# The Transformation and Reflection on AI Writing: Postprint

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## Abstract

**Objective**: With the comprehensive penetration of artificial intelligence technology into the field of journalism and communication, correctly examining the developmental and transformative process of intelligent AI writing binds and integrates humans and machines more closely and profoundly, thereby achieving stronger learning capabilities and more effective communication outcomes.

**Method**: Through speculative research methods within the logical speculation paradigm, this study explores the emergence of intelligent AI writing, its principles and advantages, and critically examines and reflects upon the impact of artificial intelligence' s development and transformation on "human" actors.

**Results**: Intelligent AI writing represents an inevitable product of contemporary development, currently exhibiting three fundamental limitations: absence of deep thinking, lack of emotional perception, and insufficient in-depth investigation.

**Conclusion**: Humans and machines will become more intimately integrated, achieving deeper binding and fusion with application domains while simultaneously possessing enhanced learning capabilities, thus attaining more effective communication outcomes.

## Full Text

### ChinaXiv Cooperative Journal: The Transformation and Reflection of Intelligent AI Writing

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## Abstract

As artificial intelligence technology increasingly permeates the field of news and communication, this paper examines the developmental transformation of intelligent AI writing, which fosters deeper integration between humans and machines to enhance learning capabilities and communication effectiveness. Through speculative research within a logical reasoning paradigm, we explore the emergence, principles, and advantages of intelligent AI writing while critically reflecting on the impact of AI' s development and transformation on human factors. The findings indicate that intelligent AI writing is an inevitable product of its era, yet it currently faces three fundamental limitations: absence of deep thinking, emotional perception, and in-depth exploration capabilities. Looking forward, human-machine integration will become more seamless and efficient, with deeper fusion in application domains and enhanced learning capabilities, ultimately achieving more effective communication outcomes.

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Artificial intelligence has become the focus of the technological revolution, with intelligent AI poised to occupy a significant position in the world. Throughout the history of industrial and technological development, humanity has been liberated from arduous manual labor, leading to substantial improvements in productivity. Today, intelligent AI stands at the forefront of technological advancement. With the rapid development of Natural Language Processing (NLP) capabilities, AI' s writing abilities have been enhanced and widely applied across numerous domains. As a creative intellectual activity, writing has become highly integrated with the internet and electronic devices. Any field with strong connections to the internet and electronic devices will be transformed by intelligent AI.

The vast amount of data on the internet has created essential conditions for the intelligent learning and data collection of AI writing. As early as 2006, the American Thomson company began assigning manuscripts to robots for editing to produce news articles related to finance and economics, leading to the widespread adoption and continuous upgrading of news-writing robots. This approach has also been innovatively developed and applied by domestic technical talents, marking one of the earliest cases of AI application in writing. Presently, a considerable proportion of message-based news in data-intensive fields such as sports and finance is completed by intelligent AI writing.

## 1. The Transformation of Intelligent AI Writing

The development of intelligent AI writing accompanies the liberation of human labor and the advancement of information technology. As early as 2014, the *Los Angeles Times* published an earthquake report generated through the Quakebot system. In China, numerous intelligent AI writing systems have emerged, such as Xinhua News Agency's "Kuai Bi Xiao Xin," *Southern Metropolis Daily*'s "Xiao Nan," and *Sichuan Daily*'s "Xiao Feng Robot." These tools have liberated writers from monotonous, rule-based, and low-creative production processes. Through intelligent AI writing, practitioners can engage in template-based, extractive, and generative writing tasks. By leveraging advantages such as strong information collection capabilities, shortened writing time, powerful data analysis functions, and reduced labor costs, the communicative power of news content creation is significantly enhanced.

### 1.1 The Rise of Intelligent AI Writing

Intelligent AI writing, also known as "robot" writing, refers to AI systems that generate manuscripts through data collection and computational processes. While intelligent AI writing has liberated writers from burdensome textual work in communication-related fields, it has also generated unprecedented anxiety. The digital project center of *The Washington Post* stated, "The goal of artificial intelligence is not to replace journalists and editors through computers, but to liberate them from basic tasks." In essence, the original intention behind AI and writing is to free humans from low-level repetitive operations, allowing them more time and energy to fully unleash their creativity and produce high-quality content with both depth of thought and human warmth.

With the advancement of internet and big data technologies, coupled with the explosive growth of the self-media market and its demands, the need for original and self-created manuscripts has surged. This has provided broad support for the widespread use of intelligent AI writing. Assisted by AI technology, media organizations no longer need to rely on traditional manual information processing methods, as AI can autonomously classify and process various information resources [1]. Internet giants such as Alibaba, Tencent, and Toutiao have all launched their own intelligent AI writing robots. Today, various forms of intelligent AI writing have become popularized and serve as tools for online media and writers to improve work efficiency.

### 1.2 Principles of Intelligent AI Writing

Intelligent AI writing is less about writing itself and more about editing and formatting after information collection. Since the invention of computers, researchers have been exploring the use of machine language to process natural language, continuously advancing computers' ability to handle text according to human specifications. Intelligent AI writing, as an extension of AI technology applications, is accompanied by the development of AI technology, with cloud

computing and big data analysis at its core. These AI algorithms now possess self-learning capabilities. Pieter-Jan Ombelet argues that achieving automated writing through intelligent AI requires four participants in the research and design of the writing process: software programmers, data sources, editors, and publishers, each playing a corresponding role in AI intelligent writing. Programmers create algorithms, data sources provide the raw data needed for writing, and editors and publishers (who may be the same person) supervise the operation of AI intelligent writing and select the content to be written [2]. Modern intelligent AI manuscript generation is implemented through three approaches: template-based, extractive, and generative.

**1.2.1 Template-Based Approach** Currently, the template-based approach is a relatively mature method for intelligent AI manuscript generation. Tencent' s DreamWriter employs this method as the foundation for its intelligent AI writing system. The specific process involves a template library and information retrieval, using algorithms to screen templates and then determining the appropriate template based on big data and algorithms, followed by manuscript generation based on the selected template. Additionally, in the selection of content data and writing techniques for manuscript generation, programming designers have incorporated machine self-learning functionality. The system can evaluate which writing templates are more popular by analyzing metrics such as page views, comment counts, and likes, thereby optimizing template selection. Combining and reorganizing collected information is currently the fastest method. However, this type of manuscript writing is limited to sports and financial information with relatively fixed structures and content, and its effectiveness is suboptimal for breaking news, in-depth reporting, and predictive journalism.

**1.2.2 Extractive Approach** Extractive intelligent AI writing can be considered as processing and writing after extracting information from massive datasets, which is also a relatively common method for automatic manuscript generation. This approach integrates and extracts recognized content, selecting satisfactory portions for text compression to complete the writing process. Extractive manuscript generation primarily involves three steps: first, analyzing the given text; second, summarizing important information from the text content; and third, replacing and transforming the original text' s language. This form of intelligent AI writing is widely applied in the news field. However, due to content homogenization, creativity in headlines becomes necessary to attract audience attention. Internet users have given such articles a sarcastic name—"clickbait headlines," also known as fishing or bait headlines.

**1.2.3 Generative Approach** Generative intelligent AI writing enhances AI' s writing capabilities through sequential deep learning, organizing and updating database materials into natural language. For example, by using Shakespeare' s works as templates for generative AI to learn from, the algorithm can generate

sentences similar to Shakespeare' s style. Generative intelligent AI writing requires deep learning models to extract from textual resources and produce texts that mimic the expressive style of the source materials. While this approach possesses certain text understanding and extraction capabilities, the generated results may not always be accurately expressed [3]. Currently, template-based and extractive approaches are more convenient for people' s writing workflows and have gradually matured, finding widespread application and popularity. The generative approach places greater emphasis on style and involves multiple predictions before outputting results. Each component has its own uniqueness, and the process involves inputting various documents, processing them through AI to package them into corresponding knowledge graphs, and finally finding similarity ratios to continue writing and editing.

### 1.3 Advantages of Intelligent AI Writing

The emergence of intelligent AI in the news field will significantly reduce pressure on journalists. "Journalists are like hamsters, striving to produce more news manuscripts for dissemination. Under excessive pressure, journalists' constantly overdrawn inspiration and energy will ultimately cause news manuscripts to lose their original value" [4]. Technology transforms life, and technological progress liberates humans from heavy labor. Writers engage in news gathering and editing, copywriting, text proofreading, and other tasks. With intelligent AI assistance, these tasks can be performed more efficiently. Intelligent AI writing primarily brings improvements to writing work in the following four aspects.

**1.3.1 Richer Creative Materials** Creative writing and copywriting material collection require writers to conduct extensive reading to understand relevant information before they can create. With the assistance of intelligent AI writing tools, writers can more purposefully locate relevant materials, while AI' s big data analysis can also collect richer creative materials for writers.

**1.3.2 Shortened Writing Time** Compared with traditional manual writing, intelligent AI writing significantly reduces writing time. Writers can produce final manuscripts by polishing and modifying AI-generated drafts through human-AI collaboration, naturally shortening the creative timeline. Additionally, current AI writing tools feature plagiarism detection functions, which can largely ensure the originality of manuscripts.

**1.3.3 Data Analysis Capabilities** Previously, writers could only obtain audience feedback through experience, subjective feelings, and reader responses to adjust writing styles and article expression focus. However, such audience feedback was relatively one-sided and could not comprehensively understand the entire audience group, while collected audience information was also limited. Through intelligent AI writing' s big data computation and analysis capabilities, the overall audience sentiment can be observed, and user profile characteristics

can be obtained. Intelligent AI writing collects such precise information through big data analysis and then selects appropriate templates for writing.

**1.3.4 Reduced Labor Costs** The supply of intelligent AI writing services is far lower than that of dedicated human copy editors, which has become an important factor enabling intelligent AI writing tools to rapidly become product services successively developed by major internet companies. Intelligent AI writing tools have attracted widespread attention and quickly entered the market, not only because they can effectively save costs for enterprises but also because they relate to the vast labor-intensive market of writing work.

## 2. Limitations of Intelligent AI Writing

While the wave of intelligent AI has brought significant transformation to writing, liberating writers from heavy labor, some even believe that intelligent AI will replace writers. The author argues that although intelligent AI is developing rapidly and has transformed the industry, it is merely a tool to improve writers' work efficiency and cannot completely replace human writers [6]. The limitations of intelligent AI writing cannot be overcome in the short term and also involve scientific ethics.

### 2.1 Lack of Deep Thinking Ability

Although current intelligent AI writing has made significant leaps in data analysis and processing, capable of handling some sports and financial news as well as homogeneous self-media copywriting, it lacks deep thinking ability. This represents a limitation of current intelligent AI writing and a shortcoming of artificial intelligence, making it impossible to completely replace human work. Intelligent AI writing can only be regarded as a tool, not as a robot. In numerous literature and news reports, the collection, organization, and computation of data related to AI writing are all described using the term "learning." Regardless of how efficient intelligent AI writing may be, it merely executes programs and processes designed by human editors and cannot autonomously generate independent thinking capabilities. Without independent thinking ability, intelligent AI cannot be used to complete original and opinion-based manuscripts. This is both a shortcoming of intelligent AI and a fundamental difference between humans and intelligent AI.

### 2.2 Lack of Emotional Perception

In addition to lacking deep thinking ability, intelligent AI writing also lacks perceptual capabilities. Its operation entirely relies on big data under set programs and algorithms. This means intelligent AI has no emotional perception in text creation and cannot create from the perspective of emotional needs and identification for the audience. Therefore, in current practical applications, intelligent AI writing is used more in certain news fields. Even in 2016, when Japan used a

computer program to create "The Day a Robot Writes a Novel,"which passed the preliminary review and received recognition for the "Hoshinoichi Award," no one detected that the article was written by a robot. However, for content requiring emotional expression such as novels and in-depth social hot topic tracking, intelligent AI writing can only mechanically generate text by extracting similar content. The manuscript creation process is mechanized without human emotional input. This emotionless and mechanized expression leads to content homogenization and stiff emotional expression, failing to attract audiences or evoke readers' emotional resonance.

### 2.3 Lack of In-depth Exploration Ability

Intelligent AI writing lacks the ability for in-depth exploration and can only be applied to superficial news reporting, unable to handle investigative journalism that requires depth. For example, in dynamic news about listed companies in the financial sector, AI design teams extract company operation indicators and stock price changes, which are then learned by intelligent AI and imported into templates through algorithms to generate news reflecting the company' s dynamics. However, intelligent AI cannot complete in-depth analysis of company operations. For social news hotspots, although intelligent AI can generate homogeneous content manuscripts, it is clearly impossible for intelligent AI to dig for truth behind social hotspots and explain deep-seated social issues [7]. Indeed, intelligent AI writing currently has certain shortcomings in terms of lacking deep thinking ability, emotional perception, and in-depth exploration capabilities, which has sparked reflection and requires improvement. However, facing the limitations of intelligent AI writing, academia and industry must continue to explore intelligent AI writing models in hopes of using new model possibilities to dissolve existing limitations.

## 3. Development Trends of Intelligent AI Writing

The development of intelligent AI is a product of the combination of artificial intelligence technology and the news media industry. This technology can currently simulate the human brain for writing and has been widely applied in news reports across major media outlets. It will continue to advance with humanity' s accumulation and exploration in the technological domain. The application of intelligent AI in writing will progress further, writers' work efficiency will increase, and the application scenarios for intelligent AI writing will become more extensive.

### 3.1 More Efficient Human-Machine Integration

Technology and data driving news production is not merely a contribution of technology or data itself; this can also be called a culture. From the perspective of news communication history, the industry's evolution is not only about the advancement of media technology but also about objective and rational extension

and development. Intelligent AI writing is indeed superior to human journalists in terms of accuracy, authenticity, and timeliness, and it also serves as an extension of the human journalist community. Since intelligent AI writing and human journalist writing each have unique strengths, and intelligent AI cannot completely replace human writing, intelligent AI writing will be optimized toward human-machine integration. This will enable users to more efficiently utilize intelligent AI writing to complete tasks, with AI-generated texts featuring more natural language expression. Simultaneously, it will be deeply customized and bound to users' habits and styles, allowing AI writing to achieve personalized customization and generate texts according to user characteristics.

### 3.2 Deeper Application Fields

Intelligent AI belongs to a frontier branch of computer science and technology, representing a new height of technological development. In 2017, Xinhua News Agency released "Media Brain," China' s first intelligent platform for the media industry. This platform integrates multiple technologies including big data, cloud computing, the Internet of Things, and artificial intelligence, forming a complete news chain covering reporting clues, planning, interviewing, production, distribution, feedback, and monitoring, providing corresponding services to the world. Although intelligent AI writing has been relatively widely applied in the field of literary creation, it has not been deeply bound with various domains or developed specific algorithms tailored to the characteristics of different industries. However, with the advancement and promotion of intelligent AI technology, meeting the needs of these fields through deep integration and personalized settings represents a development trend for intelligent AI writing.

### 3.3 More Powerful Learning Functions

In the era of information explosion, online media and self-media information production require powerful learning capabilities. Intelligent AI writing can quickly process data and perform encoding and execution through artificial intelligence technology. Although current development technology still cannot restore data and its underlying meaning to real-world social contexts, the increasingly powerful learning functions of intelligent AI writing are an undeniable fact. For artificial intelligence, training requires massive amounts of raw data combined with efficient machine algorithms—the more data available and the more advanced the algorithms, the more effective the machine learning [8]. As AI engineering teams continue to optimize and enhance intelligent AI algorithms and data analysis capabilities, future intelligent AI writing systems will become more intelligent. They will be able to integrate human-related knowledge from psychology, philosophy, literature, mathematics, and other fields to generate manuscripts with certain depth while simultaneously improving writing efficiency.

The development of intelligent AI writing accompanies the liberation of human labor and the advancement of information technology. The successful integration of artificial intelligence technology with the news communication field

has catalyzed the emergence and development of intelligent AI writing, making deeper fusion of future news production with AI technology worthy of anticipation from both academia and industry [10]. While advancing technology, we must also pay attention to its negative impacts on social development. The limitations of intelligent AI writing and its challenges require gradual overcoming of shortcomings to approach the capabilities of the human brain in the future [11]. Currently, intelligent AI writing has basically achieved the goal of conveying credible information to audiences. However, journalists should also realize that the development and future of intelligent AI writing do not mean that human journalists will lose their space and value. In fact, the objective, truthful, data-driven characteristics of current intelligent AI writing can gain more trust [12]. If human journalists use intelligent AI writing to create content that violates objective and truthful reporting, whether audiences have the ability to identify such cases and whether we can take preventive measures to avoid loss of credibility in intelligent AI writing—these extended topics should also be included in future research considerations.

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