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# EDITORIAL

# *When Machines Create!* Envisioning Our Future as Shaped by the Transformative Power of Generative AI

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*"The risk climate of modernity is thus unsettling for everyone: no one escapes."*

—Anthony Giddens, 2013

Typically, models are designed to represent reality and to produce output. In this sense, artificial intelligence (AI) can be viewed as a model of human intelligence capabilities to learn, analyze, and generate new configurations of information. In this sense, AI "machines" have been generative since the inception of the AI discipline in the 1950s and we should not be surprised by what we are now seeing in the form of "generative AI" (gen AI) applications, but we are! The recent widespread appreciation of the generative aspects of AI applications is due to the ready availability (all that is needed is a connected browser on any device!) of such applications to the masses, ease of use, the increased speeds at which gen AI outputs can be produced, and the impressive usefulness of its novel output. Gen AI has achieved fast-food status on a consumer level and is rapidly being commoditized and woven into the socioeconomic fabric of human society. As we look to the future, strategic human enhancive AI architectures, for example, adaptive cognitive fit (ACF), have the potential to help unleash iterations of rapid and complex advancements that will be treated as hyper-value creation opportunities, and emerging latent risks could be underestimated (Samuel et al. 2022; Kasirzadeh 2025). We have a solemn responsibility to ensure the development of ACF and similar human-centered AI architectures, which will help nurture a society that supports mass-human ascendancy over AIs, as opposed to the converse (Kashyap et al. 2024).

The field of AI and machine learning (ML) is rapidly evolving, with new and improved techniques emerging each year. The recent development of gen AI is a huge breakthrough in AI and ML. Gen AI can create, imitate, and produce content that is very similar to human-created content. Through algorithms and ML techniques, gen AI can be

queried to generate text, music, and images. Although gen AI has been around for quite some time, the introduction of ChatGPT by OpenAI (2025) on November 30, 2022, has made a dramatic impact on many fields, including health care and academic circles. ChatGPT is a specific application of the Generative Pretrained Transformer (GPT) series that is finetuned for human-like conversation. GPT was trained on hundreds of billions of words and can learn from any text without additional training (Rudolph et al. 2023). It has 175 billion parameters (Rudolph et al. 2023). ChatGPT acquired 1 million users within 5 days of its launch. Recently, OpenAI released ChatGTP-4, a chatbot that can interact with human beings through written language as well as images. ChatGPT has a fast-growing user base and now plays a vital role in numerous sectors, such as health care, finance, sports, information systems, and education. Some researchers argue that the ability of ChatGPT to process huge amounts of data will save time and potentially create summaries of academic research with less bias (Dergaa et al. 2023). Others see a positive impact of gen AI for academia, given the ability of tools such as ChatGPT to optimize time and effort for writing and editing (Irigaray and Stocker 2023).

To illustrate the power of gen AIs, let us consider the domain of higher education as an example. Despite the benefits offered by gen AI, the massive increase in both the amount of unverified data available and the frequency at which these technologies are used has raised many concerns. Currently, the impact of gen AI on ethics and integrity is widely debated in higher education (Moya et al. 2023). The fear that gen AI can be used as a tool for misconduct (Susnjak 2022) and discussions of how it can change the landscape of higher education in academic circles are frequent. Plagiarism is considered inevitable in many circles because gen AI can write in a way that is indistinguishable from a student's work (Cotton et al. 2023). It is therefore critically important to reflect on different ways to navigate changes and mitigate the risks driven by gen AI, especially in higher education (Moya et al. 2023). To navigate these challenges, it is essential that the higher education community proactively establish policies to mitigate the risks posed by gen AI. This includes strategies to combat cheating, revising assessment plans, and incorporating plagiarism detection tools, for example, Turnitin (2025). Furthermore, it is necessary to understand the ethical challenges we face: future research can focus on exploring the factors that influence students' ethical behavior and identify the "right" and "good" usage of such technology. This understanding will guide the creation of ethical standards for faculty and students when using gen AI.

This volume of the *Journal of Big Data and Artificial Intelligence* contains a very interesting and diverse set of articles that cover AI, data analytics and domain specific research articulations. When investigating the application of AI to agriculture, "Accurate Crop Yield Estimation of Blueberries using Deep Learning and Smart Drones" presents an innovative AI pipeline that leverages smart drones equipped with computer vision to improve the accuracy of blueberry yield estimation in a field (Nguyen et al. 2025). The authors use two YOLO (You Only Look Once) based object detection models: the Bush model, which identifies blueberry bushes from aerial and angled images, and the Berry model, which detects individual berries on a bush to improve crop yield estimation. The study also discusses deployment strategies, annotation challenges for small objects, and complexities in model evaluation.

With applications to the financial sector, the article "Unveiling Industry Pressures: A Data-Driven Analysis of SEC Filings, Amendments, and Reclassifications" reveals new insights into pressures faced by companies that drive their behavior through an analysis of their SEC regulatory filings (Olsen 2025). The author uses four key indicators based on the frequency and type of filing to introduce new metrics reflective of external forces that influence a company's business strategy and describes patterns extracted from these filings by using the open-source query language Malloy to answer key questions that help to inform investors, regulators, and policymakers about underlying trends that are distinctive of certain industries. The article "Multinational Investment under Uncertainty" builds a real options model to quantify multinational investment timing decisions under foreign market demand and exchange rate dynamics (Nagaraj et al. 2025). The article "Applications of Analytics in Disease Prediction Types" explores the identification of genetic and clinical variables that can serve as predictors for disease classification (Tsai et al. 2025). When using data from The Cancer Genome Atlas (TCGA) and the Genomic Data Commons (GDC), a comprehensive collection of patient genetic and clinical information compiled by the National Institutes of Health, the study examines whether there are significant differences in the characteristics of landmark and non-landmark genes.

With providing valuable insights for educators and policymakers, in "A Holistic Approach to Identifying Subject Correlation Analysis in Secondary Education," the authors used advanced data mining techniques, including correlation, regression, factor analysis, and hierarchical clustering, which indicated that holistic approaches can lead to more effective educational strategies and improved student outcomes (Ayesha et al. 2025). Gene AI has demonstrated transformative potential, and this is well reflected in the paper "Improving Large Language Model (LLM) Performance with Retrieval Augmented Generation (RAG)," in which the authors develop a RAG-based system for university support and educational purposes. This research emphasizes transparency, visibility, and control of key processes in the gen AI workflow, which is an excellent approach for ethical AI, and, even though it may present some immediate risks, it is much more rewarding in the long run (Chidipothu et al. 2025).

In conclusion, it is necessary to emphasize the importance of developing AI innovation, AI education, and AI policy and ethics dimensions simultaneously. This is critical due to the complexity of the evolving AI ecosystem. As has been aptly stated: *With AI technologies, given the scope, speed and scale at which damage can occur, it is compellingly necessary to implement forward-thinking policies now to ensure the future safety and sustainability of human rights and the human way of life* (Samuel 2021). AI education for all is essential and misnomers must be addressed, for example, gen AI can be developed apart from LLMs by using innovative designs (Garvey et al. 2020). AI is advancing rapidly, and, as we create more AI technologies, we should anticipate a structuration-like process to occur, which would facilitate the technologies we create to shape human society (Giddens 1984). ACF and similar architectures will continue to be developed, along with arguments for open-source AI. Open-source AI can help increase transparency and accountability, and help reduce both operational and ethical risks (Samuel 2023). It is expected that a dream scenario of a utopian future is more likely than a nightmarish dystopian future; however, this will require hard work, and deliberate and educated efforts from society as a system of people and resources.

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