



Characteristics, Applications, Challenges and Coping Strategies of AI Technology in Cultural Communication: the Case of ChatGPT

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Abstract. This paper will discuss in depth the characteristics, applications, challenges and coping strategies of AI (Artificial Intelligence) technology in the field of cultural communication, exemplified by ChatGPT. By analyzing the conceptual connotation and technical characteristics of ChatGPT, we understand that its powerful natural language processing capability has brought new opportunities and challenges to cultural communication.

In order to effectively cope with these challenges, this paper proposes a series of strategic reflections, including strengthening AI governance, establishing sound laws and regulations, adding the role of gatekeeper, actively decoding the underlying algorithmic technology, sounding the network monitoring system, and real-time sensing of public opinion dynamics. The implementation of these strategies will help ensure that the field of cultural communication continues to thrive in the age of AI and protect cultural diversity and quality.

Keywords: Culture Communication, AI, ChatGPT

1 Introduction

At the end of November 2022, since the release of ChatGPT (Chat Generative Pre-trained Transformer) which is an application that imitates natural language launched by OpenAI (a U.S. AI research lab), it has been an unstoppable trend of overnight popularity, sweeping the globe, and coming into tens of thousands of households. At the same time, ChatGPT has been on the search lists of major social media (such as Twitter, Weibo, Instagram and so on) with a variety of topics, and the degree of discussion continues to be high. According to the report of China Entrepreneur (2023), it took only five days for the user scale of ChatGPT to break through 1 million, and compared to Tiktok's record of breaking the 100 million active volume in 9 months, ChatGPT took only 2 months, and has become the fastest phenomenal product to achieve the 100 million monthly active volume ^[1]. ChatGPT has become so popular and out of the loop so quickly that it has pushed AI into the spotlight once again.

The advancement of AI technology has profoundly transformed the entire process of information production and dissemination. It is poised to usher in a novel communication paradigm, wherein Generalized AI, with its potential to replace cognitive labor, has the capacity to catalyze an efficiency and intellectual revolution across society, exerting a substantial impact on the prevailing landscape of cultural communication.

As society enters the era of artificial intelligence, characterized by the widespread adoption and integration of technologies such as ChatGPT, it promises to revolutionize every facet of cultural communication. However, this transformation also brings forth a host of new challenges and complexities.

2 Conceptual Connotation and Technical Characteristics of ChatGPT

ChatGPT represents an advancement over the GPT (Generative Pretrained Transformer) model, specifically tailored for dialogue generation and optimized for conversational contexts through a human-machine closed-loop system. GPT, as a large-scale language model, excels in automatically generating text-based dialogues closely resembling those of human speakers, based on the provided context. Furthermore, it can generate various text formats according to specific requirements and instructions, aligning with the contemporary principles of machine learning for natural language processing [2].

Within OpenAI's array of technical developments spanning intelligent robotics, AI gaming, and language model training, GPT is distinguished as the AI series designed to enable artificial intelligence to comprehend and interact with the human world through language. ChatGPT, building upon the foundation of the previously released GPT-2 model, introduces refinements to the technical model, initially focusing on text generation in response to user inputs. Consequently, it has emerged as the flagship model in this series, marking a significant milestone in the field [3].

After the deployment of ChatGPT on the Internet, web users from countries around the world have engaged in interactions with ChatGPT. They have observed that during extensive exchanges, ChatGPT often provides diverse responses when answering questions posed by different individuals, utilizing various questioning styles or different languages. This variability is accompanied by a flexible adaptation to the evolving social dynamics and the subsequent content of the communication. This capacity for flexible adaptation and personalized responses unmistakably signifies that this intelligent system is still in its learning and maturation phase. It is noteworthy that human involvement in this process is significantly more intricate than what is encapsulated in the model's training.

3 The Impact of AI on Cultural Communication

Cultural studies is an interdisciplinary field that integrates sociology, media studies, literary theory, anthropology, and other disciplines to investigate cultural phenomena

within industrial societies. On the other hand, cultural communication employs a communicative lens as an entry point into cultural studies, aiming to gain insights into human cultural behavior. As we witness the evolution of the mobile Internet and the gradual transition into the AI era, the methods of creating and disseminating culture are also undergoing significant transformations.

3.1 Application and Characteristics of AI in Cultural Communication

3.1.1 AI promotes the innovation of cultural creation and dissemination methods.

In the past, scientific and technological advancements had limited direct influence on cultural creation. This is because cultural creation was traditionally perceived as an intellectual endeavor carried out by specific individuals or groups, with the value of cultural creations depending on the creators' diverse cultural backgrounds, knowledge, and personal experiences. Consequently, the mere enhancement of technological tools did not significantly impact the intrinsic value of cultural creations. However, the introduction of ChatGPT presents a unique scenario. It has the potential to substantially enhance both the efficiency of cultural creation and its dissemination. This efficiency boost is expected to propel cultural products towards rapid prosperity and significantly accelerate the pace of cultural dissemination^[4].

In 2022, Jason Allen's painting, 'Space Opera House', claimed the top prize in the digital category of the Colorado State Fair Art Competition in the United States. However, the controversy surrounding the artwork emerged as it was revealed that Allen had created the piece using the AI drawing tool, Midjourney. Similarly, in 2023, the Grand Prize in the Creative category of the Sony World Photography Awards was awarded to Boris's work -- 'Electrician'. Nonetheless, Boris declined the award, he asserted that his work had been generated by an AI image generator and did not qualify as a traditional photographic work. The development of technology and the popularization and application of AI is irreversible, and the road of the race between AI and human beings has only just begun. Regardless of the controversy, in the future, this kind of cultural creations will be very common and more and more, which can't be prevented by the unilateral boycott of an individual or a group of people.

Therefore, the rapid proliferation of cultural products is an inevitable trend in the AI era, regardless of their quality, and this phenomenon will create the appearance (or illusion) of cultural prosperity and growth. Moreover, ChatGPT has the capability to provide personalized interpretations of various cultural and artistic works, including text, imagery, audio, and video, tailored for different audiences. These interpretations can quickly disseminate to diverse countries and regions through user interactions, thereby generating a broad spectrum of cultural influence. It is foreseeable that for nations or organizations at the forefront of AI's core technology, this efficient cultural creation and unhindered cultural dissemination will significantly bolster their cultural development.

3.1.2 ChatGPT removes barriers to understanding cultural works and further enriches culture itself.

With its algorithmic advantages, ChatGPT possesses the capability to conduct in-depth analyses of various elements within cultural works, including style, emotion, and meaning. Simultaneously, it can furnish users with comprehensive background knowledge to enhance their understanding of these works and provide personalized interpretations that are accessible to users. Furthermore, ChatGPT boasts an extensive knowledge base sourced from millions of online data points and a substantial volume of user-provided information, empowering it to interpret cultural works transcending domains, cultures, and temporal-spatial boundaries. This also enables ChatGPT to frequently offer novel and distinctive insights and perspectives during interactions with users.

Throughout the user interaction process, ChatGPT can discern each user's preferences and interests in cultural content. By identifying potential connections between cultural works and users, it can recommend culturally relevant content that aligns with users' preferences, thereby actively promoting cultural consumption and fostering the dissemination and exchange of culture. Concurrently, ChatGPT is equipped to receive user feedback, enabling it not only to refine recommended content based on this input but also to enrich the direction of cultural creation and enhance the quality of cultural works, thereby contributing to the enrichment of culture itself.

3.1.3 ChatGPT promotes cultural integration Cross-cultural communication ability is enhanced, promoting cultural integration.

The application and widespread adoption of ChatGPT have created a barrier-free platform for intercultural communication. ChatGPT functions as an expansive knowledge repository, and what makes it particularly unique is that users from diverse linguistic and cultural backgrounds worldwide can utilize it simultaneously. Furthermore, as users engage with ChatGPT, they continually contribute to its knowledge base. Multiple cultures can interact and exchange on this unified platform, transcending language barriers and overcoming geographical and cultural limitations, significantly enhancing cross-cultural communication capabilities.

At the same time, as previously discussed, the utilization of ChatGPT allows users to engage with various cultural works seamlessly. This inevitably fosters and accelerates the fusion of different cultures, thereby promoting cultural innovation and renewal. While cultural integration has occurred throughout history, it often proceeded at a leisurely pace. However, the efficiency enhancements and cognitive revolutions introduced by ChatGPT are reshaping the traditional modes of cultural communication, intensifying cultural integration, and catalyzing more rapid and profound cultural collisions and innovations. As Wang (2023) posits, these cultural exchanges disrupt entrenched concepts and thought patterns, giving rise to novel perspectives and fostering intellectual emancipation^[4]. Innovative ideas and modes of thinking, in turn, contribute to the advancement of general AI and other scientific and technological domains, thereby furthering cultural prosperity. This, in a positive feedback loop, reinforces the liberation of ideas and innovation, creating a self-sustaining cycle.

3.2 Challenges and dilemmas brought to cultural communication in the era of AI

3.2.1 The lack of the role of gatekeeper and regulator is more serious, and the authenticity of information is doubtful ChatGPT's specificity Different places Different features from the original.

The low cost and accessibility of using ChatGPT have significantly reduced the cost of disseminating disinformation. Traditional disinformation typically exhibits low-quality, easily discernible characteristics. However, individuals with malicious intent can now leverage ChatGPT to generate disinformation that is logically sound and linguistically polished. This renders the generated content from ChatGPT is highly vulnerable to being mistaken for authoritative information or sophisticated cultural products, making it challenging for audiences to ascertain authenticity.

The absence of gatekeepers and regulatory mechanisms in the utilization of ChatGPT has become a matter of concern. The Gatekeeper Theory is a seminal concept in Communication Studies, which pertains to the role played by influential and authoritative individuals or organizations in controlling the flow of information during its dissemination. These gatekeepers wield the power to influence and regulate the flow of information, making them pivotal in shaping the content and form of communication by selecting, filtering, and adjusting information. The Gatekeeper Theory underscores the importance of clearly defined roles and responsibilities in information dissemination to ensure accuracy, legality, and ethics.

However, within the context of ChatGPT, it remains uncertain whether the information exchanged by users in their interactions with ChatGPT is accurate or false, or whether the content within ChatGPT's repository is reliable. Traditional gatekeepers and regulators appear to be absent, potentially resulting in a loss of control over the information dissemination process.

If ChatGPT were solely reliant on its extensive database to generate what is often referred to as 'correct nonsense,' it might still be tolerable. However, if the database itself contains errors or if ChatGPT is led astray and generates 'incorrect nonsense,' then the dissemination of such erroneous information, either in its original form or as part of a cultural product, could result in substantial harm. This harm could impact various sectors, including online media, public opinion, and the education field, and the potential consequences are immeasurable. This is precisely why many organizations have chosen to disable ChatGPT.

For instance, in February 2023, a piece of fake news created by ChatGPT claiming that 'Hangzhou had lifted all traffic restrictions on March 1' became a trending topic. On February 16, during a discussion among residents of a Hangzhou residential district about ChatGPT, one resident attempted to compose a press release in ChatGPT announcing the lifting of traffic restrictions in Hangzhou. They live-streamed the entire process, including the final article, within the group. Some residents, without carefully examining the context, hastily captured screenshots and shared them, leading to the dissemination of inaccurate information. On February 17, a media called *Zhejiang Voice* debunked the rumor, and the business owner involved in the group subsequently issued a public apology.

Instances of ‘serious nonsense’ generated by ChatGPT are not isolated incidents. News Guard, a U.S. news credibility assessment organization, identified 100 instances of false information in the ChatGPT database and tested ChatGPT's responses. The results indicated that ChatGPT provided clear, misleading, and even false answers to 80% of the content, which often included rumors and alarmist material.

In response to News Guard's query regarding how malicious actors can exploit ChatGPT to disseminate misinformation, ChatGPT acknowledged that the bad actors can use their own data to fine-tune the model, which may include false or misleading information, and they can also use the text that ChatGPT generate out of context or in ways it was not intended. News Guard accordingly believes that ChatGPT will be the next super-spreader of disinformation, which it is spreading on an unprecedented scale.

News Guard consequently believes that ChatGPT has the potential to become a significant vector for the spread of disinformation on an unprecedented scale. OpenAI as the organization behind ChatGPT, shares similar concerns about the possibility of malicious individuals utilizing ChatGPT to create and disseminate false content on a large scale. In January 2023, Mira Muratt as OpenAI's Chief Technology Officer emphasized that the risk of ChatGPT being manipulated by dangerous entities is one of the primary justifications for the need to regulate large-scale language models like ChatGPT, and that such regulation is not premature [5].

3.2.2 Inertia of the audience's thinking, resulting in an information cocoon, hindering the full dissemination of culture and exacerbating group polarization.

The phenomenon of information cocoons is an unavoidable social issue in the information age. Information cocoon describes the narrowing of information sources and the polarization of perceptions, which occur due to various self-imposed or external factors during the process of information acquisition by individuals or groups [6]. With the advancement of science and technology, big data technology has long been capable of analyzing individual preferences to create personalized user profiles. ChatGPT can seamlessly integrate this process, from preference capture to information delivery, significantly enhancing the efficiency of constructing existing information cocoons.

In the past, building individual or group information cocoons necessitated long-term user tracking, preference analysis, and information delivery, often relying on trending events or artificially generated ones [7]. This protracted process not only consumed substantial resources but was also susceptible to detection, interference, and disruption. However, ChatGPT can execute this design in a subtle manner, embedding specific values into almost any socially influential event without the necessity of depending on or fabricating hot topics. This normalization of information cocoon construction is facilitated by ChatGPT's high degree of autonomy and intelligence, allowing for precise categorization of affected individuals and the seamless delivery of information to gradually shape subconscious impressions. This greatly heightens the efficiency of information cocoon formation.

Simultaneously, ChatGPT's capacity for precise information delivery and individual categorization can also contribute to the formation of various cliques. These cliques may continually disseminate tailored information to specific individuals within the information cocoon, fostering groups with extreme viewpoints. As these groups grow

in size, they can self-organize into smaller networks, where they remain influenced by relevant information, leading to the gradual consolidation and expansion of these cliques.

The diverse cliques fostered by ChatGPT can potentially inhibit the broad dissemination of culture, resulting in cultural diversity and a weakening of cultural influence.

4 The Cultural Communication Field to Deal with ChatGPT and Other AI Strategy Thinking

4.1 Strengthen AI Governance, Improve Corresponding Laws and Regulations, and Add the Role of Gatekeeper

On 14 June, the European Parliament adopted its negotiating position on the Artificial Intelligence (AI) Act. According to European Parliament News website (2023), “the rules would ensure that AI developed and used in Europe is fully in line with EU rights and values including human oversight, safety, privacy, transparency, non-discrimination and social and environmental wellbeing. ^[8]”

And Tesla CEO Elon Musk also said that AI safety needs legislative protection. Strengthening AI governance and enhancing corresponding legal frameworks can provide assurance that AI technologies such as ChatGPT are used in a legal and responsible manner. It ensures that the design, development, and deployment of AI systems are guided by cultural ethics and legal standards. Regulations should explicitly outline responsibilities in the generation and dissemination of cultural content, encompassing transparency of information sources, requirements for information quality, and penalties for disseminating false information and infringing on copyright. Furthermore, AI-related laws and regulations should prioritize rules governing data utilization and sharing to strike a balance between privacy concerns and the free flow of information. Concurrently, government entities, academia, industry stakeholders, and representatives from the public should collaborate extensively in developing and updating AI-related legislation, as it needs to not only adapt to evolving technologies but also reflect the ethical values of contemporary society.

Introducing the role of gatekeepers is a pivotal element to safeguard cultural diversity and quality in the AI era within the realm of cultural communication. Despite AI systems' capacity to learn and adapt autonomously, they still require human oversight and intervention. Gatekeepers may encompass AI experts in ethics, regulators, censorship boards, cultural communication practitioners, professional critics, cultural scholars, or public representatives who oversee and assess content generated by ChatGPT. Their responsibilities include reviewing and validating the training data of AI algorithms to ensure its freedom from bias and discrimination and monitoring the behavior of AI systems in practical applications to ensure compliance with ethical and legal standards, as well as alignment with cultural values and quality standards. Gatekeepers can also play a role in the decision-making processes of AI systems to ensure fairness and transparency.

4.2 Active Decoding and Intervention in ChatGPT's Underlying Algorithmic Technology

The fundamental algorithmic framework of ChatGPT is deeply rooted in Western capitalist logic and pragmatic ingenuity. Its text generation and discourse dissemination mechanisms adhere to the principle of empirical integration and are designed for broad applicability. In the realm of generative AI, it's essential not only to acknowledge the technological gap that separates us from the West but also to remain acutely aware of the ideological discourse dominance and cultural influence underlying this gap, stemming from Western cultural self-assuredness.

In essence, faced with this discourse hegemony, Chinese researchers in the humanities and social sciences must assert their own ideological standpoint, employ their unique discourse and corpus, and utilize context-specific applications to resist the ideological impacts and risks posed by ChatGPT (Li & Yi, 2023) ^[9].

It is important that understanding how algorithmic technologies work, how they generate text, and how they process user input is crucial, because it will help the cultural practitioners to better understand how AI models work and help them to recognize and understand AI-generated content.

Moreover, there is a call for AI providers to develop more sophisticated language models. These models should not solely focus on surface-level text comprehension but also incorporate contextual, logical, and factual understanding. Achieving this entails integrating advanced natural language processing techniques into AI models to ensure that the generated content not only remains accurate but also considers the social and cultural context.

Crucially, interventions in user input are paramount to counter misleading content. This can be accomplished through rigorous review, screening, or editing of AI-generated text. Such interventions encompass manual oversight or more advanced automated techniques to ensure that the text remains free from false information, misleading statements, or harmful content.

4.3 Sound Network Monitoring System, Real-time Perception of Public Opinion Posture

The implementation of the real-name system on the internet has been in effect for six years, starting in 2017. In the context of the widespread use of AI technology, the comprehensive promotion of the real-name system on the internet represents a crucial step towards establishing a robust network monitoring system. For instance, users are now required to clearly indicate whether the content they post is authored by themselves or generated by ChatGPT. This measure places the responsibility for the content squarely on the shoulders of the information publisher, making them legally accountable. Consequently, governments, media organizations, and social media platforms must enhance their monitoring and screening systems, employing data analytics and AI technologies to identify and monitor false information, misleading content, and harmful material more effectively.

In the era of AI, it is equally imperative to strengthen international cooperation. Disinformation and misleading content often transcend national boundaries, necessitating collaborative efforts by the international community to exchange experiences, share best practices, and establish common standards and guidelines. Such initiatives are vital for enhancing the quality of global online regulation and information dissemination.

5 Conclusion

With the advancement of science and technology, society has entered the era of AI, and revealing a new facet of cultural communication. Whether we consider innovations in cultural creation, shifts in communication modes, or the removal of barriers to understanding cultural works, it becomes evident that AI holds vast potential. The widespread adoption of ChatGPT in cultural communication enriches the depth of culture, fosters the blending of diverse cultures, and promises an unprecedented era of cultural prosperity.

However, the AI era also ushers in a series of challenges and dilemmas. These encompass the absence of gatekeeper and regulatory roles, issues concerning authenticity and uncertainty, potential cultural conflicts, the emergence of information cocoons, impediments to the full dissemination of culture, and the specter of group polarization. To address these challenges effectively, we must bolster AI governance, establish a robust legal and regulatory framework, and introduce gatekeeper roles to ensure the quality and credibility of cultural communication. Additionally, actively decoding underlying algorithmic technology, fortifying network monitoring systems, and real-time monitoring of public opinion dynamics are pivotal endeavors that will equip us to navigate the challenges posed by the AI era in cultural communication.

In summary, AI technology has profoundly impacted cultural communication. An open-minded approach is essential as we explore innovative strategies to ensure the continued flourishing of cultural communication in the age of AI. And we need to safeguard cultural diversity and quality, allowing AI to become a potent ally in the realm of cultural communication.

References

1. Hu, N.N. (2023) With Over 1 Million Registered Users in Five Days, ChatGPT Makes Google and Baidu Sit Up and Take Notice, *China Entrepreneur*.
2. Chen C.X., Wang Z.H. (2023) Characteristics, Application and Response Strategies of ChatGPT under Cognitive Perspective, *Journal of Political Science and Engineering*.
3. Kuang W.B., Wang T.J. (2023) Research on the Communication Characteristics of ChatGPT, a New Generation of AI, *Journal of Chongqing University of Technology*.
4. Wang W.G. (2023) General AI in Intercultural Communication: Changes, Opportunities and Challenges, *Foreign Communication*.
5. Brewster, J., Arvanitis, L., Sadeghi, M. (2023) The Next Great Misinformation Super-spreader: How ChatGPT Could Spread Toxic Misinformation At Unprecedented Scale, <https://www.newsguardtech.com/misinformation-monitor/jan-2023/>.

6. Chen C.X, Li H., Wang Z.H., Jiang, W.B. (2023) A New Sharp Weapon of Cognitive Domain Combat - ChatGPT Cognitive Profiling and Countermeasures, *Military Digest*.
7. Chen C.X, Wang Z.H. (2023) Characteristics, Application, and Response Strategies of ChatGPT under the Cognitive Perspective, *Journal of Politics and Industry*.
8. European Parliament News, MEPs Ready to Negotiate First-ever rules for Safe and Transparent. AI, <https://www.europarl.europa.eu/news/en/press-room/20230609IPR96212/meps-ready-to-negotiate-first-ever-rules-for-safe-and-transparent-ai>.
9. Li Z., Yi H.Y. (2023) The Logic, Risk and Response of ChatGPT's Intervention in the Governance of Ideological Security, *Journal of Reading River*.

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