

The Growing Concern of Artificial Intelligence in Writing and Academia

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The rapid advancement of artificial intelligence [AI], particularly large language models [LLMs] such as ChatGPT, is fundamentally altering the way in which we approach and review professional research and academic writing. Educational advances have always gone in parallel with technological advances (García-Martínez et al.). Unfortunately, as noted by Májovský et al. “With every new technology, there are benefits that come hand in hand for the potential for misuse” (Májovský et al.). During the creation of this essay, the US President Biden enacted an executive order to address concerns that the rapid advancement of AI technology has presented to the US Government (Lima and Zakrzewski). The advancement and use of AI is inevitable. Society would be better served by embracing its use along with establishing standardized guidelines for its use.

In order to understand the issues related to AI, it is necessary to have an understanding of how they function. AI is defined as “the use of computer systems to simulate human thought.” (Esplugas 819). Many modern AI are Large Language Models which process vast amounts of data, generating innovative ideas and even scholarly manuscripts (Bell). One of the most prolific LLMs is ChatGPT wherein GPT stands for “generative pre-trained transformer” (Esplugas 819). The latest version at the time of this essay, GPT-3, is the largest ever deep learning neural network (Esplugas 819).

There are tangible benefits in using AI in professional and academic writing. AI can help promote inclusivity by addressing and assisting authors with language barriers and providing accurate translations for a wider audience (Bell). AI can also accelerate writing time by improving time consuming processes such as error detection and correction, grammar and style improvements, citation accuracy, proofreading and flow, formatting, and plagiarism detection (Esplugas 820). This in turn improves writing efficiency and allows for more focus on data analysis. In his essay, Perkins opined that “LLMs should be considered as another potential tool for reducing the cognitive demands required by a task,” (Perkins). This is particularly true in the case of research. AI can aid researchers by performing data management and analysis as well as creating simulations and testing (Esplugas 820).

AI can also be used as a tool to improve the process of teaching and learning. AIs have a great advantage in their “flexibility to adapt educational programs to the rhythms and circumstances of each student” (García-Martínez et al. 188). Automated paraphrasing tools use machine translation

to transform one text to another. This technology has been in use since the 1980's and more primitive versions checked basic writing components such as spelling, grammar, and style of writing (Perkins). This can be of particular benefit when used to improve the writing of students who speak and write English as their foreign language (Perkins). Educators can also use this technology to enhance oral communication by creating visually appealing presentations which help improve audience engagement (Esplugas 820). This in turn has the potential to enhance precision of material presented and create an emotional connection between students and educators.

For their many advantages, AI technology has several limitations. Because of the way they learn, LLMs require pre-training before they can be used. This means that they may not be able to answer questions about very recent events (Perkins). The databases on which LLMs are trained often include text based upon falsehoods and other untruths and their reliance on data compressions often result in estimations and compilations (Bell). This may cause the AI to inadvertently perpetuate biases or mirror skewed representations of topics or populations.

ChatGPT in particular has many risks if used improperly. The AI has vast amounts of personal information yet is only accessible by the privileged and relatively wealthy. Because of its lack of human emotion, there is no self-policing done by the AI to ensure it is being used responsibly (Esplugas 820). As Perkins notes, "LLMs always provide an answer, even if it is factually inaccurate or misrepresented" (Perkins).

In his study of ChatGPT and plagiarism, Khalifa notes that of the 200 most recent abstracts on Alzheimer's disease pulled from the Scopus database, 79.2% of the abstracts showed as being created by AI by ZeroGPT, an AI detector. An additional 100 abstracts, published between 2003 and 2013 before the proliferation of AI, all showed AI usage of some degree. But in a final test of the accuracy of AI detection software, Khalifa tested a series of his own abstracts through various AI detection programs including ZeroGPT. With complete certainty that there was no AI use whatsoever in any of the abstracts, all the AI detectors returned positive results for AI use. Khalifa points out that AI models cannot be acknowledged or cited as authors in the scientific community as they cannot be held accountable for their writing (Khalifa 292).

In his paper, Májovský said "[a]ny AI-based tool to detect AI generated text will inevitably fail because one can always train the next language model on the outputs of such a tool" (Májovský et al.). AI detection software will always be reactive or playing catch up to the AIs themselves. The inconsistency of results from AI detection showcases the inadequacy of current methods for accurately detecting AI generated scientific abstracts. Neither humans nor AI detection tools can reliably identify text generated by AI (Khalifa 292).

It can be argued that LLMs do not allow scientists and students to cheat. Fraud has existed far longer than any AI system. But LLMs do allow scientists and students to create fraudulent work more easily (Májovský). As Esplugas points out, “we do not compete with any AI; we compete with any human who is already using AI and knows how to use it properly” (Esplugas 821).

Institutions would be better served by adapting policies of acceptance with guidelines when it comes to AI use and cheating. AI can be used positively both in research and the classroom. According to a 2019 UNESCO report, there are three areas educators should focus on when integrating AI use into the classroom: (1) learning with AI in the classroom, (2) learning about AI with techniques and technologies, and (3) preparing for AI by enabling all parties to understand its impact on humans (García-Martínez et al. 172).

AI has the potential to address some challenges in education. Its innovative methods can improve the teaching and learning process (García-Martínez 172). However, AI usage should be encouraged with guidelines in place. This understanding and implementation will begin to alleviate stigma and misunderstanding of AI capabilities. Honest discussions about ChatGPT and AI in general may be more effective than integrity models and outdated student and professional honor codes (Newell). García-Martínez and coauthors identified in their research, “that the different EAI modalities not only affect the quantity of what students learn, but also lead to higher levels of motivation” (García-Martínez et al. 188).

The implementation of AI into learning models and the prevention of AI being used to cheat can go hand in hand. According to Oravec, “[d]etection of cheating in student evaluation contexts has often been identified as one of the ongoing issues in academia.” She goes on to point out how the current digital divide puts the impetus on the student to prove they did not cheat as opposed to the accuser proving they did. This is essentially a system of “guilty until proven innocent” (Oravec).

This Catch-22 can be avoided by ensuring educators are properly conveying information and checking for understanding. Active learning and feedback alleviate confusion immediately and does not promote use of AI. This works well coupled with interactive oral assessments wherein students demonstrate knowledge of a subject in a conversational setting. This completely negates any AI usage by demonstrating knowledge in real time (Newell). Methods to detect and prevent cheating advance almost as quickly as AI technology and can be useful in certain instances. Keystroke cadence counters determine if the same person is typing; this is a form of what is known as AI proctoring where a student is observed both physically by a human proctor and also by a computer program. This new form of cheating prevention can also include stress level indicator monitoring, like those used in polygraph testing (Oravec).

The scientific community as a whole is under pressure to overhaul its peer review and publishing process. Some of the methods suggested to do this and help alleviate any doubt or concern regarding possible AI generated research were presented by Májovský. He suggests that all subject data be captured by researchers and presented as an anonymous supplemental addendum to published works. Májovský also advocates a meticulous review process. This can be supplemented by educating reviewers on the process of review itself and establishing a reviewer ranking or grading system. This system should be transparent and applied unilaterally (Májovský).

Ethical regulation should also be applied at the level of publishers of scientific and academic works. Strict ethical guidelines at the level of academic institutions should be strictly enforced. Institutions should implement harsh penalties such as loss of accreditations and funding for misconduct to help ensure that institutions are self-censoring (Perkins).

Understanding is necessary to shift the perception of artificial intelligence. AI is not the impending downfall of higher education and the scientific peer review process, nor is it a harbinger of the coming of our machine overlords. AI is a tool, and like all tools it can be useful when used correctly and dangerous when used incorrectly. Education of the functions of AI, to include its advantages, limitations, and proper methods of implementation will go a long way toward easing the stigma regarding its use.

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