Frontiers in Computing and Intelligent Systems
ISSN: 2832-6024 | Vol. 5, No. 3, 2023

The Advantages of Artificial Intelligence Application in Computer Technology

Wendong Yang

Qingdao University, Shandong 266000, China

Abstract: Presently, humanity has entered the era of big data, where artificial intelligence (AI) technology has found extensive application across various industries and domains. Notably, in the field of computer network technology, its utilization has significantly elevated the technological prowess of computer science, propelling computer systems towards a gradual trajectory of stability and intelligence. Consequently, it has transformed into an indispensable tool in people's daily lives. This paper commences by expounding on the contemporary concept and characteristics of artificial intelligence technology, followed by a synthesis of the advantages of its implementation in the realm of computer network technology based on relevant literature. Furthermore, practical demonstrations are provided to illustrate the efficacy of artificial intelligence in the domain of cloud computing.

Keywords: Computer Technology; Innovative Technology; Artificial Intelligence.

1. The Essence and Characteristics of Artificial Intelligence

1.1. The Fundamental Essence of Artificial Intelligence.

Artificial Intelligence (AI) is the utilization of computers to simulate human thought processes and behaviors by translating human cognition and actions into data stored within computers. This enables the emulation of human daily life, ultimately leading to the achievement of automation and control objectives. At the current stage, AI primarily encompasses two essential aspects: the human-made component and the intelligence component. The former pertains to the systematic design crafted by humans according to their needs, while the latter involves entrusting AI with the ability to think like humans to achieve specific objectives. Both components are realized through computer technology.

To effectively accomplish various work goals defined by individuals and align with the broader trends in societal development, AI technology is progressively evolving towards multidisciplinary integration. It interfaces with several fields, including psychology, computer science, sociology, and others. The widespread application of artificial intelligence has the potential to revolutionize how people work, leading to significant changes in work processes and methods. Furthermore, it offers the promise of sustained enhancements in work efficiency and quality.

1.2. Characteristics of Artificial Intelligence.

Intelligence. Influenced by a multitude of factors such as human resources, technology, and equipment, the current stability of computer systems is not yet optimal. There is a need to enhance their capacity for sustainable development. Simultaneously, the system's failures in practical usage are often challenging to resolve through conventional manual inspections. Experts typically diagnose problems after they occur, based on the characteristics of the issue rather than testing hypotheses before issues arise. Consequently, these problems often go undetected. Artificial intelligence, on the other hand, effectively replicates human daily tasks and behaviors. This characteristic can be applied to monitor computer networks. In practice, humans can employ artificial intelligence technology to comprehensively "diagnose" computer networks, simulating pre-checks on computer malfunctions akin to human assessments. This proactive approach helps identify potential issues and mitigate them, consequently eliminating potential security risks.

Logicality. With the continuous advancement of computer technology, the internal structure of computers has become increasingly complex and intricate. Therefore, it is imperative to establish a rational and comprehensive management system to ensure the smooth operation of computer networks. The integration of artificial intelligence into computer network technology can effectively enhance the efficiency of computers and embed scientifically sound strategies within the computing environment. Artificial intelligence enables a systematic examination and analysis of various issues within computer systems, reinforcing the inherent connections between different levels of the computer system. This, in turn, ensures the tight integration of components within the computer system, thus guaranteeing its seamless operation. Furthermore, artificial intelligence leverages its technical advantages to extract and integrate diverse information within computer systems, facilitating the sharing and allocation of resources.

Cost-effective. In the process of utilizing computers for information retrieval and data collection, a substantial amount of time and effort is required. Moreover, the accuracy and completeness of the information often fall short of the desired standards. For instance, when dealing with large datasets and intricate content, the current capabilities of computer systems may not be adequate to achieve the intended goals, resulting in overall low work efficiency. Furthermore, the inherent limitations of computer networks contribute to subpar system stability, significantly increasing the workload of computers. However, the integration of artificial intelligence technology into this domain proves to be a viable solution. It efficiently addresses users' real-world demands for computer performance, enhancing operational speed. When gathering and processing intricate data, it can replicate human thought processes, swiftly querying databases to extract valuable

information. This enhancement optimizes the computer operating environment, removing various hindrances and, as a result, effectively boosting operational efficiency while reducing investment costs.

2. The Advantages of Artificial Intelligence Application in Computer Network Technology

2.1. Increasing the Efficiency of Computer Information Processing.

When handling massive data through computer network technology, it is common for personnel to encounter information that cannot be precisely determined. Failure to scientifically process such data can impede subsequent data analysis, leading to a decrease in processing efficiency and a failure to fully realize the value of the information. To address this challenge, personnel can employ simulation analysis techniques within artificial intelligence technology to break free from the constraints of traditional data management procedures. This enables them to promptly understand and real-time track information resources within the computer network system, providing crucial support for data analysis efforts.

In the utilization of computer network technology for processing extensive data, personnel frequently encounter information that cannot be accurately assessed. In the absence of scientific handling of such data, it can negatively impact subsequent data analysis, resulting in decreased efficiency and underutilization of information. Faced with this issue, personnel can harness simulation analysis techniques within artificial intelligence technology to transcend the limitations of traditional data management protocols. This enables them to gain timely insights and real-time monitoring of information resources within the computer network system, thereby offering critical support for data analysis.

2.2. Enhancing the Capacity of Computer Network Technology Management.

From a strict perspective, the management of computer network technology is fundamentally a multifaceted and extensive undertaking. Presently, manual methods are predominantly employed for the management of computer network technology, a process that demands significant time and effort. Moreover, when tackling more complex issues, the potential for errors in work execution is heightened. All of these factors can have adverse repercussions on the quality of data and information.

However, by introducing artificial intelligence technology, these challenges can be circumvented, replacing traditional manual operating procedures. Artificial intelligence technology possesses robust intelligent management capabilities and can be integrated with big data technology to achieve efficient handling of information data. On one hand, it can effectively reduce error rates in the management of network databases. Simultaneously, it can enhance the management capabilities of computer technology.

2.3. Enhancing the Security of Computer Network Technology.

Despite the rapid information transmission speed and efficiency of computer network technology, the environment in which it operates is notably complex. During the management of computer operations, it is susceptible to disruptions caused by human factors and objective environmental elements. Consequently, this can lead to various issues such as data loss and damage, negatively impacting people's regular work.

However, with the integration of artificial intelligence technology, the security management capabilities of computer network technology can be significantly enhanced. This is achieved through the establishment of intelligent firewalls on computer systems and the implementation of artificial intelligence-based immune techniques. These methods serve to bolster computer security, ensuring that computer operating systems can achieve the goal of safety and stability.

3. Innovative Applications of Artificial Intelligence in Computer Technology

3.1. Data Warehousing and Data Migration.

The transition from a data warehouse to a data mart is currently a focal point of innovation in artificial intelligence technology. Prior to commencing the project, thorough investigation and preliminary groundwork are essential. Based on existing data, a concrete project plan must be formulated. When establishing a measurement retrieval management system, the stability of the entire architecture must be ensured, which includes data synchronization tools, centralized service buses, portals, and scheduling tools—all of which cannot be arbitrarily modified. In this context, an alternative approach based on a big data platform has been proposed to reduce the overall risks associated with system migration.

Throughout the migration process, taking model migration as an example, the original business logic is retained while making slight modifications to the interface layer model, basic layer model, and summary layer model. However, the underlying module structure of this system is complex and highly interrelated, necessitating special attention during the restructuring process.

In the original system, Teradata's database has been integrated, offering the advantage of a "one-stop" multi-mode data processing platform for batch loading. It conveniently connects and manages its data sources, providing full compatibility with Teradata's data types and structured query language, significantly reducing the cost of migration. Successful migration will greatly enhance system performance.

3.2. Cloud Data Platform and Machine Learning Platform

Building upon the TOS multi-tenancy model, we introduce big data technology into machine learning to establish a TOS-oriented multi-tenancy model while providing relevant performance services. Through unified configuration, we dynamically allocate various resources, such as storage, computing, and networking, based on distinct user requirements, achieving complete isolation. Each tenant's data analysts and operators can work in a relatively separated environment that supports their operational activities. This dynamic resource adjustment facilitates resource sharing. The operation of the multi-tenancy platform offers businesses functions such as resource provisioning, utilization, application development, and result dissemination.

Upon project approval, relevant personnel can access data in the tenancy area and efficiently utilize the platform's service resources. By utilizing big data analytics tools for data analysis, the advantages of machine learning are fully leveraged, uncovering meaningful data insights. The primary focus lies in data processing, model development, algorithm applications, and deployment. Following approval and acceptance, businesses can extensively promote their achieved results. In the realm of commercial applications, the increasing synergy between technical and business aspects has enabled the full realization of distributed technologies.

4. Summary

In conclusion, artificial intelligence technology has made a significant impact across various industries. In numerous diverse domains such as speech and image recognition, language understanding, and more, artificial intelligence is being actively integrated, yielding promising results in various applications. The application of big data technology has generated substantial commercial value, while the use of cloud technology is poised to further enhance its utility in information storage, computing, and other aspects. As artificial intelligence technology continues to advance, it has given rise to a multitude of new products. These products, equipped with intricate neural connections and functional modules, not only mimic human behavior but also possess human-like intelligence and emotions. This holds immense significance for the collaborative evolution of artificial intelligence technology and humanity.

References

[1] SHENG Yunmeng; LIU Qian(School of Management, Shanghai University of Engineering and Technology,Shanghai 201620, China) Research Hotspots and Trend Analysis of International Artificial Intelligence based on CiteSpace[J]. Software Engineering,2022.

[2] LIAO Shoufeng. Knowledge Structure and Base of Domestic Philosophical Research on Artificial Intelligence--CSSCI-Based Scientific Knowledge Mapping Analysis[J].Journal of Hunan Administration Institute,2022.6 P134-144.

[3] MA Yonghong; MA Wanli(Institute of Higher Education, Beihang University, Beijing 100191,China).Swarm Intelligence Leads High-level AI Professional Training: Experience and Inspiration from the University of Georgia [J]. Journal of Graduate Education,2022.

[4] LV Rong-jie; LI Wen-hui; ZHANG Yi-ming(School of Economics and Management,Hebei University of Technology,Tianjin 300401).Service-oriented Transformation and Employment Skill Structure Optimization--From the Perspective of Artificial Intelligence Application[J].Soft Science, 2023.

[5] WU Na (Changsha Commerce&Tourism College, Changsha, Hunan Province,410116 China).WU Na(Changsha Commerce& Tourism College,Changsha, Hunan Province, 410116 China) [J].Science & Technology Information,2023.17 P5-8.

[6] XU Hebing(Hengyang Preschool Education College, Hengyang, Hunan Province,421000 China)Application of Artificial Intelligence in Cmputer Network Technology [J]. Science & Technology Information,2022.10 P13-15.