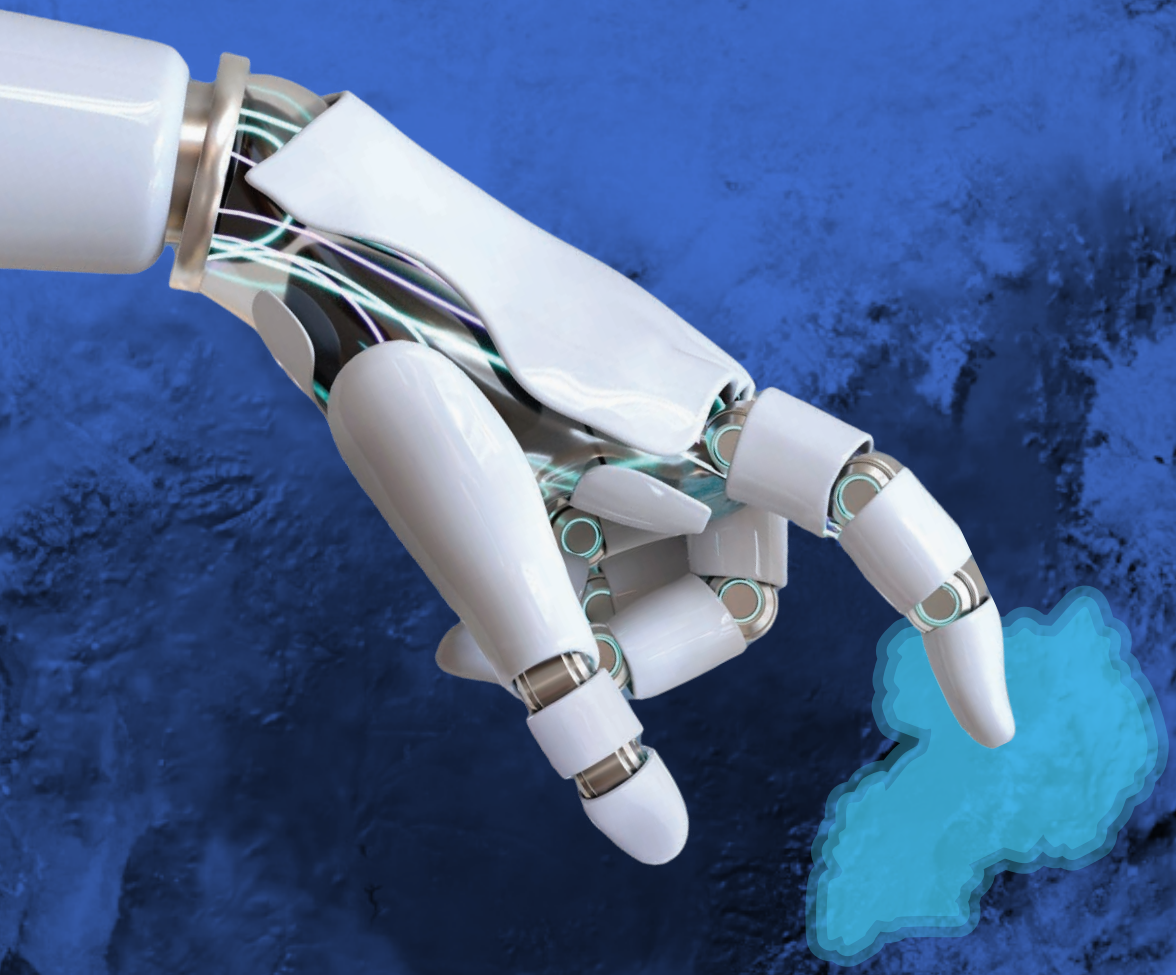
Policy **Brief**

AN ARTIFICIAL INTELLIGENCE **ECO-SYSTEM FOR UGANDA:**

POLICY ALTERNATIVES FOR CIVIL SOCIETY ORGANISATIONS

November **2024**



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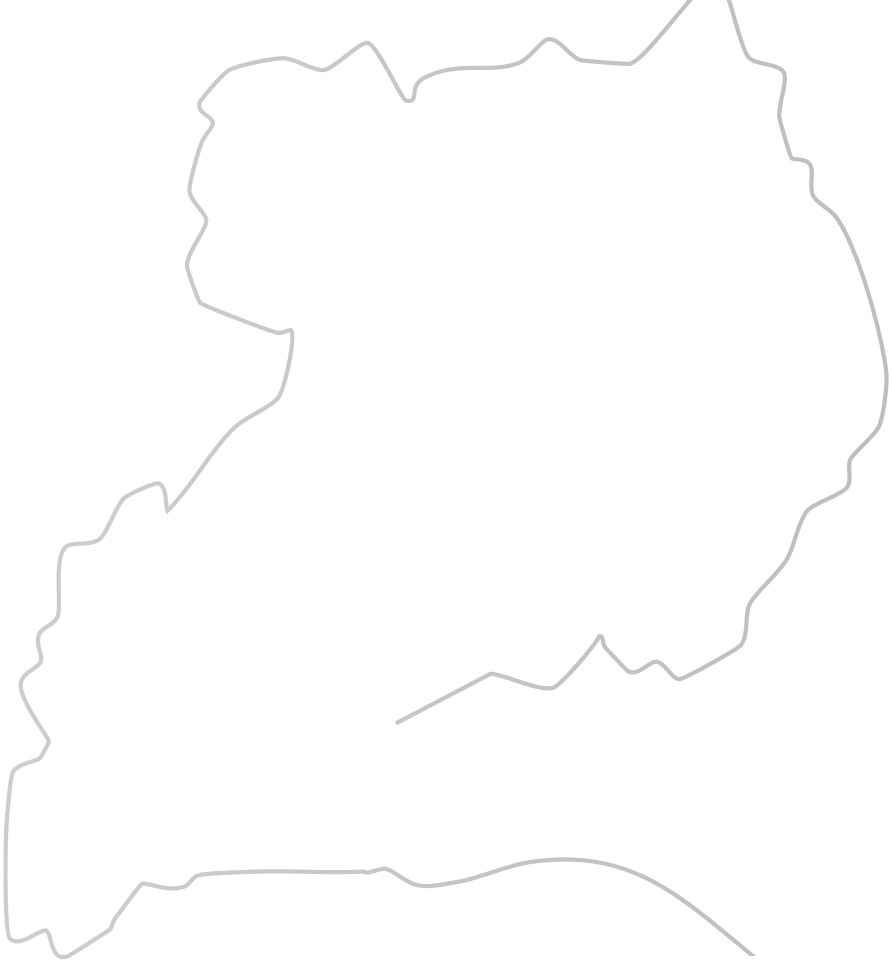

An Artificial Intelligence Eco-System for Uganda:

Policy Alternatives for Civil Society Organisations

Introduction

Projections show that by 2030, Artificial Intelligence (AI) will contribute USD 15.7 trillion to the global economy. Of this, USD 1.2 trillion will be generated in Africa and is projected to give rise to a 5.6% growth in the Gross Domestic Product (GDP) of the continent.[1] Advances in AI and machine learning over the past decade have seized the attention of diverse actors including Information Technology entrepreneurs, economists, the human rights and social justice fraternity, policymakers and development professionals across the world. This is because of the already manifested potential of these new technologies to power economic growth and transform societies.[2] But AI has not come without risks to the rights and freedoms of individuals. Concerns have been expressed around the world, including in Uganda, about the need to foster a trusted, ethical, risk-averse, transparent and accountable AI ecosystem that can elicit peoples' confidence and guarantees an enabling atmosphere for innovation, to best harness AI for the greater public good.

The adoption of AI in Uganda raises significant concerns regarding the collection of personal data, particularly given the government's push for prohibitive laws affecting the digital civic space, including those that enable surveillance and internet censorship. These concerns were amplified by the recent use of AI to manipulate and influence public opinion, in a power struggle involving two officials linked to the ruling party.[3] Accordingly, as AI technologies increasingly permeate the operations of various government agencies and private entities, such as financial institutions, Uganda faces a pressing need to develop a comprehensive national framework to govern AI.

This policy brief aims to contribute to the nascent discourse on AI usage and regulation in Uganda. Firstly, it explores the potential impacts of AI on civil society organisations (CSOs), individuals, companies, financial institutions, the media and the academia in Uganda. Secondly, it highlights the state of AI regulation in Uganda. Thirdly, it highlights the prospects for AI regulation in Uganda, proposing a number of safeguards that should be put in place, as informed by best practices from countries that have moved ahead of Uganda in regulating AI. The brief suggests policy measures should be considered to ensure proper adoption, maximisation and use of AI while mitigating its inherent risks.

1 *See Empower Africa, 'Kenya Enters Partnership with GIZ to Develop National Artificial Intelligence (AI) Strategy,' April 14, 2024. Accessible at https://empowerafrica.com/kenya-enters-partnership-with-giz-to-develop-national-artificial-intelligence-ai-strategy/*

2 *Africa Insights, 'Artificial Intelligence for Development', 2024 at 1. Accessible at chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.undp.org/sites/g/files/zskgke326/files/2024-07/undp_africa_africa_devt_insights-_ai_q2-2024_0.pdf*

3 *Frank Kisakye, 'Ugandan lawyers urged to push for digital rights as AI adoption grows,' The Observer, August 26, 2024. Accessible at https://www.observer.ug/index.php/businessnews/82248-ugandan-lawyers-urged-to-push-for-digital-rights-as-ai-adoption-grows*

1.1 The Potential Impacts of AI on CSOs, Corporate Entities and Individuals

The growing adoption of AI brings a host of opportunities and challenges. In relation to CSOs, it can contribute to improvements in productivity and efficiency through AI-powered collection and analysis of large datasets to inform research, and operational strategies. AI technologies are capable of processing and analysing massive volumes of data at a scale and speed unattainable by human effort alone.[4] These benefits are not limited to the government and the private sector. With technical support and resources, CSOs could also leverage AI to support their missions. For example, AI can enable CSOs to uncover complex patterns and draw insights, with a higher degree of precision than traditional analytical methods enable.

Furthermore, AI could enable CSOs to enhance their advocacy efforts through the creation of AI-driven chatbots strategically placed on websites or mobile applications that help CSOs to engage more effectively with the public, providing real-time information and support to users.[5] Additionally, AI could tackle specific operational challenges, such as overcoming language barriers, by utilising AI-powered translation tools to improve communication and enhance inclusivity.[6]

At individual level, AI can significantly improve individuals' lives, in various sectors such as health and public service. For instance, wearable technologies like smartwatches and smart rings leverage AI to monitor and analyse health metrics, including heart rate and sleep patterns, providing valuable insights for personalised healthcare.[7]

In Uganda, AI has been used in the public sector by agencies such as the Uganda Revenue Authority in its Automated Systems for Customs Data System.[8] This system utilises AI to conduct online market price research, enhance risk profiling and management, detect fraud, ensure compliance, and perform customs audits. By optimising these processes, AI supports more effective public revenue collection, which in turn funds essential services and infrastructure, contributing to the overall development of the country. AI is also revolutionising customer experiences, reducing waiting times for customers seeking services from the National Social Security Fund (NSSF). The fund provides easy self-service for routine transactions by applying an AI-powered digital customer assistant named Sanyu based on Avaya technology.[9]

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4 *Yongjun Xu and others, 'Artificial Intelligence: A Powerful Paradigm for Scientific Research' (2021) Cell Reports Physical Science Accessible at https://doi.org/10.1016/j.xinn.2021.100179 [accessed 8 August 2024].*

5 *S, Aceng and F, Nakazibwe, Artificial Intelligence and Emerging Technologies and Their Impact on Civic Space in Africa Women of Uganda Network Accessible at https://wougnet.org/artificial-intelligence-and-emerging-technologies-and-their-impact-on-civic-space-in-africa/ [accessed 8 August 2024].*

6 *The Independent, 'AI is Powering the Preservation of African Languages', 18 July 2023. Accessible at https://www.independent.co.ug/ai-is-powering-the-preservation-of-african-languages/ [accessed 8 August 2024].*

7 *D Nahavandi, R Alizadehsani, A Khosravi, and UR Acharya, 'Application of Artificial Intelligence in Wearable Devices: Opportunities and Challenges,' 2022, 213 Computer Methods and Programs in Biomedicine 106541.*

8 *T. Nalubega and D. E. Uwizeyimana,'Artificial Intelligence Technologies Usage for Improved Service Delivery in Uganda', 2024, 12 Africa's Public Service Delivery & Performance Review 11 at p.5; UNESCO Uganda, Report on Training Workshops on Artificial Intelligence for Disaster Risk Reduction in Uganda 2021-2022, August 2022, at p.6 Accessible at https://unesco-uganda.ug/wp-content/uploads/2022/08/Report-for-Artificial-Intelligence-for-Disaster-Risk-Reduction-in-Uganda_compressed.pdf [accessed 8 August 2024].*

9 *International Group of Artificial Intelligence, 'Uganda's NSSF transforms customer experience using Avaya's Sanyu AI chatbot,' February 2, 2022. Accessible at https://www.igoai.org/ugandas-nssf-transforms-customer-experience-using-avayas-sanyu-ai-chatbot/*

For commercial entities, AI is proving to be a double-edged sword. It is facilitating increased productivity at lower cost but also disrupting the job market, leading to unemployment due to layoffs as some employees' work is taken over by AI-powered systems.[10] AI systems have the capability to perform tasks with precision and efficiency that often surpass human abilities.[11] This increased production capacity enables companies to better meet market demands, adapt quickly to consumer needs, and maintain a competitive edge, while potentially reducing costs and maximising profitability.

In addition to workers' rights, there are observable risks. The banking sector in Uganda has embraced AI, with Finca using Proto's AI Customer Experience AI solution and Centenary Bank-Uganda deploying Sunbird AI.[12] Despite the positive impact of using AI by financial institutions, there are significant attendant risks. For example, bias in algorithms can lead to financial exclusion of some individuals who may be barred from accessing loans, where an AI system is used to assess loan eligibility. Furthermore, there are concerns about the misuse of personal data as AI systems may access more data than is necessary to evaluate a prospective borrower. Specifically, in Uganda, Airtel Wewole and MTN MoKash systems use AI to send targeted messages that encourage their subscribers to take loans from these lenders, which at times prompts individuals to take loans that they do not need.[13]

Also notable is the threat AI poses to media and information flow, mainly through disinformation. Advanced AI technologies, particularly deep fake software, can manipulate authentic audio, images, and videos with remarkable realism.[14] These tools use sophisticated algorithms to fabricate content that attributes false statements or actions to individuals, creating misleading narratives that are hard to distinguish from reality.[15] The spread of such disinformation can have far-reaching consequences, as it misguides public opinion and decision-making.

In Uganda, where social media is increasingly used as a primary source of news,[16] the risk of AI-driven manipulation continues to grow.[17] The potential for AI to sway public opinion and distort democratic outcomes is substantial.[18] Moreover, AI systems are not only capable of creating convincing falsehoods but can also produce outdated or incorrect information. In a country where internet penetration is still developing—27% of the population, or approximately 13.30 million people, and levels of digital literacy are low, this risk is compounded.[19]

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10 J, Zinkula, 'ChatGPT May Be Coming for Our Jobs — Here Are the 10 Roles That AI Is Most Likely to Replace' Business Insider Africa, 5 August 2024. Accessible at https://africa.businessinsider.com/news/chatgpt-may-be-coming-for-our-jobs-here-are-the-10-roles-that-ai-is-most-likely-to/grmgtk3 [accessed 8 August 2024].

11 Supra Note 34.

12 Aaron Gad Orena, 'Centenary bank to deploy artificial intelligence,' The Observer, August 10, 2022. Accessible at https://observer.ug/businessnews/74706-centenary-bank-to-deploy-artificial-intelligence

13 D, Mwesigwa, 'Cameras, Mobiles, Radios – Action: Old Surveillance Tools in New Robes in Uganda', Collaboration on International ICT Policy for East and Southern Africa (CIPESA) at p.234, Accessible at https://www.giswatch.org/sites/default/files/gisw2019_web_uganda.pdf [accessed 8 August 2024].

14 B, Nick and W, Ivy, 'Deepfake' TechTarget, 8 August 2024. Accessible at https://www.techtarget.com/whatis/definition/deepfake [accessed 8 August 2024].

15 Momina Masood and others, 'Deepfakes Generation and Detection: State-of-the-Art, Open Challenges, Countermeasures, and Way Forward', 2023, 53 Applied Intelligence 3974.

16 R, K, Makanga and J, S Appiah-Nyamekye, 'Ugandans see social media as beneficial and want unrestricted access, but are wary of its use to spread fake news' Afro barometer, 24 September 2021, at 3. Accessible at https://www.afrobarometer.org/wp-content/uploads/2022/02/ad480 ugandans_want_unrestricted_access_to_social_media-24sept21.pdf [accessed 8 August 2024].

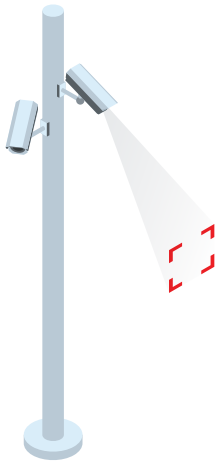
17 Ibid.

18 Ibid.

19 Simon Kemp, Digital 2024: Uganda (DataReportal, 23 February 2024). Accessible at

In another dimension, AI is already impacting the academic sphere in Uganda and beyond. Ugandan Universities such as ISBAT University are offering a Bachelor of Science in Artificial Intelligence & Machine Learning (BSC. AI & ML), first of its kind in the country.[20] At Makerere University College of Computing and Information Sciences, AI developments include the AirQo project- low-cost air monitoring systems, and AI-based tools enhancing capacities in agricultural disease tracking and medical diagnostics.[21] Markedly, the AI Health Lab at Makerere University is also influencing the health sector through AI-powered automating diagnoses for malaria, tuberculosis, and cervical cancer.'[22] In Mbarara Referral Teaching Hospital in western Uganda, AI has been deployed to curb preventable maternal deaths through the provision of artificial intelligence-enabled devices that remotely monitor the health of mothers that have undergone Caesarian section births.[23]

However, the use of AI by academic institutions comes with the risk of plagiarism, disseminating false or misleading information. Despite their advanced capabilities, current AI systems are not yet fully stable or reliable.[24] Given the critical role that academic research and scholarly work play in areas such as medicine, policy development, and other essential domains, the stakes are high. The potential for AI-driven plagiarism and misinformation necessitates the need for rigorous checks, validation and oversight to maintain ethics and accuracy in academic and research outputs.



Equally of concern is the use of AI powered surveillance systems to clamp down on dissenting views from those of the ruling NRM government. The protests in 2020, which resulted in over 50 deaths, underscore the urgent need for an AI governance framework, particularly in light of the government's use of an invasive surveillance system supposedly purchased from Huawei to identify protesters.[25] Opposition politicians and pro-democracy activists decry the possibility of increased human rights abuses associated with this technology, which has facial recognition capabilities and can track vehicle license plates.[26] Previously, the Ugandan police have acknowledged the utilisation of Huawei's surveillance cameras to identify suspects, raising concerns about a lack of judicial oversight and the potential for abuse by authorities.[27] The overall implications stress the critical necessity for an AI governance framework aimed at safeguarding human rights and preventing the abuse of surveillance technology by authoritarian regimes.

20 *See https://www.isbatuniversity.ac.ug/index.php/bachelor-of-science-in-artificial-intelligence-machine-learning-bsc-ai-ml/*

21 *Jane Anyango, 'Uganda Launches AI Health Lab at Makerere University', May 31, 2024. Accessible at https://news.mak.ac.ug/2024/05/uganda-launches-ai-health-lab-at-makerere-university/*

22 *Ibid.*

23 *Nita Bhalla, 'Ugandan medics deploy AI to stop women dying after childbirth,' January 31, 2020. Accessible at https://www.reuters.com/article/world/ugandan-medics-deploy-ai-to-stop-women-dying-after-childbirth-idUSKBN1ZU2EG/*

24 *Horowitz, Michael C., and Paul Scharre, 'AI and International Stability,' CNAS, 2021 at 7. Accessible at https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/AI-and-International-Stability-Risks-and-Confidence-Building-Measures.pdf [accessed 8 August 2024]; B Li, P Qi, B Liu, S Di, J Liu, J Pei, J Yi and B Zhou, 'Trustworthy AI: From Principles to Practices', 2023, 55 ACM Computing Surveys 1, 177. Accessible at https://doi.org/10.1145/3555803 [accessed 8 August 2024].*

25 *Stephen Kafeero, 'Uganda is using Huawei's facial recognition tech to crack down on dissent after anti-government protests,' QUARTZ, November 27, 2020. Accessible at https://qz.com/africa/1938976/uganda-uses-chinas-huawei-facial-recognition-to-snare-protesters*

26 *Ibid.*

27 *Ibid.*

1.2 The State of Artificial Intelligence Regulation in Uganda

1.2.1 The Dearth of AI-Specific Legislation

Despite its ongoing adoption into various sectors in the country, there is a gap in the regulation of AI in Uganda, as there is no comprehensive legal and institutional governance framework dedicated exclusively to AI development and deployment. Nonetheless, there are scattered pieces of legislation, which mostly focus on general-purpose technologies. The current legislative framework does not provide sufficient regulatory cover to AI, its benefits and mitigation of risks to human security, rights and freedoms.

1.2.2 The Pool of General-Purpose Technologies Policies and Plans of Action

The above notwithstanding, when pooled together, the conglomerate of the current policy and legal framework that has a bearing on AI, provides a starting point of reference from which further comprehensive, AI-specific laws can be enacted. Uganda has been developing various policy documents, such as those governing privacy, data protection, and cyber security. All of these are governed at different levels, creating a convoluted and confusing AI governance and management framework.

One such policy document is **Uganda Vision 2040**, a long-term development framework designed to propel Uganda towards upper middle-income status by 2040.[28] The vision encompasses a comprehensive approach to development, focusing on areas such as infrastructure, human capital development, and governance. It emphasises the importance of Science, Technology, Engineering and Innovation (STEI) as critical drivers of economic growth and social transformation.[29] Within this framework, the integration of advanced technologies, including artificial intelligence, is seen as pivotal in achieving sustainable development goals and improving the quality of life for Ugandans, even though there is no exclusive mention of Artificial intelligence.

Additionally, the **National Fourth Industrial Revolution (4IR) Strategy (2020)**[30] aims to position Uganda as a continental hub for 4IR technologies by 2040. This strategy outlines the nation's approach to harnessing cutting-edge technologies, including AI, to address development challenges and drive economic growth. The strategy explicitly emphasises the use of AI in the public sector to improve financial management and tax revenue collection by the Uganda Revenue Authority.[31] Its declared mission is to transform and accelerate Uganda's development into an innovative, productive and competitive society using 4IR technologies by 2040.

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28 *See Uganda Vision 2040: The vision is founded on what the ultimate outcome of "A Transformed Ugandan Society from a Peasant to a Modern and Prosperous Country within 30 years". Accessible at https://www.npa.go.ug/vision2040/*

29 *Ibid.*

30 *See Uganda National 4IR Strategy: A continental Hub that Enables a Smart and Connected Uganda Society, 2020. Accessible at https://ict.go.ug/wp-content/uploads/2020/10/Executive-Summary-Ugandas-National-4IR-Strategy.pdf*

31 *Uganda National 4IR Strategy, 2020, at 12.*

Furthermore, **Uganda's third National Development Plan (NDP III) 2020/21-2024/25** is another comprehensive framework designed to guide the country's development.[32] It identifies the promotion of digital transformation and the adoption of 4IR technologies, including AI, as critical components for achieving Uganda's Vision 2040 of becoming a middle-income country. The NDP explicitly mentions and highlights the country's urgent need for Machine Learning and AI specialists to progress in its technological and AI quests.[33]

While crucial, these policies and plans are not directly targeted towards incorporation of AI into the broader framework of Uganda's sectors. They broadly front concepts of technology, innovation and development without widening the scope or specifically alluding to AI. Nevertheless, they remain a point of reference and commencement.

1.2.3 The Constitutional and other Statutory Frameworks of AI Governance

In addition to the aforementioned policy framework, the Constitution of Uganda and the attendant laws jointly lay the foundation for Uganda's governance framework for AI. The Constitution[34] sets out the principles of governance, the protection of fundamental human rights, and policy aspirations. Of interest to the AI discourse is Principle XI (ii) of the National Objectives and Directive Principles of State Policy.[35] This provides for the role of the State in stimulating "agricultural, industrial, technological and scientific development by adopting appropriate policies and the enactment of enabling legislation."[36] This provision is an entry point and presents an opportunity for developing targeted regulations that align AI development and use with human rights standards.

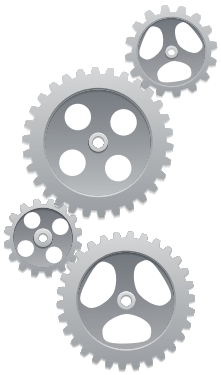
Furthermore, the Constitution lays out crucial benchmarks for the regulation of AI particularly through the framework of human rights, under Chapter Four - the Bill of Rights. In particular, Article 20 emphasises that "fundamental rights and freedoms of the individual… shall be respected, upheld, and promoted by all organs and agencies of Government and by all persons." This provision is crucial as it places an obligation on entities, and individuals in the public and private sectors to ensure that AI technologies do not infringe upon inherent rights such as the right to privacy,[37] freedom from discrimination,[38] and right to equality.[39] The right to privacy enshrined under Article 27 is particularly relevant as AI systems increasingly rely on vast amounts of personal data, hence opening up the possibility of unlawful interference and invasive practices, if no comprehensive safeguards for data privacy are put in place. This aligns with the Data Protection and Privacy Act of 2019, which provides for a specific protection regime for collection, use, processing and storage of personal data. This could inform future legislation that is AI specific.

"fundamental rights and freedoms of the individual… shall be respected, upheld, and promoted by all organs and agencies of Government and by all persons."

32 *The National Planning Authority (NPA), 'Third National Development Plan (NDPIII) 2020/21 – 2024/25,'2020.*
33 *Ibid, at 147.*
34 *The Constitution of the Republic of Uganda, 1995 (as amended).*
35 *Ibid.*
36 *Principle XI (ii) of the National Objectives and Directive Principles of State Policy of the Constitution of Uganda.*
37 *Constitution of Uganda, Article 27.*
38 *Constitution of Uganda, Article 21.*
39 *Ibid.*

Also relevant to AI governance is **Article 21 of the Constitution**, which guarantees equality of all persons and prohibits discrimination on various grounds, including race, gender, and religion. Contemporary studies reveal that AI systems have an inherent that perpetuates and exacerbates societal biases and discriminatory tendencies.[40] These come with adverse consequences for individuals, such as denial of job opportunities, unfair treatment in financial systems, and unequal access to services. Such biases could worsen existing systemic inequalities and deepen societal disparities, hence the urgency of developing a governance framework for AI to counter such risks.

Equally important is **Article 43** which provides that rights and freedoms can be limited under certain circumstances, but such limitations must be "acceptable and demonstrably justifiable in a free and democratic society." This clause is particularly relevant for AI regulation, where there may be tension between innovation and rights protection. Any AI use in Uganda involving the limitation of individual rights must carefully balance these interests, ensuring that any limitations on rights are justified, necessary, and proportionate.



1.2.4 Statutory Frameworks of AI Governance

The Data Protection and Privacy Act (DPPA)[41] was enacted to enhance the protection of the right to privacy under Article 27 of the Constitution by providing a framework for the protection of personal data. While not mentioning the term “artificial intelligence”, the DPPA is relevant to the regulation of AI through the lens of data protection,[42] since AI systems rely on immense data, including personal data, which can impact the privacy of individuals.

Future provisions on AI regulation in Uganda could be informed by Section 3 of the DPPA which stipulates guiding principles of data protection that offer guidance to persons and entities who use AI. These principles include transparency, accountability, lawful and fair processing, data minimisation, purpose limitation and observance of security safeguards in the usage of data. More protectively, Section 3(1)(b) mandates that personal data shall be collected and processed lawfully, fairly, and transparently. This requirement assumes relevance in AI, as data is usually collected from different sources for the training of algorithms. Section 12 of the DPPA limits the collection of data to only specific legitimate purposes and requires that data subjects be informed of such purposes before the collection of their data. This could help to guard against AI systems that repurpose data in ways that were not anticipated at the point of collection, a phenomenon that could potentially lead to a violation of the purpose limitation principle.

40 *Saul Mukasa, ‘Uganda’s future lies in leveraging artificial intelligence,’ September 20, 2023; Eirini Ntoutsi, et al, 'Bias in Data-Driven Artificial Intelligence Systems—An Introductory Survey' (2020) 10(3) Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery,1356.*

41 *Act 9 of 2019.*

42 *See Patricia Peck Pinheiro and Helen Batista Battaglini, 'Artificial Intelligence and Data Protection: A Comparative Analysis of AI Regulation through the Lens of Data Protection in the EU and Brazil' (2022) 71(10) GRUR International 924, https://doi.org/10.1093/grurint/ikac049 [accessed 6 August 2024].*

Other provisions relevant for AI regulation include section 7 of the DPPA which emphasises the need to obtain consent from data subjects before their data is collected or processed, except in specific circumstances such as national security or public interest; and section 24 granting data subjects the right to access, and section 13 (1) (h) and section 16 on the right to rectify, or erase personal data. This is relevant where AI systems might have memorised data and based their decision or predictions on that data. Ensuring that AI systems accommodate requests for modification of data or erasure is also required by the Act.

The DPPA also addresses automated decision-making, which is a core feature of many AI systems that allows them to make decisions autonomously based on defined or set criteria.[43] The DPPA grants each data subject the right to object to decisions based solely on automated processing if these decisions have substantial or harmful effects on them. This provision underscores a rising global concern about the fairness and transparency of AI systems making decisions independent of a human.[44]

The DPPA further emphasises the security of data by requiring that data controllers and processors establish appropriate security measures to safeguard personal data against unauthorised access, modification, or destruction. The Act requires data processors and controllers to notify the concerned individual as soon as possible in case of a data breach, a key component in building trust in AI systems handling sensitive personal data. However, the various provisions in the DPPA, while essential, do not fully address the broader challenges and ethical considerations associated with AI's integration into society. More comprehensive legal strategies are necessary to ensure the responsible use of AI technologies considering its rapid transformation.

Meanwhile, the Computer Misuse Act of 2011 provides a legal basis for prosecuting those who misuse AI technologies for illegal activities, and ensuring that AI systems are not only innovative but also secure, transparent, and ethical. The Act provides a framework that addresses unlawful use of computers and electronic systems. Relevant to the governance of AI is section 12 of the Act which criminalises unauthorised access to a computer or electronic system. The Act's provisions on unauthorised access apply to AI-driven hacking or cyber attacks, where AI could be used maliciously to infiltrate systems. Developers and users of AI technologies must ensure compliance with this Act by implementing comprehensive cybersecurity protocols and monitoring AI systems for any potential misuse. Sections 13 and 14 cover unauthorised modification of the contents of any computer, which can apply to AI systems involved in altering or generating data autonomously.

43 *R T Yarlagadda, 'The RPA and AI Automation', September, 2018; 6 International Journal of Creative Research Thoughts 3 at pp.366, 367 http://www.ijcrt.org/papers/IJCRT113393.pdf [accessed 8 August 2024]; H Sarker, 'AI-Based Modeling: Techniques, Applications and Research Issues Towards Automation, Intelligent and Smart Systems,' 2022, 3 SN Computer Science 158 https://doi.org/10.1007/s42979-022-01043-x [accessed 8 August 2024].*

44 *D. Castelvecchi, 'Can We Open the Black Box of AI?', 2016, 538: Nature News 20.*

Institutional Framework to Govern AI

In relation to the infrastructural set-up to support the regulation of AI, the **National Information Technology Authority, Uganda (NITA-U)** Act provides a starting point.[45] This law established the NITA-U,[46] a body responsible for the regulation, coordination, and promotion of information technology in Uganda. This Act is particularly relevant to AI regulation, as AI technologies are deeply rooted in IT infrastructure and practices. The NITA-U Act mandates the Authority to develop national standards and guidelines for IT-related activities.[47] In the context of AI, NITA-U's role is crucial in setting the standards that guide the development, deployment, and usage of AI technologies across various sectors. As AI becomes more integrated into business and government operations, NITA-U's regulatory oversight role, in line with its functions under section 5 of the Act, is essential in ensuring that AI systems are aligned with national IT standards and contribute positively to the country's development.

Moreover, NITA-U is tasked with promoting the use of IT in government and the private sector, which should include AI technologies.[48] Although this Act does not mention artificial intelligence, it provides the legal framework within which AI innovations can be encouraged, regulated, and integrated into the broader IT landscape of Uganda. NITA-U's authority extends to auditing and certifying IT products and services, which could include AI systems. This would ensure that AI technologies meet the required standards before being deployed, thereby promoting the safe and ethical use of AI in Uganda.

Alongside the above laws is the **National Payment Systems Act of 2020**[49] that regulates payment systems in Uganda, ensuring their safety, efficiency, and reliability.[50] Section 18 provides for the establishment of sandboxes for innovations, which serve as incubation environments for new technological systems and innovations that the government and companies plan to integrate into national payment systems. The Central Bank of Uganda holds the primary authority to establish and manage these sandboxes,[51] though individuals or entities can also apply for authorisation to create their own.[52] These sandboxes, overseen by the Bank of Uganda, provide a controlled environment where AI technologies and other innovations to be introduced in the national payment systems can be tested and refined before public deployment. This ensures that new technologies are well-tested and appropriately trained, contributing to the safety and effectiveness of the payment systems. However, the Act falls short in providing detailed provisions and specific guidelines to ensure that AI technologies passing through these sandboxes are thoroughly vetted for public safety before they are widely implemented.

45 *Act 4 of 2009.*
46 *Section 3 of the National Information Technology Authority Act.*
47 *Ibid, Section 5.*
48 *Section 5 of the National Information Technology Act.*
49 *Act 15 of 2020.*
50 *Preamble to the National Payment Systems Act.*
51 *Ibid., Section 16.*
52 *Ibid., Sections 17 and 18.*

Another piece of legislation is the **Copyright and Neighboring Rights Act, of 2006** (CNRA), which establishes a comprehensive framework for protecting intellectual property rights, primarily focusing on literary, scientific, and artistic works. The CNRA regulates AI in terms of intellectual property rights concerning works that are either created partially or wholly by artificial intelligence. Under the CNRA, copyright protection is granted to works that are original and have been reduced to a material form,[53] with authorship traditionally reserved for human creators.[54] Thus, there are arguments that the CNRA does not recognise AI as a legal author which presents complexities in attributing ownership and protection to AI-generated content. Nevertheless, the CNRA provides a reference legal framework for addressing issues related to copyright-related intellectual property rights within the context of AI.

What the above seems to demonstrate is that the current legal framework offers some scattered protection and guidelines, but as AI continues to evolve, so must the laws that govern its use and the rights of creators and innovators. They should be comprehensive to address the current and emerging gaps. The regulation of AI in Uganda lacks coordination and harmonisation across institutions that address aspects of AI governance, leading to a fragmented approach towards AI governance. The Personal Data Protection Office, National Information Technology Authority, Ministry of ICT, and the Courts of Uganda are among the bodies that may address isolated aspects of AI regulation stemming from their mandates as highlighted above. However, without a unified regulatory and institutional framework, these efforts remain disjointed without comprehensive oversight and consistent standards for AI technologies across the country.

In seeking a governance framework for AI in Uganda, there is a need for a cautious, systematic balance between creating a conducive environment for harnessing AI innovation and protecting end users, and their human rights. The two, though appearing on extreme sides, are inter-related and shall require holistic rather than siloed interventions.

53 *Section 4(1) of the Copyright and Neighbouring Rights Act.*

54 *Section 2 of the Copyright and Neighbouring Rights Act. In the interpretation section of the Act, an author is defined to mean a physical person who created or creates work protected.*

1.3 The Prospects For AI Regulation In Uganda

As Uganda's journey of AI adoption and usage gains traction, there are nine denominators that underlie other progressive AI frameworks across other jurisdictions that could help quicken and offer direction to Uganda's AI aspirations, as discussed below.

a) Establishment of AI Governance Institutional Framework

Uganda has taken proactive steps through its agencies, including UCC and the Ministry of ICT to establish the institutional set-up to guide the national prospects for the responsible use of AI. It has established various taskforces, such as the Expert National Task Force on the Fourth Industrial Revolution set up in 2018[55] and, more recently, on July 24, 2024, the AI National Taskforce unveiled by UCC.[56] Part of its mandate is to advise the government on the domestication of AI in view of technological innovation informing the fourth industrial revolution.[57] The team is tasked with developing a comprehensive concept framework to inform the deliberations surrounding AI within UCC and with other stakeholders.[58] The task force is composed of 23 experts including engineers, scientists, IT experts, government policy makers and the members of academia. However, there is limited knowledge of how this task force will consult various stakeholders, its work could be enhanced by benchmarking with entities such as the Artificial Intelligence Institute of South Africa and AI Expert Advisory Council in South Africa.[59]

b) Development and Implementation of a 'Living' Framework of Best Practices on AI

With the possibility of technology outpacing regulation due to its consistent evolution, the Uganda government must commence on developing regulations for AI that do not compromise innovation. One notable emerging best practice from various countries worldwide is the creation of a comprehensive framework that spans the diverse sectors impacted by AI. Singapore exemplifies this approach by implementing a national agenda that consistently codifies best practices, thereby guiding the responsible development and integration of AI across different domains. In particular, as an example, the government of Singapore through its Ministry of Health (MOH), the Health Sciences Authority (HSA) maintains what it calls 'Artificial Intelligence in Healthcare Guidelines (AIHGle).'[60] The document is treated as 'living' to allow for consistent and periodical updating to incorporate good practices to provide guidance for domestic developers, importers and implementers of AI in the healthcare sector. The best practices framework allows for the complementing of the regulatory framework. By adopting this best practice framework, Uganda would keep up with the evolution of AI without necessarily undertaking statutory amendments especially in the AI/technology world where every day comes with new changes.

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55 *Office of the Prime Minister, 'PM Receives 4IR Strategy Report, Commits Government to Implement It', OPM, 16 May 2023. Accessible at https://opm.go.ug/pm-receives-4ir-strategy-report-commits-government-to-implement-it/ [accessed 8 August 2024].*

56 *Umaru Kashaka, 'New AI Taskforce to Shape Uganda's Tech Landscape', New Vision, 26 July 2024, Accessible at https://www.newvision.co.ug/category/news/new-ai-taskforce-to-shape-ugandas-tech-landsc-NV_192901 [accessed 8 August 2024].*

57 *Ibid.*

58 *Ibid.*

59 *Tusi Fokane, 'Towards a Regulatory Framework for Ethical Artificial Intelligence in South Africa,' CIPESA, May 21, 2024. Accessible at https://cipesa.org/2024/05/towards-a-regulatory-framework-for-ethical-artificial-intelligence-in-south-africa/*

60 *Ministry of Health (MOH) of Singapore, the Health Sciences Authority (HSA) and the Integrated Health Information Systems (IHiS), 'Artificial Intelligence in Healthcare Guidelines (AIHGle),' 2020.*

c) The Need for A Specific Legal Regime

As noted earlier, there is no dedicated legislation for the regulation of AI in Uganda, which creates a significant gap in its regulation. To address this, key stakeholders - including the Ministry of ICT and National Guidance, UCC, NITA-U, and the Personal Data Protection Office - must collaborate to develop comprehensive and tailored regulations. This effort should focus on understanding AI's specific dynamics, impacts, and challenges within the Ugandan context and not wholesomely adopting or replicating legislation from other jurisdictions considering the divergences in context at continental, regional and national levels. Given that AI is still evolving, legislation should be forward-looking and flexible enough to accommodate future advancements. It should also address the aspects central to a formidable, ethical AI system, namely stringent data protection, enhanced privacy rights and a robust AI oversight, routinely audited framework to enforce compliance to the national legal framework governing responsible AI exploitation, transparency and access to remedy in cases of breach. As a benchmark, Uganda could look to South Africa,[61] and Kenya,[62] among other African countries where national legislation drafting efforts are in motion.

d) Picking Lessons from African AI Frameworks

Benchmarking should be undertaken to learn from African countries such as Nigeria, Mauritius, and Rwanda that are already ahead in AI governance.[63] Additionally, drawing on regional and international frameworks, such as the UN High-level Advisory Body on Artificial Intelligence (HLAB-AI) report published on September 19, 2024,[64] the African Union's AI Strategy endorsed by the African Union Executive Council in July 2024,[65] and the European Union's AI Act,[66] will be crucial in shaping robust AI legislation in Uganda. This approach will ensure that the regulatory framework is not only effective but also adaptable to future developments in AI.

Uganda's policy and legal framework, whether soft at the start (through guidelines) or binding statutory provisions, should seek to provide oversight, accountability and regulation to the various actors that are key in the chain of AI ideation and eventual use. These include in particular the following two categories of actors, which may and must not necessarily be mutually exclusive since the same organisations can belong in both sectors.

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61 *Ifeoma Joy Okorie, 'South Africa publishes a national AI policy framework, seeks feedback,' August 15, 2024. Accessible at https://techpoint.africa/2024/08/15/south-africa-publishes-ai-policy/*

62 *In Kenya, efforts are advanced aimed at debating, developing and passing the national artificial intelligence (AI) strategy, drafted in April 2024 and the Kenya Robotics and Artificial Intelligence Society Bill 2023.*

63 *S, Shahid and O, David Dentons, 'AI Regulation and Policy in Africa' , 13 June, 2024, Accessible at https://www.dentons.com/en/insights/articles/2024/june/13/ai-regulation-and-policy-in-africa [accessed 8 August 2024]; National Information Technology Development Agency, 'National AI Strategy', August, 2024. Accessible at https://ncair.nitda.gov.ng/wp-content/uploads/2024/08/National-AI-Strategy_01082024-copy.pdf [accessed 8 August 2024].*

64 *Accessible at https://www.gp-digital.org/news/the-final-report-of-hlab-ai-our-analysis-and-thoughts/*

65 *Accessible at https://au.int/en/documents/20240809/continental-artificial-intelligence-strategy*

66 *Regulation (EU) 2024/1689.*

I. **"Developers of AI"** - comprised of mainly individuals acting solely or collectively, individual organisations or operational in a consortium who undertake to raise funds, plan, design, develop and maintain AI in a diversity of spheres. Under this category, the government may have to focus on the chain of development of AI - a four-step agenda focusing on the potential gaps, overlaps and a general lack of clarity over responsibility that may be resident in the Researching, **Designing, Building and Testing** of AI.

II. **"Implementers of AI"** - in the same vein as the above, these could comprise mainly individuals acting solely or collectively, individual organisations or operational in a consortium who use the final product developed by developers of AI, in their day-to-day operations. Checks should exist in the process of implementation, which includes **Use, Monitoring, Review (evaluation), data protection and general intellectual property** related to AI. It should be noted that there are diverse models of developing AI as there are various ways of implementing AI.

e) Establish a National Research and Innovative Fund on AI

The ongoing national AI transformation as evidenced in other countries, is a prolonged and expensive process requiring immense knowledge, skills, and latest data, among other demands. To effectively tap into and harvest the dividends that come with AI, strategic investments are also needed in 'complementary technologies', including the Internet of Things (IoT), high-speed broadband enabling seamless connectivity, sensors, or computing storage, etc., all of which combined have an effect on AI development and adoption in communities. Uganda could benefit from assessing how such innovative funds operate from jurisdictions such as Luxembourg where the Ministry of the Economy established an AI Digital Tech Fund to support innovative AI-oriented start-ups. Other best practice support programmes of interest include the 5G in Italy, the Digital Innovation Hubs from the European Union, and France's Ambition Seed Angels Fund. States elsewhere are intentionally incorporating AI-related financial support arrangements such as grants, subsidies, loans and guarantees, or equity funding to diverse actors in their national AI sphere to spur research and innovation. This kind of funding requiring direct government intervention is informed by the reality that surrounds the high levels of uncertainty of outcomes that underlie innovation.

Additionally, to ensure the responsible adoption of AI, it is essential to prioritise and encourage research into AI to inform stakeholder policy direction with actionable recommendations and policy alternatives. There must be a consistent, deliberate, government-funded agenda that strengthens the national AI research capacity, and translates such AI research into application in the public and private realms. This research should inquire into the ever-evolving impact of AI, emerging risks and strategies for mitigating such risks.

Currently, despite the ongoing integration of AI in various sectors in Uganda, there is a notable lack of comprehensive research in this area and other AI-related risks. As numerous AI innovations and start-ups emerge,[67] so should the research institutions and think tanks dedicated to studying the evolution of AI in the country.[68] By enabling a conducive research environment focused on AI's challenges, Uganda can promote safer and more ethical AI development, ensuring that innovations contribute positively to society while mitigating potential risks.

f) Develop and Implement a National Strategy for AI

There is a need for a National Artificial Intelligence Strategy that is comprehensive enough to provide direction and guidance. The Strategy would encompass the national vision for AI in Uganda's social and economic development, upon which all other initiatives should be grounded and contribute towards. Kenya provides an example of progression of state efforts towards the development of such an AI strategy, which it is undertaking in partnership with the German Federal Ministry for Economic Cooperation and Development (BMZ) and the European Union.[69] Uganda too, would benefit more from pursuing and embracing a multi-stakeholder approach, bringing on board actors from "public research, industry and government institutions, having mixed public-private funding models and seeking international co-operation on AI."[70]

Most fundamental within such a strategy is the establishment of a central body/authority responsible for the coordination and ensuring cohesion in policy implementation. This is most urgent considering that currently, the available AI policy obligations are scattered across a multiplicity of not only policy spheres but also housed in different entities (across ministries and government agencies), which adds to the complexity of governing an already disaggregated nascent AI industry in Uganda.

67 *Tracxn, 'Artificial Intelligence Startups in Uganda', Accessible at https://tracxn.com/d/explore/artificial-intelligence-startups-in-uganda/__8hhT66RA16YeZhW3QByF6dOvXKyoZ13SAkpeGD1t8Vw/companies [accessed 14 August 2024].*

68 *Sunbird AI, 'About' Accessible at https://sunbird.ai/about/ [accessed 8 August 2024].*

69 *Empower Africa, 'Kenya Enters Partnership with GIZ to Develop National Artificial Intelligence (AI) Strategy,' April 14, 2024. Accessible at https://empowerafrica.com/kenya-enters-partnership-with-giz-to-develop-national-artificial-intelligence-ai-strategy/[accessed 12 August 2024].*

70 *241*

g) National AI Awareness and Literacy Programme

Increasing public awareness and literacy about AI in Uganda requires a targeted approach to education and capacity building. The public must be informed about both the opportunities and challenges posed by AI systems, with the help of various actors and key stakeholders such as the government, educational institutions,[71] CSOs and corporate companies.[72] This includes offering training and information programmes that equip individuals with essential knowledge on how AI works, including its principles, applications, concepts, and on how to use AI and navigate AI-related limitations and applications and the attendant ethical considerations.[73] This can enable Uganda to prepare its citizens to engage with AI responsibly, ensure inclusion and human rights protective practices. Currently, only Makerere University in Uganda is worldwide ranked within research performance in Artificial Intelligence (AI) ranking where it emerged at No.76 in Africa, signifying the urgency of AI education, and publication.[74] This is in addition to its laudable progress in establishing the Makerere University AI Lab, the first of its kind at an institution of higher learning in Uganda.

Uganda could benchmark for example the University of Johannesburg which is progressively making AI courses compulsory for all qualifications within the institution, through the integration of AI concepts into the courses curricula, introducing learners to evaluating AI critically, ensuring they are informed developers and users of AI.[75] In relation to enhancing AI literacy, Uganda could borrow from the USA which has gazetted 16th July as an annual national AI appreciation day to take stock of the emerging AI technologies and help its citizens to "understand and respond to the rapid advances in AI across cybersecurity."[76] Additionally, the government must invest in training teachers of AI and subsidise internet costs, a central ingredient in making AI adoption and usage accessible to all.[77]

71 *See Makerere University Courses, 'Artificial Intelligence' Accessible at https://courses.mak.ac.ug/courses/artificial-intelligence [accessed 15 August 2024]; ISBAT University, 'Bachelor of Science in Artificial Intelligence & Machine Learning', Accessible at https://isbatuniversity.ac.ug/index.php/bachelor-of-science-in-artificial-intelligence-machine-learning-bsc-ai-ml/ [accessed 8 August 2024].*

72 *Bukedde, 'Huawei Uganda Offers Free Artificial Intelligence Training' (22 February 2021) Accessible at https://www.bukedde.co.ug/business/91704/huawei-uganda-offers-free-artificial-intellig [accessed 14 August, 2024].*

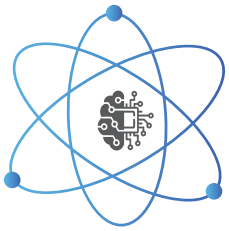
73 *World Economic Forum, 'How we can prepare for the future with foundational policy ideas for AI in education,' Apr 16, 2024. Accessible at https://www.weforum.org/agenda/2024/04/prepare-future-policy-ideas-ai-in-education/*

74 *Edu Rank, 'Best Universities for Artificial Intelligence (AI) in Africa,' February 29, 2024. Accessible at https://edurank.org/cs/ai/af/*

75 *Myles Illidge, 'University of Johannesburg making AI courses compulsory for all qualifications,' 2, December, 2022. Accessible at https://mybroadband.co.za/news/government/472267-university-of-johannesburg-making-ai-courses-compulsory-for-all-qualifications.html*

76 *ISC2, 'AI Appreciation Day: Resources and Insights,' July 16, 2024. Accessible at https://www.isc2.org/Insights/2024/07/AI-Appreciation-Day-Resources-And-Insights*

77 *Kabahizi, C.B., 'How AI could transform Uganda's Eduscape: Paving the path for blended learning,' Center of Faith Family and Justice,' 2021, at 15.*



h) Ensuring Protection of Human Rights

To ensure the ethical adoption and use of AI in Uganda, a human rights framework must be integrated from the outset of AI development. This involves designing AI systems with fairness, transparency, and accountability, and employing diverse and representative datasets to mitigate biases related to ethnicity, gender, and socioeconomic status.[78] Rigorous testing and independent evaluations should precede deployment to ensure models do not disproportionately disadvantage any group. Post-deployment, continuous monitoring, feedback mechanisms, and public engagement are essential to maintain accountability and make necessary adjustments. By embedding these principles throughout the AI lifecycle, Uganda can promote equitable and responsible AI practices that address and prevent existing societal inequalities. Central to this should also be the emphasis on data protection measures and privacy, as an integral component to the design and deployment of AI systems. By prioritising these practices, organisations can mitigate risks associated with data breaches and misuse, thereby safeguarding both user information and institutional integrity.

i) Enforcing Ethical Use of AI by the Various Stakeholders

Ethical AI is concerned with the principles and guidelines that govern the development, deployment, and use of artificial intelligence technologies in a manner that aligns with moral values and societal norms. The emphasis is on ensuring that AI systems act in ways that are considered morally right, transparent, accountable, and fair. This includes considerations like bias mitigation, fairness in decision-making, and the societal impacts of AI. It involves discussions around the responsibilities of developers and organisations in creating AI systems. Promoting ethical AI use involves emphasising transparency and accountability in its deployment.

It is crucial to establish and enforce measures that mandate disclosure of AI usage[79] by companies, public institutions, and individuals, including banks, media organisations, scholars, and journalists. Currently, there is a lack of publicly available information regarding how these entities incorporate AI into their operations, as such details are often not disclosed on their websites or in their public communications. Regulators such as the Ministry of ICT and National Guidance, UCC and the Personal Data Protection Office should ensure that they formulate clear guidelines for disclosure that can enhance public trust and ensure that AI applications are used responsibly, aligning with ethical standards and ensuring accountability in their implementation.

78 *B Li, P Qi, B Liu, S Di, J Liu, J Pei, J Yi and B Zhou, 'Trustworthy AI: From Principles to Practices' (2023) 55 ACM Computing Surveys 1, 177 Accessible at https://doi.org/10.1145/3555803 [accessed 15 August 2024].*

79 *ACME 'Should the Media Tell You When They Use AI to Report the News? What Consumers Should Know', 17 November, 2023. Accessible at https://acme-ug.org/2023/11/17/should-the-media-tell-you-when-they-use-ai-to-report-the-news-what-consumers-should-know/ [accessed 8 August 2024].*

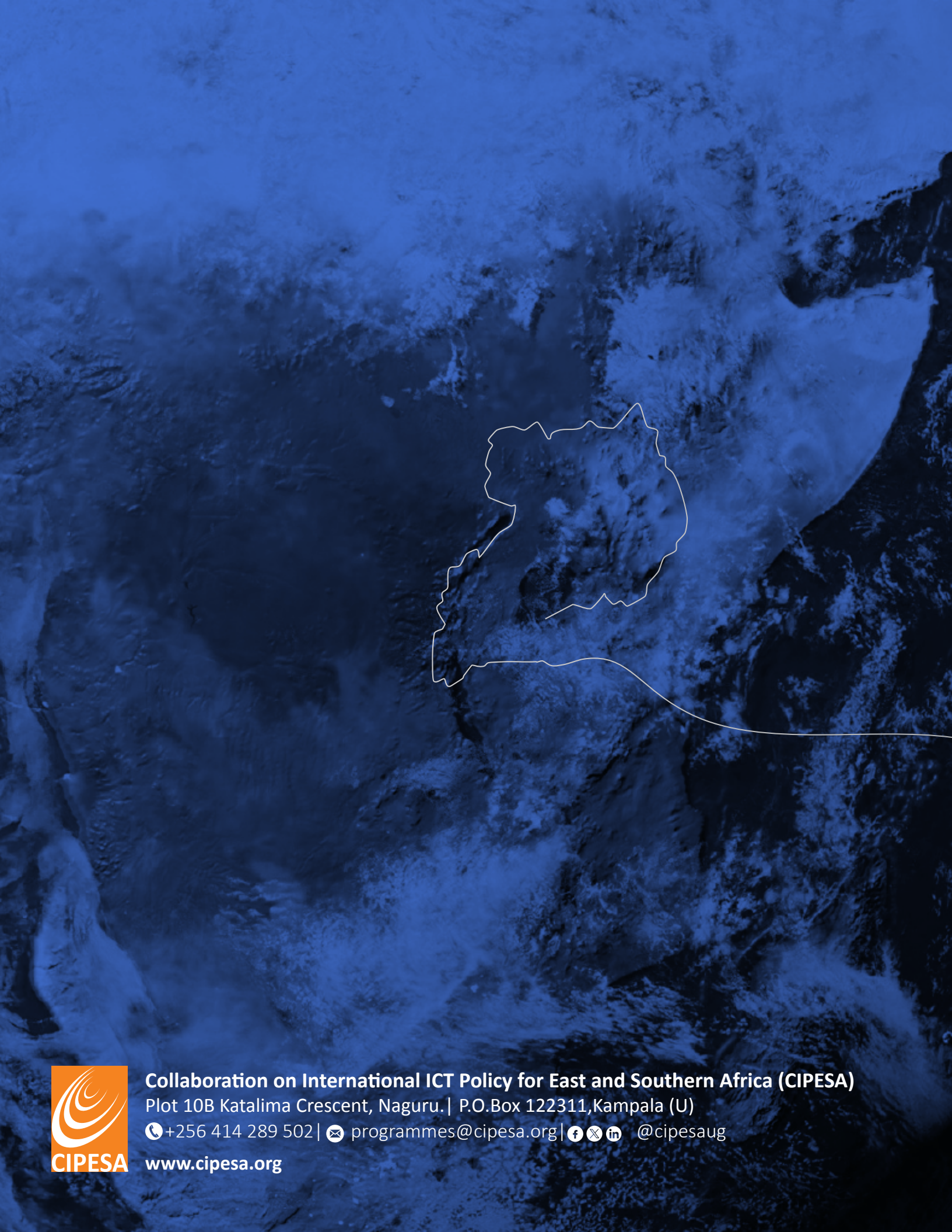
j) Establishment of Cyber Security Protocols to Counter AI Hijack

As some intend to use AI for the good of humanity, there are risks emerging from those that intend to use it for bad. Consequently, there is a need for a nationally guided framework of Cybersecurity providing guidance to the developers and users of AI on how to enhance their protection against such digital attacks. As Uganda steadies its journey into AI, cyber security remains a key component during the process of national policy formulation for AI adoption and usage to counter the vulnerability to cyber attacks and other digital security risks.

k) Creating a Conducive Atmosphere for Citizen Platforms for AI Engagements

Uganda should also ensure there is opportunity and freedom for AI actors to coalesce in various groupings such as coalitions and networks, coopting both public and private entities-corporate companies, small and mid-sized enterprises, AI think tanks and research centres, industries, funding entities, oversight and accountability seeking CSOs and professionals in the AI sphere. These platforms can be conduits of encouraging best practices, latest research information among other emerging issues on AI that could benefit the country. Examples from which this could be benchmarked include the United Arab Emirates' Dubai Future Accelerators; the Kenya Robotics and Artificial Intelligence Society, which is rooting for regulations around AI and robotics,[80] and the AI Coalition of the Netherlands made up of over 65 parties from both government and private sector, that is at the helm of spear-heading AI innovation in the Netherlands. Through this platform, AI applications are subjected to testing with oversight of industry players, there is promotion of ethical guidelines for AI development, adoption and usage, in addition to data sharing. An AI ecosystem should thus favour and strategically support such inter-agency, inter-sector and public-private collaboration and formal linkages to also facilitate AI technology transfer from explorations, studies and innovation to actual application in entrepreneurship.

80 Empower Africa, 'Kenya Enters Partnership With GIZ to Develop National Artificial Intelligence (AI) Strategy,' April 14, 2024. Accessible at https://empowerafrica.com/kenya-enters-partnership-with-giz-to-develop-national-artificial-intelligence-ai-strategy/



Collaboration on International ICT Policy for East and Southern Africa (CIPESA)
Plot 10B Katalima Crescent, Naguru.| P.O.Box 122311,Kampala (U)
+256 414 289 502| programmes@cipesa.org| @cipesaug
www.cipesa.org