



Computer Communication Technology and Traditional Chinese Medicine Applications in the Context of Artificial Intelligence

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Abstract: Artificial intelligence (AI) is a new industry ecosystem formed under the rapid development of science and technology, with extremely high intelligence. Against the backdrop of the country's strong promotion and in-depth development of AI technology, strengthening the application of computer communication technology and traditional Chinese medicine is an important guarantee for empowering hospital development with advanced technology and promoting the development of the times. This article first analyzes the current situation of computer communication technology and the application of traditional Chinese medicine in the field of AI. Then, it explores application strategies by strengthening technology integration and innovation, expanding rich application scenarios, and building a security guarantee system. Combining with the characteristics of the traditional Chinese medicine industry, it explores its specific practice in the smart traditional Chinese medicine scene, hoping to provide effective ideas for the development of technology integration and innovation in the AI field.

Keywords: field of artificial intelligence; Computer communication technology; Application of Traditional Chinese Medicine; Smart Traditional Chinese Medicine; Digital diagnosis and treatment

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1. Introduction

The data-driven and intelligent analysis functions presented by the AI technology system are prominent, and have strong domain adaptability and efficient automation features, driving various industries to transform towards artificial intelligence. Against the backdrop of the continuous maturity of this technological field and the increasingly perfect technological system, relevant units need to form a concept of technological integration and innovative development, deeply explore the functional advantages of information exchange in computer communication technology and information processing in traditional Chinese medicine applications, effectively integrate the two into the field of AI technology, and build a modern industrial

system supported by multi technology integration, empowering various industries to efficiently implement production operations and achieve high-quality development.

2. Analysis of the Current Status of Computer Communication Technology and Electronic Information Applications in the Field of Artificial Intelligence

In the context of the AI era, computer communication technology covers a wide range of functions, including data transmission between intelligent devices, promoting collaboration among various technological systems, and efficiently facilitating information exchange^[1]. Based on various technological carriers such as satellite communication, 5G/6G networks, and quantum communication, a communication network is formed, which further enhances the collaborative connection between various intelligent devices and provides rich communication data information guarantee for the intelligent development of various industries; In this era, electronic information applications also demonstrate strong functional coverage and scene applicability, obtaining rich data based on data transmission, algorithm driving, model analysis, etc., and intelligently completing algorithm analysis, programming design, and automatic control. Both play important supporting roles in promoting the deepening development of the AI era, with strong development prospects and technological advantages. However, in the actual process of implementing fusion applications, relevant units have limited the progress of technological innovation and intelligent industrial development due to non-standard understanding of fusion ideas, insufficient expansion of application scenarios, and inadequate security protection, resulting in unsatisfactory fusion effects. Therefore, based on the analysis of the close connection between these two technologies and the AI era, as well as the consideration of the current situation of technology integration and application, this article explores and proposes effective application strategies.

3. Analysis of Computer Communication Technology and Traditional Chinese Medicine Application Strategies in the Field of Artificial Intelligence

3.1. Strengthen technological integration and innovation

On the one hand, the unit needs to comprehensively understand the scale of the industry and the demand for intelligent production, position the direction of technological integration, and strengthen the deep integration of computer communication technology and AI technology. Firstly, based on the existing communication network of the technology system, the intelligent analysis function of AI technology is utilized to monitor and dynamically adjust various indicators such as network traffic size and transmission progress, and scientifically adjust network resource allocation, which not only ensures high-quality networks but also achieves cost reduction and efficiency improvement. Secondly, technicians need to adapt to the development trend of the AI era, use AI for data collection, analysis, and model generation, and combine it with computer communication technology to intelligently monitor network status, understand network conditions in different environments such as urban and rural areas, and scientifically adjust network parameters to highlight the personalization of communication technology services. Thirdly, the combination of the two achieves resource integration and improves the effectiveness of information and communication services^[2]. Especially in the intelligent protection industry, this combined technology system presents strong advantages, ensuring timely communication to meet the requirements of intelligent protection services and improving

the response speed of the protection system. Fourthly, based on the fusion of the two, real-time monitoring and automatic warning can be achieved. For example, in the field of intelligent transportation, technicians combine communication technology with AI algorithms to establish an intelligent warning system for road condition information, which facilitates drivers to timely understand the traffic conditions of routes, plan ahead, and improve efficiency.

On the other hand, relevant units need to accurately locate the data collection, storage, and analysis application functions of electronic information systems, scientifically integrate AI technology, and achieve massive data analysis, storage, and utilization. Firstly, integrating intelligent chips with AI algorithms can improve the intelligence level of chip systems and make electronic information systems more complete. Secondly, explore the intelligent perception function of AI technology, integrate it into the development and functional design of sensor networks in electronic information systems, and serve as an important carrier for medical service equipment in industries such as intelligent healthcare. It can intelligently monitor human physiological data indicators, improve the efficiency of intelligent detection of health risks, and ensure the level of intelligent healthcare services. Thirdly, from the perspective of information storage, explore the correlation between the two, and achieve the effect of secure storage, intelligent classification, and efficient reading of a large amount of data through technological integration.

3.2. Expand and enrich application scenarios

On the one hand, technicians need to combine the development requirements of industries such as intelligent transportation and intelligent healthcare that have already been widely applied. From the perspective of data mining, analysis, and application needs, they should deeply explore the opportunities for the integration of computer communication technology, traditional Chinese medicine application technology, and AI technology, continuously improve technical collaboration solutions, leverage the functions of various AI technology modules, and improve the service system of intelligent healthcare and intelligent transportation.

Especially in the field of traditional Chinese medicine, the integration of computer communication technology and the application of traditional Chinese medicine provides key support for the modernization transformation of traditional medicine. Using 5G communication network and IoT sensing technology, build a full process monitoring system for “smart traditional Chinese medicine rooms”. By deploying high-precision electronic sensors in decoction equipment and storage environments, real-time data such as temperature, humidity, pressure, and medicinal herb weight can be collected, and the data can be transmitted to a cloud based AI analysis platform in real-time using communication modules. The system automatically optimizes the decoction curve based on the characteristics of different prescriptions, and provides millisecond level precise control over the heat and duration. At the same time, image recognition technology is used to monitor changes in the characteristics of medicinal materials, ensuring the maximum precipitation of effective ingredients. In addition, the communication architecture based on blockchain technology can also achieve full traceability of traditional Chinese medicine from planting, processing to distribution, ensuring drug traceability and solving the pain points of difficult standardization and weak quality control of traditional Chinese medicine.

On the other hand, to address the subjectivity and high dependence on experience in the process of traditional Chinese medicine diagnosis and treatment, a “Traditional Chinese Medicine Intelligent Auxiliary Diagnosis and Treatment System” can be constructed using multimodal electronic information collection

technology and AI deep learning algorithms. Simulate “taste” and “smell” through high fidelity electronic tongue and electronic nose sensors, collect “observation” diagnosis information using high-resolution tongue imaging and facial diagnosis instruments, and combine with the pressure sensor of the pulse diagnosis instrument to obtain “cutting” diagnosis data. Multiple biological signals and image data are aggregated through high-speed communication networks and input into AI models trained on massive medical records for comprehensive analysis. The system can quantify the results of syndrome differentiation, assist physicians to develop personalized acupuncture and moxibustion programs or prescriptions of Chinese medicine, and through remote communication technology, it will cover high-quality Chinese medicine resources to grass-roots medical institutions, carry out remote consultation and teaching, greatly expand the coverage and accuracy of Chinese medicine services, and promote the inheritance and innovation of Chinese medicine in the intelligent era.

Furthermore, technicians continuously expand and enrich application scenarios, promoting the intelligent upgrading of various industries and meeting the sustainable development needs of the artificial intelligence era^[3]. One is to target traditional industries such as agriculture and build a smart agricultural ecosystem through technological integration, using intelligent carriers such as IoT sensors to comprehensively monitor meteorological information, obtain soil data indicators, and accurately set agricultural planting and maintenance plans. Secondly, we must follow the principle of cross-border integration to continuously enrich the usage scenarios, intelligently monitor road conditions, and create smart cities; Build immersive experience spaces and generate information visualization observation scenes to promote the intelligent development of the cultural and tourism industry.

3.3. Building a security system

Technicians need to form a correct security concept based on technological integration and innovation, expand application scenarios, comprehensively analyze the hidden data security risks in the context of multi technology integration, and use intelligent technology to support a sound security system. Through intelligent algorithm analysis, comprehensively monitor and evaluate risk types and indicators, and follow the principle of prevention first and combining prevention and control to develop safety protection plans; By utilizing security protection systems such as firewalls, we can prevent data loss and information leakage caused by virus invasion; Continuously improve and optimize intelligent systems to ensure stable and secure system operation.

4. Conclusion

In summary, adapting to the development needs of the artificial intelligence field, exploring the information transmission and interaction functions of computer communication technology, integrating the information processing and application functions of electronic information systems, and integrating them with the AI technology system to create a technology system with complete functions, wide coverage, and strong applicability are key measures to support the intelligent, innovative, and sustainable development of various industries such as traditional Chinese medicine. Units need to have a comprehensive understanding of the background of the artificial intelligence era, understand the current status of the integration of computer communication technology and traditional Chinese medicine applications, continuously strengthen

technological integration innovation, expand usage scenarios, build a security guarantee system, continuously improve the AI technology system, optimize the application environment, in order to meet the future intelligent and automated development needs of the industry.

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The author declares no conflict of interest.

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