

Research on Cross-cultural Contact Path from the Perspective of AI Algorithm

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Abstract: The deep integration of AI system and cross-cultural contact is an urgent need to build a global AI ethical governance system. Based on the research of AI system and cross-cultural contact theory, this paper discusses the contact path of cross-cultural and cross language communication in international exchanges, and discusses that in the era of globalization, value guidance and ethical norms should be implemented for the development of AI. By analyzing the shortcomings of existing AI algorithms, it is suggested to build a multi-channel cross-cultural contact path based on AI system. In this way, the multiple boundaries of culture can be eliminated, so that various subcultures reflecting different ideologies and values can coexist and be compatible with each other in the AI system. From the perspective of AI governance mechanism, this paper believes that the most important thing is to form a basic value consensus. The core content is how to provide relevant guidance for the development of AI from the value principles of inclusiveness, sharing, prudence, and responsibility and the broad sense of cross-cultural communication, so as to achieve the overall optimal development of AI systems.

1. Introduction

As an important driving force for a new round of scientific and technological revolution and industrial transformation, artificial intelligence is having a significant and far-reaching impact on economic development, social progress, international political and economic pattern and other aspects. In 2020, the AI industry will maintain a steady growth. According to IDC's estimation, the global AI industry scale will be 156.5 billion US dollars, with a year-on-year growth of 12%; According to the calculation of China Academy of Information and Communication, China's industrial scale reached about 43.4 billion US dollars (303.1 billion yuan), up 15% year on year.

Alan Turing's definition of AI is as follows: if there is a machine behind the curtain and someone is interacting with it (no matter what way, such as audio or typing), and if the person thinks he is interacting with another person, then the machine is AI. This is a very unique way to define AI. It does not directly target the concept of intelligence, but focuses on human like behavior. From the perspective of humanoid behavior, AI has two aspects. On the one hand, machines are intelligent and can communicate with humans, but they have no movement function [1]. On the other hand, it involves physical interaction with humanoid motion ability, which involves the robot field. The cross-cultural research based on AI system should be based on AI robot culture and cultural robotics, and study the similarities and differences, interactions, influences and other phenomena of robot culture. Its purpose is to better explain and solve the differences between robot cultures and cross-cultural problems in human-computer interaction [2]. In the encounter, dialogue and comprehensive learning of robot culture, we will find consensus and answers to the current and future development problems of robots, so as to better cope with the possible era of human-computer cooperation. In short, this requires us to take a cross-cultural perspective when explaining and solving robot related phenomena and problems.

2. Literature reviews

In June 2019, the Group of Twenty (G20) put forward the "G20 Artificial Intelligence Principle", which emphasized the importance of people orientation and the development of credible artificial

intelligence. This principle has also been widely recognized by the international community [3]. The EU and the United States also put enhancing user trust and developing credible AI at the core of their AI ethics and governance. In the future, translating abstract AI principles into concrete practices and implementing them into technologies, products and applications will be an inevitable choice to respond to social concerns, solve outstanding conflicts and prevent security risks, an important issue related to the long-term development of AI, and an urgent task that the industry needs to accelerate. It can be seen that the ethical governance of AI has reached a general consensus among countries around the world.

From the Web of Science database (hereinafter referred to as WOS database) from 2013 to 2022, both documents with the theme of "artificial intelligence ethics" and documents with the theme of "robot ethics" show a significant growth trend. In particular, in the past decade, there has been a blowout growth in relevant literature from 2013 to 2022 (See Figure 1). Such a rapid growth trend shows that more and more scholars are aware of the important significance and positive role of AI ethics research for social development. Exploring the knowledge and information of AI ethics research is conducive to the healthy development of AI industry and human society.

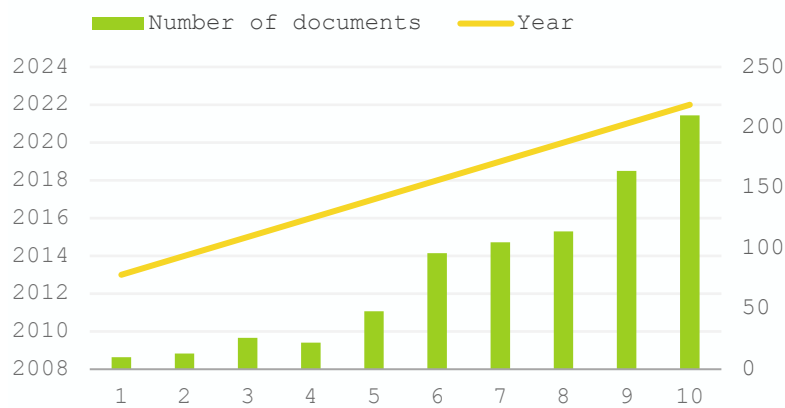


Figure 1: Time distribution of literature on artificial intelligence ethics

The debate on the moral judgment of artificial intelligence in the academic circle needs to distinguish two problems: one is the moral evaluation of artificial intelligence itself; Second, the evaluation of the good and evil consequences of AI R&D and application. The key problem of moral judgment on artificial intelligence has not been solved, that is, the problem of evaluating the good and evil of artificial intelligence itself has not been distinguished from the problem of evaluating the good and evil resulting from the development and application of artificial intelligence. The key to solving the latter problem lies in human beings themselves. However, to solve the former problem, we should not judge it based on the existing ethical framework, but should critically reflect on the traditional ethics of science and technology. Zeng Yi, a researcher from the Institute of Artificial Intelligence International Governance of Tsinghua University, believes that international AI research and AI ethics and governance groups must carefully consider how their activities support global cooperation, or how to promote understanding of social views and needs in different regions. Extensive cross-cultural research cooperation and exchange, conferences held in different regions, and multilingual journals are helpful to remove barriers to cooperation and understanding of different views and common goals. Nowadays, the political trend in the world is more and more biased towards isolationism. It is particularly important for researchers to cross the national and cultural gap and strive to achieve beneficial AI on a global scale.

3. Findings

3.1 The importance of cross-cultural contact

The research on the cross - cultural contact path based on AI system is of great academic and practical significance. For example, on the level of understanding human nature and ethics, because AI is a copy or mirror of human beings, and also a product and participant of human culture, the study of intercultural contact paths can help us to reflect on different human self and interpersonal cultures. In the discussion on the ethical level of artificial intelligence, cross-cultural artificial intelligence ethics can show the multi-level nature of human-computer ethics: on the one hand, it can avoid the absolutization of pure theoretical research and add a cross-cultural footnote to it; On the other hand, it can provide guidance for robot ethics embedding in different cultures in reality. In the specific field of practical technology design and scenario application, such as enabling AI applications from a cross-cultural perspective, communication costs and practical losses caused by cultural differences in AI can be avoided. In dealing with the challenges of the era of artificial intelligence, countries can also try to explore solutions or new ideas for robot and artificial intelligence problems in the essence of different cultures.

3.2 Global AI ethical governance calls for cross-cultural mutual trust

Artificial intelligence ethics, governance and sustainable development will be the sustainable and important issues in the global science, technology and social fields.[4] Due to the huge differences in history, culture and religious beliefs, it is difficult for countries to reach an agreement on the ethical risks of AI affecting human beings in a short time. Cultural differences do exist, which is also providing opportunities for mutual learning, discussion and reference. Building cross-cultural mutual trust is the cornerstone of global harmonious development. Achieving global benefits of AI requires international cooperation in many related fields of AI ethical standards and governance. To achieve this goal, there are also obstacles such as the lack of trust between cultures and the practical challenges of cross regional cooperation[5]. To explore the obstacles faced by Europe, North America and East Asia in the process of cooperation, so as to support cross-cultural cooperation based on artificial intelligence ethics and governance, there are considerable prospects and reasons to follow.

3.3 Important values of cross-cultural cooperation

Cross cultural cooperation is essential for achieving relevant ethical and governance initiatives. "Cross cultural cooperation" refers to the cooperation of groups from different cultural backgrounds or countries to ensure that the development, application and governance of AI technology can benefit society [6]. Specific examples of transnational cultural cooperation include (but are not limited to): AI researchers from all countries cooperate to complete projects and develop AI systems in a safe and reliable way; Establish various communication channels to ensure that international discussions focusing on the ethical issues of artificial intelligence can equally draw on diverse international perspectives; Invite stakeholders from all countries to participate in the formulation of codes of practice, standards and regulations. Achieving the greatest benefit of AI to human beings in the global society depends on the deep cooperation across fields, disciplines, countries and cultures. [7]Cross cultural research cooperation and exchange can help to remove barriers to cooperation and enhance understanding and trust of different perspectives and common goals.

3.4 Artificial intelligence algorithm has potential security risks

In recent years, AI has also exposed some potential risks, mainly in the following aspects: application risks caused by algorithm security. [8]The AI technology with deep learning as its core is fragile and vulnerable to attack, which makes the reliability of the AI system difficult to obtain sufficient trust. For example, Uber's autonomous vehicle fails to identify pedestrians on the road in time, resulting in their death; According to the US Fortune magazine, an AI company successfully cracked face recognition systems in many countries by using 3D masks and composite photos to

carry out deception attacks [9]. Black box model results in opaque algorithm. Deep learning has high complexity and uncertainty, which is easy to cause uncertainty risk. Because people cannot intuitively understand the reasons behind the decision, the further integration of AI and traditional industries is hindered. For example, a school in Texas in the United States used an artificial intelligence system to judge the teaching level of teachers. Because the system could not explain the basis for the judgment of controversial decisions, it was strongly protested by the teachers of the school, which eventually led to the system offline [10].

4. Conclusions

4.1 Seek common ground while reserving differences to establish cooperation channels

Cross cultural cooperation should be promoted, but it does not mean that all parties involved must follow the same set of AI norms, standards or regulations, nor does it mean that international agreements need to be concluded in all aspects. The focus of cross-cultural cooperation research is to clarify the issues that need to be regulated by international norms or agreements, or determine the situations that need to highlight cultural differences. In order to build stronger cross-cultural trust, it is necessary to correctly understand, eliminate misunderstanding and enhance mutual understanding between different cultures and countries. AI ethics and governance are related to the direction and future of global AI development and innovation. Taking AI as an enabling technology to promote human, social, ecological and global sustainable development is the common vision of human for AI technology innovation. In this process, AI ethics and governance from various countries, intergovernmental organizations and international organizations actively promote the formulation of relevant principles, policies, standards, laws, and the implementation of technology and society through academic institutions, industries, governments and other ways.

4.2 Cross cultural contact path based on AI system

With the acceleration of the process of global integration, cross-cultural communication is also facing new problems and challenges.

First, cultural cognitive set. Because the people of different nations or countries under different cultural backgrounds, based on their own inherent ideology, cultural background, cognitive environment, etc., have formed their own inherent cognition and views on other countries' civilization and culture, affecting international cultural exchanges and mutual learning. Second, cultural barriers. Influenced by the specific natural environment of different countries and nations, as well as the unique political system, legal system, religious belief, ideology, customs and cultural traditions, people sometimes judge other cultural circles with their own culture as the standard and reference, causing resistance to understanding and identification. Third, the way of cultural communication is solidified. At present, cultural products still need to further meet the needs of cultural information to enhance international discourse power. Fourth, the cultural exchange and cooperation mechanism needs to be improved. At present, from the domestic perspective, the cultural exchange and cooperation mechanism of various regions needs to be improved, and the encouraging policies and measures for folk cultural exchanges need to be strengthened; From the perspective of foreign countries, the cultural basis of different countries is quite different, which affects the development of cross-cultural exchanges and cooperation to a certain extent.

4.3 Build governance system around artificial intelligence algorithm

From the strong AI theory proposed by Turing, AI has gradually moved from the weak AI direction to the strong AI direction of deep learning and complex tasks after nearly 30 years of research. Compared with before, AI has developed to a quite amazing level in terms of data, algorithms and computing power. The combination of the ability to process big data, computing power, and algorithm improvement brought by deep learning can just break the bottleneck. At present, AI has carried out in-depth integration and all-round services in the field of financial technology. The next breakthrough in technology should be in algorithm. At present, there are two

different learning systems, one is human intelligence, the other is intelligence in the universe and biological evolution, which are the next wind tunnel for the development of artificial intelligence in the future. Adhering to the concept of harmonious development, AI algorithms should always be the traditional 'algorithm interpretable' and 'platform governance' models in the past. At present, "algorithm can be explained" is often considered as an important means to break through the black box obstacle of artificial intelligence algorithms - to make activities based on artificial intelligence systems subject to supervision by appealing to the public individuals to require the AI controller to explain the power of the algorithm decision-making process, or to make relevant subjects assume the obligation to explain whether the algorithm operation meets the standards of legality, rationality, etc.

4.4 Derivative relationship between AI systematic governance system and cross-cultural contact

A systematic AI governance system should reflect the full use of existing systems. Culture is the power and source of technology production and development. Informatization and digitalization are the prerequisites for constructing the network world. Intercultural communication exists in the form of invisible data encoding and decoding in the digital economy era. Intercultural communication does not only exist in the 'materiality'. The real world of form also exists in the virtual world that cannot be directly observed. Whether it is simulation, hyperreality or virtual reality, they are all derivatives of the combination of culture and technology. Cross culture can give AI system a depth of development. Building a multi-channel cross cultural contact path based on AI system can eliminate the multiple boundaries of culture, and make the original characteristics of various subcultures tend to blur. After the opening of the cross-cultural contact path, you can use the open. The attitude absorbs multiple cultures, so that various subcultures reflecting different ideologies and values can completely coexist, be compatible with each other, and penetrate each other in AI. The path of cross-cultural contact can dispel cultural authority. The multi-channel cross-cultural contact path can absorb the extensive participation of the public, and realize the transcendence of modernity and the pursuit of post-modernism with the attitude of creation and construction.

4.5 Building the core subject of AI governance mechanism

From the perspective of AI governance mechanism, the first thing to do is to form a basic value consensus. In terms of the various guidelines issued around the world, the core content is how to provide relevant guidance for the development of artificial intelligence from the value principles of inclusiveness, sharing, prudence and responsibility and the broad sense of cross-cultural communication. In terms of promoting the division of labor and cooperation among governance entities, we can divide them into four categories: government departments, AI technology providers, AI technology users, the public and third-party organizations. First, government departments should empower AI technology providers (including R&D organizations, platform organizations, universities, etc.) to a certain extent; At the same time, effective supervision is maintained, as is the case with technology applications. Second, AI technology providers and organizations should also actively interact with government departments, fully empower our government departments, and improve the quality and efficiency of public services. Third, AI technology users should cooperate and interact with technology providers, and accept the supervision of government departments. In this way, on the one hand, it is effective supervision, and on the other hand, it is further empowerment and optimization. In addition, the public, third-party organizations and other social subjects actively participate in providing timely and effective supervision over the whole elements, objects and process. (See Figure 2)

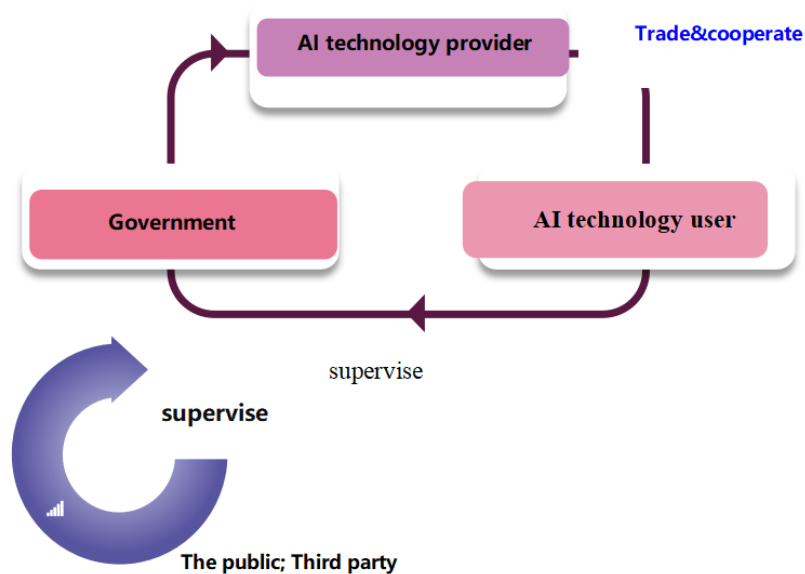


Figure 2 Cooperation Diagram of Governance Entities

AI is a way of thinking. We can consider it from two aspects. First, AI is an interdisciplinary subject, which requires computer, mathematics, physics and some statistical knowledge. Only by mastering these basic knowledge can we further learn higher level AI capabilities. Second, AI is closely related to human intelligence. How does our brain produce intelligence? Our neuroscience, brain science, and these basic knowledge have a strong relationship with AI.

In combination with the characteristics of AI system and the needs of cross-cultural communication, we can consider the following four aspects for cross-cultural contact path research. First, promote the development trend of cross cultural co prosperity based on AI system. We will continue to promote the development trend of common prosperity of civilizations and common prosperity of cultures that are harmonious but different and diversified, minimize the impact of cognitive stereotypes and barriers on cultural communication and exchange among countries, and avoid cross-cultural conflicts caused by differences in cultural values, cognitive evaluation standards, external communication strategies, etc. With the globalization of cross-cultural communication as the main purpose, formulate a cross-cultural contact path based on the development of AI ethics. We should not only maintain the distinctive characteristics and innovative heritage of our own culture, but also recognize the harmonious coexistence and pluralistic coexistence of other cultures. We should promote cultural exchanges and cooperation among countries, develop in an open and inclusive manner, and open and inclusive in development, so that the achievements of modern civilization can benefit people of all countries more.

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