

The Impact of Artificial Intelligence on the Design of Medical Health Products

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Abstract

This article aims to explore the impact of artificial intelligence on the design of medical and health products. In the design of medical and health products, artificial intelligence technology can analyze and mine data to deeply understand user needs and health conditions, providing better guidance for designers. At the same time, artificial intelligence can bring a higher level of intelligence to the design of medical and health products, achieving multi-scenario applications and personalized customization of products through modular technology and cloud database methods, offering better medical and rehabilitation services. However, artificial intelligence also faces challenges in the design of medical and health products, requiring enhanced data management and privacy protection measures, continuous improvement and optimization of artificial intelligence algorithms and models, enhancing the ease of use and user experience of products, clarifying the division of responsibilities for technology applications, and customized development to meet the needs of different fields and regions. Artificial intelligence has tremendous potential in the design of medical and health products and also requires further research and exploration to promote innovation and progress in the medical industry.

Keywords

Artificial intelligence, healthcare, products.

1. Introduction

With the development and application of artificial intelligence technology, the design of medical and health products is gradually optimized and innovated with the help of the power of artificial intelligence. In the design of healthcare products, AI can provide support and enhancement through a variety of technical means. Among them, the analysis and mining of medical data is one of the most common applications of AI in the field of medical health. Artificial intelligence can extract valuable information and laws by analyzing and mining a large amount of medical data. These information and rules can provide a scientific basis for the design of medical and health products, so as to improve the quality and reliability of products. Through the analysis and mining of medical data by artificial intelligence, the designers of medical and health products can better understand the needs and behavior habits of the users, so as to better design and optimize the functions and services of the products.

In addition to the analysis and mining of medical data, another important application of artificial intelligence in the design of medical and health products is to simulate human thinking and behavior, and provide better experience and services for users of medical and health products. For example, artificial intelligence can transform medical information into an easy-to-understand language through natural language processing technology, helping users to better understand and master medical knowledge. In addition, artificial intelligence can also

analyze and use computer vision technology to identify medical images, thus helping medical workers to diagnose and treat diseases.

2. The Development of Artificial Intelligence

Artificial intelligence is a discipline that studies how to use computer technology to simulate human intelligence behaviors. Its development is inseparable from knowledge in various fields such as computer science, psychology, philosophy, and sociology. The core of artificial intelligence is data and algorithms, which can be used to simulate human work, such as image processing, user research, and specific theme poster design in design work. Compared to human intelligence, artificial intelligence is more rational, more accurate and faster in information processing and logical reasoning. In essence, artificial intelligence simulates the human thinking process. The work of artificial intelligence relies on the logical operations of computer languages and specific program algorithms, and the process is limited within a fixed framework, thus it can complete a large amount of work in a short time without fatigue.

The development history of artificial intelligence can be traced back to the 1950s, when people began to realize that machines could perform complex tasks by simulating human thinking. However, due to the limitations of computing power and algorithms at the time, the development of artificial intelligence progressed slowly. It wasn't until the 1980s, with the improvement of computer performance and the emergence of new algorithms, that artificial intelligence entered a stage of rapid development. The applications of artificial intelligence are very extensive, including but not limited to medical care, transportation, finance, education, agriculture, and other fields. In the medical field, artificial intelligence can help doctors make more accurate diagnoses and treatment plans; in the transportation field, artificial intelligence can predict congestion and optimize traffic flow; in the financial field, artificial intelligence can help banks assess risks and detect fraud; in the education field, artificial intelligence can provide personalized educational plans for students; in the agricultural field, artificial intelligence can help farmers with precision planting and intelligent agricultural management.

Artificial intelligence is a discipline with a broad application prospect, and it has already shown great potential in many fields. In the future, artificial intelligence will continue to drive the development of science and technology, bringing more convenience and innovation to humanity. The application of artificial intelligence in product design has begun to gradually become widespread and is constantly evolving and innovating. In the future, with the continuous development and application of artificial intelligence technology, we can expect that artificial intelligence will bring more innovation and transformation to product design, providing users with better product experiences and services.

The section headings are in boldface capital and lowercase letters. Second level headings are typed as part of the succeeding paragraph (like the subsection heading of this paragraph). All manuscripts must be in English, also the table and figure texts, otherwise _s ^w we cannot publish your paper. Please keep a second copy of your manuscript in your office.

3. Application of Artificial Intelligence in Medical and Health Product Design

The application of artificial intelligence in the design of medical and health products has attracted increasing attention. Artificial intelligence can analyze vast amounts of medical data and user feedback to provide more precise product design schemes. The design of medical and health products needs to consider the needs and health conditions of users, which are very complex and variable factors. By applying artificial intelligence technology, these data can be

deeply analyzed and mined, helping designers better understand user needs and health status, and provide design schemes that better meet user needs.

Artificial intelligence can bring a more intelligent user experience to the design of medical and health products. For example, with the increasing proportion of the elderly population, the market demand for elderly health care products is gradually increasing. In the information age, big data, the Internet of Things, and other technologies provide more ways to implement elderly health care products. Among them, the application of modular technology can expand the multi-scenario application capabilities of products, enrich product styles, and meet the current concept of healthy living. At the same time, in order to meet the special needs of the elderly group, the design of elderly health care products needs to have a complete cloud database, which can track and record various chronic diseases of the elderly over a long period. Such health care products can better share the pressure of doctors and children, and provide more personalized diagnosis and rehabilitation services for the elderly.

To achieve intelligent elderly product design, usability needs to become the basis of design. In terms of specific implementation, it is necessary to combine software and hardware. The role of hardware is to obtain health data, and through software, the specific display of data is realized to achieve real-time monitoring. The process of using products by the elderly group should be convenient, preferably completed in one step. One-click operation can be adopted, combined with voice guidance for health care detection, reducing the difficulty of use. At the same time, when there is no computing product, carefully design the form, color, and material of the product to protect the physical and mental health of the elderly. A simple and clear interactive experience can increase the trust of the elderly in intelligent products. For example, in the design process, it should be considered that the elderly are relatively fragile in both physiology and psychology, and icons, interactive interfaces, etc., should be easy to recognize and operate. To reduce the psychological pressure of the elderly, voice feedback during the product use process should mainly be soft in tone, and even if there is an operation error, "error" voice reminders should be avoided. At the same time, mobile devices can be used to enrich the attributes of the product, such as monitoring and recording the health data of the elderly through related APPs, helping the elderly monitor their own health status, and also allowing children to communicate more with the elderly and care for their health.

In today's world, we will fully enter the era of artificial intelligence, various intelligent technologies have entered the public life, the pace of modern society is accelerating, empty-nest elderly people lack care in daily life, and emotionally lack care, especially for the elderly who have lost their ability to live independently due to illness, the problem is more serious. With age, there is a decline in bodily functions and a slowdown in neurological responses. The existing artificial intelligence plays the role of a participant throughout this process, using existing scientific and technological means to provide the elderly with the most suitable help, improve the living environment of the elderly, and thus enable the elderly to better integrate into the social process of the intelligent era. Young people who participate in construction cannot achieve a balance between career and family, and to some extent, they will neglect the needs of the elderly. The intelligent products we expect can not only serve as assistants in life but also provide spiritual care, allowing the elderly to communicate better with the outside world. Now, young people need social needs, and perhaps what the elderly need most is that intelligent products can bring not only health and physical well-being but also social functions. Therefore, integrating health care products into existing artificial intelligence technology to make them better distinguish from similar products, while opening a new door for the industry, also better promotes the overall improvement of the industry. Realizing the communication and interaction between the elderly and products, allowing the elderly to have a pleasant and convenient feeling in the interactive experience process, and meeting the emotional needs of

the elderly will be an important significance for studying the design of elderly intelligent health care products.

4. Advantages and Challenges of AI in Healthcare Product Design

4.1. Advantage

Artificial intelligence technology offers numerous advantages in the design of medical industrial products, enhancing production efficiency, product quality, and user experience, while reducing production costs and the risk of accidents, providing robust support for the development of medical industrial products.

In the design of medical industrial products, artificial intelligence can be utilized to optimize and intelligently manage production lines, thereby improving production efficiency and product quality. It enables real-time monitoring and prediction of product quality, facilitating timely detection and resolution of quality issues, enhancing the reliability and safety of the products. Through artificial intelligence, production automation can be achieved, reducing manual intervention and further improving production efficiency and product quality. AI technology can also perform intelligent scheduling and resource allocation based on production needs, reducing production costs and enhancing efficiency. It allows for detailed management of the production process, ensuring the safety and stability of the process and reducing the risk of accidents. Moreover, the use of artificial intelligence can provide personalized medical product customization services for different patients, enhancing the applicability and user experience of the products.

4.2. Challenge

Artificial intelligence also faces many challenges in the design of medical industrial products. For instance, medical industrial products require substantial data support, but the quality and integrity of data often present certain issues, posing difficulties for the application of artificial intelligence. Data involved in medical industrial products often includes sensitive personal privacy information, making data security and privacy protection an important issue. Additionally, the technology is immature; currently, artificial intelligence technology is still in its early stages of development, and the accuracy and reliability of many algorithmic models need improvement, requiring continuous optimization and refinement. Medical industrial products need to have good human-computer interaction, but special groups such as the elderly have limited acceptance of human-computer interaction, necessitating consideration of how to enhance the product's ease of use and user experience. In the case of medical industrial products, the use of artificial intelligence technology requires clear delineation of responsibility sharing to prevent technological causing personal injury and other adverse consequences. Due to the wide range of fields involved in medical industrial products, different fields and regions have different application needs, necessitating customized development of artificial intelligence technology to improve its adaptability.

Artificial intelligence technology faces challenges in the design of medical industrial products, including data quality, data privacy, technological immaturity, human-computer interaction, responsibility sharing, and adaptability. It is necessary to actively explore and address these issues in various aspects such as technology, law, and management to promote the development and application of medical industrial products.

5. Summary

Artificial intelligence has a significant impact on the design and development of healthcare products. Through the application of AI technology, designers of healthcare products can better understand users' needs and behaviors, improve the quality and reliability of the products, and

provide better services and experiences for users. By utilizing big data analysis and mining techniques, artificial intelligence can process and analyze vast amounts of medical data and user feedback, revealing user preferences and behavior patterns, thereby enabling data-driven design methods that make product design more targeted. Moreover, AI can build intelligent algorithm models through machine learning and deep learning technologies, to conduct intelligent design and optimization of healthcare products, achieving personalized customization and intelligent adjustments, and enhancing the applicability and user experience of the products. However, AI still faces challenges in the design and development of healthcare products, such as data quality and privacy protection, technology maturity, human-computer interaction, and user adaptability. In the future, with the continuous development and application of AI technology, we can expect the design and innovation of healthcare products to become more efficient, precise, and humanized, bringing more convenience and innovation to people's health and lives.

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