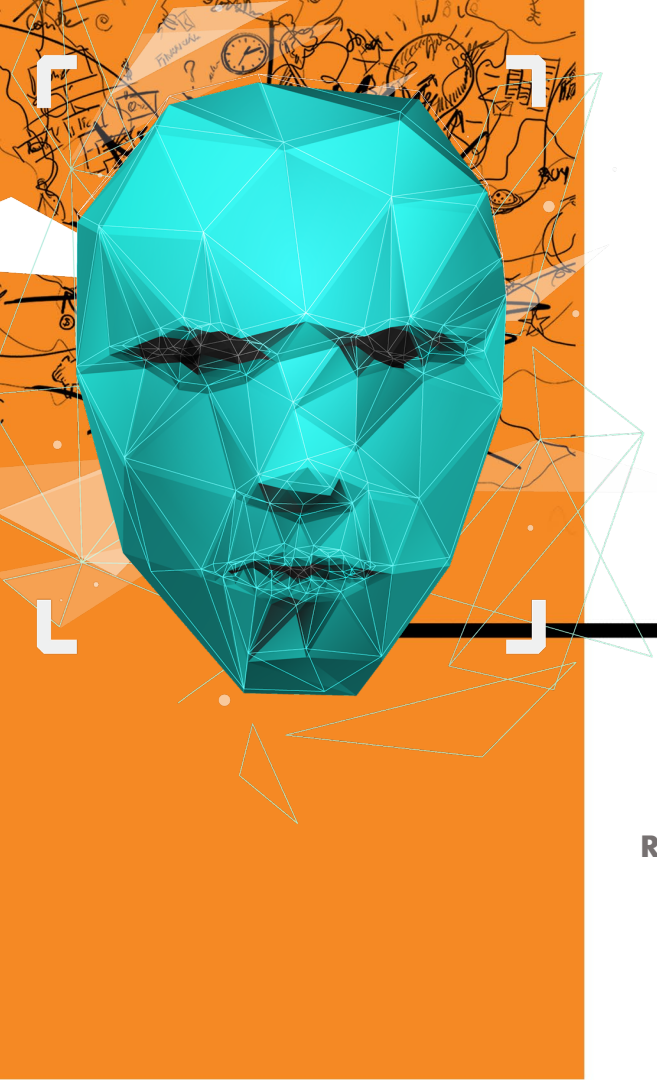

Excelling scholarly publishing processes using artificial intelligence-assisted tools

Sam T. Mathew
Researcher and Medical Communications Expert, India

Habeeb Ibrahim Abdul Razack
Researcher, Department of Cardiac Sciences, College of Medicine, King Saud University, Saudi Arabia

Disclaimers

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- Presenters do NOT have practical working experience on “ALL” the AI-assisted tools listed in this presentation, though they regularly use a few. They rely on the information given by service providers or published literature for such tools with no practical experience.
- In no way, the presenters wish to promote any particular product(s). The tools listed are for educational purposes only, and the presenters do not influence commercially.

Agenda

- What is AI?
- Future of AI
- Why AI in scholarly publishing?
- Different AI tools used in scholarly publishing
- Ethical considerations and guidance
- Impact of AI on human interventions and future

What is AI?

Any thoughtful application of advanced computer sciences in executing tasks and processes that are usually related to intelligent beings

Modified from the Encyclopaedia Britannica definition

Ref: 1,2

"The Future is AI, DOT"

Appen Report, 2021

AI budgets have increased by 55% YoY, with some investing up to $5M.

State of AI, 2021

'AI-first' approaches help faster simulations of humans' cellular machinery, that may transform drug discovery and healthcare.

Research & Markets, 2021

Total global AI solution market will reach $227.5B by 2026, growing at 28.6% CAGR.

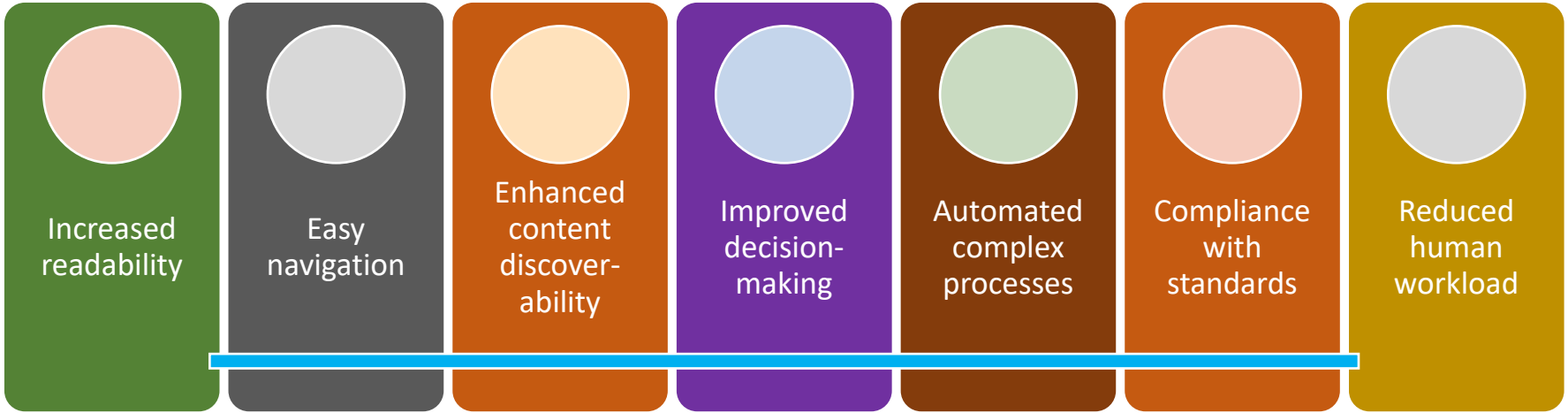
McKinsey Global Survey, 2020

COVID-19 has not prevented high-performing organizations from investing in AI.

Ref: 3-6

AI in the Publishing Industry

Gould Finch & Frankfurter Buchmesse 2019 Survey

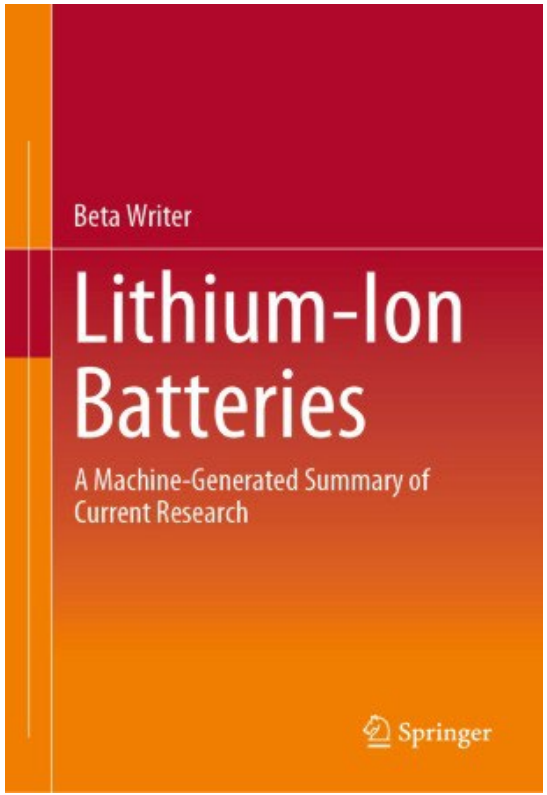


Characteristics of Survey Participants

- 300 senior leaders and editors
- Sampled from 17 countries
- Mean age: 41 years
- Mean experience: 13 years

Ref: 7

Machine-Generated Book is a Reality!



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Beta Writer 1

1. Heidelberg, Germany

About the authors

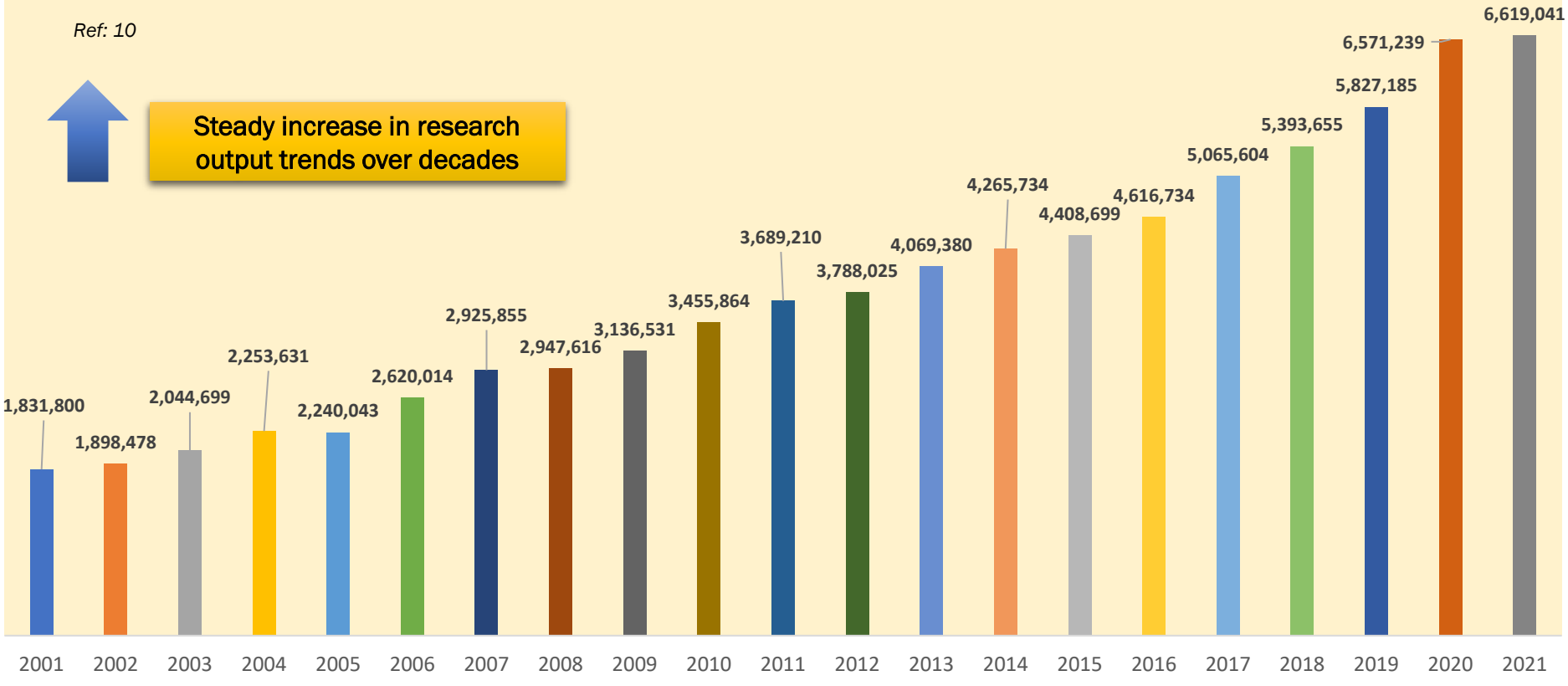
Machine-generated by Beta Writer 0.7 software developed at Goethe University Frankfurt

Bibliographic information

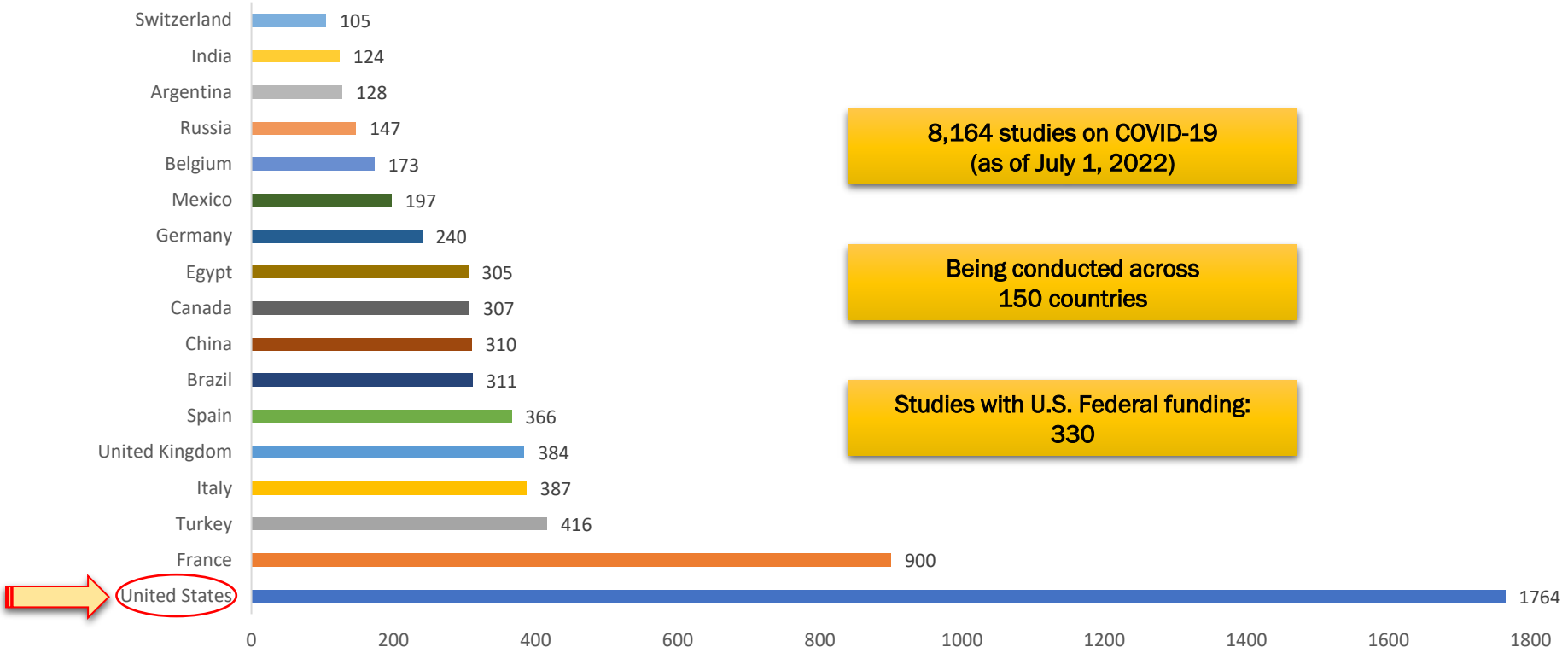
Book Title Lithium-Ion Batteries	**Book Subtitle** A Machine-Generated Summary of Current Research	**Authors** Beta Writer
DOI https://doi.org/10.1007/978-3-030-16800-1	**Copyright Information** Springer Nature Switzerland AG 2019	**Publisher Name** Springer, Cham
eBook Packages Chemistry and Materials Science	**Hardcover ISBN** 978-3-030-16799-8	**Softcover ISBN** 978-3-030-16802-5
eBook ISBN 978-3-030-16800-1	**Edition Number** 1	**Number of Pages** XXXV, 247
Number of Illustrations 1 b/w illustrations, 2 illustrations in colour	**Additional Information** This book was machine-generated.	**Topics** Electrochemistry Energy Storage Energy Materials

Ref: 8,9

The Need for AI Intervention in Scholarly Publishing



COVID-19: A Game Changer



8,164 studies on COVID-19
(as of July 1, 2022)

Being conducted across
150 countries

Studies with U.S. Federal funding:
330

Ref: 11

Peer Review Burden

In 2020 alone

>1.5 billion USD for US reviewers

>600 million USD for Chinese reviewers

>400 million USD for UK reviewers

Ref: 12

Aczel *et al. Research Integrity and Peer Review* (2021) 6:14
https://doi.org/10.1186/s41073-021-00118-2

Research Integrity and Peer Review

RESEARCH Open Access

A billion-dollar donation: estimating the cost of researchers' time spent on peer review

Balazs Aczel[1*], Barnabas Szaszi[1*] and Alex O. Holcombe[2]

Abstract

Background: The amount and value of researchers' peer review work is critical for academia and journal publishing. However, this labor is under-recognized, its magnitude is unknown, and alternative ways of organizing peer review labor are rarely considered.

Methods: Using publicly available data, we provide an estimate of researchers' time and the salary-based contribution to the journal peer review system.

Results: We found that the total time reviewers globally worked on peer reviews was over 100 million hours in 2020, equivalent to over 15 thousand years. The estimated monetary value of the time US-based reviewers spent on reviews was over 1.5 billion USD in 2020. For China-based reviewers, the estimate is over 600 million USD, and for UK-based, close to 400 million USD.

Conclusions: By design, our results are very likely to be under-estimates as they reflect only a portion of the total number of journals worldwide. The numbers highlight the enormous amount of work and time that researchers provide to the publication system, and the importance of considering alternative ways of structuring, and paying for, peer review. We foster this process by discussing some alternative models that aim to boost the benefits of peer review, thus improving its cost-benefit ratio.

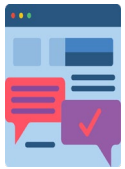
Keywords: Peer-review, Academic publishers, Publication system

Changing Landscape of Scholarly Publishing

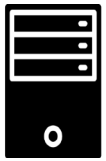
High volume of reserach

Open access

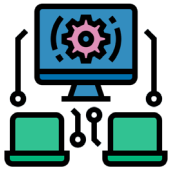
Open peer review



Predatory journals

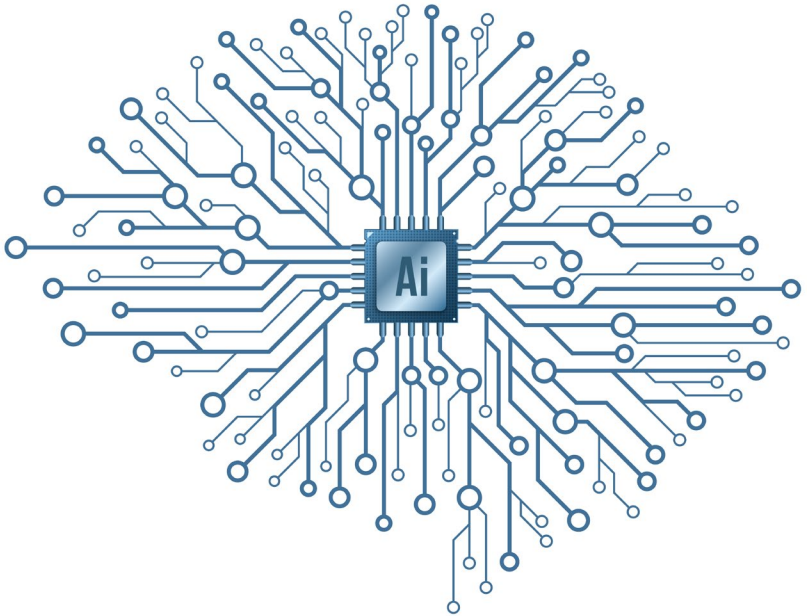


Pre-print servers



IT advancements

Opportunities for AI in Scholarly Publishing



Prospective

Improving the quality and timelines of publishable content

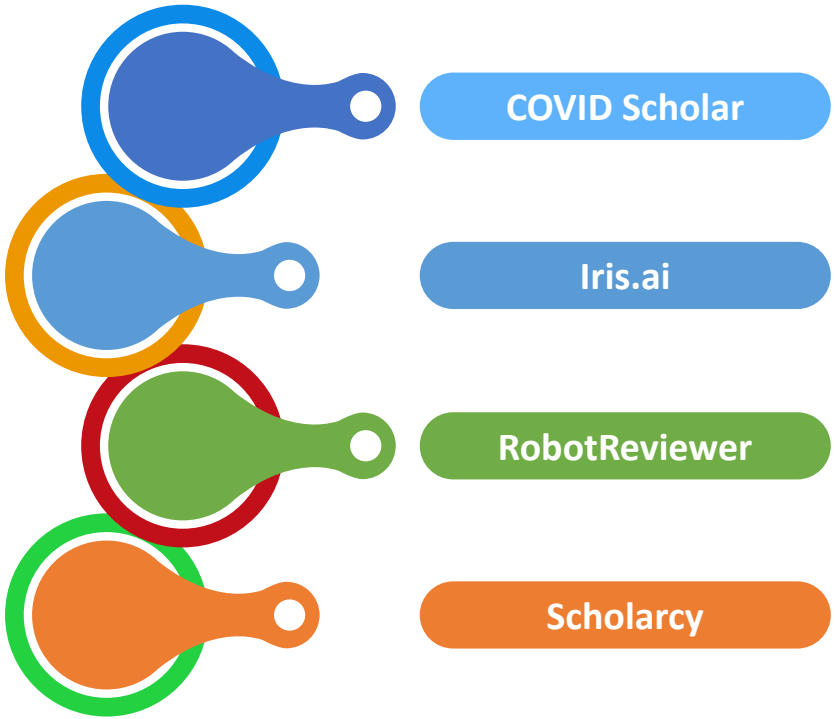
Retro-spective

Checking published content & identifying missed obligations and correct them for better use

Ref: 12

AI is Helpful to All Stakeholders in Every Stages of Scholarly Publishing

Literature Review & Data Synthesis



COVID-19 literature search powered by advanced NLP algorithms

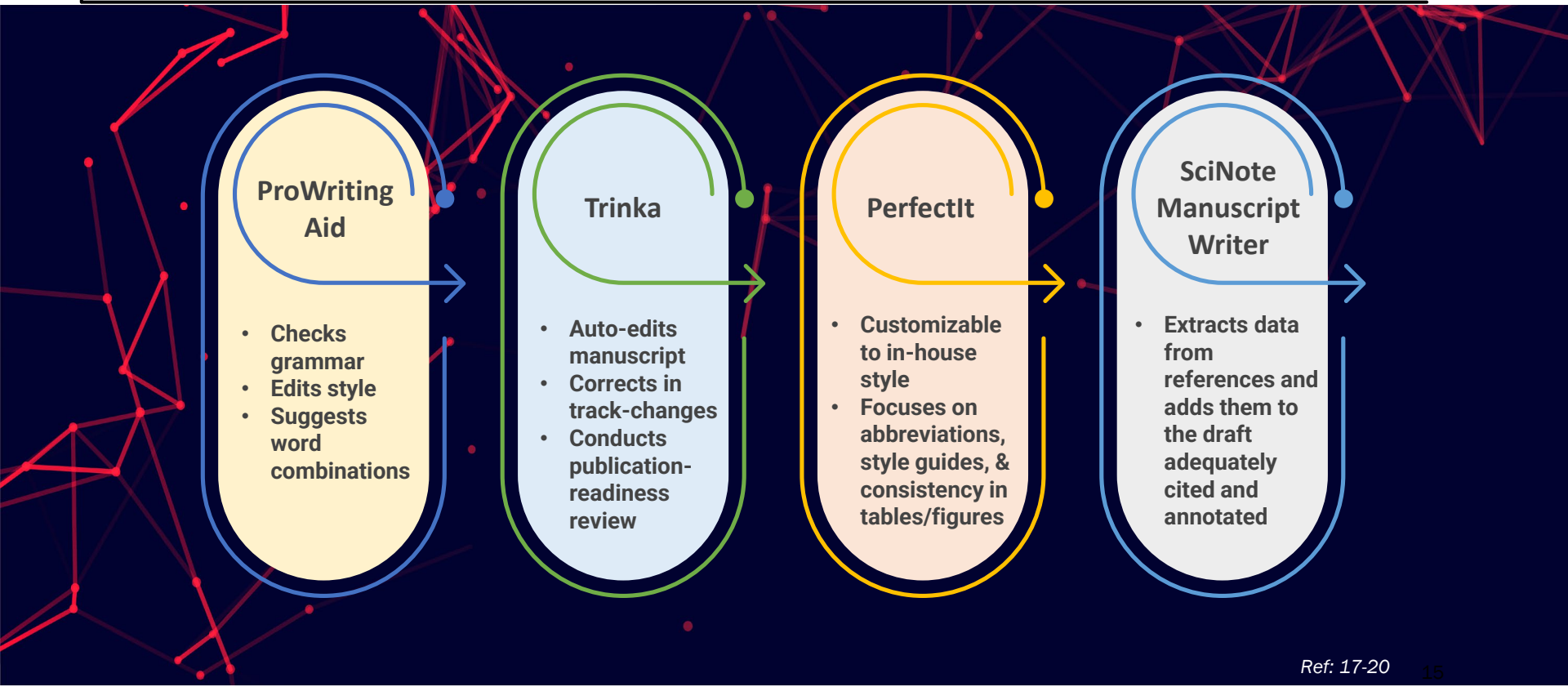
Sorts topic-based contents, amalgamates different algorithms, generates “document fingerprints,” and provides the results

Identifies critical RCT information, including the PICO, design, and risk of bias, from research publications

Provides meaningful AI-created summaries for research articles and helps to quickly understand essential study data

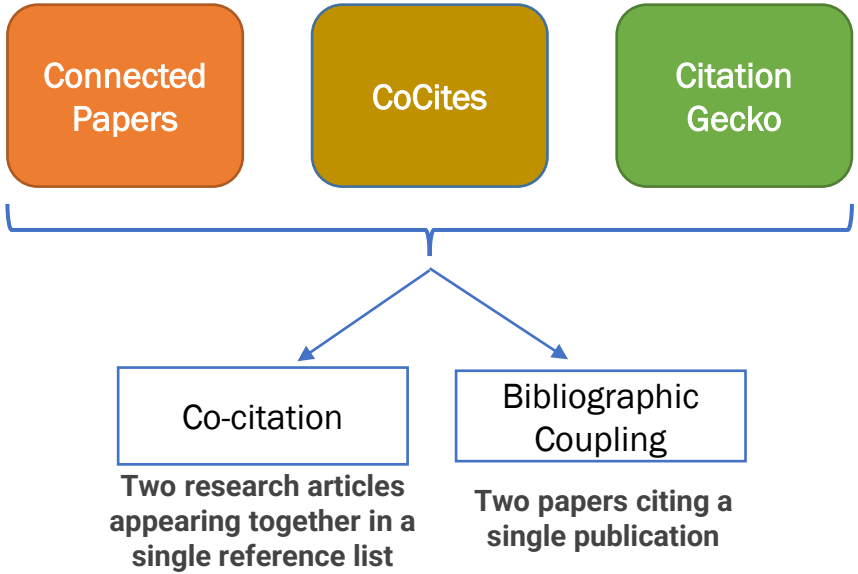
Ref: 13-16

Manuscript Writing & Editing



Ref: 17-20

Reference Management



Scite.ai
Uses smart citation to analyze the quality of references

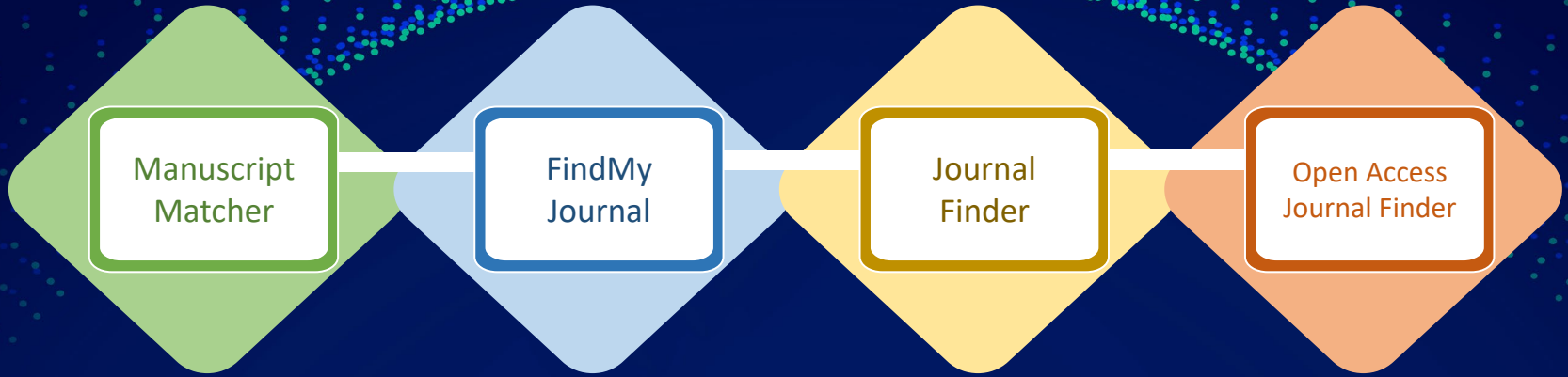
ScWheel
Uses SmartSearch algorithm to recommend relevant articles in Word and Google Docs

Wizdom.ai
Uses citation recommender and projects citation impact of manuscripts for 3-5 years

Meta
Employs predictive algorithms to identify articles and integrates with *Mendeley*

Ref: 21-26

Target Journal Selection



Applies complex algorithms, WoS information, & JCR statistics to suggest impactful journals by providing the match score

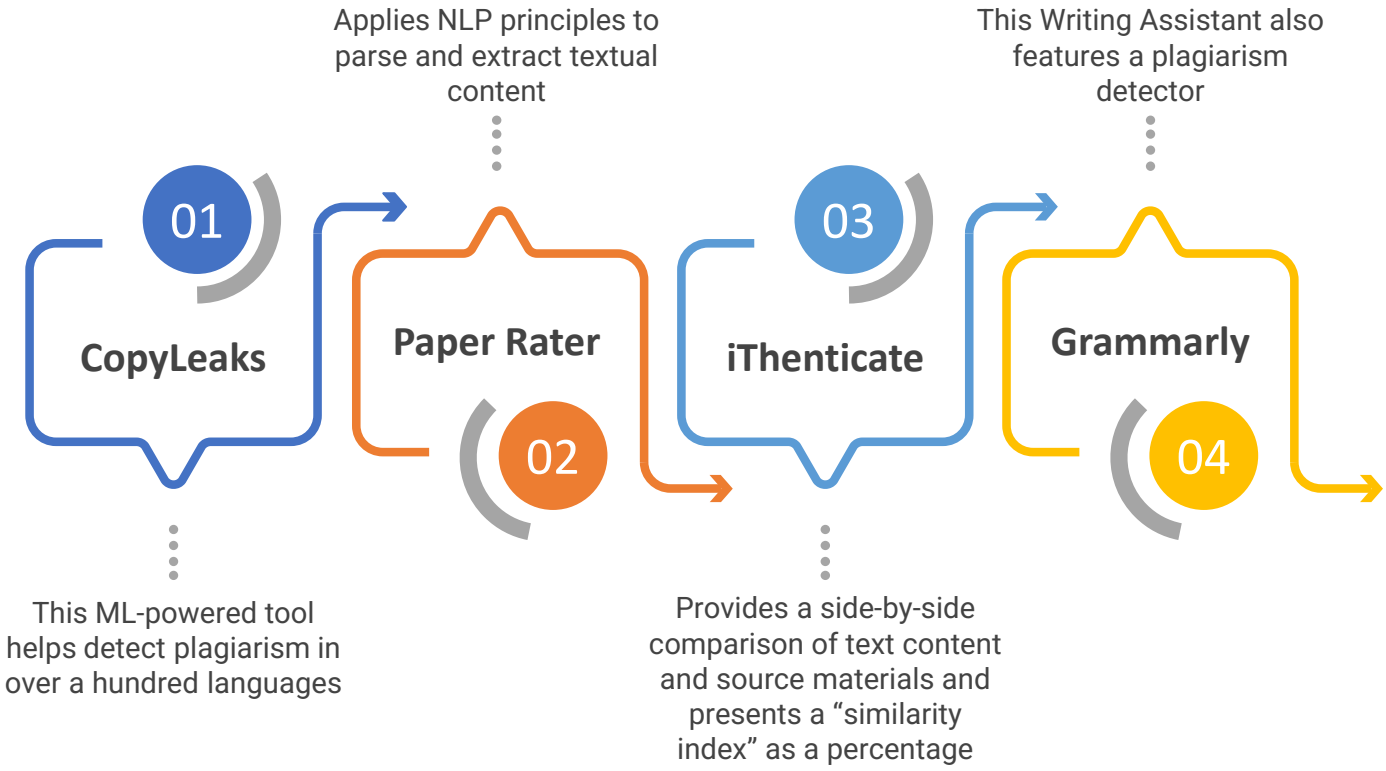
Employs an intelligent algorithm to search using researchers' responses to 11 objective questions & suggests the top five

Involves clever search know-how supported by fingerprint engine and subject-specific vocabularies to identify target journal

Uses validated journal index, an algorithm supported by DOAJ and helps avoid predatory journals

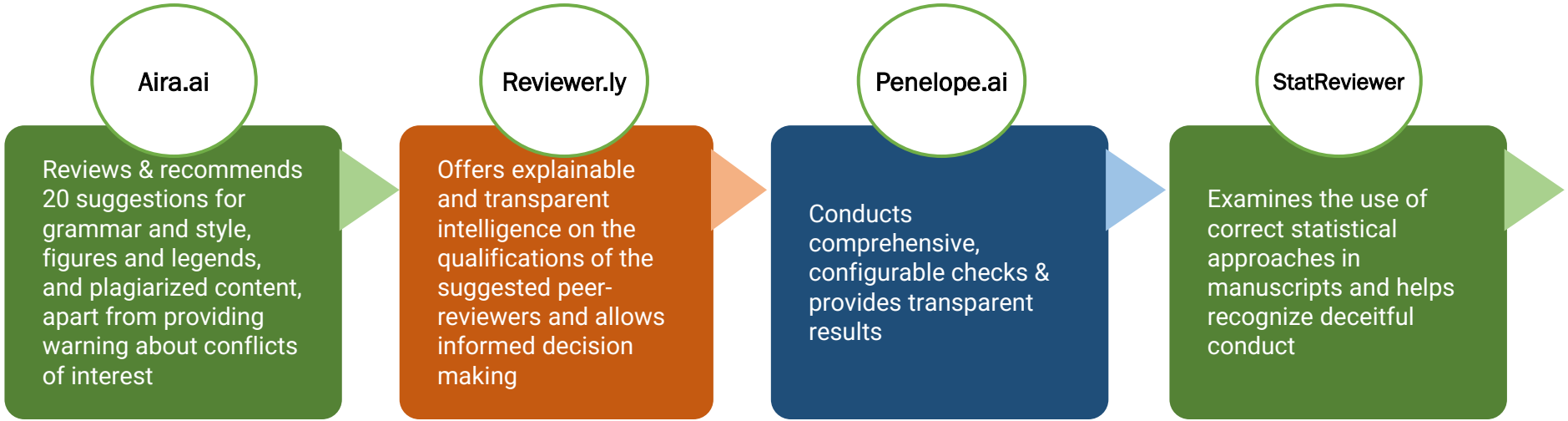
Ref: 27-30

Plagiarism Detection



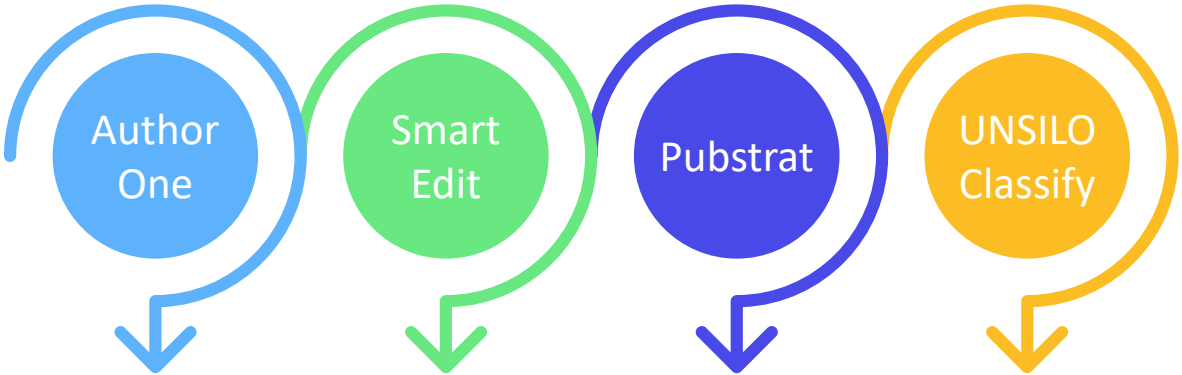
Ref: 31-34

Peer Review & Quality Check



Ref: 35-38

Workflow Management, Production & Dissemination



Conducts 60-item assessment & checks authorship declarations, ethical compliance, inclusive language, & word count reduction

Uses NLP for copy editing and proof generation and rationalizes the production process by converting texts into XML format

Features automated workflow management alongside an option for automated citation creation

Helps develop topic-based content packages, while *UNSILO Recommend* offers helps improve click & retention rates

Ref: 39-42

For More Insights on AI-Assisted Tools

science editing
pISSN 2288-8063
eISSN 2288-7474

Check for updates

Sci Ed 2021;8(2):134-144
https://doi.org/10.6087/kcse.244

Review

Artificial intelligence-assisted tools for redefining the communication landscape of the scholarly world

Habeeb Ibrahim Abdul Razack[1,2], Sam T. Mathew[3], Fathinul Fikri Ahmad Saad[1,4], Saleh A. Alqahtani[5,6]

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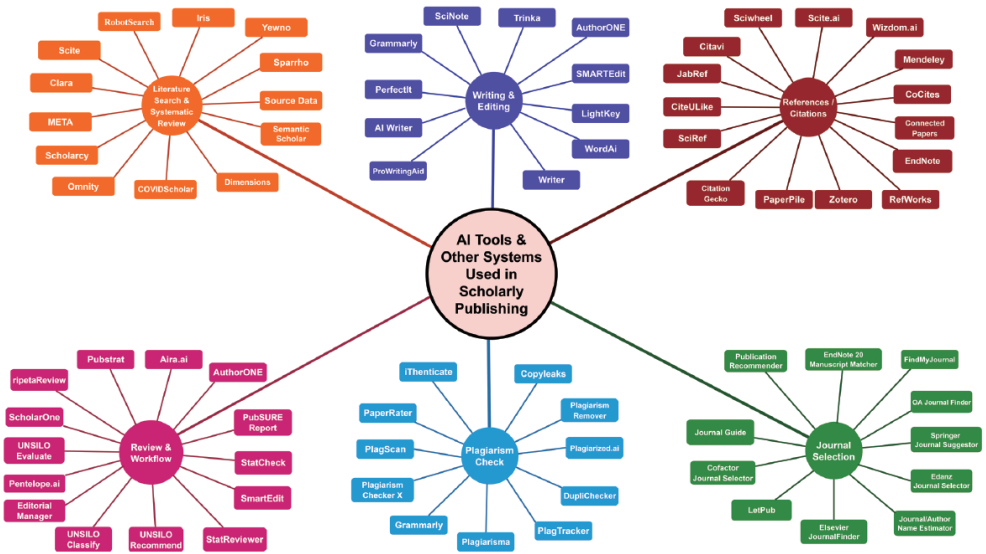
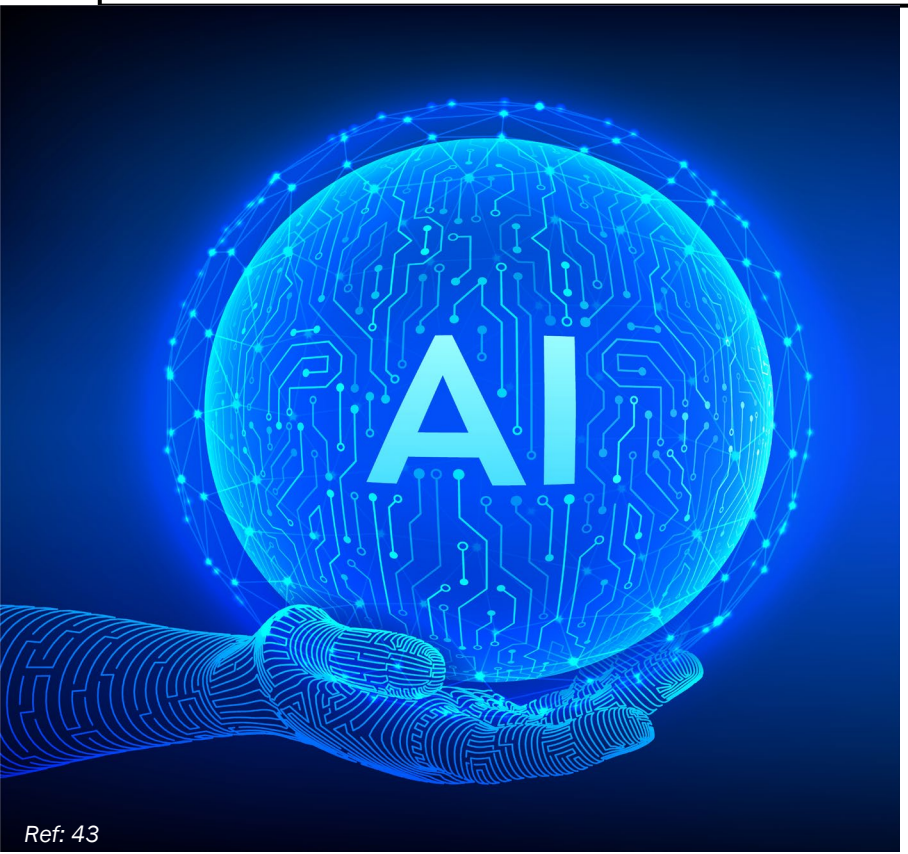


Fig. 1. Various artificial intelligence (AI) tools and associated non-AI solutions used in scholarly publishing.

Ref: 2

Challenges Ahead of Scholarly Publishing Community for Implementing AI...



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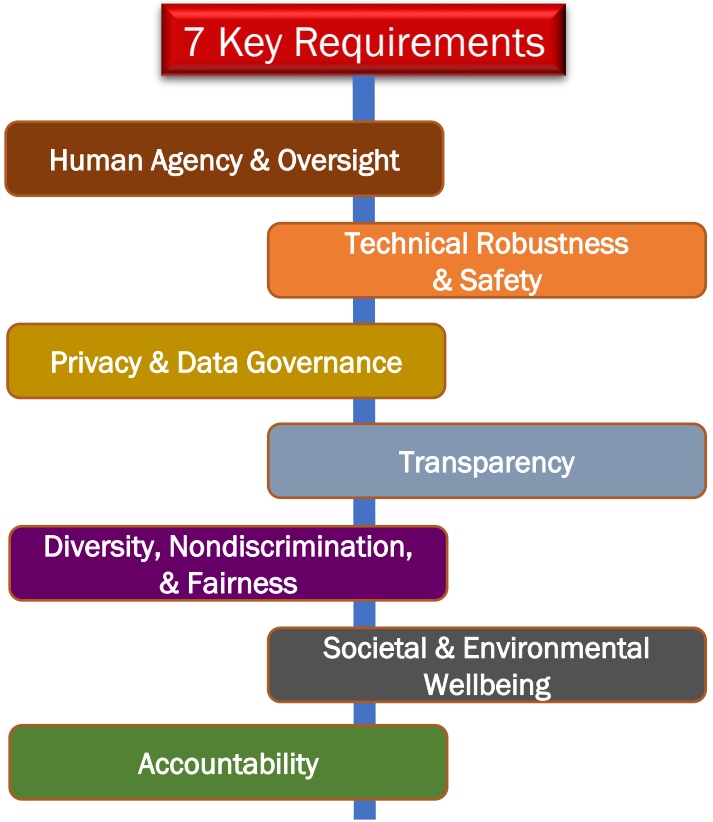
Trustworthy AI: EU Guidance



Ref: 44

Recommendations on Using AI in Scholarly Publishing COPE

Decision-making

Editorial decision cannot be made by an AI tool alone.

Fairness

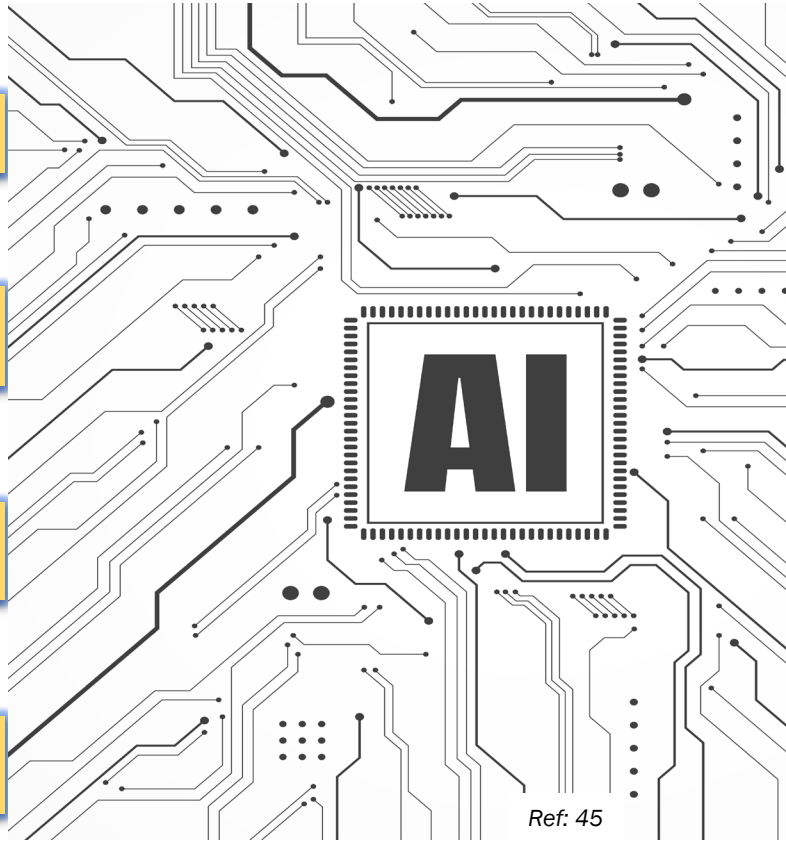
Human oversight is key to ensuring a fair process and respecting authors' rights.

Inherit Biases

Publishers should share any known biases in the algorithms or databases involving automation or AI.

Author Rights

Authors have the right to know which processes or steps involve automation or AI decisions.



Ref: 45

‘AI Hesitancy’ & ‘AI Illiteracy’

Nadarzynski T. *et al, 2019*

- Period: Nov 2017 - Jan 2018
- Mixed-methods approach: face-to-face semi-structured interviews (n=29, students) and an online survey (n=215, public)
- Aimed to explore participants’ willingness to engage with AI-led health chatbots
- Moderate acceptability (67%), correlated negatively with perceived poorer IT skills and dislike for talking to computers.

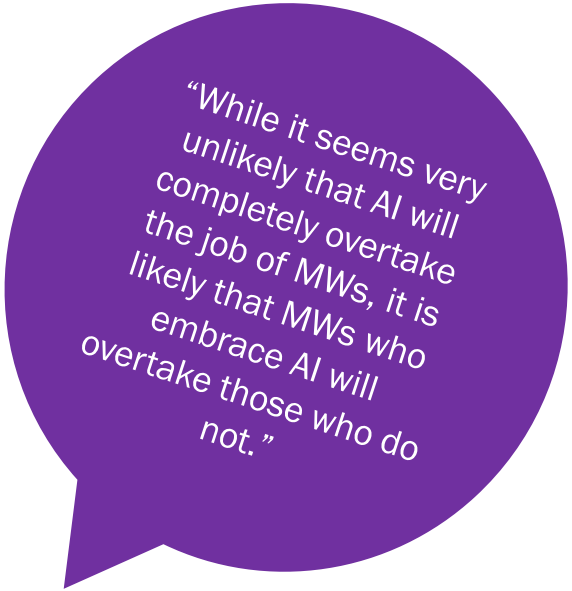
Polesie S. *et al, 2020*

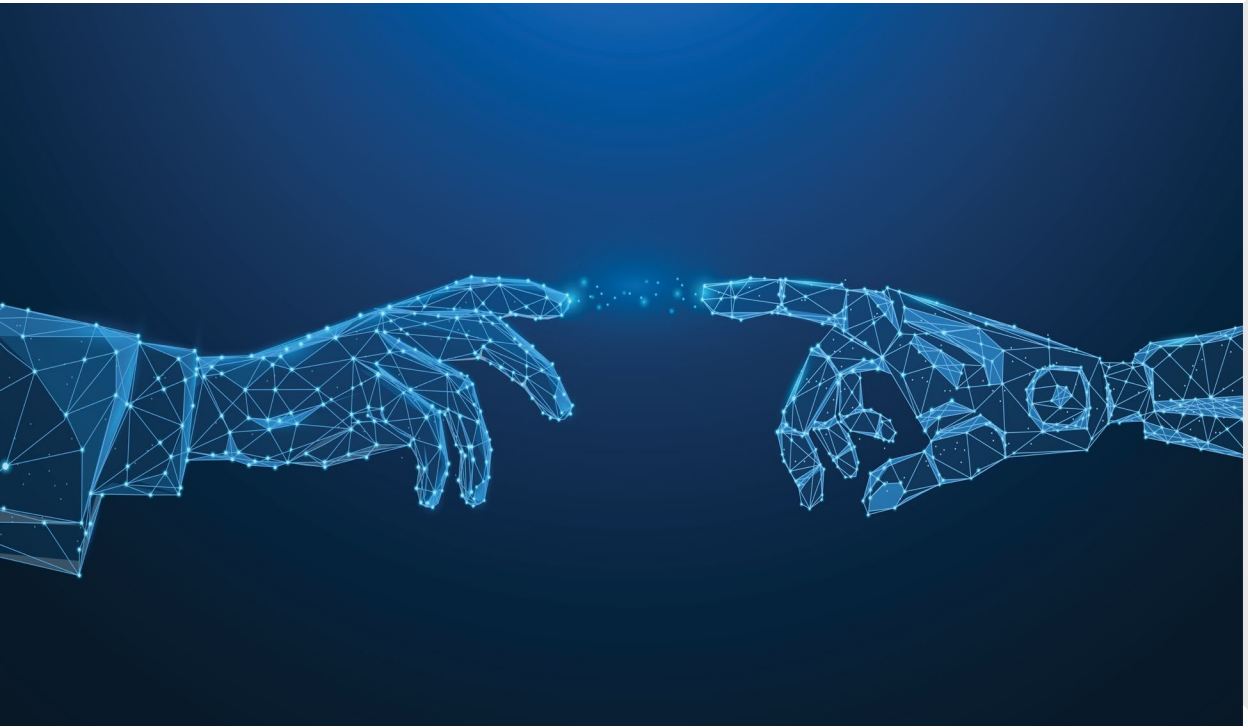
- Period: Mar 2020 – May 2020
- Online survey: Dermatopathology experts (n=718)
- Aimed to address feelings and attitudes toward AI among dermatopathologists
- Only 18.8% had either good or excellent knowledge about AI.
- 84.1% thought AI should be a part of medical training.

Ref: 46, 47

AI is not a ‘foe’ but a ‘friend’!

Stakeholder benefits	**Improves MW performance**
Patients, society, business, researcher, author & journals	Efficiency and productivity
Quality	**Ethics**
Consistency, accuracy	Complinace, nonbiased, transparency, integrity





Human-Machine Collaboration

It’s high time to promote human-machine collaboration through training and preparation to augment value creation and improve performance and delivery.

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