Computer Life
ISSN: 1819-4818 | Vol. 12, No. 3, 2024

Application of Commonly Used Artificial Intelligence Tools in Field of Publishing

Lijuan Zou

Department of Journal Center, Affiliated Cancer Hospital of Chongqing University, Chongqing 400042, China

Abstract: With the rapid development of technology, artificial intelligence (AI) has penetrated various industries, including the publishing industry. This article provides a detailed introduction to the current application status of commonly used AI tools in the field of publishing. Among them, the automated typesetting technology represented by Fangzheng Academic Publishing Cloud Service Platform has shown a dual leap in efficiency and quality compared to traditional typesetting methods, and has brought comprehensive innovations in intelligence, personalization, and cost control; Intelligent editing, represented by Grammarly, Heima Proofreading Software, and Shanfeng Software, has demonstrated their respective advantages in efficiency, accuracy, personalization, and technological innovation, providing strong support and assistance for editors. It is an indispensable and important tool in the field of publishing.

Keywords: Artificial intelligence; Publishing field; Editor; Application.

1. Introduction

The publishing industry, as an important carrier of human cultural heritage, has always been at the forefront of the times, actively exploring the combination with new technologies to better shoulder the mission of inheriting civilization and disseminating knowledge. In recent years, with the rapid development of artificial intelligence (AI) technology, the publishing industry has undergone unprecedented changes. The introduction of AI technology has not only changed the traditional publishing process, but also demonstrated strong potential in various aspects such as content creation, printing and distribution, sales forecasting, and personalized recommendations. The application of AI in content creation has made published content more diverse and enriched, while greatly improving creative efficiency. With the help of AI technology, publishing institutions can quickly generate high-quality content to meet the diverse needs of readers.

"China Pharmacy" magazine was founded in January 1990. It is a national, publicly distributed academic publication in the field of pharmacy, jointly sponsored by the National Health Commission, the China Hospital Association, and the Chongqing University Cancer Hospital [1]. In response to the call for domestic academic journals to align with international first-class journals, the editorial department of China Pharmacy introduced a series of AI technologies in 2022, gradually breaking down the barriers of traditional typesetting and editing, greatly reducing the production and publication time of academic journals, and laying the foundation for enhancing the international dissemination capability of journals [2]. This article takes the magazine "China Pharmacy" as an example, based on automated typesetting technology and intelligent editing technology, introduces the current application status of AI in the publishing field, aiming to demonstrate how AI technology can help the publishing industry achieve digital transformation, improve publishing efficiency and quality, better serve readers, and promote cultural inheritance and development.

2. Automated Typesetting Technology

Automated typesetting technology is a major application highlight of AI in the field of publishing. Traditional typesetting work requires a lot of manpower and time, and the intervention of AI makes this process efficient and accurate. Fangzheng Academic Publishing Cloud Service Platform is an academic publishing information platform developed by Beijing Beida Fangzheng Electronics Co., Ltd. It integrates XML technology, draws on the typesetting method of Word software, and takes into account the typesetting effect of Fangzheng edition. It breaks down the content of the article and stores it in a structured manner, while outputting multiple formats to meet the needs of different media publishing today [3]. Editors only need to upload the Word file of the accepted article to the Fangzheng Academic Publishing Cloud Service Platform, and it can be automatically typeset with one click. In just a few minutes, the article can be automatically typeset, which is very convenient and time-saving; Then use the refinement button to proofread and read through the article, truly achieving paperless office. In addition, the Fangzheng Academic Publishing Cloud Service Platform can enable multiple people to proofread simultaneously, without the need for editors, typesetters, and proofreaders to repeatedly adjust and verify. After each refinement submission, the system will automatically save the version with refinement marks for subsequent verification. The working diagram of Fangzheng Academic Publishing Cloud Service Platform is shown in Fig. 1.

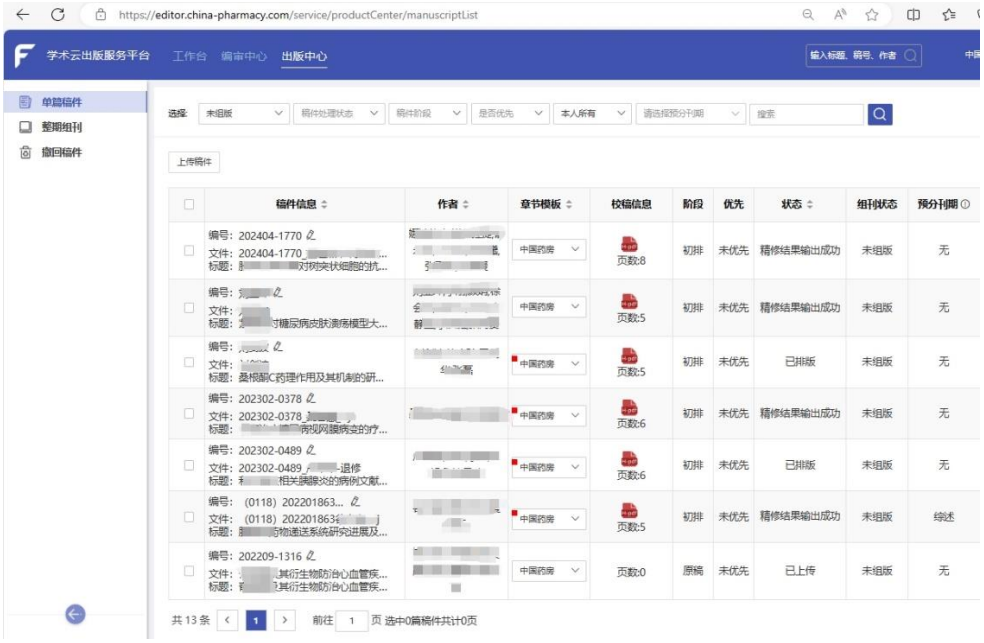
3. Intelligent Editing

Content editing is a core step in the publishing process. Grammarly, AI tools such as Heima Proofreading and Shanfeng play important roles in content editing and publishing. They greatly improve the quality of text, optimize the editing process, and provide powerful support and assistance for editors through automated checks, efficient error checking, customized formatting, and other functions. From grammar and spelling checking to automated proofreading, and then to reference management, these tools

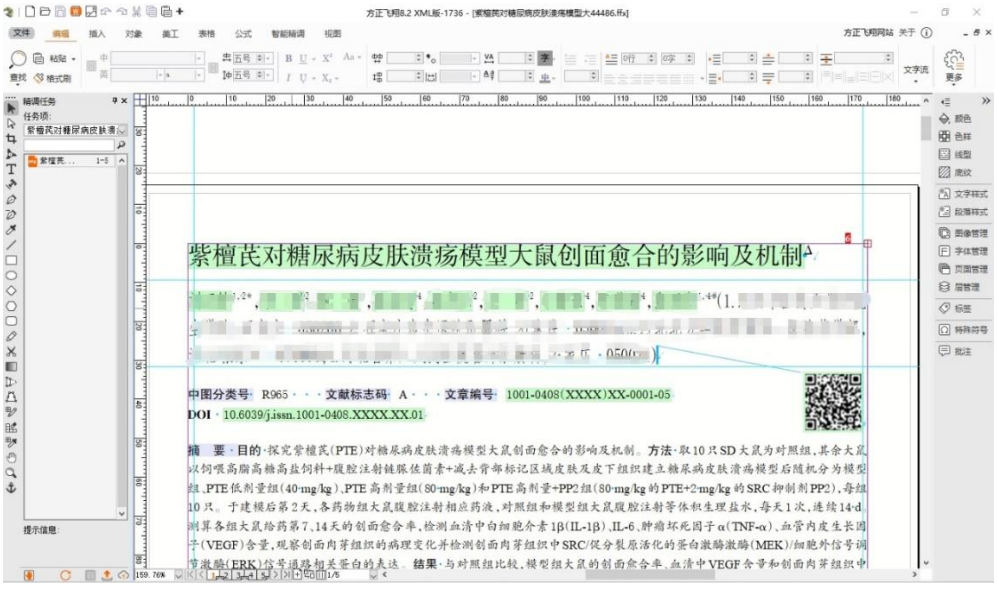
together constitute the intelligent workflow of content editing in the publishing industry.

3.1. English recognition tool – Grammarly

Grammarly is a powerful tool that integrates English grammar checking, spelling checking, style improvement, and plagiarism detection, playing a pivotal role in the publishing industry [4]. Its outstanding features not only significantly improve text quality, but also bring unprecedented convenience and innovation to the entire publishing process. The core function of Grammarly lies in its powerful text-checking and correction capabilities. It can accurately check the spelling of words, ensuring that every word is accurate and error-free; At the same time, it can also correct the use of punctuation, making the text more standardized and easy to read. More importantly, Grammarly can correct grammar errors, ensuring that the grammar structure of the text is rigorous and correct. These fundamental and important functions collectively ensure the accuracy and standardization of the text, laying a solid foundation for the high-quality output of publications. In addition to basic grammar and spelling checking functions, Grammarly also provides a particularly valuable feature of style suggestions. It can provide highly targeted writing suggestions for editors based on personalized settings such as the audience type, formality level, and field of the text. This means that Grammarly can help editors optimize their writing style, whether it's writing academic papers, business reports, or literary creations, making the text more in line with the reading habits and expectations of the target readers. This feature not only enhances the readability and attractiveness of the text, but also further strengthens the influence and market competitiveness of the publication. The working diagram of Grammarly is shown in Fig. 2.



A. Automatic page layout



B. Refine the page

Fig.1 working diagram of Fangzheng Academic Publishing Cloud Service Platform

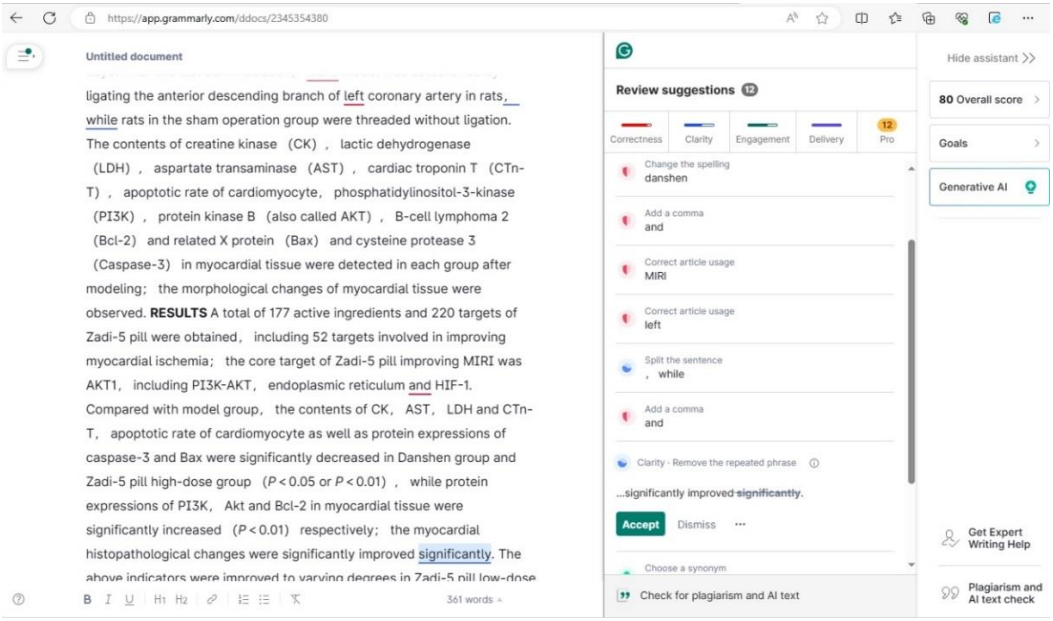


Fig.2 Grammarly working diagram

3.2. Chinese recognition tool - Black Horse Proofreading Software

Black Horse Proofreading Software, created by Beijing Black Horse Feiteng Technology Co., Ltd., is a professional software designed specifically for proofreading Chinese documents [5]. It integrates the most advanced Chinese information processing technology, and through in-depth analysis of a huge corpus of trillions of Chinese characters, it has built a database with about 80 million Chinese knowledge and about 8 million error rules. This powerful knowledge base enables the Black Horse School software to quickly and accurately detect text errors and content expression issues in the tested manuscript, thereby effectively improving the overall quality of the manuscript. In addition to basic proofreading functions, Black Horse proofreading software also supports the latest typesetting systems, such as S2 and PS versions, ensuring seamless integration with current publishing industry technologies. At the same time, editors can customize new words, incorrect words, sensitive words, keywords, etc. according to actual needs, which greatly enhances the accuracy and flexibility of proofreading. Of particular note is that the Dark Horse proofreading software also has excellent political error proofreading capabilities. This feature is undoubtedly a powerful tool for the publishing industry, providing the best solution for proofreading various types of documents. The working diagram of the Dark Horse proofreading software is shown in Fig. 3.

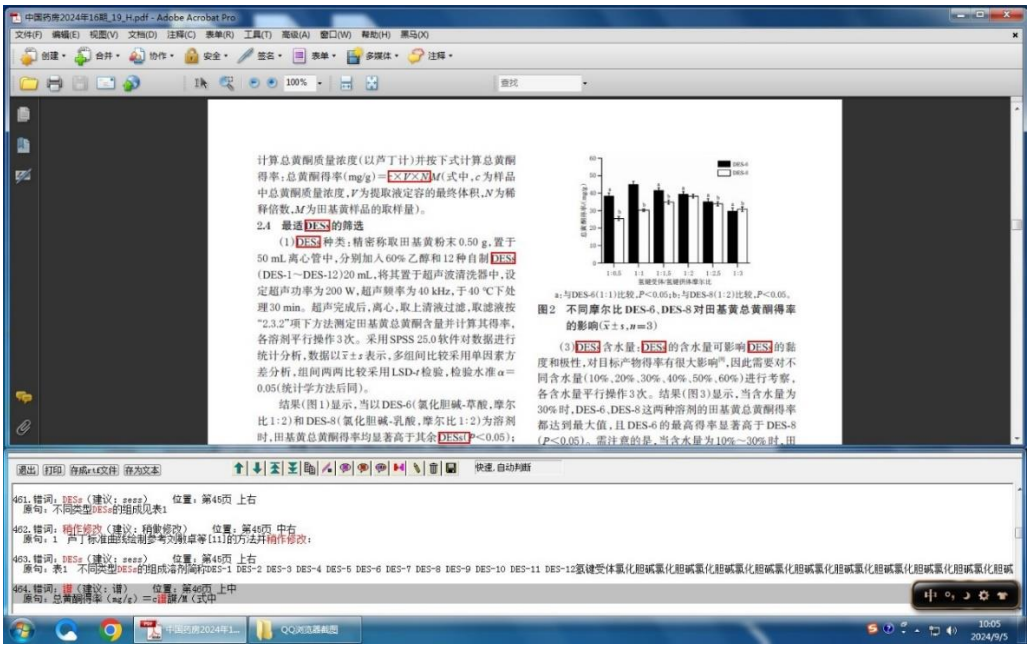


Fig.3 Working diagram of Black Horse Proofreading Software

3.3. Reference identification tool - Shanfeng Software

Shanfeng Software is a tool designed specifically for reference proofreading. This software provides comprehensive and accurate solutions for proofreading various types of literature with its excellent functionality, greatly improving the academic quality and standardization of publications [6]. The core functions of Shanfeng software include automatic retrieval and proofreading of various types

of literature, including but not limited to English journal articles, Chinese journal articles, Chinese dissertations, and Chinese books. Its bilingual function provides great convenience for international academic exchange, making the proofreading results of references not only comprehensive in content, but also standardized in format, fully meeting the high standards of academic publishing. Even more outstanding is that Shanfeng software allows editors to flexibly adjust the citation content and format of references according to actual needs, which greatly meets the diverse requirements of different publications for references. At the same time, the software can intelligently mark all differences between new and old references, providing powerful assistance for editors to correct various textual and formatting errors. In addition, Shanfeng software also provides the function of linking to the original text of references. Editors can use this function to check for omissions, reversals, duplications, and other issues in references, ensuring the accuracy of citations. This feature not only improves the efficiency of proofreading work, but also ensures the academic rigor of publications from the source. The working diagram of Shanfeng software is shown in Fig. 4.

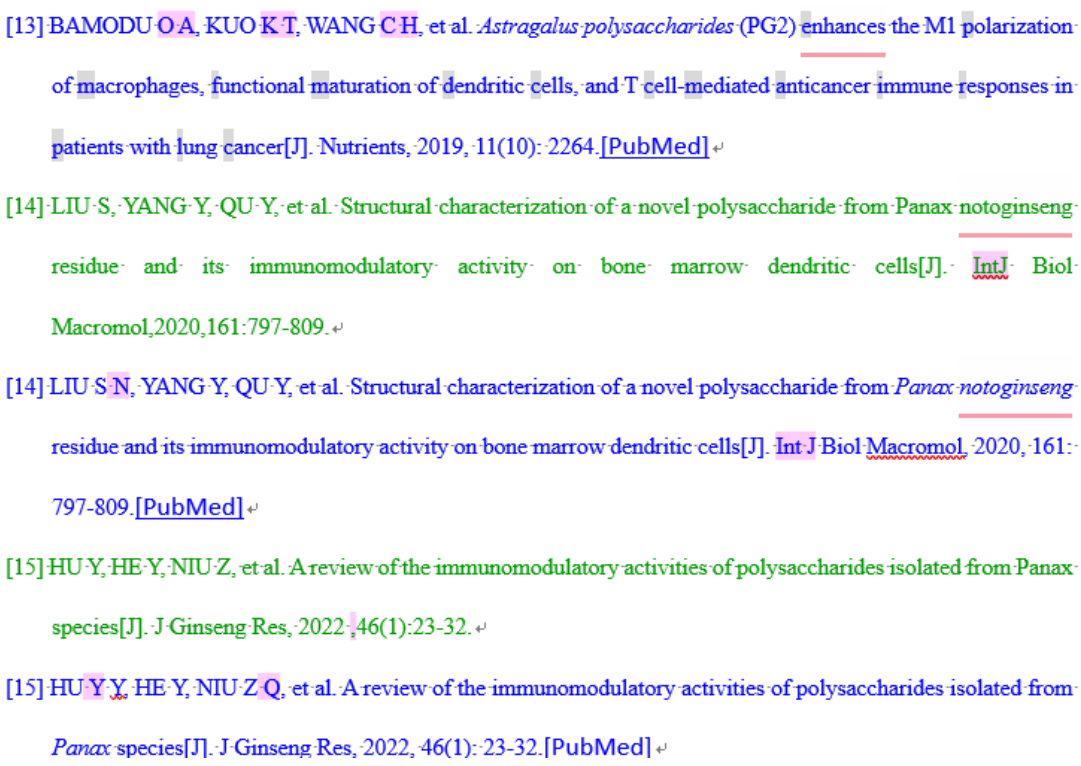

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Fig.4 Working diagram of Shanfeng software

4. Conclusion and Prospect

Traditional typesetting, as a long-standing typesetting method, carries profound cultural heritage and craftsmanship inheritance. It mainly relies on manual operation, through the exquisite craftsmanship of typesetters and their keen perception of text, to organize and combine elements such as text and images in an organized and aesthetically pleasing way to achieve the best visual effect and reading experience. In the traditional typesetting process, typesetters need to be proficient in various typesetting tools and techniques. They need to carefully select typesetting elements such as fonts, font size, line spacing, and letter spacing based on factors such as the content, style, and readership of the manuscript to ensure the accuracy and aesthetics of typesetting. At the same time, they also need to have rich proofreading experience to carefully proofread and revise the manuscript to ensure the correctness and standardization of the text. However, traditional typesetting also has some limitations. Due to relying mainly on manual operation, the typesetting efficiency is low and it is difficult to achieve large-scale personalized customization. Automated typesetting technology relies on the deep integration of advanced computer algorithms and AI to achieve automated processing and typesetting optimization of text content. This technological innovation greatly shortens the typesetting cycle, reduces manual intervention, and significantly improves typesetting efficiency. At the same time, intelligent algorithms are like rigorous proofreading experts, able to accurately identify and correct spelling errors, grammar problems, and formatting irregularities in text, ensuring the accuracy of formatting results and laying a solid foundation for high-quality output of publications. In addition, automated typesetting technology can easily provide personalized typesetting solutions based on the specific needs of editors, such as audience type, text style, visual preferences, etc. This customized service not only enhances the readability and attractiveness of the text, but also meets the diverse needs for layout effects in different scenarios, adding unique charm to publications. Compared to traditional typesetting methods, automated typesetting technology has shown a dual leap in efficiency and quality, and has brought comprehensive innovation in intelligence, personalization, and cost control, injecting unprecedented vitality and change into multiple fields such as publishing, advertising, and media.

Traditional manual editors need to carefully review the received manuscripts, evaluate their academic value, content quality, and compliance with publishing standards. Afterwards, multiple rounds of proofreading are required to ensure the accuracy and correctness of the text, punctuation,

formatting, and other elements in the manuscript. On the basis of reviewing and proofreading, editors also need to make necessary editing and processing of the manuscript, including editing and polishing, structural adjustments, content additions and deletions, etc., in order to improve the overall quality of the manuscript. In addition, editing work must follow certain norms and standards, such as publishing regulations, editing norms, etc., to ensure the legality and standardization of publications. From this, it can be seen that editing is a highly specialized job that requires editors to have solid professional knowledge, keen insight, and good writing skills. Grammarly, compared to manual editing, Heima Proofreading and Shanfeng software have demonstrated significant advantages. The biggest advantage of Grammarly lies in its intelligence and comprehensiveness. It can quickly identify and correct grammar errors, spelling mistakes, and improper use of punctuation in text, ensuring the accuracy and standardization of the text [7]. In addition, Grammarly can provide personalized writing suggestions based on the audience type, formality level, and field of the text, helping editors optimize the text style and improve overall quality. This intelligent editing method not only greatly improves editing efficiency, but also reduces the burden of manual proofreading. The advantage of Heima Proofreading lies in its powerful Chinese information processing technology and rich corpus. It can conduct in-depth analysis on the corpus of trillions of Chinese characters, quickly detecting textual errors and content expression issues in the tested manuscript. Another major advantage of Black Horse Proofreading is its political error proofreading function, which can accurately identify and mark expressions involving sensitive political issues, ensuring the political correctness of the manuscript. In addition, Black Horse Proofreading also supports customizing new words, incorrect words, sensitive words, etc., further improving the accuracy and flexibility of proofreading. These features make Black Horse School an indispensable tool for content editing in the publishing industry. Shanfeng Software focuses on the field of automatic proofreading of references, with its advantages in professionalism and customized services. Shanfeng software can provide customized automatic proofreading solutions based on the formatting requirements of the journal editorial department for paper references. It supports automatic retrieval and proofreading of multiple types of literature, including English journal articles, Chinese journal articles, Chinese dissertations, etc., and can intelligently mark the differences between new and old references, providing great convenience for editors. In addition, Shanfeng software also provides the original text link function for references, which helps editors further verify the accuracy of literature citations. This specialized proofreading service ensures the standardization and accuracy of publication references.

In summary, the Fangzheng Academic Publishing Cloud Service Platform, with its advantages of efficiency, precision, personalization, customization, and intelligence, is expected to replace traditional typesetting methods and become a new favorite in fields such as publishing, advertising, and media. Grammarly, Heima Proofreading and Shanfeng Software each have their own characteristics in content editing in the publishing field, and together play an important role in improving the quality of publications and optimizing the editing process. They have brought unprecedented changes and development opportunities to the publishing industry through intelligent, efficient, and precise editing methods. It can be seen that the application of AI in the field of publishing has achieved significant results. Meanwhile, with the popularization of technologies such as 5G and the Internet of Things, the application scenarios of AI in the publishing field will also be further expanded and deepened.

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