



Artificial Intelligence (AI) and Children in Africa: a Sandboxed Childhood and a Normative Ethics Point of View

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Abstract. Artificial Intelligence (AI) poses many opportunities for current and future generations, as well as a host of risks. Children in Africa are not spared from these risks. African culture puts children at the centre of activities, nonetheless African children frequently are victims of both natural and man-made calamities such as, inter alia, famine and human trafficking, respectively. Now AI brings new threats to this vulnerable population. As countries struggle with formulation of appropriate governance frameworks they resort to the creation of regulatory sandboxes. However, regulatory sandboxes do not necessarily assure safe AI for children in particular and humans in general. African children are exposed to AI technology in these experimental and imperfect regulatory environments thereby exposing the children to unknown risks, and in fact making African children part of the testbed for AI technologies, such that they experience a technological ‘sandboxed’ childhood. I review literature to establish these risks, and efforts being made to protect the children in Africa. Using the UNICEF’s policy guidance on AI for children’s recommendations and a normative ethics point of view, I attempt to make a case for value sensitive design of AI that will preserve the African culture through children as the future by protecting them from harmful effects of AI.

Keywords: AI, children, sandboxed childhood, normative ethics, African culture.

1 Introduction

African culture puts children at the centre of activities and African society across the continent is structured largely around the lives of its children (Lawal 2017). The Preamble of the African Charter on the Rights and Welfare of the Child states that “RECOGNIZING that the child occupies a unique and privileged position in the African society and that for the full and harmonious development of his personality, the child should grow up in a family environment in an atmosphere of happiness, love and understanding”.¹

¹ African Charter on the Rights and Welfare of the Child <https://www.acerwc.africa/en/acerwc/acerwc>

Children represent continuity with rituals and contemporary institutions designed to ensure children's survival and prosperity². An African adage in the Bemba language “*Imiti Ikula Empanga*” (translated as, *small shrubs are the future forests*: figuratively meaning, children are the future), adopted by Salome Temba in her thesis, “*The Position of Early Childhood care and development in Central Zambia*”, confirms how much regard African society has for its children (Temba 2014).

The Zambia national child policy recognizes anyone under the age of 18 as a child.³ Presently, in Zambia children represent more than 50% of the country's population.⁴ Overall on the African continent, children (under the age of 18) account for close to half (47%) of the total population.⁵ Africa's child population will be the largest among all continents in the latter half of this century, topping 1 billion by 2055.⁶

Apart from natural calamities such as famine, disease and now effects of climate change such as floods, over the years⁷, children in Africa have been victims of human made catastrophes ranging from war, slavery, human trafficking and abuse, to addiction (Peek 2008). The boom of AI joins a list of man-made threats or opportunities to the wellbeing of children and UNICEF reports that African children are already interacting with AI technologies in many different ways, directly and indirectly (Unicef 2020). UNICEF states that AI systems are fundamentally changing the world and affecting present and future generations of children (Unicef 2020).

In other words, while AI is a force for innovation and can support the achievement of the Sustainable Development Goals (SDGs), it also poses risks for children (Unicef 2020). Therefore, despite the opportunities AI provides, without adequate regulatory frameworks for ethical and child-centric AI⁸ and, I suggest here, a value-sensitive design (VSD) approach for value aligned AI based on relevant normative ethics, Africa's valued future generations are vulnerable to the dangers of AI.

Technological artifacts have an effect on how human beings interact (perceive, experience) with their world thereby shaping the human culture (Verbeek 2001). For Africa to preserve her identity, the future of AI in Africa should be African, thereby benefiting the future population which is expected to double in the next three decades (Goffi 2023). How can we ensure that African children are protected from the risks of AI technology, and that they grow up in an African culture in the face of technology mostly designed and developed in the Northern hemisphere?

Few jurisdictions around the world, particularly Africa, have put in place policies to specifically deal with AI and children. Some multilateral institutions (UNESCO⁹,

² Steve Howard (2016), Children and childhood, 10.1093/OBO/9780199846733-0045 <https://www.oxford-bibliographies.com/display/document/obo-9780199846733/obo-9780199846733-0045.xml>

³ Source: Government of the Republic of Zambia, National Child Policy

⁴ Source: Central Statistical Office, Demographic and Population Projections 2011-2035

⁵ UNICEF/UN0226463/Bongyereirwe, Children in Africa, Key statistics on child survival and population

⁶ UNICEF/UN0226463/Bongyereirwe, Children in Africa, Key statistics on child survival and population

⁷ <https://trapbag.com/natural-disasters-in-africa/>

⁸ <https://www.unicef.org/globalinsight/media/871/file>

⁹ <https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence?hub=32618>

OECD¹⁰ , AU¹¹) are making efforts to help member states or have published policy guidance documents to guide governments and private sector companies on how to design, develop, deploy and use responsible AI systems and actualizable AI policies. UNICEF gives particular attention to child-centric AI which they describe as human centric AI that upholds children’s rights founded on the requirements in their policy guidance document (Unicef 2020).

Ethical AI, sometimes referred to as value aligned, value sensitive, or ethically aligned AI, or simply responsible AI, is focused on building AI systems to comply with the ethical expectations of stakeholders such as fairness, accountability, and transparency such that AI systems are developed “along fundamental human principles and values, to ensure human flourishing and well-being in a sustainable world” (Dignum 2019, Agarwal and Mishra 2021, Eitel-Porter 2021, Undheim, Erikson et al. 2022).

In this paper, I use the phrase ‘sandboxed childhood’ to refer to a situation of children growing up in an environment where they are exposed to technology that is being tried out, not (fully) regulated as governments do not yet understand how to regulate them, and I point to the full extent of the risks involved (section 2). Then, consider AI threats affecting children (section 3). In 3.1, I base my discussion on UNICEF requirements for child-centred AI in their policy guidance on AI for children of 2021 which I sum into four thematic areas (3.2). I then match each one of them against a normative ethical theory and make a case on how ethical AI through a VSD approach could protect African children growing up in the not yet regulated AI sandbox environment while also preserving African culture (section 4). I then conclude in section 5.

2 Sand boxed childhood and Regulatory sandbox for AI

Etymologically, the word ‘sandbox’ was commonly used to describe a shallow box or hollow in the ground partly filled with sand for children to play in; a sandpit.¹² In computing, the concept is particularly utilized in the areas of financial innovation and fintech, where a regulator enables experimental innovation within a framework of controlled risks and supervision (Goo and Heo 2020, Truby, Brown et al. 2022). The International Telecommunications Union (ITU) and the World Bank¹³ jointly define a regulatory sandbox as a controlled regulatory environment for conducting live tests of innovative products, solutions, and services with the potential to deepen and develop certain markets¹⁴. In the AI technology domain, digital innovators, researchers, and digital developers are developing new technologies, business models and bringing them to market at a rapid pace while policy makers and regulators need to not only keep abreast with the pace but also be able to anticipate shifts in the market (Ranchordas 2021, Ranchordas 2021).

¹⁰ <https://www.oecd.org/digital/artificialintelligence/#:~:text=The%20OECD%20Principles%20on%20Artificial,Council%20Recommendation%20on%20Artificial%20Intelligence.>

¹¹ <https://achpr.au.int/en/news/press-releases/2023-06-08/inception-workshop-and-experts-consultation-artificial-intelligence>

¹² <https://dictionary.cambridge.org/dictionary/english/sandbox>

¹³ <https://digitalregulation.org/a-case-for-ict-regulatory-sandbox/>

¹⁴ <https://digitalregulation.org/a-case-for-ict-regulatory-sandbox/>

Sometimes, regulators fall short of keeping a close watch on these changes even as they are expected to anticipate the regulatory changes that may be required to facilitate a safe and conducive environment for the general public (Pop and Adomavicius 2021). Therefore, policymakers and regulators are increasingly incorporating new and agile regulatory tools which facilitate a dynamic, evidence-based regulatory environment to test new products, services, and technologies for which existing regulatory framework across varied sectors need to be tested. One such a tool is regulatory sandboxes (Goo and Heo 2020).

A regulatory sandbox is a way to connect innovators and regulators and provide a controlled environment for them to cooperate in (Goo and Heo 2020). Collaboration between regulators and innovators should facilitate the development, testing, and validation of innovative AI systems with a view to ensuring compliance with the requirements of AI Regulation.¹⁵ It provides innovators with incentives to test their innovations in a controlled environment, allows regulators to better understand the technology, and fosters consumer choice in the long run.

However, regulatory sandboxes cannot adequately provide a framework to protect children in an AI environment. This is because regulatory sandboxes also come with a risk of being misused or abused and need an appropriate legal framework to succeed (Ranchordás 2021). The implementation of a regulatory sandbox inherently has some limitations and risks associated with it such as *regulator's capacity, unfair competition, reputational risks, collusion between industry and market participants, regulatory capture, among others*.¹⁶ In April 2021, the European Commission presented a proposal for a regulation laying down harmonized rules on AI (the 'artificial intelligence act' or 'AI act')¹⁷. Academics and stakeholders in this context have commented on issues regarding the need for a more harmonized approach to AI regulatory sandboxes, and the interplay between AI sandbox and data protection rules.

We also need to find a way forward in protecting children in experimental situations with AI technology and I make a start on this in the coming sections with the focus on Africa. Emmanuel Goffi observes that AI ethics could not only serve as a temporal guide for ethical AI but also as bedrock for defining AI governance and a regulation framework that will reflect African culture and aspirations (Goffi 2021). He further notes that this would avoid the West's efforts to impose rules applied to AI to the rest of the world (Goffi 2021). However, ethics is not enough for regulating AI because it does not have provision for enforcement of sanctions (Horner 2003, Carrillo 2020).

Goffi also notes that, although ethics is not enough, short of legal tools, ethics appears as a normative consolation solution to frame and regulate the development and use of AI systems (Goffi 2023). In Africa, the overall absence of legal frameworks, non-active provision of regulatory sandboxes or at the very least, and the lack of African ethical frameworks applicable to the governance of AI, leave many people in Africa, especially children, vulnerable to the negative effects of AI. I will consider specific threats to children from AI technology in the next section, and then suggest a route to follow Goffi's views on the role of AI ethics to address some of these concerns.

¹⁵ <https://digital-strategy.ec.europa.eu/en/news/first-regulatory-sandbox-artificial-intelligence-presented>

¹⁶ <https://digitalregulation.org/a-case-for-ict-regulatory-sandbox/>

¹⁷ [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2022\)733544](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)733544)

3 AI and children in Africa

Over a period of years, the African child has been faced by a myriad of calamities (Agere and Agere 2020). Many a times they are the victims of the negative and exploitative effects of developmental milestones¹⁸. Some calamities are natural, such as pandemics, climate change and famine (Bain, Awah et al. 2013) inter alia; while others are man-made. Children in slavery, children in political struggles, children growing in war torn countries (enlisted in militias as child soldiers) (Albertyn, Bickler et al. 2003), child labour (working in farm plantations such as tea, cocoa, tobacco, cotton to earn a livelihood or mining especially illegal mining of precious stones) (Bonnet 1993); the list is endless.

AI joins the list of threats and opportunities for African children. General factors in the AI domain potentially impacting children include the fact that online collated data may also be used to provide the raw material for AI systems (Liao 2020). This also happens through mobile devices that are able to track where we are and who we meet on a continuous basis, some of which are in the hands of children and could undermine their privacy (Gulmezoglu, Zankl et al. 2019). AI systems can be (and are being) used to redefine work, replacing humans “with smart technology in difficult, dirty, dull or dangerous work” (EGE 2018: 8). The loss of jobs is likely to become a major factor in what is now termed the “post-industrial society” (Stahl 2021). These indirectly have an impact on children (as the future workforce) particularly where laws to protect them are not adequately in place (Unicef 2020).

In addition, policymakers, opinion leaders, researchers, and the general public have many questions such as, “How are biases (inherent in society and subsequently in the data) affecting automated decision-making? How is AI impacting jobs and the global economy? Can, and should, self-driving cars make moral decisions? What should be the ethical, legal and social position of robots?” (Dignum 2019).

In the information age, children have become targets for commercial messages (ads). With the advent of the Internet, child threats have now moved online (Andrews, Alathur et al. 2020) and now we are talking about child online abuse through child pornography, gaming and surfing addiction, online data harvesting, online behaviour tracking, profiling and targeting, misinformation, disinformation, and radicalization (through echo chambers and information bubbles) among others. AI now joins this list and introduces new threats or exacerbates existing ones (Brown 2017).

Against this background, UNICEF states that children are already interacting with AI technologies in many different ways, directly and indirectly (Unicef 2020). For instance, in the direct way, AI technologies are embedded in toys, virtual assistants and video games, and are used to drive chatbots and adaptive learning software. Algorithms provide recommendations to children on what videos to watch next, what news to read, what music to listen to and who to be friends with. In addition to these direct interactions between children and AI, children’s lives and well-being are also indirectly impacted by automated decision-making systems that determine issues as varied as improving the management of traffic flows for safer cities, welfare subsidies, quality of health care and education access, and their families’ housing applications.

¹⁸ “A troubled decade for Africa’s children”: <https://www.un.org/africarenewal/magazine/april-2002/troubled-decade-africas-children>

As demonstrated earlier, when there is a new technology, there is usually a tendency by governments to allow such technology to operate in a live environment without strict legal compliance requirements to allow for regulators to appreciate the technology and encourage innovation in an approach called regulatory sandboxes. While governments have been slow to respond to the increasingly urgent demand to govern AI, recent legislative activity signals a growing effort to mitigate fears with a myriad of regulations intended to rein in the potential for risks and uncertainties posed by AI (Truby, Brown et al. 2022).

This has implications for all children, including those from developing countries who apart from interaction with AI may be equally impacted by lost opportunities as a result of not being able to enjoy the benefits of AI systems. African children are exposed to AI technology in experimental and imperfect regulatory environments thereby exposing the children to unknown risks, and in fact making African children part of the testbed for AI technologies, and in a sense then experience a technological ‘sandboxed’ childhood (Werthner, Prem et al. 2022).

Although there are a number of regulations that have been developed in the past few years (Jobin, Ienca et al. 2019) with a number of publications dominated by the west (Hagerty and Rubinov 2019), the slow pace is still unsatisfactory to many stakeholders. It is hard to understand how governments could allow a technology of such power, “comparable to nukes”, the words of Elon Musk¹⁹, to be a sphere of experiments with inadequate to no regulatory and governance frameworks in research and implementation. This is after even prominent industry leaders have joined the chorus to warn of the risks that AI poses to humanity²⁰. As Africa is still lagging even more behind (Eke, Wakunuma et al. 2023), like in other developmental efforts (Okyere-Manu 2021), possibilities of countries coming up with AI strategies or policies in general, let alone that will especially safeguard the children in the African cultural context, still remain far-fetched (Goffi 2021, Goffi 2023).

Below I look at a number of frameworks at international, continental and national level meant to protect children from the negative effects of AI.

3.1 Literature on policies for child protection against AI technology threats

Existing literature shows that, despite many countries lacking specific policies for AI and children, a number of countries are putting in place measures to protect their people in general. Africa however, always comes last, like in many issues especially those to do with technology (Eke, Wakunuma et al. 2023). Many countries, including Zambia, are struggling to put national AI strategies in place, yet as already stated above, children in Africa are already at risk of being exposed to the diverse effects of AI such as online manipulation, discrimination, child profiling and privacy invasion among others.

¹⁹ <https://www.reuters.com/video/watch/idRCV004NTE>

²⁰ <https://www.nytimes.com/2023/05/30/technology/ai-threat-warning.html#:~:text=A.I.,Poses%20Risk%20of%20Extinction%2C%20Industry%20Leaders%20Warn,as%20pandemics%20and%20nuclear%20weapons.>

In Zambia for instance, the National Child Policy of 2015 – 2021 only speaks to children’s access to information and communications technology (ICT)²¹ among other issues. It does not address child-centred AI. Equally, the ministry responsible for ICTs, working together with the regulator of ICTs (ZICTA)²², International Telecommunication Union (ITU), International Multilateral Partnership Against Cyber Threats (ITU-IMPACT), UNICEF, and other Cooperating Partners organized a Child Online Protection (COP) Framework Workshop in 2019²³. The primary objective was to develop a sustainable Action Plan to be implemented in the country to ensure a safe and secure cyberspace for users of Information and Communications Technologies (ICTs), especially children.

The product of the above undertaking was a National Child Online Protection Strategy of 2020. However, this strategy does not cover AI and children in particular as a concern, through its provision or lack of opportunity to the Zambian child. Generally too, there is a lack of debate among researchers, policy experts, civil society and general citizens on the need for ethical AI and the potential AI has to transform the cultural development of Africa especially through the exposure of this younger generation of users to this modern technological innovation (Okyere-Manu 2021).

Some multilateral institutions have published policy guidance documents to assist governments and the private sector to come up with AI, AI policies and AI systems that promote child wellbeing. Among these, the major ones being the Policy Guidance on AI for Children (UNICEF 2021) and the Artificial Intelligence for Children Toolkit (WEF 2022). For the EU, there is the document on AI and Rights of the Child (EU 2022). Other than the above documents drafted to specifically tackle child rights and wellbeing, other high-level documents developed by supranational organizations include the UNESCO Recommendation on the Ethics of AI (COMEST 2021).

At continental level, Africa’s Agenda for children 2040,²⁴ a cause inspired by the vision of the African Union (AU)’s Agenda 2063, and intended to foster an Africa fit for children, does not address child-centred AI, among any of its 10 aspirations. While the African Union High-Level Panel on Emerging Technologies (APET) and the African Union Development Agency (AUDA-NEPAD) recently convened African Artificial Intelligence experts at a Writing Workshop in Kigali, Rwanda, from February 27 to March 3, 2023, to finalize the drafting of the African Union Artificial Intelligence (AU-AI) Continental Strategy for Africa, it is not clear what the focus on children will be. The overall goal is to develop a comprehensive strategy that will guide African countries on how to support inclusive and sustainable AI-enabled socio-economic transformation.²⁵

Of specific interest to this study, UNICEF as an international multilateral organization mandated with protecting the rights of children, identifies nine requirements for

²¹[https://www.mcdss.gov.zm/?page_id=2780#:~:text=NATIONAL%20CHILD%20POLICY%202015%20%2D%202021%20\(NCP\)&text=Additionally%2C%20the%20focus%20on%20maternal,for%20all%20children%20in%20Zambia.](https://www.mcdss.gov.zm/?page_id=2780#:~:text=NATIONAL%20CHILD%20POLICY%202015%20%2D%202021%20(NCP)&text=Additionally%2C%20the%20focus%20on%20maternal,for%20all%20children%20in%20Zambia.)

²² Zambia Information and Communication and Technology Authority

²³<https://www.zicta.zm/storage/posts/attachments/Eu63HezeLZR0P6Zedq70CUOAlwQPL9jfyANXQdlB.pdf>

²⁴ https://au.int/sites/default/files/newsevents/agendas/africas_agenda_for_children-english.pdf

²⁵ <https://www.nepad.org/news/artificial-intelligence-core-of-discussions-rwanda-au-high-level-panel-emerging>

child-centric AI. Based on a thematic analysis of these requirements, below I summarise the requirements into four thematic areas based on the common subject the requirements address in order to discuss them against four normative ethics theories (Unicef 2020). One of these ethical theories is African, while the other three are the major western ones, often held by many scholars as universal moral theories.

The discussion of the grouped requirements against the four normative ethics theories is not mutually exclusive but carefully matched based on the emphasized ethical concerns in the requirements. As Emmanuel Goffi notes, the consideration of other ethical theories in the discussion of ethics applied to AI bring about cultural diversity (Goffi 2021). He further states that this obviously is not only a matter of respect for cultural particularisms but also a fundamental requirement to establish a long-lasting governance (globally) where all cultures are satisfied and allowed to promote their own interests based on their ethical stances (Goffi 2021). I suggest my normative framework against this background to specifically provoke thinking in protection of African children in regulatory sandboxes based on diverse ethical frameworks.

Table 1. Normative framework for combined requirements for child-centric AI.

Four thematic areas	UNICEF requirements for child-centric AI	Normative ethics perspective
Cultural identity and well-being	Support children’s development and well-being	Ubuntu perspective
Equal opportunities	Ensure inclusion of and for children Prioritize fairness and non-discrimination for children	Deontologist perspective
Security, safety and privacy	Protect children’s data and privacy Ensure safety for children Provide transparency, explainability, and accountability for children	Virtue ethics perspective
Economic opportunities	Empower governments and businesses with knowledge of AI and children’s rights Create an enabling environment Prepare children for present and future developments in AI	Consequentialist perspective

3.2 From the four normative ethics point of view

Cultural identity and well-being/Ubuntu perspective

I consider cultural identity and well-being as a parallel to UNICEF’s supporting children’s development and well-being child-centric AI requirement. There is a strong correlation between UNICEF’s first requirement and Africa’s culture of putting children at the centre of cultural activities as the future of society.

Zambia’s COP strategy interestingly mentions core cultural values and practices as one of the guiding principles upon which the strategy is founded among other principles. A clear indication that one of the aspects considered in the discussion of child (online) protection (and well-being) is to preserve culture through younger generation.

However, little information is available to the effect that technological products aligned to cultural values is a compulsory prerequisite or indeed hallmark approach for

ICT products and services for consumption in a sovereign Zambia as a deliberate policy to safeguard the nation's culture. Let alone, regulatory sandbox frameworks could increase the risks for children to be exposed to moral and social ill-effects of AI (like addiction, discrimination, radicalization through echo chambers²⁶ or filter bubbles²⁷, etc.) that are not yet detected while the technology is still in its infancy (Truby, Brown et al. 2022).

Mohan (1989) warns of modern technology as a new tool for neo-colonialism. Therefore, without protecting the children from the negative effects of modern technology such as AI targeting them, Africa might end up having no cultural identity and thus no sovereignty to talk about (Sahbaz 2019). Africa which represents 16% of humanity on the globe must have a say in the design of AI and ethics applied to AI (Goffi 2023). (For instance, develop AI games based on African traditional games to cater for an African child.)

A moral theory such as Ubuntu, which became an object of political interest during the struggle for political liberation, from minority white rule to majority black rule in Zimbabwe and South Africa (called humanism in Zambia (Kaunda 1974)) must then all the more be the basis for demanding technology, such as AI, to align to human values. Based on this normative ethics, Africa must take a leading role to demand for human-centered AI (HCAI). HCAI calls for future technologies that value human rights, justice and dignity (Shneiderman 2021). An African perspective on ethics applied to AI would not only shake our conviction and open a new path towards ethical AI regulations, but it would also offer the continent normative tools fitting its very needs to the benefit of its population (Goffi 2023).

Thus, Africa's cultural identity and wellbeing of its people will be achieved by supporting children's development and wellbeing as the future and the "*batu ba kamuso*"²⁸, meaning; the future generation. From the Ubuntu moral philosophical point of view, children inherit their humanity from the present human generation who should mold them into the humans they would want to see in future, the saying goes; "*Mutu ki mutu ka batu*"²⁹ (meaning, a person is a person through other persons) (Düwell, Braarvig et al. 2014, Metz 2016). Therefore, human centered AI which also encompasses child-centred AI should be the goal for AI regulation (Shneiderman 2021).

Equal opportunities/Deontologist perspective

I relate equal opportunities to UNICEF's two child-centric AI requirements; namely, ensuring inclusion of and for children, and prioritizing fairness and non-discrimination for children based on what the requirements intend to achieve. Through the formulation of laws and regulations to govern the research, design, development, deployment, and use of AI, equal opportunities for all children could be provided and thus protect

²⁶ An environment where a person only encounters information or opinions that reflect and reinforce their own

²⁷ Algorithmic bias that skews or limits the information an individual user sees online in search engines, social media sites etc.

²⁸ A saying in Silozi language, one of the popular and influential languages in Zambia

²⁹ A Silozi saying equivalent to the sayings in sub-Saharan languages such as Nguni, Sotho-Tswana Metz, T. (2016). "Ubuntu as a Moral Theory and Human Rights in South Africa (Repr.)."

children’s rights. This gives a deontological perspective of upholding a moral obligation of equal opportunities for all children through governance frameworks put in place at global, continental, regional, and down to national level.

All children must be treated as an end in themselves, and no children must be treated as a means to an end. They must have equal access to child-centric AI and no child must irresponsibly be exposed to AI whose negative effects are unknown (not properly classified as unacceptable, high, limited or minimal risks) through regulatory sandbox loopholes (Truby, Brown et al. 2022). From the deontologist perspective, all concerned stakeholders would feel duty bound to develop universal child-centric AI that would in turn provide equal opportunities for all children.

UNICEF policy guidance on AI for children further advocates that when developing AI systems, design principles that address the widest possible range of users should be applied so that all children can use the AI product or service, regardless of their age, gender identities, abilities, or other characteristics. AI systems should not lead to discrimination against children on any basis, including age, ethnicity, race, gender identities, disability, rural or urban contexts, socioeconomic status, or location. The promotion of equal opportunities and fairness for every child should underpin the policies, development and intended benefits of AI systems.³⁰ This equality will ensure co-existence among the future generations too³¹.

Security, safety and privacy/Virtue ethics perspective

Security, safety and privacy are paralleled with three UNICEF’s requirements for child-centric AI based on the goals the requirements intend to achieve. These are protecting children’s data privacy, ensuring safety for children, and providing transparency, explainability, and accountability for children. As moral agents whose cause of actions are inspired by desire for human flourishing, we would envision a better world for future generations.

The UNICEF policy guidance on AI for children encourages that AI policies and systems should recognize the value and unique vulnerability of children’s data and their privacy in a protective and empowering way. This is because children are biologically and psychologically distinct from adults and will be impacted differently by AI systems. Children’s safety within AI systems should be assured, both in the short and in the long term.

Using a virtue ethics approach we can develop a set of ethical principles that we can use to make decisions about when and how to use AI technologies (Cuellar 2023). AI ethics can put a stronger focus on virtues (as complementary to a principle based approach) or, in other words, on character dispositions in AI practitioners³² in order to effectively put itself into practice (Hagendorff 2022).

³⁰ UNICEF encourages Equity where possible; e.g., “actively support marginalized children so that they may benefit from AI systems

³¹ Africa’s Agenda for 2040: Fostering an Africa fit for Children https://au.int/sites/default/files/newsevents/agendas/africas_agenda_for_children-english.pdf

³² When using the term “AI practitioners” or “professionals”, this includes AI or machine learning researchers, research project supervisors, data scientists, industry engineers and developers, as well as managers and other domain expert.

In a way, virtue ethics moral theory combines both the deontological and consequentialist approaches, because apart from looking at the agent (the person performing the action), the virtue ethics approach also pays attention to both the action (as in Kantianism and social contract theory) and the consequences of the action (as in utilitarianism) (Quinn 2014) because it is context-specific.

Based on their objectives, regulatory sandbox frameworks could be used to prioritize the protection of children from any yet to be known dangers of AI. Using the complementary view to the ethical dilemmas of AI regulatory sandboxes discussed in the literature to point at an epistemological dilemma of true uncertainties (unknown unknowns), Undheim, Erikson et al. (2022) argue that regulatory sandboxes have the potential of supporting the development of a more ethical AI through not only reducing uncertainty, but also through nurturing moral imaginations. I equate moral imagination, to a virtue or character disposition of an AI practitioner (Hagendorff 2022).

In addition, General Comment (No. 25) from the Committee on the Rights of the Child calls for the rights of every child to be respected, protected, and fulfilled in today's digital world or digital environment³³³⁴. Finally, the development of AI is often described in terms of human progress (Stahl, Andreou et al. 2021). This must be the disposition of the developers to an extent of developing value-laden AI for benefit of the future generations or a better future (Stahl 2021).

Economic opportunities/Consequentialist perspective

The theme, economic opportunities is paralleled with the other remaining three UNICEF's requirements for child-centric AI. These are, empower governments and businesses with knowledge of AI and children's rights, create an enabling environment, and prepare children for present and future developments in AI.

Bernd Carsten Stahl (2021) mentions the three main purposes that drive the development and use of AI as economic efficiency, social control, and human flourishing and argues that the delimitation of the ecosystem should include a clarification of which of these (or maybe other) purposes motivate the description of the ecosystem. He further says that AI is not an end in itself, but rather a promising means to increase human flourishing, thereby enhancing individual and societal well-being and the common good, as well as bringing progress and innovation (Stahl 2021).

Consequentialist theories focus on the *outcomes* of the action for this evaluation. These include various approaches to utilitarianism that go back to Jeremy Bentham (1789) and John Stuart Mill (1861) as the most prominent examples (Stahl 2021). In theory, it is held that the net utility of the act of educating children is high as it translates to economic empowerment. Thus, equally investment in AI has been viewed to have greater economic returns (Rao, Verweij et al. 2017, Szczepanski 2019).

Therefore, in a digital economy, empowerment of governments and businesses with the right knowledge (AI and children's right), and the creation of an enabling environment and preparing of children for present and future developments in AI will result in right outcomes of economic opportunities, which is one of the above three purposes

³³ Digital environment includes covering the impact of AI systems, robotics, automated systems, algorithms and data Analytics.

³⁴ <https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation>

identified by (Stahl 2021). From the consequentialist perspective, it is the right thing to invest in the education of AI developers for child-centric AI as well as empowering children with AI skills for economic opportunities, starting from the time the regulatory sandbox is set and throughout its entire lifespan.

4 Value Sensitive Design (VSD) and cultural values inclusion

Value Sensitive Design (VSD) is a methodology that provides a principled approach to embedding common values into AI systems (Umbrello 2019, Bartneck, Lütge et al. 2021). The normative framework in Table 1, enables the coining of thematic areas which in turn enables appropriate matching of moral theories that could be the basis for recommending value alignment of AI application. The normative framework might be used to classify AI regulatory sandbox risks by identifying threatened values or child-centric AI requirements and matching them with the appropriate thematic area and moral theory. The identified requirements/values from stakeholders could later feed into the VSD approach during the implementation of AI systems (Goldkuhl 2012, Liywalii 2020).

For instance, picking the first thematic area in the framework; where ‘cultural identity and well-being’ are the values to safeguard because we agree that each child is entitled to a cultural identity for their well-being. The requirement ‘supporting children’s development and well-being’ could be satisfied by first identifying the appropriate (human) values embedded in it. Second, the identified values would then be guiding principles or ‘ingredients for moral imagination’ in the VSD approach.

In a sense, the framework in the first thematic area puts in one place the work of Goffi as he encourages inclusion of African cultural values in AI and the use of a VSD approach for value aligned AI. In the former sense, Goffi calls for enriched ethics applied to AI by including perspectives from rich and diverse Africa and thus escaping what he calls western ‘cosm-ethical’ hegemony (Goffi 2021, Goffi 2023). Hence, the consideration of one of the African moral theories of Ubuntu. In the latter sense, Friedman et al. argues that technology is the result of human imagination and that all technologies to some degree reflect, and reciprocally affect, human values. It is because of this deep-seated relationship that ignoring values in the design process is not a responsible option. At the same time, actively engaging with values in the design process offers creative opportunities for technical innovation as well as for improving the human condition (Friedman and Hendry 2019). Hence, protecting the children’s lives and the African culture through the children as the future.

Based on the above, I reecho the claim that any recommendation for ethical or value aligned, and subsequently child-centric AI, is anchored on moral theories. Moral theories form the basis of the ethical review of AI systems (Bartneck, Lütge et al. 2021). In addition, VSD could be adopted to build AI systems that satisfy the stakeholder requirements/values (van de Poel 2020) identified in the normative framework (Table 1).

5 Conclusion

In conclusion, African societies are structured largely around the lives of children who are considered the future. While it has its benefits, AI joins the list of threats for Africa's future if not designed to be aligned to the African culture and values. Despite the opportunities AI provides, without adequate regulatory framework for ethical and child-centric AI and value alignment through a VSD approach based on relevant normative ethics, Africa's valued future generations, are vulnerable to the dangers of AI.

Children in Africa too are already interacting with AI, yet many of the negative effects of such interaction are not well grasped. Although there is a number of policies put in place by most countries to protect children in general, African countries are still struggling to develop AI governance frameworks that will among others protect children. This lack of policies and loose implementation of regulatory sandboxes for the purposes of studying the benefits and dangers of technologies entail a sandboxed childhood for an African child making them testbeds for AI technology.

There are a number of policy guidance tools developed by various organizations at international, regional, and continental levels, among them is the UNICEF's policy guidance on AI for children. I group UNICEF's nine recommendations for child-centric AI into four thematic areas namely cultural identity and wellbeing; equal opportunities; security, safety and privacy; and economic opportunities. These have been paralleled with four normative ethics theories namely ubuntu, deontologist, virtue ethics and consequentialist theories respectively, in order to recommend value aligned design of AI for culture and identity preservation in Africa through the protection of children and future generations.

Despite a growing call for Africa to now more than ever free itself from the Western universalist tropism to focus on its peoples' needs and ethical stances (Goffi 2023), failures by African leadership to rise to the occasion on time when needed always leaves their future generation exposed to risks, some of which perpetuate Africa's cultural and value extinction. An African perspective on ethics applied to AI would not only shake our conviction and open a new path towards AI ethical regulations, but it would also offer the continent normative tools fitting its very needs for the benefit of its population (Goffi 2023).

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