



ASSOCIATION OF AFRICAN UNIVERSITIES ASSOCIATION DES UNIVERSITÉS AFRICAINES

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ARTIFICIAL INTELLIGENCE IN AFRICAN HIGHER EDUCATION

Celebrating the 2023 African Universities' Day

6-10 November 2023

CONCEPT PAPER

Background

The Association of African Universities (AAU) is the apex organisation and forum for consultation, exchange of information and co-operation among institutions of Higher Education in Africa. The AAU represents the voice of Higher Education in Africa and provides a prestigious platform for networking by African institutions of Higher Education. Currently, the Association has a membership of 421 Higher Education Institutions (HEIs) in 48 African countries and its Secretariat is based in Accra, Ghana.

The decision to create the AAU was taken at a meeting of Heads of African Institutions of Higher Education held for this purpose at the University of Khartoum, Sudan in September 1963. The International Association of Universities assisted in planning and making administrative arrangements for this meeting and was invited to cooperate with the Interim Committee that was set up to draft a constitution for the AAU. A founding conference attended by the Heads or Senior representatives of 34 African Universities was held at Mohammed V University in Rabat, Morocco on 12th November 1967. At this meeting the constitution was adopted, and the first officers and members of the AAU Executive Board were elected.

The African Universities' Day is celebrated annually on 12th November by universities in Africa. This day coincides with the birth of the AAU and aims to present a unique platform to promote critical dialogue among stakeholders on how to improve Higher Education in Africa. The African Universities' Day, mostly marked through a weeklong celebration, has become a premier event on the calendar of AAU and this year the Association is celebrating its 56th birthday.

The Theme for 2023

This year's theme, "Artificial Intelligence in African Higher Education" was aptly chosen because of the need to discuss the advances in augmented reality, virtual reality, natural language processing, internet of things and other emerging technologies - and how these are impacting teaching, learning, research, collaboration, lifelong learning, ethics and privacy, and the administrative functions of African HEIs. It is critical that HEIs adopt progressive strategies to guide the usage and integration of emerging technologies such as AI and use these opportunities to improve educational outcomes. The AAU recognizes that for this to happen HEIs need to engage in continuous learning and to collaborate with industry and other stakeholders to guide students and staff, ensure the relevance of the curricula, build capacities of staff- to produce graduates that are adaptive, critical thinkers and can make differences in their communities through problem solving.

The online dictionary, merriam-webster.com, defines artificial intelligence (AI) in two ways: "a branch of computer science dealing with the simulation of intelligent behavior in computers" or "the



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capability of a machine to imitate intelligent human behavior". The concept of artificial intelligence is not new because it dates to 1951 when the first working AI programs were written to run on the Ferranti Mark 1 machine of the University of Manchester ("Timeline of artificial intelligence," 2023). These programs included a checkers-playing program written by Christopher Strachey and a chess-playing program written by Dietrich Prinz ("Timeline of artificial intelligence," 2023). More specifically, the term "artificial intelligence" was coined in 1955 by John McCarthy, an assistant professor at Dartmouth College (Nilsson, 2009: 77-81). McCarthy defined artificial intelligence as the ability of machines to behave in a manner that would be deemed intelligent if a human were acting in that way (McCarthy et al., 2006). From 2020 to-date we have witnessed an explosive growth of artificial intelligence applications particularly OpenAI's ChatGPT which now has more than 100 million users. ChatGPT is a form of generative AI - a type of artificial intelligence that can construct diverse forms of data, including images, videos, audio, text, and 3D models (Musioli, 2023). Musioli (2023) stated that Generative AI could learn patterns from existing data and use the knowledge to create novel and distinctive outputs. GenAI can produce highly credible and complex content that simulates human creativeness, making it a valued tool for many industries such as education, gaming, entertainment, and product design (Musioli, 2023).

Globally, the education sector is facing great uncertainty concerning how AI would impact educational systems. There are concerns that students and teachers would use AI unethically and thus undermine teaching and learning. This is because ChatGPT can be used to generate essays and complex answers to academic exercises. Generally, it can be posited that for African Universities to fully leverage the potential of AI to their benefit, the various concerns that come along with it - be it regulatory, societal, and organizational need to be addressed. The huge potential of AI warrants the requisite investment of effort by all key stakeholders in addressing the practical and ethical challenges that confront it. African Universities must lead the discourse and the engagement of all such concerned stakeholders.

[EDUCAUSE](#), a nonprofit association whose mission is to advance higher education using information technology regularly conducts online polls, engaging colleges and universities, corporations, foundations, governments, and other nonprofit organizations to further its mission of transforming higher education with information technology. The April 2023 Educause QuickPoll Results on 'adopting and adapting to Generative AI in Higher Education' recommended intentional staffing and governance to ensure that institutions adopt AI technologies effectively and appropriately (McCormack, 2023). This poll also revealed that Educause members were already using generative AI in four clusters: (1) helping one to think, (2) lightening one's load, (3) building one's content, and (4) advancing one's work (McCormack, 2023). This Educause poll demonstrates the value that AI could bring to African Higher Education when it is strategically and intentionally integrated to the teaching and learning processes.

The Policy Context for the intersection between AI and African Higher Education

In 2021 UNESCO published a guidance¹ on AI and education for policymakers to inspire conversations on how AI could be leveraged to enhance education, empower teachers, and enhance teaching. This guidance emphasizes the interdisciplinary nature of AI, introduces AI technologies

¹ Miao, F., Holmes, W., Huang, R., & Zhang, H. (2021). *AI and education: A guidance for policymakers*. UNESCO Publishing. <https://doi.org/10.54675/PCSP7350>



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and techniques, maps out possible trends in AI, does a critical review of the capabilities and limitations of AI, discusses human-machine collaborative intelligence, and reflects on the 4th industrial revolution and the impact of AI on employment. Two key developments are said to be responsible for the growth in AI - these are the exponential growth of data because of the internet development and related technologies - and the exponential growth of computer processing power. Big data and powerful computers have been key ingredients of successful machine learning because they depend on processing trillions of data which in turn requires huge computer power (UNESCO, 2021).

The UNESCO guideline (2021) recommends the characterization of a system-wide vision of AI and education policies as top priority. Policy makers are also called upon to champion the assessment of system-wide readiness and to choose strategic priorities. Ensuring that AI is human-controlled and centered on serving people, and that it is deployed to enhance capacities for students and teachers – is also highlighted to be fundamental. Building the knowledge and confidence of policymakers and education leaders is central for them to make decisions in an increasingly AI-rich educational ecosystem. Master plans for using AI in education management, teaching, learning, and assessment are priority. Testing and scaling up evidence-based avenues of applying AI in learning would facilitate the strategic adoption of AI. Fostering innovations and incubating the local development of AI technologies and tools would proactively address inequality, bias and uptake of opportunities and support educational AI research and innovation.

The African Union Development Agency² is championing the development of the African Union AI Continental Strategy to be formally adopted and launched in January 2024. The all-African AI experts are reported to have held several writing workshops since May 2022 and have emphasized the need for a continuous review and adaptation of the strategy to ensure that it is not obsolete soon.

Some countries in Africa are reported to have either launched their national AI strategies or developing AI strategies or initiated steps to develop AI policies and or promoting AI research and development. These countries include South Africa, Tunisia, Nigeria, Kenya, Egypt, Ghana, Morocco, and Rwanda. However according to the Global AI Index³, African countries are still ranked low on three pillars of analysis: investment in AI, AI innovation and AI implementation.

What some African Universities are doing around AI and Higher Education

African Universities are doing commendable work around talent development for the AI future, AI research and innovation and partnerships for AI development. Some shining examples profiled here include:

1. A research team at Cheikh Anta Diop University in Senegal is applying Large Language Models (LLMs) to improve decision-making, policy development, resource allocation and communication to help combat infectious diseases in Africa. The team, led by Dr Mamadou Alpha Diallo, is using ChatGPT-4 to analyze and interpret epidemiological data, clinical records, and research literature to help predict outbreaks, identify priority areas for interventions, and evaluate the potential impacts of specific policies. The information

² <https://www.nepad.org/news/artificial-intelligence-core-of-discussions-rwanda-au-high-level-panel-emerging>

³ <https://www.tortoisemedia.com/intelligence/global-ai/>



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produced will include tailored messages, educational materials, and real-time updates on disease trends and prevention strategies for healthcare workers, policymakers, and affected communities.

2. The Responsible Artificial Intelligence Lab (RAIL) which is hosted by the Kwame Nkrumah University of Science and Technology in Ghana. RAIL aims to create a sustainable approach for nurturing local talent to engage in multidisciplinary, responsible AI for development research and innovation with an emphasis on women involvement. RAIL aims to address the capacity requirements of the public and private sector and strengthen capacities in the responsible utilization of AI in support of the most vulnerable communities in Ghana, Senegal, and the sub-region.
3. There is a growing interest in AI education and research in Egypt⁴, with several new AI faculties opening or re-branding between 2019-up to date and these are adding over 3,000 new graduates into the market each year. The Science and Technology Development Fund (STDF) is issuing AI-specific research calls with substantial amounts of grant money, leading to a stimulation in academic AI research across Egypt. Major international ICT companies operating in Egypt have introduced AI and data science teams in the country, which employ Egyptian scientists and engineers to develop advanced products.
4. The Centre for Artificial Intelligence Research⁵ (CAIR) represents a South African national research network that conducts foundational, directed, and applied research into various aspects of Artificial Intelligence. CAIR has nodes at five South African universities: the University of Cape Town, University of KwaZulu-Natal, North-West University, University of Pretoria, and Stellenbosch University. CAIR is primarily funded by the Department of Science and Technology (DST), as part of the implementation of South Africa's ICT Research, Development and Innovation (RDI) Roadmap.
5. The Academic City University College, a private university in Ghana offers an innovative BSc Artificial Intelligence program, in which the ethical dimensions of AI, its strategic impact as well as the core programs and adjacencies such as robotics, informatics, and data analytics are explored. This program develops talent as a contribution to the future industrialization efforts across the spectrum of key strategic areas such as manufacturing, healthcare, and others, which are pivoted around artificial intelligence. Academic City University College is equipping its graduates with knowledge in emerging advances in computational, decision-making sciences and technologies that allow computers and machines to function in an intelligent manner both in accurate prediction of events and outcomes.
6. The African Centre for Technology Studies⁶ (ACTS) is implementing the Artificial Intelligence for Development Africa (AI4D) Scholarship Project to foster and nurture talent in responsible Artificial Intelligence (AI) and Machine Learning (ML) in African public universities. The 3-year project, funded by the International Development Research Centre (IDRC) and the Swedish International Development Cooperation Agency is supporting selected scholars to undertake and successfully complete PhD research in AI and ML in African universities; and early career academics to strengthen their research and development capacities in the two areas. Special consideration is given to research projects on responsible AI innovation for sustainable development, gender equity, equitable regional distribution in low-income countries. ACTS is implementing the AI4D Africa project in partnership with Kwame Nkrumah

⁴ https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf

⁵ <https://www.up.ac.za/statistics/article/2422756/cair-artificial-intelligence-in-south-africa>

⁶ <https://www.acts-net.org/research/projects/artificial-intelligence-for-development-ai4d-africa>



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University of Science & Technology in Ghana; University of Linkoping, Sweden; University Cheikh Anta Diop de Dakar, Senegal; Regents of the University of California, United States; Research ICT Africa, South Africa; HUMA - University of Cape Town, South Africa and Eduardo Mondlane University, Mozambique.

7. The African Institute for Mathematical Sciences⁷ (AIMS) of South Africa has partnered with DeepMind to implement AI for Science as its new stream for the master's degree in mathematical science. The program sits at the crossroads of AI and the Sciences. Applications are open to students from across Africa passionate about mathematics, artificial intelligence, and machine learning. A DeepMind donation will fund 40 scholars per year for the next four years. The program draws on DeepMind's world-leading expertise in AI for Science.

Objectives

The main objectives of the 2023 African Universities' Day Celebrations are to:

1. Explore the impact and opportunities for AI in African Higher Education
2. Promote a dialogue with African students on how they are using AI.
3. Discuss current trends among African HEIs and how they are approaching AI and confront tricky questions concerning responsible use of AI and whether AI support personalized learning and expand access to learning.
4. Explore possible partnerships for African HEIs in the field of AI.
5. Create awareness on the emerging issues around AI in Higher Education in Africa and
6. Celebrate the success stories of 'AI champion African Higher Education Institutions'.

Expected Outcomes

1. Increase collaborations between and among African universities in the areas of AI research, AI innovation, and AI capacity building.
2. Increase the understanding of AI opportunities in African Higher Education and the strategic roles of Vice Chancellors.
3. Identify and recommend appropriate actions required to facilitate the uptake of AI in higher education for achieving intended educational outcomes.

Venue

The event will be hybrid. The physical venue is at a selected AAU Member University for one of the days and at the AAU Secretariat Office in East Legon, adjacent the Ghana Tertiary Education Commission, Accra, Ghana.

⁷ <https://ai.aims.ac.za/>



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Collaborating Organizations

The AAU Secretariat is collaborating with its Member Universities across Africa and in Ghana to hold the celebrations. Universities in Africa will also recognize the day by holding local celebrations on their campuses.

Target Participants

The target participants include the following:

- Vice Chancellors, Deputy vice Chancellors, Registrars, Deans of Faculty and Directors of Institutes.
- Academic and administrative staff from universities, colleges, polytechnics, professional schools
- Students from universities, colleges, polytechnics, professional/technical & vocational schools
- Representatives from diverse sectors including – agricultural, health, financial, telecommunications companies, and educational industries.
- Research Institutions
- Government Ministries

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How the 2023 African University Day will be organized?

Overview of the Program

Day Number	Activities
Day One	<ul style="list-style-type: none">• Discussion Forum with students on how they are using AI: <i>Explore how different students from various African HEIs are adopting and adapting AI technologies in higher education</i>• African Jobs Board Webinar
Day Two	<ul style="list-style-type: none">• High Level Forum for African VCs - <i>AI Policy and Governance: The role of government policies and institutional governance in shaping the use of AI in higher education, including regulations, standards, and best practices.</i>• Members Only Event: for University Registrars & Administrators
Day Three	<ul style="list-style-type: none">• High Level Panel- Showcasing case studies of AI implementation by African HEIs: <i>Continental perspectives from 5 African HEIs on their adoption of AI</i>• Members Only Event: for University Registrars & Administrators
Day Four	<ul style="list-style-type: none">• Visit to a member university in Accra.• Official Celebration of the 2023 AU Day – Keynote Speaker: <i>AI-Enhanced Learning Environments: How AI technologies can be integrated into traditional classrooms and online learning platforms to enhance the learning experience.</i>

How to Participate / Partner

All stakeholders are invited to participate and partner with us to ensure successful celebrations as we jointly explore “AI in African Higher Education” as a strategy for embracing the opportunities in AI while also addressing the concerns.

Contact Information

Ms Naomi Darko Communications Assistant Association of African Universities P. O. Box AN 5744, Accra-North, Ghana Email: ndarko@aau.org	Mrs Felicia Kuagbedzi Senior Communications & Publications Officer Association of African Universities P. O. Box AN 5744, Accra-North, Ghana Email: fnkrumah@aau.org
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