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Future-Focused:

Educating in an Era of Continuous Change

The Global Artificial Intelligence University (GAIU) – the first digital-age university

Philip Uys
Senior international education freelance consultant

Mike Douse
Senior international educational development freelance advisor

Universities are using Artificial Intelligence as an add-on and not achieving its transformational benefits. In this presentation to Ascilite, a different kind of university is described: the futuristic "Global Artificial Intelligence University (GAIU)" that applies AI to all its processes, as machine learning and artificial intelligence in education are finally coming of age – instead of an indifferent machine, AI has become a dedicated companion. The current capabilities of AI are projected into the future, while surprisingly new beneficial applications of AI could occur and transform GAIU even further.

As with any educational technology, the potential and application of AI need to be guided by ethical, value-based considerations aimed at benefiting the students. While the GAIU Council initially believed that only the students would be real people, it became clear that a small group of other humans are also needed. Furthermore, a fundamental principle at GAIU remains that students want to interact with other people some of the time and this basic human need of "high touch" is balanced with the " colder" AI algorithms.

Perhaps this debate, along with the ever-more-responsively-evolving GAIU itself, signal a dramatic reassessment of what a digital-age university should be, and how humans and machines can excel together.

Keywords: artificial, intelligence, GAIU, global, international, digitalisation, digitisation

Introduction

Universities are using elements of AI as an add-on, like most universities currently also uses online learning, and thus not reaping transformational benefits. In this presentation, a very different kind of higher educational institution is described: one that is based upon and applies Artificial Intelligence in all its processes. This futuristic Global Artificial Intelligence University (GAIU) commenced operations over a year ago.

Digitalisation – that includes AI - involves a pivotal leap in human potential as profound as the wheel in terms of development (Uys & Douse,, 2020) with educational planning now needing to be founded upon digitisation for the Digital Age (Douse & Uys, 2018).

In this overall framework, machine learning and artificial intelligence in education (of which research commenced in the 1950s) are finally coming of age, particularly through Gen AI (Marr, 2023) and impacting all five elements of educational systems, namely students, teachers, curriculum (that includes assessment), technology, and governance (Uys, 2022). AI tools and systems are continually multiplying with a myriad of AI and AI supported educational tools available to universities (IU International University of Applied Sciences, 2024; Karageorgakis, T., 2023). AI a field within computer science aimed at developing machines capable of tasks typically requiring human intelligence.

Traditional AI performs a specific task as well as it can being trained to follow specific rules. Examples are voice assistants like Siri or Alexa, and recommendation engines on Netflix or Amazon. Generative artificial

intelligence (GenAI) emerged into public awareness in late 2022 when ChatGPT of OpenAI launched (Uys & Douse, 2024). Generative AI models learn the underlying patterns to generate new data that mirrors the training set. Specific technologies behind GenAI are part of the family of AI technologies called machine learning (ML). Central are Generative Pre-trained Transformers (GPTs) and large language models (LLM).

As with any educational technology, AI's capabilities and application also need to be guided by ethical, value-based considerations aimed at benefiting the students – as is the case at GAIU. A balance was achieved between the basic human need of "high touch" with the cold algorithms of AI. GAIU did not merely consider the potential and affordances of AI, but also the dangers and moral pitfalls of AI such as non-contextual use and misunderstanding based on incorrect prompts. The pitfalls of AI in education need to be carefully considered and mitigated (Holmes, 2023).

Dramatic and necessary changes at GAIU

In establishing GAIU, the Governing Council (of five members) believed that only the students would be humans, and that all other roles and responsibilities at GAIU would be effectively delivered by and entirely embody AI. However, it has become clear over the last year, based on the affordances of current AI tools and emerging trends, that a small group of humans (probably not exceeding 50) would be needed at GAIU as described in Table 1 below.

Table 1
Roles for humans at GAIU (besides the students)

Role	Description
Conduct original research	Original research can only be done by humans and is a vital income stream for GAIU. Basic research can be done via AI using algorithms.
Do external consulting	Consulting work is a critical income stream for GAIU. Academics will use AI but will interact in person with clients.
Create and perform creative and artistic endeavours	Students and teachers outperform machines in creativity and artistic endeavour; courses can be created in these fields, while learning and facilitation can be done in creative ways (Uys & Douse, 2024).
Represent each discipline area	These academic staff members • contribute to ethical considerations in the use of AI as ethics are normally not a matter of concern for machines • decide about the appropriateness of AI software and comparing AI sources for conceptual and cultural appropriateness • set the rules for AI software to reflect the contextual needs of the organisation and research requirements • vet sources – as per the EdGPT foundation model that trains AI with high-quality, domain-specific education data (UNESCO, 2023); the role of the research librarian might still be necessary • ensure that a diversity of viewpoints and cultural expressions are represented in the sources, and that the sources are contextually appropriate (UNESCO, 2023) • contribute to overall programme design i.e., a programmes overall philosophy, goals, assessment and modules.
Administering funds	Guided by AI, these finance staff administer funds and review any algorithms used

Supporting students with disabilities	Support students with some disabilities that AI cannot assist with e.g., the selection of appropriate screen-reader software, or software that will guide a student using prompts
A small number of academic facilitators in each discipline area	Facilitators to kick off and close courses at the end of the semester, and respond to original questions by students during their studies that AI is not able to address appropriately
Core IT staff	IT staff to install and maintain AI systems, and debug such system when there are inevitable glitches
Outsourced gymnasium and cafeteria staff	External staff to run the pop-up gymnasiums and pop-up cafeterias envisaged on physical campuses to encourage a campus atmosphere that students would wish to belong to, and mingle with other students and staff.

Nevertheless, AI is engendering the learning autonomy of students (Park & Young Doo, 2024), and many traditional roles were replaced by intelligent machines over the year of the operation of GAIU, as listed in Table 2, that seems to be performing these functions far better than humans!

Table 2
Traditional roles that were replaced by intelligent machines

Role replaced by AI	Rationale
Select students	Once the rules have been set/revised by humans, AI does the complex selection of students
Select staff	Once the rules have been set/revised, AI performs the selection; interviews in terms of cultural and emotional intelligence are still done by humans after the selection by AI has occurred
Academics conducting basic research, and research assistance	AI cannot do original research, but is excellent at comparing, selecting and integrating resources from an enormous set of domains
Learning design	Based on programme design, the learning design of each course is set, and constructively aligned (Biggs, 2003) comprising the learning outcomes, learning assessment, learning activities, and learning content required
Develop lesson plans and presentations	Based on the learning design, AI develops the lessons plans and presentations using state-of-the-art presentation techniques that include pictures with motion, and videos
Course content provision (subject matter experts)	The lessons plans and presentations include content from vetted sources extracted and integrated from the sources made available by humans to the AI tools
Educational game creation	AI games are much more engaging than traditional games and changes in real time; it is further personalised in ways that humans cannot personalise games for individual student needs
Review and update of curricula	AI software will regularly scan the internet or vetted resources to update curricula with the latest research; this process done by humans often occurs every few years, but with AI occurs at least at the end of a semester
Set assessment tasks	Once the learning design is created and the learning outcomes finalised, AI sets appropriate formative and summative assessment tasks are set
Mark assignments	AI will mark and provide contextual feedback on assignments within three minutes (and mark quizzes immediately with contextual feedback)
Ensuring academic integrity	AI ensures that there is no plagiarism, through using online checking, through compulsory academic integrity training (by AI), and through differentiated, personalised assignments

Conversational interaction with students	AI conducts conversational interactions with students and guides them to appropriate conclusions; AI thus becomes a dedicated companion and guide
Online facilitation	AI facilitates the online learning of the students in a personalised way
Training students and facilitators in prompt-engineering	AI detects prompt intentions and train students and facilitators in prompt-engineering – an important new educational skill (UNESCO, 2023)
Guidance to students	AI picks up student needs and provide personalised guidance untiringly 24 x7
Guidance to the small group of facilitators	AI guides the small group of facilitators on how to start and close courses as it relates to each discipline, and how to respond to high level questions by students; AIU thus become a companion also for the facilitator
Library work	AI provides advice on up-to-date readings, textbooks and study resources but find interdisciplinary connections hard to identify (the role of the research librarian will thus not fully be replaced by AI, but AI will be extensively used by research librarians)
Train students in information literacy and digital literacy	AI provides this critical training in a personalised way given its access to extensive resources and being digital in nature.

The benefits of studying at GAIU

Real-life benefits for GAIU's students include:

- the low cost of studying increases access to learning, and encourages life-long learning opportunities;
- interactive work with other students – online in virtual rooms and off-line on the physical campuses;
- hyper-personalised learning suiting individual learning interests, pace, abilities, preferences and diverse learning needs specified before the semester and also emerging throughout a semester;
- studying using free, personalised textbooks in which the core materials are the same, but additional, contextual information is included and personalised to the students' needs;
- digital literacy including gaining expertise with AI tools which have become integrated in their learning, and their learning platform; a unique AI ability is to train students on how to select among various AI tools and compare output-based on similar prompts;
- advanced information literacy and critical thinking skills, where AI tools present various information sources of which some are correct and some are false, and assessing the ability of the students to select the appropriate information sources;
- being supported in special needs (UNESCO, 2023) through AI's capability for personalisation and identifying special needs even before the student has become aware of such needs;
- bridging language barriers in classrooms where the facilitator can speak in their home language and the students hear the interpretation in their language, it is instantaneous translation, and *vice versa*; this also holds true for international interactions among students;
- AI inspired new ideas even though novel ideas might evade AI, AI can generate options that might not have been evident for students and facilitators;
- Very quick turn-around times for assignment marking (within three minutes) and quizzes (immediately)... both with contextual and highly personalised feedback;
- learning from an up-to-date curriculum that is relevant to the course, and is never older than a semester; changing the curriculum during a semester can cause confusion for students and facilitators;
- learn through engaging AI educational games that adapt in real-time to a student's performance that draws the students into the game into a personalised approach;

- 1-1 conversational interaction with an AI teaching assistant and conversational "tutor" that knows their context and becomes a trusted companion; because it knows the context of the student, it can nudge students to change their learning strategy;
- educational AI Chatbots answer students' queries and provide personalised and relevant information and scaffolding unobtrusively; the chatbots have taught themselves how to be unobtrusive as a companion rather than a computer trainer;
- being guided by a personal writing coach that provide gentle assistance about spelling, grammar and organisation of materials;
- 24 x 7 guidance with real-time alerts and feedback; predictive analytics identifies students who are falling behind and intervenes proactively or pass the information on to a human facilitator when necessary;
- enables delivery of final outputs by facilitators and students by AI generating semi-finished knowledge products that can then be finalised by humans;
- image creation stimulated by AI that again can be further finalised by humans;
- assignment loads of students controlled by AI to ensure an appropriate spread of assignments and quizzes through the semester in alignment with other assignments in the academic programme; and
- studying skills for new jobs created by AI use.

A fundamental principle at GAIU remains – contrary to what many may expect – that students want and need to interact with other people some of the time, depending upon their learning preferences and personalities. This basic human need of "high touch" in balance with cold AI algorithms is addressed through the following strategies:

- collaborate with others in group work;
- conduct peer review and assessment of the assignments of others;
- online interaction with others via online forums, chat sessions and regular online and face-to-face - where possible- meetings;
- extensive practical work with mentors in industry who will assess and provide feedback on academic work and practical application;
- extensive use of student as assistants, such as lab assistants when virtual reality applications are lacking;
- academic facilitators to kick off courses, close courses and deal with original student questions;
- on-campus physical interaction at tables and chairs cleverly stationed for maximum interaction; and
- interaction at physical pop-up gymnasia and physical pop-up cafeteria on the campuses.

Life at GAIU

At GAIU Bachelor and Masters' level programmes by coursework are available across all disciplines, involving AI-moderated tutorial arrangements, AI-guided laboratory practice and real-world practical experiences as appropriate. Postgraduate degrees by research, including Doctorates in any valid field of knowledge, are AI-supervised and supported. Instantaneous translation enables all students to participate in tutorials, receive guidance and hear learning instructions, lectures, lessons, and videos in their preferred tongues. There is a three-minute standard for the return of essays and assignments, with scoring, constructive advice and bespoke suggestions. Every aspect of the GAIU experiences makes sensible and creative use of the latest relevant technology which has AI at its core.

There are, in addition, a range of new programmes in AI addressing new vocational skills such as prompt engineering, the coding of AI algorithms, machine learning, data analysis, and the ethical considerations of AI.

Currently, GAIU has a physical campus on the former Pacific Training Academy in Mosman, Sydney, Australia. Two others will open within the coming six months: in Rabaul, Papua New Guinea and in Butterworth, Malaysia. With GAIU's ever-increasing income accruing from its research and development

activities and donations from donors who encourage digital tertiary study, along with the provision of specialist services to business and government, fees are minimal and affordable. Costs are kept low due to low salary expenses and using open source or free AI and other educational technologies, where possible based on open learning principles. AI tools further create personalised, free textbooks and learning resources.

Indeed, full-time students (presently some 2,700) are now receiving not only generous living allowances but compensation for their not working during their years of study. Distance learners (currently 23,400 and expanding rapidly) receive an allowance to cover expenses likely to be incurred. Upon graduation, as well as generous prizes for outstanding students, there are cash awards enabling a smooth transition into the world of work.

Conclusion

Already, several traditional universities are expressing concern regarding this fictitious, better-than-free higher educational institution drawing off their prospective students, not to mention making many of the academic staff redundant. This concern is likely to amplify as fears about job losses and de-personalisation are already appearing. GAIU's answer will continue to be the real-life benefits from each of its teaching, research and community service and their overall contribution to the quality of human lives. GAIU is committed in its use of AI to be guided by ethical, value-based considerations aimed at benefiting the students. GAIU is flexible to future models enabled by AI and will continue to balance the cold AI algorithms with real human interaction.

Implementing AI in such a systemic way to impact all five elements of an educational system (Uys, 2022) requires carefully designed top-down, bottom-up and inside-out institutional strategies as described in the LASO model of technological transformation (Uys, 2007). An initial policy framework and regulations are inter alia required (UNESCO, 2023) but the road – also of integrating AI - is made by walking (Horton & Freire, 1990) – not by waiting on the sidelines.

This fictitious university's operations above are shared at a time that Gen AI is at the height of the "peak of inflated expectations" of technology and seen in an overly positive light (Gartner, 2024). Nevertheless, it is hoped that this debate, along with the ever-more-responsively-evolving Global Artificial Intelligence University itself, signal a dramatic reassessment of what a Digital-age university should be and how it may best reflect and respond to the conditions and possibilities of these fragile and exciting times.

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