On Artificial Intelligence (AI) and Academics

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As the development of artificial intelligence (AI) accelerates, it is increasingly crucial for societies to discuss its potential impacts. Some who hail AI as a technology heralding another major technological revolution in human history claim it will be a strong presence in many fields, from education to finance to entertainment. There is merit to this enthusiastic claim. AI's power might not necessarily rest in its capabilities but in its magic to transform many industries in the long run.

One of the fundamental fields of human activity that must brace for the shock from AI is academia and academic education. Since ChatGPT and OpenAI entered the stage, academics and educators have been in a scurry to rule out certain features and debate about new additions to academic integrity codes. This essay will begin by examining the challenges posed by AI to academia, followed by a discussion of academic integrity in the age of generative AI. This essay will end by investigating ways to ensure AI will not cause an upheaval in academic environments globally.

It is a danger to understate AI's challenges to academia. As AI tools become more prevalent, academic misconduct is exponentially more prevalent. A 2022 investigation by Taylor and Francis, a prominent publisher of scientific papers, shows that in 2022, the number of research-integrity cases rose from about 800 in 2021 to 2900. The investigators predict that this number might double in 2023. There are several specific academic risks. First, AI allows researchers to make up and utilize nonexistent sources. Large language models (LLMs) can fabricate critical information, such as the title of another essay or the evidence used to support an argument. Elizabeth Bik, a microbiologist at Stanford University, points out that between 2016 and 2020, dozens of biology papers contained images produced by AI and created deliberately to back their theses. This risk is quite severe. Other researchers and readers digest the information presented by academics in their papers based on the premise that it is real. Forging academic information with AI breaks the trust between researchers, their peers, and their readers.

Second, AI-generated content can be challenging to identify. LLMs will provide more genuine responses to human requests as they evolve. The genuine difficulty for the reader is not that the AI-generated content looks real. Once researchers fuse AI-generated content into their writings and fine-tune the language to their writing style, it would be improbable for the readers to discern a marked difference. This risk, again, might lead to a trust crisis. For example, if readers are aware that there might be AI-generated content when reading argumentative essays, they would doubt the fundamental validity of the evidence presented by the author to make their point. This trust crisis negatively impacts the willingness of readers to read the works of academics and believe in the professional knowledge they provide.

Third, AI can be biased. Some people hold that using AI increases the objectivity of any scholarly writing. This opinion lacks merit. Computer scientists often train LLMs with AI-generated data or ones that do not factor in certain demographic groups. For instance,

underrepresented data of women or minorities can lead to biases in predictive AI algorithms. Experts have found that computer-aided diagnosis systems, which should benefit immensely from the power of AI, return results with lower accuracy for Black patients than white patients. Other algorithms that analyze user data for a specific app and return with recommended content are also prone to be skewed due to extant biases in the data they are trained with. In academia, writing that utilizes AI-generated materials carries and even magnifies the biases in these materials. This issue might lead to ethical ramifications, especially if AI biases are related to sensitive topics in race, ethnicity, or politics.

As AI permeates different academic environments, how will academic integrity look like in this age of generative algorithms? The quick answer is that the old rules and values will still hold. Academic integrity demands that work be transparent, credible, honest, and trustworthy. Some extant rules apply to AI as well. For example, one must refrain from using AI to write blocks of text, as doing so leads to a significant loss of originality. Institutions should also require scholars to cite AI tools if they are used. AI will not uproot academic environments entirely, at least not in the short run, so the fundamental guidelines that have been in place for centuries will continue to exist.

However, there should be some new additional points to the idea of academic integrity. Most importantly, scholars cannot use AI to make up nonexistent information – this behavior must be considered a blatant violation of academic integrity. There are two specific cases of violation under this point. In the first case, an author forges content with AI tools on purpose. Institutions should punish the author severely in this case. In the second case, an author utilizes AI-generated fabricated content but is unaware of it. After all, it is difficult to determine what data an AI tool pulls up to generate a response. Even if the author does not desire to use fake content, the materials that the AI feeds them might still be undetectably fake. This case calls for the devising of a systematic solution. Academic organizations should urge for the enactment of regulations on the capability of LLMs to fabricate content. Regulations can discourage scholars from utilizing nonexistent evidence by prodding them to invest less trust in these LLMs' effectiveness. Innovative leaders in developing AI models, such as Mustafa Suleyman of Inflection AI, have supported this notion of taking certain features off the table.

Another solution to prevent scholars from fabricating information using AI involves cross-checking each other's work. Ideally, this solution would create a mechanism for academics to watch and supervise each other. Any attempt to use fake evidence can be caught. This is not to take away the so-called freedom of academia. Having experts read each other's work is a simple method to "screen" each piece before it becomes widely accessible. Experts might detect any trace of AI-generated content more effectively than most readers.

Aside from the ban on utilizing AI to make up nonexistent materials, another aspect of academic integrity in the era of great algorithms is to involve the readers' proactivity more. Essays that fail to allow readers to cross-check evidence should be regarded as academically dishonest. Today, readers are more passive than active when absorbing the content of an academic paper. Admittedly, some may actively process the author's argument during reading and choose to agree or disagree, but they are still heavily influenced by the product of the author's thinking

process. Academics should provide direct channels for readers to cross-check information for them. Through this approach, every reader can be an active sifter and processor of information, not a passive receiver. This approach strengthens the audience's ability to determine the realness and credibility of an essay's content, which are arguably of utmost importance in the age of AI.

To implement this approach, besides citations, academics should link other relevant sources and peer-reviewed work in the main body of the text. These links must be direct and easy to access for the target readers. This action aims to make an essay as transparent as possible. Such an approach has already been shared in some fields, such as history. When Herodotus, the Greek historian who lived 2500 years ago, wrote his history, he had the habit of listing all the potential sources his audience might find when making a disputable claim. This writing mode should be adopted more commonly today in the AI age. Fostering open discussion about writing is the ideal new norm in AI-present academia.

Finally, regarding academic integrity, a greater weight should be put on the ethical side of a piece of work. Current codes of academic integrity emphasize ethics less than they should. AI's biases can be challenging to spot and avoid, so how researchers use AI ethically in the presence of potential prejudices is vital. The essential requirement for scholars is that their work does not promote harmful or misleading information. The burden of distinguishing reliable information from unreliable pieces rests not just on the readers but also significantly on the writers. If authors choose to incorporate AI into their research, they must sift through the algorithm's responses and check whether they violate ethical codes or might leave a harmful influence on specific groups of audiences.

Aside from academics, the LLM trainers are another shareholder in the AI world. This essay argues that they should not let AI train itself yet for ethical reasons. Today, allowing AI to train itself recursively might cause an undesirable phenomenon known as "model collapse." In 2023, Ilia Shumailov, a computer scientist at Oxford University, published a paper investigating this phenomenon. The paper explains an experimental case: A model was fed handwritten digits and requested to form digits of its own, which were fed back to it in turn. After a few iterations, the computer's numbers became more illegible. After 20 iterations, it could only generate rough circles or blurred-out lines. This experiment illustrates that AI algorithms still have a long way to go before evolving true capabilities and consistently improving themselves. Letting go of the reins now bears the risk of producing ineffective and inaccurate algorithms. More importantly, having unmonitored algorithms with the potential to magnify biases based on the training data they feed themselves is genuinely horrifying. Negative ethical ramifications would be both hard to measure and eradicate.

Academia should be more involved in the training of AI to ensure that the data LLMs digest reflects a broad spectrum of demographic groups. The current problem is that AI technology has not yet become accessible on the open web. As a result, the groups who have a say in training AI are only computer scientists and government personnel. Since people cannot stop AI's integration into academic work, it seems the safest option to factor in the opinions of academics in "LLM capability" discussions. Academia should debate what features might be hugely

disruptive and, hence, should not be widely employed. A decision-making process with only computer wizards and government officials risks creating unintended impacts on academia.

To tackle the challenges posed by AI and protect academic integrity, the general philosophy that incorporates all the aforementioned solutions is to create greater cohesion between different shareholders and parties. A concerted effort spearheaded by academics is the most effective. However, there are some broader, more macro-level solutions to AI's disruption in academia. If successfully implemented, these solutions would guarantee a future where students and researchers can coexist with AI algorithms.

The first solution is raising awareness in the primary and secondary educational frameworks. Today, there is a lag in these frameworks in the sense that educators need to integrate AI into the daily classroom. Doing so might be a tall order, but technological innovators have been pushing significant progress. In a recent talk, Sal Khan, the founder of the renowned Khan Academy, discusses how his platform for learning integrates an AI tool called "Khanmigo." Khanmigo heralds a new era for Khan Academy, where AI will be a nonnegligible factor in student learning. The AI tool is available when watching knowledge videos, doing practices, or visiting the website for general purposes. Mr. Khan believes in the vitalness of familiarizing students early with AI so that they become accustomed to algorithms in their future learning and research.

The second long-run solution concerns the coordination between AI firms, academia, and educators. AI companies like OpenAI are responsible for informing academic researchers and educators about the evolving landscape of the technology. Faced with such a rapidly developing technology, people might not have the time or ability to fully understand each short period of evolution. AI firms should then openly discuss new features to their models so that guidelines can be collaboratively created and adapted to changing conditions.

The third long-run solution asks for the founding of an independent academic institution or a collective group of such institutions to monitor the development of LLMs that academics may employ. Historically, whether it was with fossil fuel technologies or mobile phones, an independent organization eventually oversaw the progression of such technologies. AI requires independent monitoring eyes, too. A checks-and-balance system where an independent academic institution monitors AI firms, and the latter conversely has some deciding power over the components of the former, is desirable.

Given all the challenges and obstacles, this essayist still holds an optimistic view of AI in academics. For researchers, AI yields immense promises for academic breakthroughs. For instance, AI just helped historians decipher damaged Roman papyrus scrolls carbonized by the eruption of Mount Vesuvius in 79 C.E. In the future, with AI tools, researchers will achieve many more such breakthroughs. Additionally, AI can make academic work and achievements genuinely impactful to society. This boon includes bringing unprecedented help to underprivileged populations in healthcare. For the public, AI makes education and academic research more accessible. As the previous essay about the doughnut economy explains,

edifying the populace is one of the most imperative tasks to reach a sustainable future with secure social foundations. With proper regulation and discussion, the AI age will be the best of times. With rash carelessness and complacency, the AI age will be the worst of times.

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