Computing Content and Communication: Public Opinion in the Age of Integrated Media and Governance

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Abstract. This study explores the role of Artificial Intelligence (AI) technology in promoting new forms of public opinion and reshaping traditional industries in the era of integrated media, and introduces the new concepts of "intelligent public opinion" and "intelligent power". The study shows that with the iterative development of AI technology, the "AI+Industry" model has become more and more common, and the media public opinion, as the "fourth force", has also been affected by AI technology, and many new forms have appeared. The article analyzes the development of public opinion, from word-of-mouth communication to AI and discusses the new form of intelligent public opinion, emphasizing the comprehensive penetration of AI technology in the process of news and opinion collection, production, distribution, reception and feedback. At the same time, the article also presents the opportunities and challenges posed by smart public opinion, including the impact on the national, social and individual levels. Finally, the article looks into the future of smart public opinion, mentioning concepts such as "meta-universes" and emphasizing the importance of AI technology in creating immersive virtual environments, as well as the potential threats and challenges it may pose to human society.

Keywords: Artificial Intelligence (AI), Public Opinion, Integrated Media.

1. Introduction

With the rapid evolution of artificial intelligence (AI) technology, a multitude of traditional industries are undergoing a transformation driven by AI, making the "AI + industry" paradigm increasingly common. The media and public opinion, often referred to as the "fourth estate", have also been impacted by AI, exhibiting numerous new forms. Harari in "Sapiens: A Brief History of Humankind" posits that "effective gossip" was crucial for Homo sapiens to stand out in the evolutionary process, and this effective "gossip" is the scaled processing of information and public opinion, the significance of which is self-evident. The internet has long become the primary arena for the production, emergence, dissemination, reception, and exchange of public opinion. With the integration of AI technology, the traditional public opinion environment is undergoing swift changes. The application of AI in the collection, production, distribution, reception, and feedback of news and public opinion, and its impact on the shaping of communication patterns and specific application scenarios, represents a new trend in the development of public opinion in the era of intelligence. Most current research overlooks the deep logic behind these impacts, namely, the overall role and influence of AI in the dissemination of public opinion. In the age of intelligence, with the involvement of AI, the irrational tendencies of the "crowd" may be further amplified. AI has the capability to directly shape opinion leaders or create a "majority" voice, thereby playing a decisive role in the public opinion sphere. The concept of the "fourth estate" has been endowed with new meaning and strength. The rise of AI is not merely a symbol of technological advancement; it has also become a manifestation of power. Entities that possess advanced intelligent technologies undoubtedly hold an advantage in the competition and exercise of this emerging power—namely, "intelligence power." Examining the development of intelligent public opinion and its impact on the nation, society, and individuals from the perspective of intelligence power is not only of significant practical importance but also provides us with a new theoretical perspective.[1] [2].

2. Public opinion development: from word of mouth to AI

Public opinion, as the consistent opinion and attitude of the public towards a specific matter in a particular time and space, is a form of social evaluation. Its characteristic function include public, tendency, autonomy and change. Public opinion cannot be created or developed without the medium of communication.[3]

2.1. History of the development of opinion media

Throughout the history of the development of public opinion media, the communication of public opinion has undergone a course of development from simple to complex and from one-dimensional to multidimensional. The development of opinion communication can be divided into three eras. The initial stage of opinion dissemination, i.e. S the natural or biological media era, is characterized by the fact that information dissemination is highly dependent on the physiological functions of individual organisms and primitive symbol systems. Although simple symbolic expressions and preliminary information carriers have already appeared in this period, the efficiency and scope of information dissemination are still strictly limited by the physical and perceptual capabilities of living beings, showing a simple and one-dimensional form of dissemination. As mankind entered the industrialized society, the era of mechanical media came dawned, marking a fundamental shift in the manner of information dissemination. The widespread use of mechanical energy completely subverted the information dissemination pattern of the pre-industrial era, greatly enhancing the speed and breadth of information dissemination. Consequently, the generation and influence of public opinion also soared to unprecedented height, far surpassing the limitations of the natural media era. The advent of radio technology marked another leap forward in information dissemination technology, ushering the radio era. This stage not only vastly enriched the form of information carriers, but also accelerated the speed of information dissemination to a level approaching the speed of light, profoundly reshaping the mode of communication and exchange in human society. As a result, the dissemination of public opinion has gained unprecedented freedom and penetration, and has had a profound impact on the social structure and individual cognition. (The Historical timeline is shown in Figure 1.)

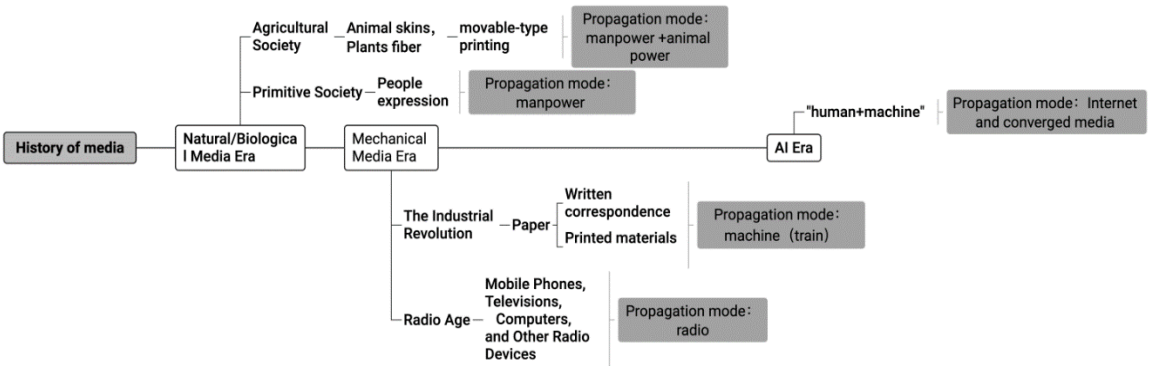


Figure 1. History of media.

2.2. Intelligent Public Opinion

At present, with the rapid development of AI technology, the intelligent information age is approaching us at an unprecedented speed. In this context, the public opinion ecology is undergoing profound and comprehensive changes. First of all, AI is disrupting the traditional communication mode dominated by human beings, prompting the main body of public opinion production to develop in the direction of diversification, and the synergistic effect of "human+machine" becomes the new normal of public opinion communication in the era of integrated media, which endows public opinion with new vitality in its generation and dissemination. In the era of intelligent information, the ecological environment of online public opinion has undergone a radical change. The speed of information dissemination has been accelerated unprecedentedly, the scope of coverage is far-

reaching, and the interactivity has been significantly enhanced, which provides strong support for immediate feedback and in-depth communication of public opinion. These changes have not only changed the generation and dissemination mechanism of public opinion, but also put forward new challenges and requirements for public opinion management, guidance and regulation. In traditional public opinion research, the main body of public opinion expression mainly focuses on traditional media, network media, public opinion leaders, authorities, masses and organizations. Nowadays, the development of artificial intelligence technology makes this pattern completely broken, and the subject of public opinion presents a more diversified trend. As an independent information producer and disseminator, AI systems, together with members of the human society, constitute a complex network of public opinion ecology, which promotes the continuous evolution and innovation of the public opinion environment.[4]

In general, the development of public opinion media is a history of evolution from simple to complex, from one-dimensional to multi-dimensional. The arrival of the intelligent information age has opened up infinite possibilities for the future development of the public opinion ecology, requiring us to re-examine the nature, function and influence mechanism of public opinion in the context of the new era, so as to better cope with the new challenges of information dissemination and public opinion guidance.

The keyword of converged media is convergence, and "Internet + entity" is a specific feature and symbol of converged media. Convergence of the media is now the narrative form in the de-formalization, platform support, strengthen the entrance, the fusion of the discourse system to complete the stage of development. The dissemination of information is no longer limited to a single medium as a carrier, in the past the traditional media have a fixed medium form of information carrier is no longer a single form, the user can through the physical publication of the text and images + electronic publication of the text and images of the sound and video multifaceted view of the content of the era of convergence of the media information narrative is more rich and diversified. Media convergence gives intelligent public opinion a great degree of technical support, multimedia convergence allows artificial intelligence to produce public opinion content is fuller, the scope of dissemination is more extensive.

3. The new shape of public opinion: intelligent public opinion

AI is widely recognized as the signature technology of the fourth industrial revolution. Compared with the direct technological progress in the past, AI is more like an enabling platform, which can realize full integration with traditional industries and promote new changes in them.[5]

At this stage, AI permeates the entire process of news and public opinion collection, production, distribution, reception and feedback, realizing intelligent public opinion production and dissemination with the participation of both humans and machines. The arrival of the era of integrated media has accelerated the in-depth fusion of old and new media, which has gradually shifted the source of public opinion information from traditional media to the Internet platform. The rapid response capability of the Internet enables it to report quickly after the formation of public opinion, which significantly improves the efficiency of communication. At the same time, traditional media follow up and finalize the content of public opinion through secondary dissemination, giving full play to the complementary advantages between new and old media. The efficiency of new media and the rigorous authority of traditional media combine to jointly promote the efficiency and quality of public opinion dissemination. In this context, the progress of AI technology is particularly remarkable. Its learning ability far exceeds that of humans, and through continuous iteration of machine learning algorithms, AI has achieved significant upgrades in news-writing capabilities. On an intuitive level, machines seem to show a more rational and objective reporting ability than humans, while also being far ahead in data processing and reaction speed. The application of AI in news production makes it possible to sift through massive amounts of data and distill newsworthy content. Through in-depth analysis of social opinion trends, user concerns, and needs, AI can optimize news content and produce

more efficient and accurate news reports. With the help of AI, mainstream media can quickly seize the right of news debuts on the Internet, and then obtain more traffic resources. During the Olympic Games, NBC announced that the Peacock streaming platform will enable AI-generated speech based on real sports anchors for broadcasting news about the games, and the AI anchors will have the ability to broadcast news around the clock, which greatly optimises the news production process, significantly reduces human resources needs and financial costs in the news production process, and effectively avoids the interruption problems brought by traditional real anchors due to rest, scheduling, and other factors .The problem of broadcasting interruptions caused by factors such as breaks and scheduling is effectively avoided .[6]

The level of intelligence of artificial intelligence is largely limited by the quality of the big data used for its training, which constitutes an indispensable nutrient for the growth and development of artificial intelligence. The self-optimization mechanism of AI relies on in-depth analysis, reorganization, integration and learning of a wide range of data to generate a unique algorithmic logic system and achieve autonomous operation. AI provides new vitality to industrial innovation. Under the intelligent environment of public opinion, many well-known companies in the market are developing their own big models of artificial intelligence. These big models rely on big data for their operation, and the content posted by netizens on the Internet becomes nutrients in the petridish that is big data. The Large Model upgrade themselves by analyzing the data and asking themselves questions. In the U.S., the creation and sharing platform represented by Medium is leading a new trend in which the content posted by creators is collected by the bigdata system and fed to advanced AI technology, thus providing a rich data base for AI to generate virtual content. In the environment of intelligent public opinion, AI Large Model have become the alternative to "human labor" in term of productivity. Not only on these social platforms, but also on Instagram, more and more creators related to literary and artistic advertisements are using AI Large Model as a production tool, which may enable users to use AI to generate virtual content by cooperating with AI image generation technology (such as DALL-E), which can be used for the production of virtual content. Enabling users to generate fictional images or animations with an artistic flair based on their own photos or descriptions, which can then be published as posts. And writing platforms such as Substack may explore the capabilities of AI writing assistants to help authors quickly generate first drafts, expand on ideas, or provide writing advice, which the author ultimately reviews and then decides whether to incorporate into an officially published piece. Intelligent opinion is no longer limited to the dissemination of information and opinion, but has penetrated into production and life.

4. Opportunities and challenges of intelligent public opinion

As the Communist Manifesto says, "The bourgeoisie has created more and greater productive forces in its less than one hundred years of class rule than all the productive forces created in all past generations." Technological progress is the underlying foundation that has allowed human society to develop to this day. But equally, Baker also points out that while industrial society has brought great wealth, it has also brought great risks to humanity, especially the human-made risks that are beginning to flood the world. Intelligent public opinion, as a new form of public opinion, cannot escape this kind of impact it brings to human beings. Intelligent public opinion will show different impacts at three levels: national, social and individual.[7] [8].

4.1. The state level

At the state level. We need to realize that the state or government is the largest actor in society in the broad sense, and it possesses resources that are hard to reach by other actors. In the era of AI, the AI capabilities possessed by the state can be called the right to intelligence. For the state, smart power is not only a new source of power, but also an important assistant to realize traditional power. The expansion of this power will allow the state to further expand its advantages over other actors. Intelligent power here is not the power under the structure of state power or the allocation of power

resources, it is the extension and expansion of the content of the specific power of the traditional state, which is not only an empowerment of a traditional power to make it stronger, but also a brand new power that enriches and enlarges the resources of power that the state holds. As an empowering power, the state's right to intelligence can help state power achieve more efficient and precise operation, while as a new power resource, it is mainly manifested in the new areas opened up by artificial intelligence. For example, in the past, the state needs to spend too much human resources and economic resources to carry out regulatory work, the addition of AI greatly reduces the cost of regulation, once the input of the data model in the early stage is shaped, the later stage only requires code input and output to complete the huge and systematic supervision and management, and the power of the state is thus greatly enhanced.

The state's right to access and utilize intelligence can be understood at the macro level in two ways. Vertically, the state has a greater relative power that it has seized in the new field of AI compared to societies, organizations or individuals. In the name of the state or in the public interest, the state, through its legislature, formulates the direction and policies for the development of AI. The extension of the right to intelligence within the state is like a capillary that penetrates into all aspects of society at various levels. With the aid of AI and big data, state power can reach into previously inaccessible areas, enhancing the comprehensiveness of both the state's power and supervision networks. Under the intelligent public opinion environment, artificial intelligence upholds national social stability by leveraging AI to bolster the power of the state. Horizontally, the right to intelligence is also an integral part of national power, and intelligent public opinion is a crucial tool for international competition. TIKTOK's algorithms have made it a big hit in the field of global short videos, and it has become an important element of the game between China and the United States in the field of high technology. For the U.S., There is insufficient evidence to conclusively determine whether TIKTOK poses a threat to national security. But the impact of TIKTOK on the U.S. technology-led public opinion media is obvious to all. In the era of intelligent public opinion, when a country has advanced AI technology, it can manipulate the public opinion of other countries through intelligent public opinion to obtain the interests of its own country. In addition, the development of intelligent public opinion ecosystem requires a huge energy supply system, and a continuous and stable power supply to maintain the operation of generative AI. The lack of energy supply in small countries means that these small countries often have to rely on external leasing or purchasing if they want to use AI and related technologies that require large amounts of electricity, which undoubtedly makes them always subject to other countries in the process of technological innovation and industrial upgrading, lacking autonomy and flexibility. If the information gap can be bridged through "software" such as access to the Internet and the cultivation of relevant talents, the solution to the "intelligence gap" is more a matter of infrastructure construction or energy issues.

4.2. The social level

The right to intelligence also extends vertically at the social level. A large part of the existing advanced AI technology is developed and operated by private organizations, and AI technology is a new type of weapon for them to steer public opinion in the direction of generating interests. The effective use of social robots in cyberspace influences the expansion of online public opinion dissemination and the enhancement of the predictability of the behavior of the masses, affecting the intensity of interaction of the masses to manipulating collective choices and mobilizing the group's homophobia, and induces the mass discussion and dissemination of results to change the social order. Mass discussion and dissemination, leading to altering the social order. Similarly, private organizations in society can either slowly become collaborators in the expansion of government power, assisting the government to expand its dominance, or they can slowly erode some of the government's power. In many cases, the goals of private corporations do not coincide with political goals and the relative interests of the whole, and their mastery of high technology has the potential to lead the nation to believe in negative aspects of the state and society. In an intelligent public opinion environment where information can be disseminated, a number of social media platforms, such as

TikTok, provide a wider arena for the public to speak out, changing to a certain extent the "government-oriented" situation of the traditional media era. The benefits of realizing information traffic have led netizens to turn to rivers of negative forces for the sake of cash. In the past, the LGBT community has long suffered from "marginalization" and "stigmatization", and was regarded as a symbol of alienation and mental disorder, and encountered widespread social exclusion. However, with the innovation of communication technology and the evolution of the media environment, LGBT people have become a kind of "cultural symbol" in the Internet age, and even a new type of politically correct attitude in many countries, which has profoundly affected society and even national politics.

4.3. The individual level

Advances in AI at the individual level have provided new avenues for individual voices to be heard. In the past, individual voices were easily suppressed by the powers that be, and individuals were unable to express their ideas freely. Now, thanks to the Internet, netizens can actively express their views on social issues and use social platforms to defend their rights. Along with technological advances, individuals can manipulate social bots to increase their influence on public opinion, reflecting Andy Warhol's prediction of "fifteen minutes of fame" in the real world of intelligent public opinion. This environment also carries risks, and AI-enabled online fraud poses a challenge to people's lives that should not be underestimated. U.S. digital forensics professor Farid said, now just need to come from a short video of the human voice, AI software can analyze its qualities and find a similar voice in a huge database for prediction simulation, reconstruction of the overall similar voice for fraud. In this industrial chain there are specialized AI devices and software to operate, and there are many illegal software also lurking in people's lives, especially AI face-swapping and other tools lurking in the risk of data theft, threatening user safety. The rights and interests of people in the intelligent public opinion environment are also subconsciously imprisoned by artificial intelligence. While the right to personal intelligence is expanding, the power of the state is also expanding at the same time, and the new intelligent public opinion dissemination channels make the people wrapped up in the information environment carefully constructed by the state in a multi-dimensional way. People are often unconsciously trapped in the information cocoon set up by the state and government, as well as social organizations, and are influenced by them without knowing it.[9][10]

5. Truman's World: The Future of Intelligent Opinion?

Significant changes in news dissemination have occurred, but the public information reception mode is still "you say I listen", favoring passive acceptance. AI is involved in the news production and dissemination cycle, using big data analysis to build a personalized information environment, i.e., the "information cocoon", which is ostensibly user-initiated, but in reality, it is the big data that precisely pushes and potentially guides public opinion. In the era of integrated media, personal mediatization has intensified, and content output inevitably carries subjective emotions and tendencies. Social robots classify users based on the refinement of big data preferences, resulting in users receiving an increasingly narrow range of information, showing the "echo wall effect". Under this effect, users are reinforced with cognitive biases, which amplify their individual stance within a closed information circle and promote self-perceived isolation. Discussions about the information cocoon continue to ferment on the Internet, and netizens have found that different groups will see different comments under the same video. For example, talking about gender and race relations in American society in the video of opposing positions, etc. Visualization shows the negative impact of information cocoon, deepening the antagonism and disconnection between online communities. AI algorithms classify users in the background, contributing to the formation of homogeneous information silos.

The development of AI has blurred the human-machine boundaries of information producers, and the public is prone to fall into the vortex of virtual information. 2022 a netizen for the sake of the game's sense of experience in the Wikipedia fabricated a country's history of several hundred years,

and its detailed and realistic degree of realism so that many scholars have used it as a research document. This highlights nowadays network information is difficult to distinguish between true and false, machine efficient output dec news seems to be more credible, improve the efficiency of news production, but at the same time the authenticity of the news to be hit, this is not conducive to the release and dissemination of real news, once there is false news by the public to recognize, it will lead to a crisis of confidence, i.e., "the wolf is coming". Once false news is recognized by the public, it will trigger a crisis of confidence, i.e., the "crying wolf" effect, which will seriously damage the authority and credibility of news.[11]

AI has not only injected unprecedented vitality into industrial innovation, but its cutting-edge results, such as generative Large Model like ChatGPT and Sora, as well as more sophisticated AI technologies expected in the future, also pose relatively complex challenges and potential uncertainties to human creativity. These models demonstrate advanced learning and creative capabilities, and the advancement of AI may replace some humans, laying the groundwork for the future development of human beings. In addition, the current development of generative large model is a form of intelligence that can self-learn and improve, and it may be able to iterate a newer level of advanced AI in its self-learning process, just as scientific giant Stephen Hawking has expressed deep concern about the overdevelopment of AI.[12]

The concept of "Metaverse" combines user experience, the creative economy and spatial computing, which relies in particular on AI, to create immersive virtual environments that blur the boundaries between the real and the virtual, enabling instantaneous interactions across space. This innovative experience, which allows users to experience the transition from a two-dimensional to a four-dimensional persona, has been widely discussed and its vision depicted in sci-fi productions such as "Top Gun" and "Westworld". Combining the above intelligent public opinion with the development of the meta-universe, it is not difficult to find that the AI-driven meta-universe is gradually building a new era of "Truman's World", which may be the ultimate manifestation of intelligent public opinion. In the virtual world, human identity in news dissemination is reconstructed, and individuals can deeply participate in the news experience. The virtual world is easy to manipulate, in this virtual utopia constructed by data, intelligent public opinion under the extension of the spatial and temporal dimensions, human beings may be able to find a way of existence beyond the boundaries of reality, in this case the future of intelligent public opinion is very likely to deflate the boundaries of reality and virtual, so how many people will choose to continue to stay in the real world? Then whether human beings still maintain a clear position on their own meaning? This will be a huge blow to the management of the real world, and balancing the real and the virtual has become an important topic that needs to be explored in depth.[13]

6. Conclusions

In this study, the leap of artificial intelligence technology has reshaped the production, dissemination and influence mechanism of public opinion in the context of media integration era, leading it into a new form, which provides opportunities and challenges for the national society and individuals, and injects new vitality into the theoretical research of communication science, showing certain positive significance. At the same time, while revealing the positive aspects of the new form of intelligent public opinion, this study also puts forward many questions about the future development of intelligent public opinion, especially focusing on the potential risks and complex challenges that human society may face under the wide application of intelligent technology, such as the intensification of the information cocoon effect, the rising risk of privacy leakage, and the overly realistic virtual world that blurs the meaning of reality, and so on. These profound reflections not only enrich the theoretical connotation of intelligent public opinion research, but also point out the direction for subsequent research. This study has only analyzed the opportunities and challenges of the right to intelligence at the national level, and future research can further explore the future shape of the right to intelligence. As technology continues to develop and the meta-universe evolves, the

boundary between the real and virtual worlds becomes blurred, and whether the final shape of intelligent opinion will be formed in this blurred boundary is a question that deserves in-depth study. The dissolution of intelligent power in the human sense and possible coping strategies can be explored by combining the perspective of social psychology, which is not only of practical significance, but also provides new perspectives for theoretical research.

References

[1] Schuster S S. The persuasive power of the fourth estate: Estimating the effect of newspaper endorsements: 1960–1980[J]. Journal of Economic Behavior & Organization, 2023, 207: 496-510.

[2] Harari Y N. Sapiens: A brief history of humankind [M]. Random House, 2014, 34-36.

[3] Fraser N. Trans nationalizing the public sphere: On the legitimacy and efficacy of public opinion in a post-Westphalian world [M]//Habermas and Law. Routledge, 2020: 379-402.

[4] Alvarez R M, Brehm J. Hard choices, easy answers: Values, information, and American public opinion [J]. 2020.

[5] Chalmers D, MacKenzie N G, Carter S. Artificial intelligence and entrepreneurship: Implications for venture creation in the fourth industrial revolution [J]. Entrepreneurship Theory and Practice, 2021, 45(5): 1028-1053.

[6] Peacock/NBCUniversal: Peacock Unveils Personalized OLYMPIC RECAPS FEATURING THE VOICE OF LEGENDARY SPORTS ANNOUNCER AL MICHAELS GENERATED WITH A.I.;NBCsports; June 26, 2024 01:00 PM https://www-nbcsports-com.translate.goog/pressbox/press-releases/peacock-unveils-personalized-olympic-recaps-featuring-the-voice-of-legendary-sports-announcer-al-michaels-generated-with-a-i?_x_tr_sl=en&_x_tr_tl=zh-CN&_x_tr_hl=zh-CN&_x_tr_pto=sc

[7] Marx K, Engels F. The communist manifesto [M] Ideals and ideologies. Routledge, 2019: 243-255.

[8] Beck U. From industrial society to the risk society: Questions of survival, social structure and ecological enlightenment [M]//Risk management. Routledge, 2020: 17-44.

[9] Guinaudeau B, Munger K, Votta F. Fifteen seconds of fame: TikTok and the supply side of social video [J]. Computational Communication Research, 2022, 4(2): 463-485.

[10] Dressel J, Farid H. The accuracy, fairness, and limits of predicting recidivism [J]. Science advances, 2018, 4(1): eaao5580.

[11] Jonny, Diamond; A “Chinese Borges” wrote millions of words of fake Russian history on Wikipedia for a decade..; Literary Hub.; 2022-06-28 [2022-07-22]. https://lithub.com/a-chine se-borges-wrote-millions-of-words-of-fake-russian-history-on-wikipedia-for-a-decade/

[12] Cellan-Jones R. Stephen Hawking warns artificial intelligence could end mankind [J]. BBC news, 2014, 2(10): 2014.

[13] The metaverse is a virtual space that is online and interactable with the real world, in which all events occur in real time and have a permanent impact. Details can be found in: Mystakidis S (2022) Wang H, Ning H, Lin Y, et al. (2023)Lee L H, Braud T, Zhou P, et al. (2021)