**The development path and exploration breakthroughs of smart media**

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[Abstract] Artificial intelligence technology has enabled the media industry to improve content productivity and user reach, enhance the interaction between readers and readers, and improve the reading experience. However, the rapid development of smart media has concerns such as squeezing out the information release rights of professional media, challenging the formation of social consensus, and triggering the "information cocoon" effect. The government, the media, and the public need to work together to integrate correct values ​​and public opinion guidance into algorithm design under the premise of human-machine collaboration and people-oriented, so as to enable smart media to play a greater role in building a new mainstream media platform and promoting the modernization of the national governance system and governance capabilities.

【Key words】artificial intelligence, intelligent media, "information cocoon", algorithm transparency

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At present, the application of artificial intelligence in the news media industry has become a trend, and smart media has become a new engine for the innovative development of the media industry. While the media enjoys the dividends brought by intelligence, there are also problems such as the dominance of information production and release being squeezed out, the consensus of public opinion being challenged, and the "information cocoon". Correctly viewing the development and advantages of smart media and coping with the hidden concerns brought by artificial intelligence technology have become the focus of people's attention.

Advantages of smart media in content production and distribution

With the continuous advancement of artificial intelligence technology, the media industry at home and abroad has begun to apply it to clue collection, topic selection, content production, product distribution, and user interaction. Practice has proved that artificial intelligence technology has improved the productivity of news information, the accuracy of reaching users, and improved users' reading experience.

Intelligent editing and compiling has effectively improved the efficiency of content production. To achieve all-weather, high-efficiency, and multi-format news information production and release, it is necessary to highly integrate, centrally manage, and uniformly dispatch the media resources that are in a decentralized state and difficult to share. At present, with the support of artificial intelligence technology, the production and release of news information have been able to break through the constraints of previous subjective and objective conditions. For example, for media big data capture, public sensor systems, and massive data released by ordinary netizens, news producers can use audio and video processing, voice recognition, and face recognition technologies to find clues and refine topics in the complex and scattered information. The use of intelligent technology helps to reduce the time and manpower spent on the process of collecting, sorting, and transmitting information, and effectively improves the production efficiency of news information. Let machines and programs do what machines or programs can do, thereby freeing up manpower to engage in work that requires innovation and imagination. This is the basic concept of the automation revolution since the industrial revolution. Media intelligence with data technology as the core will promote the transformation of news production from "big and comprehensive" to "comprehensive and deep". It can not only collect more comprehensive data information, but also is more conducive to in-depth exploration and production of content with high added value.

Optimizing the distribution process enables efficient access to users. Modern society is a society with a rapid increase in information. While people are producing massive amounts of information, they are also consuming this information in their work, life and study. In order to save time and energy, people's demand for personalized information is becoming increasingly urgent, and they are shifting from pursuing the quantity of information to emphasizing the quality of information. In the era of traditional media, news practitioners manually selected and published content based on the audience positioning of the media. This is a linear, centralized distribution model. In the Internet era, the production and dissemination of content are separated, and a decentralized distribution model has emerged. Driven by social platforms, ubiquitous users have become the distribution subjects, and communication relationships have become an important factor in information dissemination. Content is distributed in intertwined social networks. The algorithm distribution of smart media not only analyzes user behavior to obtain accurate user portraits, but also evaluates the value of information. It is an intelligent recommendation that effectively adapts the two. Nowadays, a large number of news aggregation platforms and social platforms have added the function of priority recommendation, which has largely replaced the traditional manual publishing model. Targeted content distribution is achieved through algorithm recommendation, which solves the pain points of content docking in the mobile Internet environment and pushes various types of information to a large number of user terminals in a targeted manner.

Intelligent panoramic production improves user experience. With the emergence of mobile Internet, the development and application of technologies such as artificial intelligence, big data and 5G have broadened people's online lifestyles and provided users with personalized information and services. The media is no longer limited to relying on text, pictures, audio and video to build information scenes for users. New technologies such as VR, AR, speech recognition, natural language processing, computer vision, and deep learning are constantly being integrated to form an all-round, three-dimensional panoramic news production model. In this scenario, users transform from bystanders of news events to participants and experiencers. Artificial intelligence, VR and AR technologies enhance the visualization and audibility of news information, greatly enrich the user experience, and give users a stronger sense of presence and substitution from a sensory perspective.

Intelligent identification improves the efficiency of content review. Whether it is for the needs of content production or public opinion monitoring, checking facts and opinions is an indispensable key link for any media. At present, harmful information on the Internet mainly includes politically sensitive information, information related to terrorism and violence, pornographic information, false factual information, and sensitive words in the Advertising Law, etc., which often appear in various forms. If we rely entirely on manpower to identify, monitor and filter the user-generated content (UGC) that is growing at an alarming rate, it is inevitable that there will be problems such as delayed correction and omissions due to tight time and heavy workload. Some variants of harmful information generated by processing and transformation are even more difficult to be discovered. News media use massive, authoritative, and high-quality data resources to establish intelligent recognition models for video, audio, pictures, and text information, which can accurately and efficiently identify various types of harmful information. Artificial intelligence can improve the efficiency of automatically capturing harmful information and avoid content risks through deep learning and long-term data training.

Hidden concerns about the rapid development of smart media

In recent years, mainstream media at home and abroad have conducted many explorations and practices in the field of artificial intelligence. It can be said that the technology and concepts of artificial intelligence have penetrated into all aspects of the media field. However, "intelligence" is not "omnipotent". In the process of clue collection, topic selection, content production, priority recommendation, etc., intelligent media often appear disordered and anomie.

First, the generalization of communication subjects has squeezed out the dominant power of news communication. Artificial intelligence technology has led to the continuous lowering of the threshold for content production, operation and distribution, and multiple subjects such as government agencies, Internet companies, and self-media have joined the field of information production and dissemination. The general audience no longer relies solely on professional media to understand what is happening outside, but instead learns more about the full picture of events through social media platforms. The media ecology of "mass production" and "mass creation" has made the subject of information production increasingly generalized, and the core position of professional mainstream media has been continuously squeezed out. At the same time, artificial intelligence has gradually replaced some of the functions of professional journalists, shaking their professional status in news production and dissemination. In the era of traditional media, the basis of news information production and distribution is a comprehensive judgment of social scenarios, news value, and reader needs. It is content-oriented and has a lasting impact on the audience. The algorithm logic is based on data and traffic. For example, hot searches, as a more important mechanism in Weibo algorithms, promote the hottest content on the platform to reach user terminals, forming a pattern of "the strong will always be strong". In an environment where algorithms are popular, greater dissemination effects can be achieved by timely "referencing" or even "grabbing" hot searches. The intervention of algorithms is changing the logic of news information production and dissemination, making the power of intelligent platforms continue to rise. When new media, especially information aggregation platforms, use algorithmic rules to stimulate the desire of Internet users to express themselves in an unprecedented way, user-generated content is produced continuously and rapidly. The spatiotemporal logic of emerging media technologies determines the value ranking of production capacity over quality, and also shapes corresponding consumption habits.

Second, it poses a challenge to forming a consensus on public opinion and adhering to the truth of news. Algorithmic recommendation is adopted by most news clients and social media platforms at home and abroad because it can improve the efficiency of information push and bring high-quality user experience. However, while algorithm recommendation technology frees us from the complicated search of massive information, it also eliminates the "gatekeeping" function of professional media. In the past, news editors would comprehensively consider users' "should know", "want to know" and "unknown" when selecting news. Now, relying on accurate user portraits, the "want to know" factor is highlighted when pushing information. Sorting and recommending information based on algorithms reduces the opportunity for users to hear different voices and see different opinions. Overly catering to users' preferences and value orientations will inevitably lead to "information narrowing". The public information service function that the media should bear has been weakened, increasing the difficulty of forming a consensus on public opinion and social cohesion. In addition, technologies such as face-changing, voice synthesis, and video production based on artificial intelligence can greatly reduce the cost of producing false news and rumors, making "seeing is believing" also "unreliable". Fake news and new rumors based on artificial intelligence technology have increased the complexity of identification and verification work for relevant government departments and professional media, and the authenticity of news faces greater challenges.

Third, there are legal and ethical risks in the processing of personal data. Data is an important resource in the era of artificial intelligence, and it contains huge economic value. The Internet is constantly generating massive amounts of data involving personal identity, behavior, beliefs, ideas, emotions and social relationships. The collection, storage and use of these data will inevitably involve legal and ethical issues. For example, Cambridge Analytica, a British company, obtained a large amount of Facebook user data illegally, and then analyzed the interests and preferences of these users to accurately deliver news and advertisements to them, which subtly influenced their commercial consumption and political tendencies. Personal data has clear directionality and great commercial value. Especially after in-depth mining, when a certain relationship or law contained in the data is discovered, the value of the data will be further enhanced, bringing greater benefits to data developers. In the data age, the probability of privacy being violated and the difficulty of aftermath have increased exponentially. Once damage is caused, it cannot be remedied. Even if you delete the original text, countless image files still exist. As various sensors obtain data information and are used for news dissemination activities, algorithm decision-making and algorithm recommendation need to be based on respecting personal data ownership, respecting user privacy and ensuring data security.

Fourth, the "information cocoon" effect on individual users. The term "information cocoon" comes from the book "Information Utopia" by Cass R. Sunstein, a law professor at Harvard University. The term frequently appears in papers studying the impact of algorithms, reflecting the academic community's concern about the influence of algorithm recommendations on people's social cognition. For a long time, people's reading behavior has been autonomous reading, out of need or interest. As the selective exposure theory explains, people tend to focus on information in certain areas based on their own positions, views and attitudes, and avoid content that is contrary to their existing tendencies. As algorithms become the mainstream of current media intelligence, intelligent recommendations have become a catalyst for the formation of "cocoons". Under its influence, autonomous reading gradually gives way to passive reception, and the right to receive information that the audience could originally control has been transferred to algorithms, and most of the information recommended by algorithms is in line with the audience's "appetite". Due to the lack of information diversity, the audience's cognition is confined to a limited field similar to "cocoons" while "enjoying the fruits of their labor". As algorithms become increasingly sophisticated and technology continues to improve, the intelligent information distribution model has trapped many people in the "cocoon" of information, making them lose the opportunity to explore the unknown and create different possibilities. The "information cocoon" will not only lead to the decline of the audience's cognitive and judgment abilities and the imbalance of their personal information structure, but will also hinder people's all-round development and their comprehensive understanding of society.

Strategies to deal with the negative impact of smart media development

Benefits are often accompanied by risks. It is necessary to avoid and eliminate the negative impact of artificial intelligence technology in the media industry by taking measures such as correcting the relationship between technology and value, improving algorithm transparency, and improving relevant ethical laws and regulations.

First, correct the "technology supremacy" and adhere to the principle of keeping integrity and innovation. The application of artificial intelligence in the media industry highlights the value of technological rationality. However, we cannot ignore the dominance of people in news communication activities and fall into the trap of "technology supremacy". Although content producers are becoming more and more diversified, in the production model of human-machine collaboration, in order to produce content products with ideas, warmth and quality, human subjective initiative and creativity are always the first priority. In the era of artificial intelligence, we still need to respect the laws of news communication and use the perspective of the times to examine the impact of new technologies on the media industry. Artificial intelligence technology is only a tool to serve the practice of news communication. It belongs to the category of means innovation, form innovation and method innovation. What really touches people's hearts is still the content that contains the meaning of life and values. Therefore, while reforming and innovating, we must not lose sight of the big picture. We must accurately grasp the characteristics and development trends of artificial intelligence, do a good job in top-level design, and use artificial intelligence technology to explore communication content, expand communication channels, and enhance reading experience. Only by achieving the best adaptation of content innovation and form innovation can we produce high-quality news products and better serve news and public opinion work.

Second, understand the algorithm logic and grasp the value orientation. At present, intelligent technology is being widely used in major media platforms. In order to better master this new technology, news practitioners need to strengthen algorithmic thinking, have a deep understanding of algorithmic logic, and understand the symbiotic relationship between media and algorithms. On the one hand, news practitioners need to adhere to the news value orientation of "economic interests must be subject to social benefits", adhere to communication ethics, avoid "traffic logic", dynamically monitor the rationality of algorithm recommendations, continuously improve and adapt, and seek a balance between instrumental rationality and value rationality. It can not only adapt to the algorithmic rules of the platform, but also adjust the interest bias of the algorithm in concept and practice, and realize the algorithmic coordination of news value and user preference. On the other hand, news practitioners need to work closely with algorithm engineers, integrate concepts such as public opinion orientation and social benefits into algorithm design, algorithmize and model news value and public opinion guidance, and jointly promote the development of mainstream algorithms to achieve intelligent content understanding and diversified content supply.

The third is to highlight algorithm transparency and enhance integrity and fairness. Algorithm transparency is essentially a question of transparency in news production. The transparency of news production refers to the process of publicizing the collection, production and release of news information, giving the audience the right to monitor, evaluate and participate in news production and release, breaking the "barrier" between content producers and users, and making the original "invisible" "visible". The data source, data screening, and operation rules of the algorithm are easily affected by a variety of human factors, and are embedded in the algorithm model and are not easy to detect. However, journalism is a cause that serves society and the public. This is the logical starting point of algorithm transparency. We cannot use the complexity of the algorithm itself and the inscrutability of the "algorithm black box" as an excuse. Intelligent media have the obligation to moderately disclose the operating mechanism and design purpose of their algorithms. This "honesty" is not only conducive to the media avoiding certain risks, but also helps to increase the public's trust in content producers and content quality. It is very difficult to formulate unified standards and achieve complete algorithm transparency purely from a technical perspective. At present, we can consider having a trustworthy third-party verification agency inspect and evaluate algorithms that involve the public interest, are of public concern or are controversial, and include "algorithm transparency" in the consideration of whether the production and push of smart media is in compliance with regulations through industry associations.

Fourth, self-discipline and external discipline should be coordinated to ensure good use and control. The construction of laws, regulations and professional ethics applicable to intelligent media requires not only the cooperation of legal experts and artificial intelligence technicians, but also the joint participation and mutual cooperation of government departments, corporate media and the public. For the sake of public opinion security and correct guidance, the government needs to supervise the application of algorithm technology in the media field, formulate corresponding ethical laws and regulations to clarify the scope of application of algorithm technology, and further establish accountability mechanisms and formulate accountability standards. In order to strictly prevent the occurrence of technology out of control and ethical deviance, major media information platforms and content distribution platforms with strong social attributes need to clarify their own responsibilities and obligations, formulate evaluation rules, and enhance algorithm transparency on the basis of improving their own algorithm review mechanisms. The public is the user of artificial intelligence products and the possible infringer. While improving media literacy, they can participate in supervising whether the algorithm is fair and just and whether the intelligent media behavior is deviant through reporting and other means. From the history of scientific and technological development, we can see that only when scientific and technological progress is consistent with the relevant requirements of social ethical regulations and ethical principles, and an ethical evaluation is made on the results of scientific and technological development to guide science and technology in the right direction, can we continuously promote the progress of human civilization.

At present, artificial intelligence is gradually replacing or assisting news dissemination in some fields. However, the identification of complex information, the judgment of news value, the grasp of timeliness and effectiveness, especially the flexibility of unconventional reports, are not what artificial intelligence is good at at present. In addition, there are various problems that need to be corrected in operation, which makes the "good use" and "good management" of smart media inseparable from human participation. "Comprehensive and authoritative information, in-depth and rational views are the most solid foundation for social public opinion and mentality." "Technology and algorithms are tools and the end after all; the joy of thinking, the shaping of values, and the improvement of knowledge are the goals and the foundation. In the era dominated by algorithms, we need more "editor-in-chief" who can check, lead and guide, and more "gatekeepers" with attitude, ideals and responsibilities." Only on the basis of journalists' solid theoretical foundation, high policy level and superb business ability, can smart media play a greater role in building a new type of intelligent mainstream media platform and promoting the modernization of the national governance system and governance capacity.

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