

Artificial intelligence (AI) in decision making

Artificial intelligence (AI) technology has advanced steadily over the past several years, and has started to introduce data-driven solutions to many processes throughout the publication process. AI tools can be developed to provide guidance to humans based on relevant data, or AI may lend toward automation of some processes without human intervention. Some processes already being considered for AI intervention include: journal selection, topic identification, reviewer suggestion, scope assessment, text duplication checking, and statistical analyses; however, this is not a comprehensive list of AI options, and the opportunities for AI use are expanding at a rapid rate.

With the advancement of AI, questions surrounding the relevant ethics arise as to if, when, and how AI could/should be used. In this forum we'd like to start a discussion about these ethical issues, which COPE will use to develop a larger discussion document on this topic.

Questions for the Forum:

1. Is there a clear distinction between technical automation and artificial intelligence for automatic decision-making or actions taken in the publication process?
2. Are there processes where full technical automation is acceptable or even expected? Are there processes where full automation would be deemed unethical? Similarly, are the processes where AI-aided recommendations would be expected or deemed unethical?
3. What information do journals need to provide to authors (and reviewers) about AI tools in use at their journal?
4. What happens if an author/reviewer disagrees with a recommendation made by or action taken by AI tools? What types of procedures should be put into place to appeal an AI action?

This was discussed at the start of the COPE Forum on Monday 11 November 2019.

COMMENTS FROM THE FORUM (Monday 11 November 2019) – NOTE, Comments do not imply formal COPE advice, or consensus.

- There is a clear distinction between technical automation and artificial intelligence for automatic decision making. Any discussion document should clearly outline this difference and understand the nuances between them. Both require some level of human interaction. Technical automation is very useful, but it is very rules based, and if something goes wrong, human intervention is needed to look at what might be the exception to the rule, The same is true for artificial intelligence. It is essential there is human intervention in the process to double check what is happening.
- Artificial intelligence for peer review, for example, has a long way to go before it is that advanced.
- This issue is related to similarity checking for text duplication. Similarity checking using potential plagiarism detection software is a technical automation that is an alert mechanism for editors. When editors see similarity checking as artificial intelligence telling them that they should not accept a paper because there is some certain percentage of overlap with another publication, this is a misuse of technical automation. Technical

automation is more of an alert mechanism that requires human intervention and not just an automatic dismissal.

- When applying artificial intelligence techniques and technologies to problems, allowance has to be made for the biases in the results of these algorithms. The data sets that algorithms were developed on are biased.
- Artificial intelligence can be a very useful tool, but it needs human expertise to understand what is going on.
- An artificial intelligent algorithm may come up with a result, but it may not be obvious how the algorithm came to that solution.
- This is really powerful and exciting new technology but needs to be considered carefully and humans should be in the loop.
- Artificial intelligence suggestions should not be accepted blindly.
- It may not be possible to know what triggered flags raised by an artificial intelligent algorithm. This makes it difficult for the decision maker to understand why something has been flagged, so some level of transparency on how algorithms are developed or used is important. However, this could be problematic in terms of intellectual property around the algorithms. But there needs to be some balance in using these tools and how much information we have from people who are supplying these algorithms. What are the algorithms weighing up when they make their decisions?
- With regards to the information journals need to provide to authors, there has been a lot of work done in the financial services sector. For example, around loan applications, the algorithm would provide a yes or no most of the time, but it is possible to add some explainability around this (if your income had been higher your loan application may have been accepted). That is not the full explanation but perhaps enough information to give people an understanding of what they need to do. This could be applied to journals in terms of the information supplied to authors.
- Authors and reviewers should be informed about the use of artificial intelligence in the journal and how it is used. Authors should have some guidance and understand the consequence of what can happen and how it will be used.

ACTIONS: COPE will be developing a discussion document around this issue, starting with the questions that have been posed here and expanding on some of the issues that have been described.

COMMENTS POSTED ON THE WEBSITE

Posted by Georgii Alexandrov, 7/11/2019

At the current stage of AI development, it would be only prudent to restrict the use of AI to pre-reviewing submitted manuscripts. This gives authors the right either to improve the manuscript or to ignore AI recommendations. The following case study is to explain my opinion.

At some moment, I realized that I spend much more time on arranging peer-review for the papers of limited interest than for the papers that are of interest to a broad readership. It is really difficult to find a reviewer for a paper of limited interest. Nobody wants to read it.

But is there any objective algorithm for evaluating the level of interest except my perception? I trained a neural network, verified it and found that it is not perfect, but works reasonably well. It

looked like a tool that authors could use for making their manuscripts more attractive to readers - that is, for simplifying my task of finding reviewers to their manuscripts.

Unfortunately, I failed to convince the publisher to employ AI for pre-reviewing the submitted manuscripts. But I believe that AI-based pre-reviewing will save the time of editors and does not burden authors.

Posted by Noemie Aubert Bonn, 11/11/2019

I am not an editor, (only an interested PhD student) but I would like to know if any of you had experience with Meta (meta.science). It is a company now partly owned by the Chan Zuckerberg Initiative, and they aim to facilitate article recovery for researchers. But as a sideline, they also built an algorithm to 'predict impact of papers', which appears to be shared with some editors when articles are submitted. I find this very troubling, and I wondered if any editors have had experience seeing or hearing about this 'impact prediction score'. Thanks for any input!

Posted by Phil Hurst, 12/11/2019

With the incessant increase in published research, increased automation is inevitable – AI will become an important part of this.

AI should be used as a tool to support human decision-making, rather than as a replacement for it. Furthermore, it must not be used as a 'black box' which produces a result which we blindly base decisions upon.

It is ethical to use AI as a support tool in areas of content analysis to identify suitable journals, suggest reviewers and identify statistical weaknesses. However, this should only form part of the decision-making process. It is unethical to automatically reject or accept content without human intervention. Decision makers must be made aware of biases in computer algorithms. Authors and reviewers need to be made aware of the AI systems a journal is using and what for – in a similar way we make them aware of use of similarity checking software. Transparency is essential to allow author to understand the decision-making process so that they can challenge it through the normal procedures.