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# Implications of generative artificial intelligence for the development of the media industry

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**Abstract:** As an important branch of artificial intelligence research, Generative Artificial Intelligence (GAI) mainly refers to artificial intelligence technology in which algorithms produce results under the given input data conditions. Generative artificial intelligence is one of the most active research directions in the field of artificial intelligence. Generative artificial intelligence has brought new technology innovation and content production mode. This paper discusses the new opportunities and challenges that generative artificial intelligence brings to the media industry from the aspects of technology realization, application status and application prospect. On this basis, it is proposed that the media industry should actively embrace and use generative artificial intelligence to promote its own intelligent transformation and achieve intelligent matching between information production mode and user needs.

**Keywords:** generative AI, media industry, content production

## 1. Introduction

With the development of artificial intelligence technology, the intelligent transformation of media industry has become a development trend. Domestic research also shows that the current domestic major media in the field of artificial intelligence research and application has walked in the forefront of the world, and has made some phased results.

In December 2018, the China Unicom Research Institute and Xinhua News Agency jointly issued the White Paper on Artificial Intelligence Development in 2019. White paper pointed out that the current domestic artificial intelligence industry has entered a new stage from technological innovation to application landing. On the technical level, great progress has been made in such aspects as speech recognition, machine vision and natural language processing; on the application level, technologies such as 5G network construction, cloud computing, big data and block chain have entered the stage of large-

scale commercial application; on the content level, applications such as speech recognition and machine translation have gradually matured and started to develop towards personalized recommendation.

Hu Yong, an associate professor at the School of Journalism at Renmin University of China, said the current application of artificial intelligence technology in the media industry is mainly in the following areas: First, content production. For example, Tencent News's AI writing robot can automate the writing of articles, and news reporting, including automatic scraping of information and intelligent summary generation. Next is the intelligence audit. For example, some media organizations introduce machine censorship systems to censor and categorize news content. Finally, content distribution. Including personalized recommendation algorithm and personalized advertising push applications.

## 2. Literature review

In the literature review part, the existing literature on generative artificial intelligence is sorted out, and it is found that the research on generative artificial intelligence technology mainly focuses on three aspects: first, the concept and application of generative artificial intelligence. For example, generative artificial intelligence, which is considered to be an adaptive learning mechanism based on knowledge graphs, data-driven and multi-modal perception [1]. Its essence is to automatically learn knowledge from training data through self-supervised learning. And then realize the intelligent system that generates content independently. Generative artificial intelligence can be regarded as a cognitive intelligence based on reinforcement learning and transfer learning methods, which automatically obtains knowledge from existing data and uses this knowledge to generate new content [2].

The second is about the application field of generative artificial intelligence. For example, in the field of medical and health care, generative artificial intelligence can assist doctors in disease diagnosis and provide personalized treatment plans. In the field of education, generative artificial intelligence can be used to build a new education system and create a new teaching model. For example, generative artificial intelligence will bring about changes and reshaping of the media industry, but its technical defects will also bring about problems such as false news and privacy leaks [3]. In terms of media supervision, for example, to strengthen the supervision of big data and artificial intelligence to prevent risks such as false news and personal privacy leakage [4].

Existing literature studies on generative artificial intelligence mainly focus on three aspects: one is about its concept, characteristics and application scenarios; the other is about its relationship with traditional technologies; the third is about its impact on the media industry. Existing literature mainly focuses on the impact of generative artificial intelligence on the media industry, and believes that it will bring new changes in content production, copyright protection, marketing, etc., but there are also certain risks and challenges. For example, in terms of content production, generative artificial intelligence has replaced human resources to a large extent, but it also brings risks such as false news and user privacy leakage; in terms of copyright protection, generative artificial intelligence through automated methods can eliminate duplication of labour in the process of copyright registration, but they also face risks such as algorithm discrimination and infringement; in terms of marketing, generative artificial intelligence can realize personalized advertisement push [3, 5].

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## 3. Application of Artificial Intelligence Technology in Media Industry

### *3.1 Content production.*

The application of artificial intelligence technology in content production mainly includes automatic writing and intelligent abstract generation. It is understood that at present, some media organizations have introduced machine writing and intelligent abstract generation of these two technologies. Machine writing is the use of natural language processing technology to analyze the needs of users, and then automated writing, and the final article published online. At present, many media organizations are using this technology, such as Tencent News, today's headlines, a little information, Tencent video and so on. Intelligent abstract generation is to use machine learning algorithm and natural language processing technology to extract key words from news articles and sort them according to their similarity. For example, Impulse News has developed a machine summarization system called "word segmentation engine". Based on the natural language processing technology, the text is segmented and the abstracts are generated by using the keyword extraction technology. Then the abstracts are applied to recommend news content. It is known that "Word Segmentation Engine" can automatically identify and extract key words and semantic relationships in text, thus generating headings, introductions, body parts, summaries and other article elements. At the same time, the "word segmentation engine" can match different search strategies according to different content types.

### *3.2 Intelligent auditing.*

At present, the mainstream media mainly through human censorship to deal with Internet content. With the increasing number of Internet users and the continuous expansion of Internet information transmission channels, the existing manual auditing can no longer meet the needs of work. Therefore, in the era of traditional media, the mainstream media mainly deal with Internet content through manual auditing. According to statistics, there are more than 400 Internet media organizations using intelligent auditing system.

In the era of traditional media, due to the audit itself is very professional and technical, so the workload of manual audit is very large. Artificial intelligence technology can not only improve the efficiency of audit work, but also reduce labor costs and labor costs. With the continuous development of artificial intelligence technology, artificial intelligence technology has begun to change from auxiliary content production [6].

### *3.3 Content distribution.*

Content distribution is the main distribution method used by major media organizations. With the development of information technology, traditional media organizations and new media organizations have begun to explore different content distribution methods to meet the needs of different users. In this regard, Tencent News, today's headlines, Baidu and other new media institutions have launched a personalized recommendation algorithm to adapt to different reading habits of users. For example, today's "personalized recommendation engine," known as personalized recommendation algorithms, is a way to distribute content based on artificial intelligence technologies and big data algorithms. Through this engine, users can see the personalized information content of "better understand you" in news client or mobile news client, and provide personalized information related to their interests. The principle is

to recognize the user's interest automatically by machine learning, and then recommend the content according to the user's reading history, usage preference and behavior preference. At present, Tencent News, today's headlines, Baidu and other new media organizations are using this technology to provide users with content services.

## 4. Application Prospect and Value of Generative Artificial Intelligence

The application of generative artificial intelligence technology has developed from "assisted editing" and "assisted writing" to "assisted creation". With the development of technology, generative artificial intelligence will go further into the field of media content production. For example, in news reports, generative artificial intelligence can quickly generate a high-quality news report based on news clues, event background, character relationships, etc.; in news reports, it can also use generative artificial intelligence to carry out the production of text automatic summaries, intelligent diagrams, intelligent titles and other content; in the development of media products, it can carry out personalized customization and content creativity based on generative artificial intelligence technology; in the field of advertising, it can carry out product design and advertising creativity based on generative artificial intelligence technology [7].

Generative artificial intelligence will play an important role in other areas besides media content production. For example, in the entertainment industry, game engines based on generative artificial intelligence technologies can provide efficient game design solutions for game developers; in the medical industry, intelligent predictive technologies can assist doctors in making surgery plans and advise them on decisions; and in the financial industry, financial products based on generative artificial intelligence technologies can price risks according to investors' preferences and risk preferences, and achieve personalized recommendations [8].

Through the use of generative artificial intelligence technology, media can more accurately grasp user needs, production of personalized information, build accurate content. At the same time, media can also apply their data analysis capabilities to content production and distribution. For example, in content production, news can be automatically produced through machine learning models, and in content distribution, massive data can be efficiently processed and intelligently analyzed through artificial intelligence. All these provide new ideas and new directions for the intelligent transformation of the media industry.

### *4.1 Rich content production mode.*

The appearance of generative artificial intelligence technology will completely change the form of media content production, make media more flexible in content production and enrich content production mode.

On the one hand, artificial intelligence can help the media to automatically produce news reports, automatic text manuscripts, intelligent design of visual images, so as to greatly improve the efficiency of content production. For example, the mainstream media, such as the New York Times and the Washington Post, can automatically collect news clues, write news articles and process visual images by using AI technology. On the other hand, artificial intelligence can also help the media create more personalized content. With the help of artificial intelligence, media can customize the content production mode according to the user's needs and preferences. For example, in the "Today's Headlines" app, users

can directly generate personalized news via voice entry or photo uploading. In addition, the media can also use generative artificial intelligence technology to develop more personalized news products. There will be more innovative applications based on generative artificial intelligence in the future. This will further enrich the media content production mode and information product form, and promote the continuous upgrading of the media industry [9].

### *4.2 Improve content distribution efficiency*

Different from the traditional content distribution, the generative artificial intelligence technology can generate news quickly and accurately, and put it into the user's intelligent terminal at the first time. Using generative artificial intelligence technology, media can use big data to analyze user behavior and preferences, and then personalize recommendations. For example, the recommendation system based on artificial intelligence can accurately portray the users according to their browsing records and reading habits on the platform. At the same time, Generative Artificial Intelligence can use its powerful data processing ability to analyze news text quickly and distribute it to interested audiences automatically. Generative AI can also track and analyze users' interests and reading habits over a long period of time, and then analyze user preferences based on their history and reading behavior. With this information, the media can accurately push news, entertainment and other information to users.

## 5. Opportunities and Challenges for the Media Industry

As an intelligent medium that can provide users with more accurate and comprehensive information, generative artificial intelligence has broad application prospects in the field of news communication.

On the one hand, personalized news content customization through artificial intelligence technology can meet the user's needs of information content diversification, differentiation and personalization. For example, Facebook's "Reels" system, launched in 2018, allows users to choose the style, title, or chart they want on Facebook, and has some control over how the post will spread. On the other hand, generative artificial intelligence can provide media organizations with intelligent content generation tools. For example, Donald Trump uses generative artificial intelligence technology to quickly produce high-quality news videos. "My videos are always well made, thanks to the use of many different types of technology. For example, I make my own videos on YouTube; I use a range of different media sources; and I publish my own videos on YouTube."

However, the application of generative artificial intelligence in the field of news content generation also faces some potential risks and challenges. The first is ethical and moral. For example, how do media organizations balance their own interests with human morality? Will generative AI impact journalists? Next comes privacy and data security. How do you ensure that the data obtained in generative AI are truly and voluntarily provided to the media?

## 6. How Media Industries Learn and Apply Generative Artificial Intelligence

In recent years, the application of generative artificial intelligence in the media industry has been developing continuously, and some achievements have been made in many fields [10]. However, there are still some problems in generative artificial intelligence, such as lack of enough data samples, immature training of algorithm models and lack of unified data standards. Therefore, the media industry

to make full use of generative artificial intelligence technology, should actively learn and master its development process accumulated experience and knowledge.

First of all, the media industry should start from itself, strengthen cooperation with relevant professional institutions or enterprises, understand and grasp the development status and application prospects of generative artificial intelligence. Secondly, the media industry should actively explore the algorithm model development model and tools with industry characteristics, and constantly optimize and improve its algorithm model. Finally, the media industry should continuously improve its own cognitive level of generative artificial intelligence through practice.

### *6.1 Strengthen cooperation with relevant professional institutions or enterprises*

First, the media industry should actively cooperate with professional institutions or enterprises to understand their research content, research methods and research results. Through cooperation with professional institutions or enterprises, the media industry can learn the development and research direction of artificial intelligence from the source of technology, as well as the theoretical basis, application fields and algorithm models of artificial intelligence. Algorithm model development model and tools are one of the key factors for the effectiveness of generative artificial intelligence. In the development of algorithm model and tools, the media industry can choose the appropriate development model and tools according to its actual situation, and constantly optimize and improve its algorithm model. For example, many media industry has begun to use automatic video generation technology. This technology makes video content generated quickly by deeply learning and analyzing a large amount of video material. In the future, the media industry can choose the appropriate algorithm model and tools to research and develop, and explore the algorithm model and tools with industry characteristics.

### *6.2 Explore industry-specific algorithmic model development patterns and tools*

First, the development of algorithm model should be open to some extent. As Wu Enda, an artificial intelligence scholar, said, "There are two kinds of popular artificial intelligence technologies, one is deep learning represented by intensive learning, the other is generative AI represented by generative artificial intelligence."

In order to make full use of generative artificial intelligence technology, the media industry must fully understand its technical principles and select appropriate algorithm models and tools in light of its actual situation. In this process, the media industry should actively explore the development model and tools with industry characteristics. For example, the media industry does not have its own algorithm model and tools developed specifically for generative artificial intelligence, so it needs to optimize the existing algorithm model according to its actual situation. At present, the popular algorithm models include generative AI technology based on neural network, generative AI technology based on reinforcement learning, and generative AI technology based on convolution neural network. Among them, AI technology based on neural network is to build some special algorithm models to achieve the simulation of human thinking patterns, mainly used in text information or picture information processing. Compared with the other two algorithms, the generative AI based on reinforcement learning and convolution neural network is more suitable for large datasets and difficult tasks. Therefore, the media industry can choose corresponding algorithm models and tools according to its own

characteristics and specific needs. In addition, the media industry can also optimize the existing algorithm model, through trial and error and adjust the parameters of the algorithm model to improve its prediction ability. For example, the media industry can improve the predictive effect of its algorithm model by text analysis of user comments, emotional analysis of video content and semantic analysis of news content.

## 7. Conclusion

Under the influence of generative artificial intelligence, a series of changes have taken place in the field of content production, such as machine creation, machine editing, etc. In the future, the development of generative artificial intelligence will have a more profound impact on the entire media industry. First of all, the media industry will no longer be a mere information acquirer, but an information producer and disseminator, becoming a "content manufacturer." Secondly, with the development of Generative Artificial Intelligence technology, its application will be expanded from news reporting, entertainment and other aspects to more fields. Finally, generative artificial intelligence technology provides a new information production mode and development direction for the media industry, which will become intelligent and personalized "intelligent media". However, Generative Artificial Intelligence not only brings great development opportunities to the media industry, but also puts forward new requirements and challenges. For example, how to properly use generative artificial intelligence technology, how to deal with related data and privacy issues. In the face of these challenges and opportunities, the media industry needs to strengthen the recognition and understanding of generative artificial intelligence technology, and actively embrace and use it to achieve its own intelligent transformation. This not only helps to promote the intelligent transformation and innovative development of the media industry, but also helps to ensure the standardization and objectivity of media content production.

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