with disabilities in society mainly through institutionalization.[60] From the development of prosthetics, to the Braille language, we have always depicted technological development as favorable towardspersons with disabilities, and as an extra factor of exclusion or segregation. The current debate about the uses and abuses of AI systems does not differ from this historical dynamic.

Now, with the comprehensiblecautions and reluctance regarding the medical model and its relationship with technological development, we should recognize that new technologies, especially those developed in the last quarter of a century, have allowed many persons with disabilities to overcome discriminatory barriers that were once thought insurmountable. For example, current voice reading systems for all digital information on an electronic device have allowed blind or low vision people to use and communicate through the Internet, access digital libraries, and even enjoy a movie or favorite series through audio description system. In relation to persons with motor impairments, the development of automated wheelchairs, bionic prostheses or exoskeletons, have allowed many persons with disabilities autonomy of mobility and therefore, independent living.

The technology offered by AI systems represents a step forward in the development of technical devices and assistive technologies for the disability sector, because they allow two functions that are not possible under commonly used technologies.

In the first place, AI systems have the possibility of providing support or assistance similar or better than that provided by a human being, but without the need to undermine or affect the moral autonomy and independent life of the person. Product of the paternalistic or charitable vision of our societies, persons with disabilities have been very often reluctant to depend on the support or assistance of other people. History shows that such assistance, if not well defined and regulated, then it becomes dependence, and therefore in loss of autonomy and independent life. Reliable and universally designed AI systems could offer an alternative to human assistance and support, as long as it would achieve the same or better service, but without the peculiarities or edges of a human relationship and all that it entails, such as power-obedience, good-bad mood, proper-improper influence, etc.

In second place, AI systems have the possibility to learn, grow, and above all, to adapt to the environment, i.e. to adapt to the circumstances and particular needs of each individual. It is very often said that assistance and support systems for persons with disabilities should be designed as a tailored suit. AI systems offer this possibility of adapting to the needs of the person, andthey can improve and learn about such adaptations through its regular use.

In terms of communication, AI systems are allowing, with increasing rigor and accuracy, simultaneous or real-time translations of practically all the languages of the world, as well as identifying text and written symbols and instantly translating or describing them orally. Other AI systems with a great impact on the communication and educational rights of persons with disabilities are those that allow image recognition, for example, to take and image or video with the mobile device and the AI system almost instantaneously describes the content.Thus, AI systems offer great opportunities for all persons with disabilities who use alternative forms of communication, even for those who use personalized and complex forms of communication such as deaf-blind, or those who can only move the eye pupils.[61] A concrete example of the use of this type of technology was that used by Stephen Hawking to communicate with his environment.

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[60] BARIFFI, F., "Article 8. Awareness-Raising" in *The UN Convention on the Rights of Persons with Disabilities: A Commentary,* Bantekas, Stein and Anastasiou (Ed), New York: Oxford University Press, 2018, pp. 229-257.

[61] CIRSON, N., "Smart Phone and Tablet Technology: Changing the face of AT for the Blind or Vision Impaired", en*Independent Living Journal*, Vol. 29(3), 2013.

Without distinguishing between personal assistance and support AI systems offer great opportunities in this area of vital importance for the exercise of rights by persons with disabilities. In various regions of the world, robotic systems have been implemented for some timenow in order to provide personal assistance for the elderly and persons with disabilities. The UN Independent Expert on the enjoyment of all human rights by older persons has approached and analyzed this trend.[62] Also robotics and AI systems seem to gain a lot of support in the provision of health services. In terms of supports, AI systems offer great opportunities for supported decision-making, an area of extreme importance for intellectual and psychosocial disabilities.[63]

If AI systems avoid incurring in discrimination or marginalization, they can offer great opportunities and benefits for persons with disabilities. Perhaps a good starting point to achieve this approach towards AI systems is to include their development under the principle of "universal design". This principle has international recognition in CRPD itself,[64] in various national legal systems, and especially in both the European Union[65] and the Council of Europe.

In short, and in a broad sense, we can conclude that current AI systems represent the following major benefits for the enjoyment and exercise of rights by persons with disabilities: a) AI systems that facilitate communication in all media and formats; b) AI systems that facilitate decision-making; c) AI systems that facilitate accessibility and reasonable accommodation; d) AI systems included in robots (androids) that facilitate personal assistance; e) Automotive AI systems that facilitate universal design; or f) AI systems that facilitate health care and rehabilitation services.

5 Conclusions

The use and proliferation of AI systems in our daily lives is an unavoidable reality. The debate is no longer about whether we should welcome this type of technology in our lives, but under what conditions and safeguards.

Preliminary reports on the risks of using the AI system reveal discrimination in detriment of social groups in situations of vulnerability, and persons with disabilities are no exception to this phenomenon, very often through multiple discriminations. Persons with disabilities, as a group in a situation of social vulnerability, face a greater risk of violation of their fundamental rights and freedoms, which justifies adopting specific approaches based on the principle of equality and non-discrimination.

The standards and principles developed at the international and regional level should serve as a basis for the use of AI systems that endanger or violate the human rights of persons with disabilities on an equal basis with others.International human rights bodies must address in their monitoring mechanisms the risks in using AI in human rights, especially regarding groups in a special situation of vulnerability, such as persons with disabilities.

From a specific approach towards human rights of persons with disabilities, AI systems represent *prima facie*, both risks and benefits for their enjoyment and exercise. Among the risks, the key areas of infringement are those related to equality and privacy. Among the benefits, the key areas of impact are communication, personal assistance and supports.

The ethical and social debate that inevitably imposes the widespread use of AI systems considering universal and regional human rights standards cannot excludepersons with disabilities, nor can it ignore the specific focus of this group, prioritizing the principles of equality and non-discrimination, as well as the principle of "universal design" as the main standards.

The disability community should address as a priority the specific approach regarding the risks and benefits of the use of AI systems for the human rights of persons with disabilities. For these purposes, it is necessary to assign priority and resources such as research and innovation support, promotion of public debates or active intervention in forums and spaces for political and social participation.

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62 Robots and rights: the impact of automation on the human rights of older persons. Report of the Independent Expert on the enjoyment of allhuman rights by older persons, A/HRC/36/48, 21 July 2017.

63 WALLACE, M., *Building Decision Support Systems: Using MiniZinc*, 1st ed., Springer, 2020.

64 "Universal design" means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. "Universal design" shall not exclude assistive devices for particular groups of persons with disabilities where this is needed. Article 2. Convention on the Rights of Persons with Disabilities (CRPD).

65 Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services, OJ L 151, 7.6.2019, p. 70–115; Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030, Brussels, 3.3.2021 - COM(2021) 101 final.

Making disability visible and including it in the development of ethical standards and principles on the use of AI systems contributes to thinking about a global framework for human rights protection that is much broader and adjusted to the reality of human diversity.

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