

Reflections on the Artificial Intelligence Transformation: Responsible Use and the Role of Institutional Research and Institutional Effectiveness Professionals

Mike Urmeneta

About the Author

Mike Urmeneta is with the Association for Institutional Research (AIR)'s Data Literacy Institute. Previously he was director of analytics at the New York Institute of Technology.

Abstract

This article explores the potential impact of artificial intelligence (AI) and machine learning (ML) on higher education. It overviews current generative AI capabilities and argues for ethical frameworks to address issues such as bias. The article advocates for a multidisciplinary governance approach involving institutional stakeholders by examining past academic technology adoption. It highlights the strategic role institutional research (IR) and institutional effectiveness (IE) professionals can play in navigating AI complexities. This article provides specific suggestions for IR/IE professionals to embrace the role of AI ethicist: continuously developing AI literacy, ensuring ethical deployment, upholding privacy and confidentiality, mitigating bias, enforcing accountability, championing explainable AI, incorporating student perspectives, and developing institutional AI policies. The article concludes by asserting that IR/IE's research expertise, ethical commitment, and belief in human judgment equip the field to adapt to and lead in the AI era. By taking an active role, IR/IE can shape the technology's impact to benefit higher education.

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INTRODUCTION

As discussed in this volume's preface and evidenced by the other articles in this volume, artificial intelligence (AI) and machine learning (ML) are far from new concepts (Stahl, 2021). Until recently, however, discussions around these tools were predominantly confined to specialists, researchers, and enthusiasts. This changed in November of 2022 when Chat Generative Pre-trained Transformer (ChatGPT) provided unprecedented access to this technology, ushering in a new wave of widespread interest. Seemingly overnight, generative AI had catapulted to the forefront of public awareness. AI and ML started to permeate every field and industry, spanning technology, business, health care, law, and education. The reactions ranged from excitement and enthusiasm to criticism and concern. While generative AI has the potential to increase efficiency, encourage exploration, and spark creativity, it also has the potential to disseminate misinformation, compromise privacy, and amplify biases (Megahed et al., 2023; Shahriar & Hayawi, 2023). Certainly, as these technologies continue to evolve, they also continue to introduce opportunities and challenges.

This article reflects on the potential impact of AI in higher education, from the increasing proliferation of AI tools, to the need for ethics and accountability, to the pivotal role of institutional research (IR) and institutional effectiveness (IE) offices. It begins by exploring generative AI's evolution and capabilities. It then advocates for robust ethical framework and accountability measures to mitigate AI biases. It next examines disruptive technology in academia through a historical lens. Next it discusses the need to leverage IR and IE effectiveness expertise. It concludes by embracing the role of the AI ethicist, and challenges IR/IE professionals to not only navigate the complexities of AI but also to harness its potential to shape a sustainable and inclusive future.

EVOLUTION AND CAPABILITIES OF GENERATIVE ARTIFICIAL INTELLIGENCE

Today's generative AI tools have an array of capabilities, including the ability to summarize and condense complex information, generate art and imagery, and streamline writing and research (Megahed et al., 2023). Using natural language prompts, large language models (LLMs) like ChatGPT, Google Bard, Microsoft Bing Chat, Jasper.ai, Perplexity, HuggingChat, Language Model for Dialogue Applications (LaMDA), and Large Language Model Meta AI (LLaMA) can draft sophisticated written content. Based solely on descriptive text, these models can create reports, marketing materials, cover letters, and program code. Furthermore, they can summarize dense material and provide sentiment analysis of uploaded content. Generative art tools such as Midjourney, Stable Diffusion, Leonardo AI, and Adobe Firefly have the capability to convert descriptive text into studio-quality art and imagery. Finally, AI-enhanced tools like Elicit and Consensus can accelerate the process of identifying and reviewing research studies and articles, complete with citations (Lund et al., 2023).

The landscape continues to evolve. Third-party plugins can enhance ChatGPT capabilities by providing access to external resources and services (OpenAI, 2023). Multimodal large language models (MLLMs) like Microsoft's Kosmos-2 can accommodate a broader range of input types than just text, including images, audio, and video (Peng et al., 2023). Autonomous AI agents, such as Auto-GPT and Tree of Thoughts, can be assigned an objective and can be programmed to run on an iterative loop until that objective has been met (Nakajima, 2023;

Tindle, 2023; Yao et al., 2023). In these models, intermediate steps are generated, tested, and updated without human guidance.

Research indicates that GPT-4 is performing “strikingly close to human-level” in executing tasks across a diverse range of disciplines such as law, medicine, psychology, mathematics, and programming (Bubeck et al., 2023, p. 1). In 2022, GPT-3 was nearly able to pass the U.S. Medical Licensing Exam (Jenkins & Lin, 2023; Kung et al., 2023). And in 2023 GPT-4 successfully passed the Uniform Bar Examination (Katz et al., 2023). This evolution highlights the rapid advancements in AI, marking an era of possibility for this transformative technology.

THE NEED FOR ETHICS AND ACCOUNTABILITY IN MITIGATING ARTIFICIAL INTELLIGENCE BIASES

The future is not a vague, distant concept. In discussions about technology and society, a quote by science fiction author William Gibson (2003) is frequently cited: “The future is already here—it’s just not evenly distributed.” His phrase implies a disparity where advanced technologies are available to some groups but not to others. It highlights the need to democratize technology and make its benefits more universally accessible.

Coded Bias is a 2020 documentary film directed by Shalini Kantayya that delves into the biases embedded within AI technology. The film centers around MIT media researcher Joy Buolamwini, who discovered that facial recognition systems failed to recognize her own face. This discovery led Buolamwini to investigate further how AI technology can disproportionately affect minorities (Kantayya,

2020). The film goes on to criticize how the lack of legal structures around AI results in human rights violations. It reveals how specific algorithms and AI technologies discriminate based on race and gender, affecting vital areas of life such as housing, job opportunities, health care, credit, education, and legal issues.

Following her discoveries, Buolamwini and her colleagues testified about AI before the U.S. Congress. Buolamwini then established the Algorithmic Justice League (AJL), a digital advocacy group whose goal is to address these biases and create a fair and accountable AI ecosystem by increasing awareness, equipping advocates, and uncovering AI abuses and biases (AJL, n.d.). AJL members advocate for accountability through third-party audits of AI algorithms (Koshiyama et al., 2021; Raji et al., 2023).

Fortunately, progress has been made since the documentary *Coded Bias* was released (Kantayya, 2020). In August 2022 AI resolutions were introduced in at least 17 states (National Conference of State Legislatures, 2022). In October of the same year, the White House (2022) published the “Blueprint for an AI Bill of Rights” to address potential harms. Meanwhile, the European Parliament has taken the lead in legislation safeguarding individuals from possible AI-related hazards. In June 2023 the Council of the European Union voted to approve the Artificial Intelligence Act (European Parliament and Council of the European Union, 2021), the most far-reaching legislative piece on AI. The European Union’s Artificial Intelligence Act addresses concerns about surveillance, algorithmic discrimination, and misinformation; it also introduces regulations and requirements for AI developers, which could be likened to the European Union’s General Data Protection Regulation (2018).

The future is indeed upon us but is not uniformly accessible, as evidenced by the bias in technologies like AI. The work by Joy Buolamwini and the AJL has brought this bias to the forefront. These bias-related issues underline the importance of democratizing technology by enforcing privacy, fairness, and transparency in AI tools (Cath, 2018; Mhlanga, 2023). With the increasing capabilities of AI models, the urgency for human oversight becomes ever more crucial (Prud'homme et al., 2023). While AI can accomplish remarkable feats, it is fundamentally important to acknowledge that human guidance and ethical considerations are pivotal to guaranteeing responsible and beneficial outcomes.

A HISTORY OF DISRUPTIVE TECHNOLOGY IN ACADEMIA: A MULTIDISCIPLINARY APPROACH TO GOVERNANCE

AI is not academia's first encounter with disruptive technology. One only needs to look to the recent past to see similar concerns and debates around the use of the Internet, analytics, mobile technology, data science, and cloud computing. Addressing the impact of these technologies required a multidisciplinary approach involving higher education professionals from across the academy. The same approach can be used for generative AI.

Gasser and Almeida (2017) addressed how governance mechanisms, accountability, and transparency can be jointly examined with broad stakeholders when dealing with technological black boxes. Mirroring a model used for the General Data Protection Regulation, the

authors proposed a three-layered framework for regulating AI systems, covering its technical, ethical, and legal aspects. These layers offered a broad but practical approach to implementing governance structures for AI, an approach that can vary among industries and organizations.

Officials in higher education institutions can use a similar multipronged approach. Colleagues in multiple divisions can work both independently and in concert to tackle AI issues. University information technology offices can address AI from a technical perspective by managing how physical and software systems interact with AI algorithms. This layer can focus on transparency, audits, algorithmic accountability, and fairness in data usage. Likewise, the general counsel, compliance, and human resources offices can address AI from a regulatory and policy perspective. This layer can incorporate technical and ethical insights into legal and regulatory frameworks (Viljanen & Parviainen, 2022). Finally, IR and IE officers can approach AI from an ethical perspective through oversight, evaluation, policy development, and data governance.

Given the speed of advancements, even full-time AI researchers report feeling anxious and overwhelmed (Togelius & Yannakakis, 2023). The difficulty for educational professionals is further exacerbated by the traditionally glacial pace of educational transformation. However, established principles and frameworks can be a consistent foundation for navigating the evolving technological landscape (Taeihagh, 2021).

LEADING THE CHARGE: LEVERAGING INSTITUTIONAL RESEARCH AND INSTITUTIONAL EFFECTIVENESS EXPERTISE

IR/IE offices are tasked with collecting, analyzing, and using data to support decision-making, planning, policymaking, and institutional improvement. Moreover, it is a fundamental aspect of the IR/IE professionals' role to establish robust engagement, encourage collaboration, and ensure open communication with stakeholders across their respective institutions. As custodians and advisors of data-informed decision-making, IR/IE professionals provide crucial context and nuance to their organizations. As such, IR/IE professionals are frequently entrusted to lead and advise on projects related to data literacy, data governance, and institutional assessment. Leadership in implementing AI strategies is not such a far reach. The skillset, relationships, and experience required to excel in their current roles can help IR/IE professionals navigate this era of technological change. The ability to interpret data and communicate insights effectively is essential to AI development and implementation.

The remainder of this article outlines how IR/IE professionals can take an active role in leveraging AI for their institutions. Some suggestions may seem aspirational, given that many IR/IE offices frequently work under high demands and with scarce resources. However, strategies that are applied incrementally can still lead to impactful changes despite resource limitations. AI can benefit small IR/IE offices by enhancing workflow to create more capacity. The time saved by leveraging AI individually can then be redirected toward leveraging AI organizationally.

EMBRACING THE ROLE OF ARTIFICIAL INTELLIGENCE ETHICIST: GUIDELINES FOR INSTITUTIONAL RESEARCHERS AND INSTITUTIONAL EFFECTIVENESS PROFESSIONALS

One crucial role that IR/IE professionals can play is that of AI ethicist. Niederman and Baker (2023) argued that the ethical issues associated with AI are not unique, and current frameworks have the capacity to tackle them. In their study, Jobin et al. (2019) conducted an extensive analysis of 84 AI ethics reports that had been drawn from a diverse range of private corporations, research institutions, and governmental bodies. Through a thematic analysis, they discovered an agreement across these reports, centering around five key ethical considerations for AI: transparency, fairness, safety, accountability, and privacy. To guide their actions, IR/IE professionals can look to the Association for Institutional Research (AIR) Statement of Ethical Principles (AIR, 2019) as their North Star. The statement equips IR/IE professionals with a flexible and familiar framework to effectively handle the concerns and complexities associated with AI. It comprehensively addresses a multitude of concerns that have been raised by those expressing apprehension about AI. Like the above ethical considerations, the AIR statement emphasizes privacy, accuracy, contextual relevance, fairness, transparency, and accessibility. These principles can serve as a compass to guide practitioners in their work with AI as the AIR statement has successfully done with the tools and technologies that preceded it. Following are a few suggestions on how IR/IE professionals can apply these ethical principles.

Continuous Learning and Development

A good guide must understand the terrain. The first step in leveraging AI involves taking time to understand and experiment with it. As with any new skill, proficiency will develop through practice and application. Fortunately, gaining AI expertise is no longer a steep hill to climb.

Many LLMs, such as ChatGPT, Google Bard, Claude, and Microsoft Bing Chat, are free and accessible. Despite some models being proprietary, the information about the technology and its foundational principles are documented and available. The only differences among models lie in the specific data sets on which they are trained—which can vary significantly. Traditional ML models often rely on supervised learning, where the model is trained on data sets that are known. LLMs, on the other hand, use unsupervised learning techniques on vast amounts of data in order to train models to predict the next likely word in a phrase or sentence. Given the sheer enormity and complexity of these models, LLMs are effectively black boxes designed to generate human-like responses. Knowing this, IR/IE practitioners should focus on applying LLMs to areas where their strengths can be used most effectively.

From a practical standpoint, there is no shortage of documentation, videos, forums, and communities to obtain tips, techniques, and examples. The act of designing, testing, and refining AI instructions is called “prompt engineering.” The process is similar to developing effective research questions. It requires an understanding of context and a willingness to continue refining. Arming oneself with technical and practical information will go a long way toward reducing anxiety and increasing competence. Once competence is attained, education of the community and leveraging of AI can occur.

A black box model is not a substitute for the skills, expertise, transparency, and nuanced judgment an experienced IR/IE professional can provide. Thus, an IR/IE professional’s responsibility must extend beyond just describing these models to stakeholders. It is crucial to educate users about their underlying methodology and limitations. Practitioners can offer clarity and insight to campus community members, and can equip them with knowledge of these models’ capabilities and limitations. This understanding can empower stakeholders to make informed decisions about the use of AI.

Ethical Deployment

The significance of ethics in AI usage, even when using publicly available tools, cannot be overstated. Upholding ethical principles is essential at all stages of AI adoption, from selecting the right tool, to understanding data needs, to deployment of AI in daily operations. Collaboration across institutional teams is crucial to maintaining these ethical standards. IR/IE professionals can foster interdepartmental cooperation, thus ensuring that AI tools are used responsibly and ethically, in line with the best interests of campus stakeholders. Soliciting campus feedback can broaden and diversify perspectives on AI tool use. Facilitating open dialogues on AI ethics can stimulate ethical mindfulness. Finally, establishing training sessions on AI ethics can strengthen awareness and responsible usage.

Privacy and Confidentiality

When using generative AI tools, IR/IE professionals can establish privacy and confidentiality by first understanding existing tools and their privacy policies. IR/IE professionals can then adapt a range

of established research protocols to protect user data further and to limit exposure. These protocols include practices like data minimization, where only the necessary data are input into the AI tool. This technique reduces the risk of privacy breaches. Another approach would be to anonymize any personal data before they are input into the tool. A third protocol would be to obtain informed consent when sensitive data are used, even when personal identifiers are removed. Furthermore, educating staff on privacy and responsible AI use is essential. Finally, one should not hesitate to consult with legal counsel to ascertain that all necessary precautions are being taken.

Bias and Fairness

IR/IE professionals know that bias can be introduced at multiple stages of the research process and must be managed (Roulston & Shelton, 2015). Likewise, bias can be inserted at multiple points in AI models and must be mitigated. Bias can be hidden in the training data, algorithms, and the subjective choices of their creators. In her TED Talk, Cathy O’Neil (2017) challenged the common perception that algorithms were objective, and asserted that algorithms were influenced by the biases of their designers. The same protocols to mitigate bias in research can also be applied to AI use.

IR/IE offices can adopt several measures to minimize bias and enhance fairness when using publicly available generative AI tools. One of the first steps is to carefully review and select the tools to be used. It is essential to choose tools with a reputation for fairness and transparency. The selection process can include reading reviews and studying case studies to make an informed choice. Once the right tools have been chosen, it must be understood that the process can still be contaminated with biased input

data. Practitioners must ensure that the data fed into these models fully represent the populations and scenarios to be considered. Additionally, practitioners must use professional judgment when interpreting and presenting results. Involving key stakeholders at each stage can help ensure that diverse perspectives are considered.

Accountability and Responsibility

Working collaboratively with campus colleagues, IR/IE professionals can help drive the discussion on AI accountability. These dialogues should not be theoretical but rather should be grounded in specific use cases. They must identify who will take responsibility when an AI system inflicts harm or commits a significant error (Dignum, 2018). For example, someone must be willing to take responsibility if an AI tool is used to make an incorrect prediction that impacts a student negatively. Comfort in taking responsibility will require proficiency with the AI tools used, the establishment of clear guidelines for usage, and clear communication with other stakeholders. IR/IE professionals can facilitate all of these steps.

Furthermore, a review mechanism and an appeal process should be established to evaluate decisions informed by AI. Finally, a strategy to ensure accountability is to include third-party audits. External evaluators bring an objective perspective and use distinct methodologies and frameworks for assessment. These auditors serve as a safeguard, adding another layer of scrutiny to AI usage and decision-making processes.

Transparent and Explainable Artificial Intelligence

Transparency is necessary for developing trust among student, administrative, and faculty stakeholders. Furthermore, transparency is a fundamental principle that underpins robust and credible research. Extending this principle to AI is relevant and necessary. IR/IE professionals can champion the need for transparent and explainable AI. It is difficult to achieve transparency when dealing with something that is continually evolving. Examining the issue from a legal perspective, Miriam Buiten (2019) acknowledged this difficulty and proposed a practical solution: instead of creating new regulations for a rapidly changing field, Buiten recommended the application of existing regulations from a more familiar but related area. Likewise, IR/IE practitioners can follow a similar strategy by applying the established principles of good research design to AI use. One does not need to be an AI expert to ensure transparency. IR/IE professionals can uphold the principle of transparency by assisting with tool selection, researching methodology, maintaining open communication with the community, and being an example of ethical and responsible use.

Student Involvement and Communication

As discussed by Emily Oakes, Yih Tsao, and Victor Borden in their article in this volume, it is critical to incorporate the student voice in the work of student success. Student voice refers to individual students' and student groups' values, beliefs, perspectives, and cultural backgrounds. Higher education professionals must listen to, learn from, and respond to the collective student voice. Unfortunately, a recent meta-analysis of media articles on AI's impact on higher education found little mention

of the student voice (Sullivan et al., 2023). Instead, the dominant discussion focused on institutional concerns about academic integrity. This oversight must be corrected. Together with their peers in student affairs, IR/IE practitioners with qualitative research backgrounds can help lead the discussion. Involving and communicating with students about AI tools that affect them is crucial. It is important to seek methods to educate students about these AI tools involved in their education, emphasizing their rights, benefits, and potential risks.

Develop Institutional Policies for Artificial Intelligence

Finally, having articulated policies and procedures can help guide the campus community toward responsible AI use. I agree with Webber and Zheng (2020) that change is best facilitated through campus-wide strategies. This guiding strategy should include rules for data collection and usage, principles establishing AI transparency, directives for setting data use parameters, processes for initiating the ethical review of AI tools, and mechanisms for ensuring accountability across one's campus or organization. Such policies would not only uphold institutional integrity but also enhance the effectiveness and value of AI in supporting data-informed decisions and optimizing institutional outcomes.

CONCLUSION

AI will be increasingly impossible to ignore. Microsoft, Google, Adobe, and other architects of the digital ecosystem have already begun to embed AI into their existing applications (Microsoft, 2023). Being a passive spectator is neither optional nor tenable. Fortunately, the frameworks and skillsets that have enabled IR/IE professionals to thrive in their current roles can empower them to transition from mere observers to key influencers during this technological revolution.

It is essential to remember that the tools now considered indispensable to IR/IE professionals were once enigmatic and unfamiliar. The same strategies used to master data visualization, business intelligence, statistical analysis, and data science can be used to leverage AI. Armed with research expertise, ethical commitment, data-informed decision-making knowledge, and a profound belief in human insight, IR/IE professionals stand ready to both adapt and lead. By harnessing this unique combination of skills and perspectives, IR/IE professionals can confidently step into the future and remain valued leaders in the higher education community.

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