Artificial Intelligence Improves the Review and Proofreading Efficiency of Journal Editors (Post-print)

Authors: Liu Qin, Bi Li, Zhang Pengjie, Shi Yun, Sun Ting

Date: 2023-10-08T00:00:00+00:00

Abstract

Artificial intelligence technology has been deployed across multiple domains and has achieved considerable accomplishments; consequently, various industries attach great importance to its application. Within the editing and publishing field, the utilization of this technology can both enhance operational efficiency and provide effective prevention against academic misconduct. Therefore, journals should fully leverage this advantage to elevate their comprehensive competitiveness.

Full Text

Preamble

Title: Artificial Intelligence Enhances the Review and Proofreading Efficiency of Journal Editors

Authors: Liu Qin, Bi Li, Zhang Pengjie, Shi Yun, Sun Ting*

Affiliation: Chongqing Health Statistics Information Center, *Modern Medicine and Health* Magazine, Chongqing 401120, China

Abstract: Artificial intelligence technology has been applied across multiple domains with notable success, garnering significant attention from various industries. Its implementation in the editing and publishing field can not only enhance work efficiency but also provide reasonable safeguards against academic misconduct. Therefore, journals should fully leverage these advantages to improve their overall competitiveness.

Keywords: Artificial intelligence; Journal editors; Review; Proofreading; Efficiency

CLC Number: G612.3
Document Code: A
Article ID: 1671-0134(2021)11-097-03
DOI: 10.19483/j.cnki.11-4653/n.2021.11.029

Citation Format: Liu Q, Bi L, Zhang P, Shi Y, Sun T. Artificial intelligence enhances the review and proofreading efficiency of journal editors [J]. China Media Technology, 2021(11).

On July 27, 2020, the "National New Generation Artificial Intelligence Standard System Construction Guidelines" were officially issued, emphasizing the importance of top-level design and the construction of an AI standard system framework. Currently, artificial intelligence is exerting a profound impact on multiple fields, including editing and publishing. For the traditional editing and publishing industry, AI technology can not only bring disruptive breakthroughs but also further optimize workflows, accelerate information dissemination, and impose more stringent requirements on editorial staff [1]. Editors at major journals can utilize AI to complete numerous repetitive tasks, thereby significantly improving work efficiency.

1. Applications of AI Technology in Editorial Processes

1.1 Optimizing Publishing Workflow

First, journal editors can employ AI technology to conduct detailed analysis of academic papers, scientifically evaluate their scholarly value, and statistically track citation counts. Second, AI can provide editors with the latest references and relevant information, offering effective support for topic selection and planning. Third, editors can leverage big data technology within AI to compare and analyze various aspects of papers, identify related literature and reports, and categorize references appropriately. Fourth, editors can use this technology to analyze the novelty and rationality of articles from multiple perspectives, enabling rapid quality assessment. Fifth, through intelligent paper analysis, editors can match manuscripts with suitable reviewers, thereby enhancing review efficiency. While editors should personally review particularly special manuscript content, routine submissions can be processed by AI technology.

1.2 Controlling Academic Misconduct

To ensure more effective control of academic misconduct, AI technology can be implemented. Currently, most detection systems have limited database scope. AI application can analyze not only conventional text but also compare and analyze data related to images and graphics in manuscripts. During analysis, AI is not constrained by language and can quickly determine whether academic misconduct exists.

1.3 Improving Editing and Proofreading Standards

Supported by AI, automatic editing and proofreading algorithms have become increasingly sophisticated and are being further applied in many systems. Through deep learning, AI technology can comprehensively understand formatting specifications and proofreading requirements, enabling automated paper editing and subsequent reference verification. Editors utilizing automated proofreading technology can substantially reduce their workload while strictly ensuring proofreading efficiency and quality. Advanced big data and deep learning systems within AI can further optimize editing and review processes, expanding coverage by constructing comprehensive knowledge bases and corpora.

In recent years, AI-powered automatic typesetting technology has gained further application in academic editing. This technology can not only achieve automated layout but also conduct standardized typesetting and printing tailored to different publication platforms, ensuring users can access and download papers anytime across various terminals. Furthermore, AI and big data technologies enable comprehensive packaging of papers to meet readers' in-depth reading needs. In summary, intelligent automatic typesetting can improve publishing efficiency while ensuring paper timeliness [2-3].

1.4 Enabling Rapid Intelligent Manuscript Submission

China' s journal publishing industry possesses abundant resources and plays a vital role in promoting technology dissemination and development. In recent years, due to rapid technological advancement, traditional manuscript submission methods are quietly evolving. Papers must be indexed promptly to be visible to researchers in the same field for further study and to generate new research content and outcomes. Traditional peer review systems cannot satisfy these requirements.

AI technology ensures timely inclusion of outstanding manuscripts, promoting sustainable development of academic journals. In traditional solicitation models, journal editors must proactively approach authors via email or phone calls —an inefficient method that cannot achieve precise and effective manuscript acquisition. AI technology can clarify a journal' s scope, target user groups, and send targeted solicitation letters, effectively improving solicitation efficiency [4]. These letters can also include recently published relevant content, enabling potential contributors to better understand the journal and make informed decisions about submitting.

As technology continues advancing, AI can play greater roles in the review process. Editors can use AI as an auxiliary tool, employing machine learning to match manuscript research directions with reviewer expertise to identify the most suitable reviewers. After review completion, relevant information from the current review is captured by the system as new data. Machine learning then generates new parameters, and this iterative process continues to improve

manuscript-reviewer matching. This approach not only enhances review efficiency but also ensures rapid manuscript acceptance [5].

2. Application Prospects of AI Technology in Review and Proofreading

AI technology relies on deep learning algorithms and computer technology support. Optimized algorithms possess powerful computational and data analysis capabilities, enabling them to draw conclusions and provide reference bases for decision-making. Integrating AI technology with review and proofreading work can fully highlight the advantages of natural language processing technology. Review and proofreading work is typically standardized and must be based on objective facts—precisely AI' s strength. This technology can locate relevant materials in massive databases, promptly identify errors, and correct them. However, due to AI' s lack of creativity and emotional expression, deeper processing of review and proofreading work still faces certain obstacles [6].

2.1 Ensuring Accuracy in Word-Level Proofreading

Currently, numerous proofreading software exists in the market, but these cannot guarantee accurate word-level proofreading and still require editors' secondary review and confirmation. To further optimize proofreading software functionality, AI advantages can be leveraged. First, AI' s deep learning capabilities should be utilized to study various formal references and books. Second, mastering semantic recognition techniques enables efficient review of proofreading texts and accurate identification of existing problems.

2.2 Improving Sentence-Level Proofreading Capability

Common proofreading software often cannot guarantee accurate sentence-level proofreading. To enhance software proofreading capabilities, natural language processing technology advantages can be employed. By accumulating extensive sentence examples, comprehensively analyzing and interpreting article content, and comparing it against knowledge base contents, the system can analyze sentence-level issues and provide corresponding prompts.

2.3 Ensuring Timeliness of Proofreading Results

Most proofreading software contains professional lexicons and massive vocabularies. With AI application, data can be updated in real-time, enabling batch processing of massive database information, eliminating outdated content, and retaining current terminology and materials.

2.4 Improving Proofreading of Professional Terminology

AI technology can update traditional databases and incorporate professional terms published by the National Committee for Scientific and Technical Termi-

nology in a timely manner, making database functions more robust. In subsequent review and proofreading work, relevant terms can be promptly extracted from databases and compared with terms in manuscripts, improving proofreading accuracy.

3. Strategies for Improving Journal Editors' Review and Proofreading Efficiency in the AI Context

Journal editors must consider AI' s advantages, embrace new challenges brought by emerging technologies, engage in continuous learning, improve their knowledge structure, and effectively combine their professional skills with AI advantages to enhance review and proofreading efficiency.

3.1 Mastering Proofreading Software Characteristics

With AI support, proofreading software functions are increasingly perfected and their application scope continuously expanding. However, in daily review and proofreading work, editing work cannot be completely replaced by proofreading software. Editors typically use proofreading software for word-level checks but cannot achieve sentence-level and semantic proofreading. Over time, proofreading software can not only perform sentence-level proofreading but also improve semantic proofreading accuracy. Nevertheless, due to AI software' s lack of common sense and logical thinking, accuracy cannot be guaranteed when proofreading related content. Editors should identify work priorities and tasks based on manuscript types and software strengths, enabling their work to complement AI capabilities.

3.2 Continuously Improving Knowledge Structure

Journal editors should adopt a developmental perspective, fully recognize deficiencies in their knowledge structure, and take practical actions to improve it and achieve capability iteration. In review and proofreading work, although current AI technology cannot truly replace editors, this does not mean editors will permanently maintain industry dominance. Relying solely on traditional work experience and methods may lead to lack of innovation and eventual obsolescence. In daily work, editors should diligently study technology-related knowledge, understand the characteristics of latest software, master AI technology operation methods and development patterns, continuously update work approaches, and fully adapt to emerging challenges.

3.3 Achieving Self-Improvement

As core components of academic journals, academic editors must consider their own capability enhancement. First, they should innovate work concepts. Second, they should master diversified knowledge and skills. Editors should proactively study AI-related knowledge and master common processing tools—for

instance, diligently learning programming technology and understanding its current status and latest applications. Third, editorial staff must reasonably evaluate published content and assess associated risks. For example, when involving public health emergencies, editors need to use their experience and keen judgment to clarify manuscript direction and determine publication schedules. Fourth, editors must possess strong professional judgment—capabilities that AI technology cannot replace.

Currently, AI technology' s drawbacks cannot be ignored; for example, it cannot replace human creativity. As time progresses, human creative ability remains the source of social progress. For journal editors, continuously improving their own creativity is essential to better harness AI technology. They should diligently study domain-specific knowledge, such as mastering corresponding text specifications and understanding language logic, using AI technology as an auxiliary tool for review and proofreading.

4. Development Strategies in the AI Era

4.1 Building Professional Academic Service Platforms

In the AI era, academic communication is gradually moving toward mobility and video-based formats, transforming from traditional media to omnimedia dissemination. Journal editors should be adept at integrating various resources, transforming journals into professional academic exchange platforms and achievement display venues that fully share authors' , readers' , editorial board members' , and experts' opinions and suggestions, promoting information exchange and resource integration. With internet support, readers' demands for reading are increasingly high. When acquiring and disseminating knowledge, journal editors should further improve service functions, actively collect and organize various academic resources, establish dedicated academic service exchange platforms, and meet the needs of readers and authors. Editorial staff should possess strong brand awareness, cultivate their planning and organizational capabilities, and ensure smooth implementation of various academic exchange activities. Regularly holding academic exchange activities and planning events around hot topics provides researchers with learning and exchange platforms. Through academic activities, journals can not only expand their influence but also improve paper quality, thereby enhancing brand impact.

AI and big data technologies should be utilized to analyze user behavior patterns and professional preferences, making push content more targeted. For example, after an author' s article is published, they should receive push notifications about citation status or new information relevant to their research, keeping them informed about the latest industry trends. The advantages of mobile clients and websites should be fully leveraged, enabling users to access information across different terminals and strengthening the relationship between users and journals.

4.2 Strengthening Talent Cultivation

To further improve journal timeliness, academic journal publishers should strengthen cultivation of outstanding talent, enabling editorial staff to proficiently apply AI technology. Dedicated editorial information management systems should be built to reorganize editorial publishing and workflow processes. For instance, important functions such as journal databases, social sharing, and mobile publishing can be integrated into platforms. Intelligent technology can be used to profile users, thereby better understanding their characteristics, and AI algorithms can achieve precise content push. Publishers must fully adapt to AI-induced changes and develop intelligent work thinking. Management of various big data platforms should be strengthened to improve data and resource sharing levels. Editorial functions should be fully leveraged, with increased investment enabling editorial staff to actively engage in AI learning. Furthermore, publishers should guide editors to understand relevant laws and regulations, emphasize data copyright, and adopt professional technologies to ensure data security.

4.3 Transforming Work Concepts and Methods

In the AI era, editors should actively transform traditional mindsets and work methods, rationally view AI' s impact on editorial work, and regard AI as a powerful tool. As time progresses, AI can help editors complete more tasks, but editors must also recognize AI' s inherent limitations, exercise reasonable control and oversight, and personally complete tasks that AI cannot handle.

AI' s advantages in many aspects cannot be ignored. For example, it can browse and filter massive data volumes, enhancing data value. AI can handle these highly repetitive tasks, effectively improving work efficiency and reducing human-caused oversights. With AI assistance, editors can free themselves from repetitive work to engage in more creative endeavors. Editors should master more knowledge and skills, proficiently use various tools and software, leverage AI program advantages to review, edit, typeset, and proofread manuscripts, and optimize editorial publishing workflows. Simultaneously, editors should transform work thinking, break through traditional cognitive limitations, clarify product positioning and target audiences, use new media to disseminate journal content, and expand audience groups. Omnimedia platform multimedia attributes should be leveraged, using novel technologies such as virtual reality to provide sensory stimulation and achieve effective communication impact.

5. Limitations of AI Application

First, when using AI technology to retrieve papers, erroneous data in papers may lead AI to misinterpret information, flagging explainable content as warnings. Without manual review, relying solely on AI for manuscript review may impact certain innovative points in papers. Second, when using AI to review manuscripts, AI' s inability to promptly recognize new knowledge may cause

authors to alter their subjective intentions and modify papers to meet AI review standards. Third, although AI can accelerate publishing speed, its application may lead to literature proliferation and compromised paper quality. Currently, AI technology cannot reasonably judge paper scientific merit and innovation. Some papers involve specialized fields requiring manual quality assessment. AI technology lacks human understanding, thinking, and innovation capabilities —key issues that need to be addressed and improved in current applications. Fourth, AI technology cannot handle emotions or make rational judgments like humans, especially concerning ideological knowledge and issues—capabilities currently beyond AI' s reach. Thus, due to AI' s limitations, journal editors must strengthen manuscript review and control, and maintain final decision-making authority.

In conclusion, traditional journal editorial work is undergoing significant changes with AI technology' s continuous penetration. Journal editorial staff should leverage this technology' s advantages, improve their comprehensive qualities, emphasize review and proofreading work, enhance work efficiency, and expand journal influence.

References: [1] Dai N, Bu Z D. Impact of artificial intelligence on scientific journal publishing [J]. Publishing Wide Angle, 2021(11): 46-48.
[2] Tan X J. Application of big data and artificial intelligence in comprehensive academic journal editing [J]. Science and Technology Communication, 2020(6): 11-13.
[3] Liu C. How scientific journal editors can cope with challenges in the new media era [J]. Research on Communication Power, 2019(15): 149-150.
[4] Wang X Y, Tian J, Xu Y F. Artificial intelligence empowers the development of scientific journals [J]. Tianjin Science and Technology, 2019(4): 94-96.
[5] Li Y L, Tang B H. Data-driven development paths for publishing editors in the context of intelligent algorithms [J]. News Tide, 2021(8): 52-54.
[6] Fu X X. Transformations brought to publishing by emerging technologies such as big data and artificial intelligence [J]. News Dissemination, 2021(16): 91-93.

Author Biography: Liu Qin (1985-), female, from Huaibei, Anhui, master' s degree, intermediate publishing professional, research interests: journal editing, conference planning, and extended services for research brands. (Responsible Editor: Zhang Xiaojing)

Note: Figure translations are in progress. See original paper for figures.