Development, Trends, and Implications of Artificial Intelligence in Philosophy and Social Sciences Research: Postprint

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Abstract

[Purpose/Significance] The current digital wave is sweeping across the globe, and artificial intelligence, as the most disruptive and transformative force in the technological domain, is integrating into human society in an all-round manner at an unprecedentedly rapid pace. Philosophy and social sciences are also irresistibly entering a new era of deep integration with artificial intelligence. Looking ahead, the application trend of artificial intelligence in philosophy and social sciences research will become increasingly prominent. [Method/Process] On the basis of comprehensively reviewing the development history, theoretical framework, and implementation mechanisms of artificial intelligence in philosophy and social sciences research, this study selects the "Economic Big Data and Policy Evaluation Laboratory" of the Institute of Quantitative and Technical Economics, Chinese Academy of Social Sciences as a typical case, conducts an in-depth analysis of the application trends and development prospects of artificial intelligence in this field, and proposes targeted policy recommendations. [Results/Conclusion] This paper proposes the integration prospects and application modes of artificial intelligence in philosophy and social sciences research, aiming to provide practical and feasible references for promoting the deep integration of artificial intelligence and philosophy and social sciences.

Full Text

Preamble

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Abstract:
[Purpose/Significance] The current digital wave is sweeping the globe, and artificial intelligence, as the most disruptive and transformative force in the field of technology, is integrating into human society at an unprecedented pace. Philosophy and social sciences are also entering an unstoppable new era of deep integration with artificial intelligence. Looking ahead, the application trend of artificial intelligence in philosophy and social sciences research will become increasingly significant. [Method/Process] On the basis of comprehensively reviewing the development process, theoretical framework, and implementation mechanism of artificial intelligence in philosophy and social sciences research, this article selects the "Economic Big Data and Policy Evaluation Laboratory" of the Institute of Quantitative Economics & Technical Economics of the Chinese Academy of Social Sciences as a typical case, deeply analyzes the application trends and development prospects of artificial intelligence in this field, and proposes targeted policy recommendations. [Result/Conclusion] This study proposes the integration prospects and application methods of artificial intelligence in philosophy and social sciences research, aiming to provide practical reference and inspiration for promoting the deep integration of artificial intelligence and philosophy and social sciences.

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1. The Development History of Artificial Intelligence in Philosophy and Social Sciences Research

The application of artificial intelligence in philosophy and social sciences research can be traced back to the mid-20th century. With the initial development of computer technology, scholars began attempting to use computer programs for social science research. For example, early expert systems were employed to simulate human expert decision-making processes, providing solutions to complex social problems [1]. However, due to technological limitations, early artificial intelligence applications primarily focused on data statistics and simple model construction, with limited substantive impact on philosophy and social sciences research, though they laid the foundation for subsequent development [2].

Entering the 21st century, the rise of big data and machine learning technologies has ushered in new opportunities for artificial intelligence applications in philosophy and social sciences research. Big data technology enables researchers to access and process unprecedented volumes of data, while machine learning provides powerful data analysis tools for extracting valuable information and patterns. During this period, artificial intelligence applications in philosophy

and social sciences research gradually deepened, covering increasingly broad fields. For instance, in political science, data mining techniques have been used to analyze voter behavior and election outcomes, while in economics, machine learning algorithms have been employed to predict market trends and economic indicators [3].

In recent years, breakthroughs in deep learning and natural language processing technologies have brought new opportunities for artificial intelligence applications in philosophy and social sciences research. Deep learning enables computers to automatically learn complex patterns and features from large amounts of data, thereby improving model accuracy and generalization capabilities. Natural language processing allows computers to understand and generate human language, providing powerful text analysis tools for social science research [4]. The emergence of generative artificial intelligence, represented by ChatGPT, has further advanced artificial intelligence applications in philosophy and social sciences research. Generative artificial intelligence can not only produce high-quality text, images, and video content but also simulate human thinking and behavior, offering entirely new perspectives and tools for philosophy and social sciences research. Through generative artificial intelligence, researchers can more efficiently collect and process data, build more complex models, and even simulate human social behavior and decision-making processes [5-7].

2.1.1 Philosophical Examination of Artificial Intelligence Technology in Philosophy and Social Sciences Research

From an epistemological perspective, artificial intelligence brings innovation and expansion to cognitive approaches in philosophy and social sciences research. With its powerful data processing capabilities and algorithmic models, artificial intelligence serves as a powerful extension of human cognition. However, we must also clearly recognize the limitations of artificial intelligence cognition. Its cognitive process is essentially data-driven and algorithm-based, and issues such as data bias and algorithmic prejudice may lead to distorted research conclusions. Therefore, when using artificial intelligence tools, philosophy and social sciences researchers must maintain critical thinking, combining artificial intelligence-generated results with rich human experience and robust theoretical frameworks to avoid falling into the trap of "technological determinism" and ensure the scientific rigor and reliability of their research.

From an axiological perspective, the application of artificial intelligence in philosophy and social sciences research highlights the complex relationship between technological ethics and human agency. On the one hand, artificial intelligence brings efficiency improvements and innovation opportunities to research, but it also raises a series of ethical controversies, such as data privacy and algorithmic transparency. This requires researchers to strictly follow ethical guidelines, ensuring legal and compliant data sources and fair and transparent algorithmic design, integrating technological ethics throughout the entire research process. On the other hand, the widespread application of artificial intelligence may chal-

lenge human agency. Over-reliance on artificial intelligence-generated content may cause researchers to lose originality and deep thinking abilities, becoming passive recipients of technology. The core of philosophy and social sciences research lies in profound insights and value judgments on human society, culture, and ethics. We must adhere to human-centered principles, viewing artificial intelligence as an auxiliary tool rather than a "panacea" that replaces human wisdom.

From an ontological dimension, the integration of artificial intelligence and philosophy and social sciences research heralds the arrival of a new human-machine symbiosis form and will have far-reaching impacts on social structures. Artificial intelligence is no longer merely a tool but has become an important participant in the research process. This human-machine collaborative relationship requires us to rethink the essential relationship between "human" and "technology," exploring their complementarity and synergy in knowledge production and value creation. Meanwhile, the popularization of artificial intelligence may reshape the social foundation of philosophy and social sciences research. Data-driven research paradigms may change traditional academic evaluation systems, interdisciplinary collaboration will become more frequent, and new research fields and directions will emerge. However, issues such as technological monopolies and the digital divide may also follow, exacerbating social inequality. Therefore, researchers must pay close attention to the potential impacts of technology on social structures, actively promote the construction of an inclusive and fair human-machine symbiosis environment, ensure that technological development benefits all members of society, and promote harmony and progress in human society.

2.1.2 The Evolution of Research Paradigms in Philosophy and Social Sciences

The deep integration of artificial intelligence and philosophy and social sciences research has greatly expanded research boundaries and brought new perspectives. At the data level, artificial intelligence, with its powerful data processing capabilities, integrates massive amounts of multi-channel, multi-format data, such as social media, government, and corporate data, and can automatically clean and preprocess data to improve data quality, laying a solid foundation for research. Simultaneously, it builds interdisciplinary technology platforms that enable multi-modal data fusion, such as combining text and images to study cultural phenomena, and can construct simulation models for prediction, such as simulating economic system operations to assist in policy formulation. Furthermore, artificial intelligence diversifies research application scenarios, aiding in urban management and public safety governance in social governance, and promoting digital restoration and display of cultural relics in cultural inheritance and innovation, providing rich practical soil for philosophy and social sciences research [8-9].

Artificial intelligence has prompted profound transformations in philosophy and

social sciences research paradigms. Research perspectives have shifted from single disciplines to multidisciplinary and interdisciplinary approaches, requiring the integration of knowledge from philosophy, sociology, and other disciplines, such as in research on artificial intelligence ethics. It also requires a global perspective, integrating global data to study global issues such as the impact of climate change on socio-economics. The research subject has shifted from researcher-led to human-machine collaboration, with artificial intelligence systems participating in the research process and working with researchers to complete tasks. The role of researchers has transformed into designers, managers, and interpreters of artificial intelligence systems. Research objectives have also moved from descriptive studies to predictive and interventional studies, using artificial intelligence for predictive analysis, such as forecasting socio-economic development trends, and proposing policy recommendations based on predictive results to guide social development [10-11].

Artificial intelligence brings many innovative methods to philosophy and social sciences research. In terms of data-driven approaches, it deepens quantitative analysis, such as using algorithms to analyze financial market data to predict stock trends, and can also quantify qualitative data, such as using natural language processing technology to analyze news reports for public opinion quantification research. In experimental methods, artificial intelligence helps build virtual experimental environments to simulate social phenomena, such as studying information dissemination patterns, and can design scientific experimental schemes based on big data, such as screening medical data samples for drug efficacy research. Visualization research methods have also been innovated, as artificial intelligence can present complex data and models through intuitive charts and images, such as displaying regional development conditions in geographic information systems or showing variable relationships through visual economic models, helping researchers better understand and interpret research content [12-13].

2.2 Implementation Mechanisms

The theoretical system of philosophy and social sciences is undergoing transformation opportunities empowered by artificial intelligence. On the one hand, artificial intelligence promotes the integration and innovation of theories across various disciplines. For example, sociology expands social network analysis theory with big data and machine learning, while economics enriches traditional theories by using reinforcement learning to simulate complex market environments. On the other hand, interdisciplinary theoretical construction becomes necessary. For instance, studying the ethical decision-making of autonomous vehicles requires integrating philosophical ethics, computer algorithm ethics, and sociological public acceptance theories. Additionally, artificial intelligence provides new means for theoretical verification and correction. Through big data simulation and real-time monitoring, theoretical deviations can be discovered and adjusted in a timely manner, enhancing the explanatory power and predic-

tive accuracy of theories [14].

Technology and data are the core supports for applying artificial intelligence in philosophy and social sciences research. In terms of technology application, natural language processing assists in text processing and analysis, machine learning provides support for prediction and decision-making, and knowledge graphs enable structured association of knowledge. In data acquisition, multi-source data is automatically obtained through artificial intelligence technology, forming high-quality datasets after cleaning, preprocessing, and fusion, while data sharing platforms promote resource openness [6]. However, technology application and data use also face security challenges, requiring measures such as data privacy protection, algorithm security assessment, and system security protection to ensure the safety and reliability of research data and systems.

Artificial intelligence has broad application scenarios in philosophy and social sciences research. In the policy domain, it can be used for policy simulation, prediction, and real-time effect monitoring, providing scientific basis for policy formulation and adjustment. In social governance and public services, it can achieve social risk warning and public service optimization, such as epidemic prevention and control warnings and traffic congestion alleviation. In academic research and education, it can promote research method innovation and educational teaching reform, such as discovering new perspectives through historical document mining and providing personalized learning solutions through intelligent teaching systems, fully demonstrating the practical value of artificial intelligence in the field of philosophy and social sciences [15].

3.1 Strengthening Interdisciplinary Integration Trends

Artificial intelligence is becoming a catalyst for deep integration between philosophy and social sciences and other disciplines, breaking traditional disciplinary barriers and giving rise to emerging interdisciplinary fields such as "computational social science" and "complex systems" [16]. When studying complex social phenomena, such as climate change-induced migration waves, environmental science, economics, political science, and artificial intelligence technology work together, using multi-modal data modeling to deeply analyze the internal relationships between population flow and social structural changes. Simultaneously, artificial intelligence has revolutionized interdisciplinary research paradigms. Traditional methods relying on literature review and qualitative analysis are being replaced by real-time dynamic analysis based on machine learning and natural language processing [6]. For example, in social media public opinion research, artificial intelligence tools can capture multi-language texts and combine psychological models to gain insights into the relationship between public sentiment and social events. Furthermore, artificial intelligence has expanded global academic cooperation networks, promoting international collaboration from single-discipline dominance to multi-disciplinary coordination. For instance, the EU' s "Human Brain Project" brings together experts from multiple fields to explore the nature of consciousness and artificial intelli-

gence ethics issues, providing a new paradigm for interdisciplinary collaboration in philosophy and social sciences research.

3.2 Popularization of Intelligent Research Tools

Intelligent research tools are becoming increasingly popular in philosophy and social sciences research, greatly enhancing research efficiency and quality. Generative artificial intelligence-supported literature review methods can automatically capture, classify, and annotate massive amounts of literature and generate visual knowledge graphs. In historical research, these tools can quickly compare ancient texts to reveal historical evolution patterns. The interactive capabilities of large language models with multi-modal data enable research to go beyond text and integrate images, audio, and other data. In cultural research, artificial intelligence can analyze visual symbols and dialogue texts in film and television works to uncover the ideological connotations of cultural products [17]. Moreover, artificial intelligence technology runs through the entire research process, from data collection and cleaning to model construction and result verification, all achieving automated processing. In economics research, agent-driven simulation systems can adjust parameters in real-time to predict policy effects, providing scientific basis for decision-making.

3.3 Strengthening Research Ethics and Norms

With the widespread application of artificial intelligence in philosophy and social sciences research, research ethics and norms face new challenges and urgently need to be strengthened and improved. The academic ethics framework needs to be reconstructed to address integrity issues arising from artificial intelligence-generated content entering the research process. Currently, many academic institutions in various countries require disclosure of the extent of artificial intelligence participation in research outcomes and have developed detection tools to verify data authenticity. Some journals have also introduced an "artificial intelligence participation disclosure system" to regulate academic behavior. Ethics review mechanisms are also being continuously improved. In response to the ethical risks of artificial intelligence technology, the academic community has established multi-stakeholder collaborative governance networks. For example, the Chinese Academy of Social Sciences and other institutions have jointly established an ethics review committee to conduct traceability reviews of artificial intelligence-generated results [18]. Additionally, the scientific research evaluation system needs adaptive innovation to accommodate the new ecology of artificial intelligence-empowered research. It is necessary to reconstruct evaluation standards for "originality," introduce a "human-artificial intelligence collaborative contribution" model to quantify academic value, and incorporate records of artificial intelligence tool usage into the evaluation scope.

4. Development Prospects of Artificial Intelligence in Philosophy and Social Sciences Research: A Case Study of the Economic Big Data and Policy Evaluation Laboratory

4.1 Development Prospects

Artificial intelligence is leading a profound transformation in philosophy and social sciences research paradigms. Traditional research often relied on experience induction from limited samples, but now, with the powerful data processing capabilities of artificial intelligence, data-driven approaches have become the new research model. For example, in economics, while previous economic cycle research was based on local surveys, it is now possible to collect massive amounts of global enterprise and financial market data and use machine learning to discover new patterns, laying the foundation for theoretical innovation. Simultaneously, research has moved from static analysis to dynamic simulation. For instance, in urban development research, by inputting multi-dimensional data such as population, land, and transportation into artificial intelligence models, researchers can simulate urban evolution under different policies, helping to understand dynamic development mechanisms and optimize urban planning [11, 19]. Furthermore, research perspectives have expanded from single-disciplinary to interdisciplinary comprehensive perspectives. Taking social equity issues as an example, integrating sociological and political science theories with data analysis from computer science and cost-benefit analysis from economics, artificial intelligence integrates multi-disciplinary methods to provide more comprehensive solutions for complex social problems.

Artificial intelligence brings dual improvements in efficiency and quality to philosophy and social sciences research. In terms of data collection and processing, automation can be achieved, such as using web crawlers to capture news and social media data, and then using natural language processing technology to clean, annotate, and analyze texts, greatly improving efficiency and quality. In model construction and verification, models built with artificial intelligence algorithms are more accurate. For example, psychological research can use machine learning to construct psychological models based on large-scale data to accurately predict individual psychology and behavior, and can optimize models through cross-validation and other methods to enhance reliability. In knowledge mining and discovery, deep learning technology can mine hidden knowledge from massive data. For instance, historical research can use it to mine potential associations between events and figures in historical documents, discover new perspectives and patterns, and reveal the dissemination paths and evolution patterns of cultural phenomena.

To adapt to the application of artificial intelligence in philosophy and social sciences research, cultivating interdisciplinary talent is crucial. In terms of curriculum design and teaching content, universities and research institutions need to innovate. Philosophy and social sciences-related majors should add artificial intelligence courses such as machine learning and data mining, while computer

science majors should strengthen the teaching of philosophy and social sciences knowledge, such as offering courses like "Artificial Intelligence and Social Research" to enable students to master interdisciplinary methods. In practical teaching and project cooperation, through cooperation with enterprises and research institutions on projects, students can participate in actual research, such as participating in social public opinion analysis projects, applying theory, statistics, and artificial intelligence technology to practice, while encouraging students to participate in interdisciplinary competitions to enhance innovation and teamwork abilities. In faculty construction and academic exchange, universities should introduce interdisciplinary talent or encourage teachers to engage in interdisciplinary learning, strengthen academic exchanges, and hold events such as the "Forum on the Frontiers of Artificial Intelligence and Philosophy and Social Sciences" to promote intellectual collisions and knowledge sharing among different disciplines.

4.2.1 Laboratory Construction: Leading a New Trend in Philosophy and Social Sciences

In the digital wave of the 21st century, philosophy and social sciences research is undergoing unprecedented profound transformation. Facing major national needs and complex and changing social practices, the Institute of Quantitative & Technical Economics of the Chinese Academy of Social Sciences (hereinafter referred to as "IQTE") has driven innovation to build the "Economic Big Data and Policy Evaluation Laboratory." This laboratory not only bears the heavy responsibility of promoting the integration of natural sciences and social sciences but also provides solid data support for the research of Xi Jinping' s economic thought, demonstrating the academic reputation and influence of a national think tank.

The laboratory relies on IQTE' s characteristics of "interdisciplinary, strong methodology, and emphasis on ideas," combined with the Chinese Academy of Social Sciences' "Peak Climbing Strategy" advantageous discipline "Quantitative Economics" and emerging interdisciplinary discipline "Digital Economy," as well as IQTE' s key disciplines "Technical Economics" and "Green and Low-Carbon Economics."It fully connects with various economic big data resources, uses modern quantitative economic methods and economic policy simulation advantages, and promotes the organic combination of artificial intelligence and economic and social development. The laboratory is committed to building a high-level shared scientific research platform, producing original academic achievements with important influence and think tank achievements with decision-making reference value, building an innovative team that gathers strategic talents and leading talents at the international level, becoming an important source and bridgehead for prospering Chinese academia, developing Chinese theory, and spreading Chinese thought, and creating a first-class laboratory based on IQTE, serving the Chinese Academy of Social Sciences, and radiating across the country.

4.2.2 Sub-Laboratory Architecture: Applying Disciplinary Tools to Focus on Key Issues

Regarding the organizational structure of the "Economic Big Data and Policy Evaluation Laboratory," the laboratory personnel mainly include a management committee, academic committee, laboratory director, laboratory researchers, and administrative management personnel, implementing a director responsibility system under the leadership of the management committee. The "Economic Big Data and Policy Evaluation Laboratory"has established five sub-laboratories: China Macroeconomic Monitoring, Forecasting and Policy Simulation; Global and National Economic Monitoring and Forecasting Analysis; China Regional Economic Monitoring Analysis and Policy Simulation; Economic Development Index Monitoring and Analysis; and Economic Big Data Sharing Platform. Each sub-laboratory fully absorbs talents with interdisciplinary backgrounds, focusing respectively on macroeconomic models, global and national economic operation monitoring and early warning, China's regional economic and social development and intelligent governance, special economic and social development indices, and text analysis big data. They comprehensively apply research methods such as intelligent simulation, multi-dimensional policy simulation, artificial intelligence, crawler technology, text mining, machine learning, and network analysis, fully reflecting the characteristics of interdisciplinary research and helping to promote the application of computer science in philosophy and social sciences research.

In addition, the laboratory has independently developed the "Social Science Intelligence" artificial intelligence large model, which has three characteristics and core competencies. First, deep integration of quantitative research and qualitative analysis. The "Social Science Intelligence" large model is positioned as a professional large model. On the one hand, based on fully absorbing the computational principles of international mainstream large models, it combines with more than 30 years of accumulated and developed platforms by IQTE, including the China Economic-Energy-Environment-Fiscal Policy Simulation Analysis System Platform, Global Trade Policy Simulation System Platform, China Macroeconomic Real-time Monitoring and Forecasting System Platform, Global Multi-regional Industrial Chain and Value Chain Analysis System Platform, and Journal Paper Analysis System Platform. It applies artificial intelligence large models to conduct in-depth qualitative analysis of the causes and mechanisms of the results calculated by the above models. On the other hand, when quantitative analysis questions are input into "Social Science Intelligence,"it directly calls the above system platforms for predictive analysis and simulation analysis. This deep integration of quantitative and qualitative analysis gives "Social Science Intelligence"outstanding quantitative analysis features and core competitiveness. Second, it has obvious resource advantages in the field of philosophy and social sciences. From the perspective of resource integration, the Chinese Academy of Social Sciences has numerous excellent philosophy and social sciences journals and well-known domestic publishers, which are undoubtedly valuable academic assets. By integrating these electronic resources, including massive journal ar-

ticles, research reports, and survey reports, "Social Science Intelligence" can be provided with rich and high-quality model training materials and knowledge bases. This not only helps to enhance the academic professionalism and generality of the large model but also ensures that its quality reaches a first-class domestic level in the field of generative artificial intelligence. Third, it has obvious platform advantages. As a national-level scientific research institution, the Chinese Academy of Social Sciences has strong comprehensive technical strength and R&D capabilities. This interdisciplinary comprehensive research capability gives it unique advantages in developing artificial intelligence large models with social science characteristics. Additionally, the national-level platform of the Chinese Academy of Social Sciences can attract high-end professional talents in artificial intelligence, providing strong intellectual support for the development of high-performance, high-quality artificial intelligence large models. Moreover, the Chinese Academy of Social Sciences has established close cooperative relationships with numerous domestic and foreign universities, enterprises, and research institutions. This extensive cooperation network enables it to share the latest research results and technical resources, accelerating the R&D process of artificial intelligence large models.

The laboratory researchers include economists or chief experts, economic analysts, data scientists, technical engineers, and research assistants. Economists, chief experts, and economic analysts mainly come from IQTE, the Macroeconomic Situation Quarterly Analysis Research Group, relevant institutes of the Chinese Academy of Social Sciences, or externally hired experts and scholars. Data scientists and technical engineers are mainly externally hired personnel, and research assistants mainly come from IQTE doctoral students, postdoctoral researchers, and visiting scholars. While promoting scientific research innovation, the laboratory also attaches great importance to research education. The laboratory provides researchers with rich academic resources and practical opportunities by holding academic lectures and seminars. In addition, during the construction process, the laboratory has conducted exchange and learning with the School of Economics of Xiamen University and the Digital Economy Laboratory and National Security Computing Laboratory of the University of International Business and Economics. In the process of participating in laboratory projects, researchers can not only access the most cutting-edge academic research results and technical means but also exercise their scientific research and innovation abilities in practice. This theoretical-practical integrated operation model not only enhances the comprehensive quality and competitiveness of researchers but also cultivates more outstanding talents for the field of philosophy and social sciences.

Looking ahead, the "Economic Big Data and Policy Evaluation Laboratory" will actively connect with various big data resources from government departments, industries, and enterprises, scientifically apply modern quantitative economics and artificial intelligence analysis methods, give full play to IQTE' s profound accumulation and outstanding advantages in economic models and policy evaluation, and strive to promote the organic combination of artificial intelligence

and economic and social development. At the same time, the laboratory will continue to focus on major national strategic needs and social hot issues, provide scientific basis and intellectual support for party and government decision-making, and contribute more wisdom and strength to China' s economic and social development.

5.1 Strengthen Policy Guidance and Support to Build an Institutional Framework for the Integrated Development of Artificial Intelligence and Philosophy and Social Sciences

In the era of deep integration between artificial intelligence and philosophy and social sciences, policy guidance and support are key forces driving innovation and development in this field. The government should play a leading role in formulating comprehensive and detailed special development plans that clarify the strategic positioning, development goals, and implementation paths of artificial intelligence in philosophy and social sciences research. The plans should cover multiple stages including basic research, application development, and achievement transformation to ensure the orderly advancement of work at each stage. At the same time, special funds should be established to provide stable financial support for interdisciplinary research projects, academic exchange activities, and talent cultivation plans, reducing financial pressure on researchers and stimulating their innovation vitality.

In addition, the government should encourage enterprises and research institutions to increase investment in artificial intelligence applications in philosophy and social sciences research through economic means such as tax incentives and financial subsidies. For example, tax reductions can be granted to enterprises engaged in related technology R&D and applications, and rewards can be given to teams that have achieved significant scientific research results, thereby forming a positive incentive mechanism to promote rapid development in this field. At the same time, a sound policy evaluation and adjustment mechanism should be established to regularly evaluate the effectiveness of policy implementation and timely adjust policy directions and support intensity based on evaluation results to ensure policy effectiveness and relevance.

In the policy implementation process, attention should also be paid to policy coordination and systematization. The integrated development of artificial intelligence and philosophy and social sciences involves multiple departments and fields, requiring strengthened communication and collaboration among government departments to form policy synergy. For example, science and technology departments can be responsible for technology R&D and achievement transformation, education departments can be responsible for talent cultivation and discipline construction, and cultural departments can be responsible for ethical norms and cultural inheritance. Through inter-departmental coordination, the healthy development of artificial intelligence in philosophy and social sciences research can be jointly promoted.

5.2 Establish Interdisciplinary Cooperation Mechanisms to Promote the Deep Integration of Artificial Intelligence and Philosophy and Social Sciences

Interdisciplinary cooperation is an important way to achieve breakthroughs in artificial intelligence applications in philosophy and social sciences research. To achieve this goal, effective interdisciplinary cooperation mechanisms need to be established to promote deep integration and exchange between different disciplines.

First, interdisciplinary cooperation platforms should be built to provide venues for researchers to communicate and cooperate. Platforms can include online forums, offline seminars, cooperative laboratories, and other forms, encouraging researchers to share research results, exchange research insights, and explore cooperation opportunities. Through platform construction, disciplinary barriers can be broken, knowledge circulation and sharing can be promoted, and strong support can be provided for interdisciplinary research.

Second, forming interdisciplinary research teams is the core of interdisciplinary cooperation. Teams should include experts from multiple disciplines such as artificial intelligence, philosophy, sociology, and economics to jointly carry out application projects of artificial intelligence in philosophy and social sciences research. Team members should establish close cooperative relationships, learn from each other, support each other, and jointly overcome research challenges. Through the formation of interdisciplinary teams, complementary advantages between different disciplines can be achieved, and the comprehensiveness and innovation of research can be improved.

In addition, cooperation among universities, research institutions, and enterprises should be encouraged. Universities and research institutions have rich scientific research resources and talent advantages, while enterprises have keen market insights and strong application development capabilities. Through industry-university-research cooperation, scientific research results from universities and research institutions can be transformed into practical applications, promoting the industrialization process of artificial intelligence in philosophy and social sciences research. At the same time, enterprises can also obtain the latest scientific research results and technical support through cooperation to enhance their competitiveness.

In the process of interdisciplinary cooperation, attention should also be paid to the cultivation of a cooperative culture. A cooperative culture emphasizes trust, respect, and inclusiveness among team members and encourages the collision and integration of different viewpoints. By cultivating a cooperative culture, an open, inclusive, and innovative cooperation atmosphere can be created, stimulating researchers' innovative enthusiasm and promoting the in-depth development of interdisciplinary cooperation.

5.3 Improve Ethics and Legal Norms to Ensure the Healthy Development of Artificial Intelligence in Philosophy and Social Sciences Research

With the widespread application of artificial intelligence in philosophy and social sciences research, ethical and legal issues have become increasingly prominent. To ensure the healthy development of artificial intelligence in philosophy and social sciences research, relevant ethics and legal norms must be improved.

In terms of ethical norms, ethical guidelines for artificial intelligence in philosophy and social sciences research should be formulated. The guidelines should clarify researchers' behavioral norms and moral responsibilities, and protect the rights and dignity of research subjects. For example, in research involving human participants, the right to informed consent and privacy of research subjects should be fully protected; when using artificial intelligence for data analysis, data bias and discrimination should be avoided to ensure the fairness and objectivity of analysis results. At the same time, an ethics review mechanism should be established to conduct ethics reviews of research projects to ensure that research activities comply with ethical guidelines.

In terms of legal norms, laws and regulations related to artificial intelligence should be improved. Laws and regulations should clarify the legal status and responsibility attribution of artificial intelligence in philosophy and social sciences research, providing legal protection for related research. For example, for research results generated by artificial intelligence, intellectual property ownership should be clarified; for damages caused by artificial intelligence technology, the responsible party and compensation mechanism should be clearly defined. At the same time, publicity and popularization of laws and regulations should be strengthened to improve researchers' legal awareness and compliance awareness.

In addition, the construction of supervision and evaluation mechanisms needs to be strengthened. Regulatory departments should regularly inspect and evaluate application projects of artificial intelligence in philosophy and social sciences research to ensure they comply with ethical and legal norms. For violations, punishment should be administered according to law and publicly exposed as a deterrent. Through the construction of supervision and evaluation mechanisms, effective constraints and incentive mechanisms can be formed to promote the healthy development of artificial intelligence in philosophy and social sciences research.

5.4 Strengthen Talent Cultivation and Education to Provide Intellectual Support for the Application of Artificial Intelligence in Philosophy and Social Sciences Research

Talent cultivation and education are the foundation for promoting the application of artificial intelligence in philosophy and social sciences research. To cultivate high-quality talents with interdisciplinary knowledge and skills, it is

necessary to strengthen talent cultivation and education.

In terms of curriculum design, the curriculum system of philosophy and social sciences-related majors should be optimized to increase content related to artificial intelligence. For example, courses such as Introduction to Artificial Intelligence, Data Mining and Analysis, and Machine Learning should be offered in majors like philosophy, sociology, and economics to enable students to master the basic principles and technical methods of artificial intelligence. At the same time, students should be encouraged to take interdisciplinary courses to broaden their knowledge and horizons. Through curriculum optimization, students' interdisciplinary thinking and innovation abilities can be cultivated.

In terms of practical teaching, the construction of practical teaching links should be strengthened. Through internships, practical training, and project cooperation, students' practical abilities and problem-solving skills can be improved. For example, industry-university-research projects can be carried out in cooperation with enterprises, allowing students to apply the artificial intelligence technology they have learned in actual projects to solve practical problems in philosophy and social sciences research. Through strengthened practical teaching, students' hands-on abilities and teamwork spirit can be cultivated.

In addition, international cooperation and exchange activities should be carried out. Through cooperation and exchange with world-class universities and research institutions, high-quality foreign educational resources can be introduced to improve the level of talent cultivation in artificial intelligence applications in philosophy and social sciences research in China. For example, foreign experts can be invited to give lectures in China, cooperative research projects can be carried out, and students can be organized to participate in international academic conferences. Through international cooperation and exchange activities, students' international vision and academic exchange abilities can be broadened.

In the process of talent cultivation, attention should also be paid to the cultivation of innovative spirit and entrepreneurial ability. Students should be encouraged to explore unknown fields and dare to propose new viewpoints and new methods. At the same time, entrepreneurship guidance and support services should be provided to help students transform scientific research results into practical applications, achieving the dual improvement of personal value and social value.

5.5 Promote Data Sharing and Opening to Facilitate the Utilization of Data Resources for Artificial Intelligence in Philosophy and Social Sciences Research

Data is an important foundation for artificial intelligence in philosophy and social sciences research. To promote the utilization of data resources for artificial intelligence in philosophy and social sciences research, it is necessary to promote data sharing and opening.

First, a data sharing platform should be established. The platform should integrate various philosophy and social sciences research data resources, including survey data, statistical data, and literature data, to provide researchers with convenient data access channels. Through the construction of data sharing platforms, the phenomenon of data silos can be broken, and data circulation and sharing can be promoted.

Second, data opening policies should be formulated. The policies should encourage research institutions and enterprises to open their research data resources and promote data sharing and utilization. For example, a data opening reward mechanism can be established to reward institutions that open data resources and achieve good social benefits; at the same time, data opening standards and technical specifications should be established to ensure the security and compliance of data opening. Through the formulation and implementation of data opening policies, the enthusiasm of data providers can be stimulated, and the effective utilization of data resources can be promoted.

In addition, data security protection work needs to be strengthened. While promoting data sharing and opening, the security and privacy of research data must be ensured. A sound data security management system and technical protection measures should be established to prevent data leakage and misuse. For example, encryption technology and access control technology can be used to protect data security; at the same time, a data leakage emergency response mechanism should be established to timely respond to data leakage incidents. Through strengthened data security protection, the legitimate rights and interests of researchers and data security can be protected.

In the process of promoting data sharing and opening, attention should also be paid to data quality and usability. A data quality evaluation mechanism should be established to evaluate and screen shared and opened data; at the same time, services such as data cleaning and annotation should be provided to improve data quality and usability. Through the improvement of data quality and usability, effective data support can be provided for the application of artificial intelligence in philosophy and social sciences research.

5.6 Promote the Deep Integration of Economic Quantitative Models and Artificial Intelligence to Develop Artificial Intelligence Research with Philosophy and Social Sciences Characteristics

The combination of economic quantitative models (such as multiple regression models, time series models, simultaneous equation models, computable general equilibrium models, panel regression, etc.) and artificial intelligence can significantly improve the accuracy, dynamic adaptability, and policy guidance value of social science research. However, the integration of the two is not a simple superposition but requires deep integration in methodology, algorithm optimization, and application scenarios. On the one hand, hybrid models can be built

by combining traditional econometric methods and machine learning. Traditional economic quantitative models rely on strict assumptions (such as linear relationships and normal distribution), with the advantage of having solid economic theory, and their results and parameters can be explained and understood from economic theory. Machine learning excels at extracting non-linear patterns from complex data but often lacks economic connotation. Therefore, the combination of the two can achieve complementary advantages. On the other hand, agent-based modeling can be combined with reinforcement learning. Agent models study macro phenomena (such as economic growth, price fluctuations, and market changes) by simulating the interaction behaviors of micro individuals (such as consumers, producers, and intermediate traders), but traditional agent model rule setting relies on artificial assumptions, lacks flexibility, and has a large gap with reality. Introducing reinforcement learning mechanisms allows artificial intelligence agents to optimize strategies through trial-and-error learning, thereby effectively improving the authenticity and reliability of simulating human behavior. In addition, explainable artificial intelligence can be combined with philosophy and social sciences theory. Because philosophy and social sciences research emphasizes mechanism explanation, while deep learning is often regarded as a "black box."Through explainable artificial intelligence technologies (such as SHAP values and attention mechanisms), the contribution of different economic variables can be quantified, making artificial intelligence models meet the theoretical needs of philosophy and social sciences research. In summary, the deep integration of economic quantitative models and artificial intelligence can not only improve the scientific nature and predictive ability of philosophy and social sciences research but also provide more dynamic and refined decision-making support for policy formulation. In the future, it is necessary to focus on breakthroughs in key technologies such as causal inference, multi-agent simulation, and explainable artificial intelligence, while strengthening interdisciplinary collaboration, data sharing, and ethical governance, to promote "philosophy and social sciences artificial intelligence" to become one of the core tools for national governance modernization.

In summary, the application of artificial intelligence in philosophy and social sciences research has broad prospects and great potential. To promote the healthy development of this field, joint efforts from multiple parties including government, universities, research institutions, and enterprises are needed to strengthen policy guidance and support, establish interdisciplinary cooperation mechanisms, improve ethics and legal norms, strengthen talent cultivation and education, promote data sharing and opening, and promote the deep integration of economic quantitative models and artificial intelligence. Through the implementation of these measures, the deep integration of artificial intelligence and philosophy and social sciences will be promoted, injecting new vitality and momentum into philosophy and social sciences research.

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Note: Figure translations are in progress. See original paper for figures.