

Risks and Strategies of AIGC-Empowered Smart Library Applications

Authors: Sui Jingjing

Date: 2024-08-30T00:00:00+00:00

Abstract

AIGC is transforming the world at an unprecedented pace. It not only alters people's modes of production and lifestyle, revolutionizes content creation across industries, but also drives transformation and development across all sectors of society. Based on an examination of AIGC's developmental trajectory and capabilities, this paper analyzes its application scenarios in smart libraries, primarily encompassing literature acquisition and cataloging, resource management, and subject services. Finally, it investigates the technical limitations and security risks inherent in AIGC-enabled smart libraries and proposes corresponding mitigation strategies. The deployment of AIGC in smart libraries holds significant implications for the intelligent transformation of libraries.

Full Text

Research on Risks and Strategies of AIGC Technology Enabling Smart Library Applications

Sui Jingjing

China University of Petroleum (East China) Library, Qingdao, Shandong, 266580

Abstract: AIGC is transforming the world at an unprecedented pace, reshaping not only how people live and work and revolutionizing content production across industries, but also driving transformation and development throughout society. This paper analyzes the application scenarios of AIGC in smart libraries—primarily in literature acquisition and cataloging, resource management, and subject services—based on a study of AIGC's development history and capabilities. Finally, it examines the technical limitations and security risks of AIGC-enabled smart libraries and proposes corresponding countermeasures. The application of AIGC in smart libraries holds significant importance for the intelligent transformation of libraries.

Keywords: AIGC; smart library; artificial intelligence; enable; application scenarios

The success of AIGC represented by ChatGPT has attracted worldwide attention, with competing products accelerating the iteration of new technologies. The *National Library of China “14th Five-Year” Development Plan* emphasizes that libraries at all levels should optimize collection resource allocation and improve service efficiency while strengthening digitalization efforts to promote the intelligent and personalized development of library services [1]. The *2023 Work Priorities of the Department of Higher Education, Ministry of Education* calls for in-depth exploration of future learning center pilots, highlighting the prominent advantages of university libraries, actively integrating diverse campus learning resources, and leveraging next-generation information technologies to build new grassroots learning organizations that foster innovation in learning methods [2]. As an entirely new content production paradigm, AIGC offers convenience, diversity, and high-quality output while operating across multiple modalities, enabling widespread applications across all domains of social life.

In November 2022, OpenAI’s large language model ChatGPT emerged and rapidly proliferated globally. As a crucial AIGC application, ChatGPT employs a deep neural network Transformer architecture that processes input data through self-attention mechanisms. Its applications span chatbots, intelligent customer service, natural language generation, text classification, and numerous other fields. Through dialogue with ChatGPT, users can stimulate creative inspiration, improve writing skills, and even discover novel approaches to problem-solving. Currently, major technology companies worldwide are investing substantial human and financial resources in AIGC R&D, launching various similar platforms. These technologies have propelled AIGC development, including Baidu’s Wenxin Yiyao [3], Google’s Bard [4], and NVIDIA’s StyleGAN [5].

The library community has also engaged with AIGC research, covering smart library transformation, content generation and management, knowledge organization and discovery, user enhancement, and technical challenges and ethical issues. Liu and Shao’s research indicates that in the metaverse context, AIGC technology can facilitate library service intelligence while requiring solutions for data security and copyright issues [6]. Wang et al. explore how libraries can adapt to the AIGC era, emphasizing the importance of data value and user experience reconstruction [7]. Zhou’s research focuses on GPT technology applications in smart libraries, including autonomous robots and intelligent service systems [8]. Liu discusses ChatGPT’s implications for library enterprise competitive intelligence services and proposes specific measures to enhance intelligence service effectiveness [9]. Chu and Luo analyze AIGC’s impact on information generation methods and user information behaviors, proposing corresponding library service strategies [10].

Currently, academic research on AIGC in library intelligentization remains preliminary, focusing primarily on theoretical discussions and often approaching from single applications like ChatGPT, lacking comprehensive analysis of AIGC as a whole. Moreover, research on practical AIGC applications in smart libraries remains insufficient, with inadequate integration between theory and practice. Most studies focus on analyzing potential risks and proposing corresponding countermeasures. Therefore, it is necessary to comprehensively review AIGC's development trajectory, deeply understand its functional characteristics, further explore its role and potential risks in smart libraries, and propose more targeted development and prevention strategies.

1.1 The Concept of AIGC

AIGC (Artificial Intelligence Generated Content) refers to the cutting-edge technology that utilizes artificial intelligence to automatically generate various forms of digital content, encompassing text, audio, images, videos, and more. This concept evolved from PCG (Professionally Generated Content) and UGC (User Generated Content).

The origins of AIGC can be traced to the 1960s, when scientists began exploring how to automate simple mathematical proofs using computers, marking the initial exploration of AIGC. Entering the 21st century, AIGC technology began widespread application in natural language processing. Today, AIGC can generate novels, poetry, and academic papers with diverse styles and themes. Simultaneously, AIGC technology has achieved significant progress in multimedia domains including audio, images, and video. Notably, AIGC represents not merely a technology but a creative generative AI capable of autonomously creating new content—including text, images, music, video, 3D, and interactive content—based on training data and advanced generative algorithms [11].

AIGC demonstrates highly intelligent characteristics, analyzing natural language and providing high-quality responses. However, as AIGC is trained on large-scale corpora, its outputs are often influenced by training data biases, potentially leading to skewed results. When using AIGC, users should maintain a dialectical mindset, conduct multi-faceted considerations, and make judgments and selections based on actual circumstances.

1.2 Core Capabilities

AIGC encompasses numerous core capabilities, including text generation, image generation, audio generation, video generation, 3D content creation, and multi-modal generation. These capabilities have enabled the successful development of a series of content products and derived various models. Specifically, text generation based on NLP (Natural Language Processing) divides into non-interactive text generation (including summarization/title generation, text style transfer, and article generation) and interactive text generation (including chatbots and text-based interactive games), with representative products such as GitHub

Copilot, JasperAI, Lavender, Surfer, Copy.AI, Spellbook, ChatGPT, Bard.AI, and AI Dungeon. Image generation technology based on NLP includes image editing/modification and autonomous image generation, with the latter encompassing end-to-end image generation, real-to-cartoon conversion, reference-to-painting conversion, real-to-sketch conversion, and text-to-image generation, represented by Disco Diffusion, Midjourney, DALL-E, ImagenAI, EdiGAN, Deeplake, Wenxin Yige, DALL-E, Midjourney, and Stable Diffusion. Audio generation technology has matured and found widespread application in C-end products, including voice cloning (replacing one person's voice with another's, creating nearly indistinguishable synthetic speech), text-to-scene-specific speech, and scene-based audio/music generation from text descriptions or image content understanding, represented by MusicLM, Deep Voice, DeepMusic, WaveNet, Riffusion, Soundful, MusicAutoBot, Boomy, Deeplake, VideoGPT, Gliacloud, Make-A-Video, Imagen Video, Endel, and Melodybes. Video generation technology divides into video editing and autonomous video generation, with the latter including image-to-video technology (generating motion videos from reference images) and text-to-video technology (generating content-aligned videos from descriptive text), represented by DALL-E, Midjourney, Stable Diffusion, Opus, Make-A-Video, and Phenaki. These four modalities can be combined for cross-modal generation, such as text-to-image (AI painting, generating specific-style images from prompts), text-to-audio (AI composition, generating scene-specific audio from prompts), text-to-video (AI video production, generating semantically aligned videos from descriptive text), image-to-text (generating titles or stories from images), and image-to-video conversion.

2. Analysis of AIGC Application Scenarios in Smart Libraries

The AIGC technical architecture comprises three layers: the infrastructure layer, the core layer, and the application layer. AIGC's effective operation depends on technical support from the infrastructure layer, whose core tasks include providing computing power, building infrastructure, developing pre-trained models, and preparing training data. The core layer contains the algorithms and models for AIGC content production and represents the critical technology for AIGC operation. Beyond large models, the core layer incorporates various technologies including causal computing, affective computing, blockchain, 3D simulation, meta-learning, and knowledge graphs, enabling cross-modal content generation and supporting AIGC's creative applications across different scenarios. AIGC application scenarios rely on the application layer, which serves as the back-end of the AIGC workflow, enabling human-computer communication and interaction with generated content. Digital native content, through smart wearables, XR/VR/MR/AR headsets, and brain-computer interfaces, achieves a breakthrough from flat, passive, unidirectional interaction modes to three-dimensional, active, interactive new modes.

AIGC's role in smart library construction includes promoting service concept innovation, enhancing service quality and efficiency, and supporting the recon-

struction and upgrading of service systems. Libraries should actively explore AIGC-enabled smart library application scenarios to advance the intelligent and personalized development of library services.

2.1 Resource Management

Smart library content editing requires semantic understanding and attribute control technologies from natural language processing. Most digital content in smart libraries presents in multimodal forms comprising diverse semantic information. With the development of natural language processing technology, disentangled semantic learning technology based on generative models has emerged. By understanding and learning variations in different semantic components, this technology achieves deeper comprehension of data content. In smart library resource construction, semantic understanding technology applies to intelligent image editing, text rewriting, and intelligent audio tuning, thereby improving digital content creation efficiency.

AIGC-enabled resource management can achieve four primary functions: (1) **Cataloging system updates:** After introducing AIGC technology, library cataloging systems can significantly improve efficiency and quality. AIGC utilizes natural language processing and machine learning algorithms to automatically generate or optimize metadata such as titles, abstracts, and keywords, reducing manual input workload. Additionally, AIGC assists catalogers in providing more precise access points and enhances user retrieval experience through intelligent classification and subject analysis. (2) **Intelligent management systems:** Based on semantic association and knowledge organization through automatic classification, AIGC technology enables in-depth analysis and classification of library resources. This system helps libraries better manage and utilize their rich resources, improving resource utilization rates and user satisfaction. (3) **Multimodal generation for digital replication of rare collections:** Rare collections in smart libraries are only accessible to limited readers, substantially reducing their utilization. Therefore, AIGC technology enables high-precision digital replication of these treasures for digital preservation and display. This approach allows precious artifacts to transcend temporal and spatial constraints for long-term preservation and dissemination while broadening access channels and providing more convenient access methods for readers. (4) **Big data statistical analysis:** A core capability of AIGC is natural language processing (NLP), which enables in-depth analysis of large volumes of text data. Through NLP technology, AIGC systems can understand and parse human language, allowing comprehensive and detailed management of library user information and full exploitation of library collection resources. By systematically organizing and analyzing collection resources, we can obtain new knowledge, effectively promote widespread resource dissemination, fully protect readers' reading rights, and significantly enhance user reading experiences.

2.2 Literature Procurement

Librarians utilize AIGC technology to achieve precise procurement. By analyzing user information, AIGC technology can identify frequently consulted book catalogs and transmit this information to procurement departments, greatly improving library procurement efficiency. This intelligent transformation optimizes the collection resource system, maximizes library collection value, and reduces waste of human and material resources in the procurement process. This process primarily relies on big data analysis, providing different algorithms for different user data, offering different collection types for different application scenarios, and delivering predictive analysis for collection procurement to standardize procurement workflows [12].

AIGC technology application in literature procurement manifests in four aspects: (1) **Decision support:** Procurement decisions require demand analysis as their foundation. Libraries employ AIGC technology to accurately capture users' reading interests and obtain multi-level procurement catalogs through big data analysis. This data-driven decision support system helps libraries select the most cost-effective literature among numerous books, ensuring resource effectiveness and procurement economy. (2) **Automatic recommendation:** AIGC technology can recommend suitable book lists based on users' reading history and preferences, enabling libraries to procure books more targeted and ensuring maximum utilization of limited resources. (3) **Convenient inquiry:** AIGC technology can construct intelligent inquiry systems. The application of intelligent inquiry systems allows library managers to quickly grasp procurement information, improving work efficiency while facilitating library information management. (4) **Analysis and evaluation:** Smart libraries utilize AIGC technology to comprehensively analyze procurement information, scientifically evaluate procurement status, integrate existing collection resources, and predict usage of newly purchased books. This analytical capability helps libraries make more accurate procurement decisions, ensuring rational allocation and long-term value of collection resources.

2.3 Subject Services

Improving subject service quality requires integration of university teaching resources and disciplinary knowledge. As AIGC possesses natural language understanding capabilities and pre-trained learning abilities, it can self-determine user intentions and intelligently generate natural language responses. Leveraging university library subject service scenarios and reference consultation service scenarios, AIGC innovates subject service models, enhances service efficiency, and profoundly improves intelligent subject service capabilities. This includes four areas of improvement:

- (1) **Supporting university discipline construction and research on disciplinary hotspots:** Relying on the vast information resources of a central knowledge base, we precisely track discipline evolution trajectory

ries and construct detailed disciplinary knowledge graphs to reveal complex research connections within and across disciplines. By introducing a “chain-of-thought strategy,” we deeply explore cutting-edge disciplinary topics, accurately identify advanced disciplinary development fields, provide solid data support and strategic insights for university “Double First-Class” construction, and effectively reduce academic research redundancy and blindness.

- (2) **Integrating intelligent reference consultation services to enhance user experience:** Large language models possess logical reasoning capabilities, fully explore knowledge correlations on the basis of pre-training, continuously acquire new knowledge from external sources, expand the boundaries of the central knowledge base, and thereby improve the precision and creativity of natural language processing. During consultation responses, these models provide more objective replies, effectively reducing the influence of human subjective consciousness on response content. The service achieves round-the-clock, uninterrupted consultation coverage, significantly improving user satisfaction and convenience. This transformation marks the transition of reference consultation services from traditional manual models to intelligent robotic systems.
- (3) **Integrating disciplinary analysis service platforms to achieve automated data analysis:** Through natural language understanding and generation technology, the platform accurately captures user intentions and understands user needs, enabling intelligent monitoring of disciplinary dynamics. Based on big data support, the platform organizes and analyzes disciplinary research data and, relying on its core text generation capability, automatically generates high-quality disciplinary analysis reports, substantially improving report writing efficiency and professionalism.
- (4) **Empowering information literacy education and innovating educational models:** Establishing a three-dimensional information literacy education knowledge base on the foundation of model knowledge transforms traditional abstract concepts into intuitive, multi-dimensional learning experiences. Using interactive text generation technology, the platform provides intelligent dialogue learning tools that enable students to customize personalized learning paths on demand, filling knowledge gaps through active questioning and immediate feedback mechanisms. This innovative intelligent teaching tool can tailor personalized, intelligent information literacy cultivation plans for each student, ushering in a new era of information literacy education.

3. Risks of AIGC Application in Smart Libraries

AIGC applications in university libraries indeed present potential risks, primarily stemming from technical complexity, data security and privacy protection, and the inherent limitations and uncertainties of AI technology.

3.1 Incomplete User Privacy Protection Systems Libraries must implement strict security measures when processing sensitive data such as user information to prevent virus attacks and data theft. During AI operation, its operations, predictions, and decisions rely on massive amounts of data, introducing certain privacy leakage risks. If such data is illegally obtained, it may threaten individual rights, damage personal reputations, and even cause property losses. Smart library services are delivered via the Internet, and redistributing servers and software may complicate security audits. Additionally, insufficient data backup and system failures may cause data loss. Data security and privacy protection will pose significant challenges for intelligent libraries during AI application.

3.2 Lack of Experience in Intelligent Technology Innovation Integrating cutting-edge AI technology into library daily operations requires investment not only in necessary hardware and software but also in human and financial resources at the R&D and operational levels. AIGC technology application involves complex system integration and data processing; improper command execution or technical defects may trigger system instability or even failures, directly affecting the stable operation and service quality of smart libraries. Technical issues or system instability may also disrupt library services and affect daily user usage. Domestic libraries remain in the initial stage of AI technology application, with capabilities for mastering and applying new technologies needing improvement. Over-reliance on AIGC technology may gradually weaken library staff skills in content classification, recommendation, and management.

3.3 Security Risks First, **copyright and intellectual property issues:** AIGC technology may automatically generate content similar to existing books or articles, potentially triggering copyright disputes. For example, if AIGC-generated content is highly similar to a published work, it may infringe upon the original author's copyright. Currently, the International Conference on Machine Learning (ICML) 2023 stated that text generated by large language models (LLMs) such as ChatGPT cannot be used as paper content unless the generated text is part of experimental analysis [13]. Additionally, international renowned journals such as *Nature* [14] and *Science* [15] have stated that large language models like ChatGPT cannot be listed as paper authors or accept submissions of papers generated by ChatGPT.

4. Application Strategies for AIGC in Smart Libraries

Despite AIGC's characteristics of massive data processing, creative content generation, strong cross-modal fusion, and high cognitive interactivity [16], the quality of generated content may be uneven and even contain errors or misleading information. Particularly in academic research and professional domains, content quality issues can create significant negative societal effects. We should properly understand the transformation AIGC brings to libraries, comprehensively examine its inherent risks, and formulate corresponding risk prevention

and control strategies to promote sustainable library development.

4.1 Improving Technical Stability and Accuracy

- (1) **Hardware upgrades and software optimization:** Smart libraries need to regularly inspect and update servers, storage devices, and network equipment to ensure they can support efficient AIGC system operation. By adopting the latest machine learning and natural language processing algorithms and continuously optimizing system software, smart libraries can improve content generation accuracy and relevance. For example, using Transformer models for text generation and BERT models for text understanding.
- (2) **Data preprocessing:** Smart libraries utilize various methods to clean and process input data, eliminating noise and outliers to improve data quality.
- (3) **Model training and evaluation:** Smart libraries train models using large volumes of high-quality training data, considering public datasets or self-built datasets to ensure models master rich knowledge and patterns. Regular performance evaluation of AIGC systems includes key metrics such as accuracy, recall, and F1 score. Based on evaluation results, libraries can adjust model parameters or algorithms, select appropriate feature representation methods such as Word Embeddings and Sentence Embeddings to improve model performance, and thereby further enhance system accuracy.

4.2 Training and Improving Information Literacy Levels Libraries improve users' information literacy levels through information literacy education to help them cope with information society challenges. AIGC-specific information literacy education serves as an effective means for libraries to help users understand and apply AIGC technology. AIGC-specific information literacy education should be based on information literacy frameworks, focusing on discussing the principles, sources, backgrounds, and nature of AI-generated content. Specific approaches can begin from three aspects: (1) **Providing resources:** Establish AIGC training topics in library AI information resources and research resource guides, particularly featuring relevant reports from technological frontiers and authoritative media, with source links provided. Additionally, libraries can provide users with more valuable resources on citation, usage rights, and academic compliance of AI-generated content. (2) **Organizing seminars:** Invite AIGC domain experts to share the latest research reports and practical experiences to attract continuous user attention to AIGC. Conduct thematic seminars on AIGC knowledge, skills, and applications to promote understanding of AIGC technology among librarians and users. Through seminars, stimulate users and libraries to jointly explore new approaches and methods, flexibly construct AIGC application scenarios in knowledge production, knowledge services, and knowledge innovation, foster new knowledge service models, and

fully leverage library roles in scientific research and educational innovation. (3) **Conducting training:** Training coordinators should develop internal training plans covering AIGC technology fundamentals, application cases, operational skills, training schedules, and methods. Through training, help users effectively master relevant skills and improve critical thinking abilities. Provide librarians with practical opportunities through simulated scenarios or actual projects to familiarize them with system functions and operational procedures.

4.3 Establishing Risk Prevention Mechanisms and Protecting User Privacy While AIGC models indeed bring great convenience to smart library operations, we cannot neglect data security and privacy protection issues. AIGC models operate similarly to a “black box,” increasing data processing complexity and uncertainty and potentially leading to leakage of user privacy and confidential data. According to China’s *Data Security Law*, smart libraries must strictly comply with relevant laws and regulations when processing user data to ensure data security and compliance [17].

- (1) **Formulating and improving data compliance standards:** This requires libraries to further refine and optimize existing data management systems according to AIGC technical characteristics and application scenarios, strengthening compliance supervision throughout the data lifecycle. This includes integrating domestic laws and regulations (*Public Library Law*, *Cybersecurity Law*, *Data Security Law*, etc.) and international laws (*AI Act*, *Blueprint for an AI Bill of Rights*, etc.), as well as industry standards such as the *Digital Library Security Management Guidelines* and *Digital Library Resource Management Guidelines*, to form a data compliance system that meets both domestic legal requirements and international trends. Through implementing these standards, smart libraries can comprehensively improve data security management levels and effectively prevent and respond to potential data security risks.
- (2) **Establishing risk prevention mechanisms:** The deep application of AIGC technology enables comprehensive smart library service coverage but also introduces continuous data security risks. Smart library managers should establish a series of targeted risk prevention measures, including developing and implementing automated data security risk early warning systems. This system will be embedded into smart library operations to normalize and intelligentize data security supervision, helping smart libraries promptly detect and respond to potential security threats and establishing effective safeguards within the security monitoring and early warning framework.
- (3) **User data security protection:** To ensure user data security, smart libraries adopt SSL/TLS protocols for data transmission encryption, AES algorithms for data storage encryption, and role-based access control (RBAC) or minimum privilege principles to restrict access permissions (only authorized personnel can access user data). To prevent sensitive

information leakage or misuse, libraries remove sensitive information such as ID numbers and phone numbers when processing user data. Technical departments regularly back up user data and ensure backup data security, enabling timely data recovery in case of loss or damage. They also establish security audit mechanisms using log audit tools to record user access and operational behaviors for tracking and analysis during security incidents. Smart libraries can also popularize data protection knowledge and raise user data security awareness through publishing data protection guides and organizing data security promotion activities [18].

- (4) **Introducing control technologies:** Smart libraries need to introduce data annotation technology to hierarchically label collection resources according to their security levels. Additionally, they should consider embedding Digital Rights Management (DRM) technology in existing systems to control AIGC-generated content through file encryption and digital watermarking. By adopting content identification technology (Content ID) and copyright watch technology (Copyright Watch) used by overseas digital content platforms, they can develop copyright identification and monitoring systems for smart libraries with embedded AIGC to achieve automated processing of infringement identification, prevention, notification, and recording during user services.

With the rapid development of artificial intelligence, libraries' roles and functions are undergoing unprecedented transformation. AIGC's technical advantages in content creativity, cross-modal fusion, and cognitive interaction will further drive the transformation of traditional library service models and gradually realize the "AIGC+" intelligent service paradigm. Library development strategy formulation should adhere to principles of open cooperation and continuous iteration, continuously absorbing cutting-edge scientific and technological achievements, optimizing system architecture, and enhancing system stability and security. However, it must be acknowledged that current AIGC technology remains immature, and its application in smart library construction still faces challenges. Ultimately, successful smart library construction will be reflected not only in technological breakthroughs and innovations but also in the continuous prosperity and development of libraries as platforms for knowledge dissemination and cultural exchange.

[1] National Library of China. *National Library "14th Five-Year" Development Plan* [EB/OL]. [2023-05-30]. http://www.nlc.cn/dsb_{footer}/gygt/xxgk/202110/P020211009593349959836.p

[2] Ministry of Education of the People's Republic of China. *2023 Work Priorities of the Department of Higher Education* [EB/OL]. [2023-11-26]. <http://www.moe.gov.cn/s78/A08/tongzhi/2022.03/W02022031054779354544.pd>

[3] Wenxin Large Model [EB/OL]. [2023-02-10]. <https://wenxin.baidu.com/>

- [4] Google. Google responds to OpenAI with its own chatbot - 'bard' [EB/OL]. [2023-02-10]. <https://www.washingtonpost.com/technology/2023/02/06/google-bard-chatbot>
- [5] OpenAI-model-overview [EB/OL]. [2023-02-22]. <https://platform.openai.com/docs/models/overview>
- [6] Liu Z, Shao B. Research hotspots and development trends of artificial intelligence in the domestic library field [J]. *Information Science*, 2024(5).
- [7] Wang C, Zhang C, Gao N, Jin X, Li G. Library service adaptation and innovation in the AIGC era [J], 2024.
- [8] Zhou S. Exploration of GPT technology driving smart library innovation scenarios [J]. *Journal of Liaoning University of Technology (Social Science Edition)*, 2023(25): 48-51.
- [9] Liu L. Implications and reflections of ChatGPT for library enterprise competitive intelligence services [J], 2023(10): 60-65.
- [10] Chu J, Luo Y. Research on the path of artificial intelligence generated content enabling library knowledge services [J]. *Information Studies: Theory & Application*, 2024(3).
- [11] The computer, a choreographer? Aesthetic responses to computer-generated dance choreography [EB/OL]. [2022-12-30]. <https://psyarxiv.com/yvgxk/>
- [12] Cai Y. Intelligent book selection: Implementation strategies for library precise procurement [J]. *Digital Library Forum*, 2021(6): 50-55.
- [13] Clarification on large language model policy LLM [EB/OL]. [2023-02-25]. <https://icml.cc/Conferences/2023/llm-policy>
- [14] ChatGPT is fun, but not an author [EB/OL]. [2023-02-25]. <https://www.science.org/doi/10.1126/science.a>
- [15] Tools such as ChatGPT threaten transparent science; Here are our ground rules for their use [EB/OL]. [2023-02-25]. <https://www.nature.com/articles/d41586-023-00191-1>
- [16] Guo Y, Guo Y, Li S, et al. ChatGPT enabling library smart services: Characteristics, scenarios, and paths [J]. *Library Construction*, 2023(2): 30-39+78.
- [17] Deng L. Interpretation of the *Data Security Law (Draft)* and countermeasures for China's library and information science community [J]. *Journal of Intelligence*, 2020, 39(12): 83-87.
- [18] Luo G, Zhang X. Focusing on ChatGPT: Development, impact, and issues [J]. *Chinese Journal of Nature*, 2023, 45(2): 106-108.

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

Source: ChinaXiv — Machine translation. Verify with original.