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Application and development of artificial intelligence based on computer science

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Abstract. Artificial intelligence (AI) technology has become widely utilized in all spheres of life due to the quick growth of information technology. AI operations are added to computer technologies such as information and network technology so that computers may think like humans do, ultimately taking computers to a level above humans. This study undertakes a thorough examination of the classification, development, application, and trend of computer AI technology. It can be concluded that computer AI technology has great application potential in the field of automatic driving, medical diagnosis, scientific research, and problem solving. Besides, the improvement of smart chip, the optimization of facial recognition, and the combination with the Internet can be some of the trends for the future development of computer AI technology.

Keywords: Computer, Artificial intelligence technology, Application

1. Introduction

Technology based on artificial intelligence is a key representation of Internet informationization. Its creation and use directly impact people's day-to-day activities and employment, as well as a nation's level of scientific and technical advancement. Therefore, it is essential to boost investment in, and research and development of, computer AI technologies in order to increase a nation's production. Since it contributes significantly to the growth of the national economy, science, and technology, it is also vital to improve its practical application [1]. The goal of intelligent and informational applications is achieved by combining computer technology and artificial intelligence technology in an organic way so that they complement one another. The level of intelligence and knowledge in many businesses is continually rising thanks to the quick development of artificial intelligence technologies. As an advanced technology, it will open up new development avenues and quicken the pace of scientific and technical advancement. Additionally, computer AI technology can carry out specific tasks in accordance with the human brain. As science and technology advance, this technology will become more complex and have a broader range of applications, but for the time being, there is still a lot of room for development [2].

In this paper, the author introduces and the classification and development of computer AI technology. Besides, its application and development trends in different fields are also analyzed. This paper can help improve the promotion of computer AI technology in China.

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2. Classification of computer AI technology

computer AI technology can imitate the human thinking mode and continue to expand the computer thinking mode. The following sections introduce the classification of computer AI technology.

2.1. Cognitive AI

In the field of artificial intelligence, the development of cognitive computing as the core has laid a solid foundation. With the help of cognitive computing, computers can simply communicate with people and solve some basic problems. In addition, with the development of data mining, analysis, acquisition, and other technologies, its scope of application will be greatly improved [3].

2.2. Machine learning AI

Machine learning is one of the three levels of current computer AI technology. Take driverless cars for example, by using artificial intelligence, a car can be driven on the road without a driver. With the development of AI, its use will be more and more extensive, which will have a far-reaching impact on people's life and work. With the help of large databases, artificial intelligence can find the development track of data through data analysis and make corresponding judgments, so that the computer has an independent judgment function [4].

2.3. Deep learning AI

Deep learning is a cutting-edge technology beyond machine learning. It is a huge network composed of massive data and disordered data, just like the neural network in the brain. Therefore, it can also be called a "neural network". With the development of artificial intelligence technology, deep learning can not only be applied to the field of language and image analysis but can also be used to communicate with users, sign contracts, and so on, acting as an assistant in people’s life and work [5].

3. The development of computer AI technology

3.1. Initial stage

In the 1950s, relevant researchers made a conceptual interpretation of computer AI technology, and with the further deepening of research, related research has entered a new stage [6]. For example, relevant scientists have developed machine theorems and LISt Processing (LISP) languages, which lay a research foundation for subsequent development. However, restricted by the technical conditions at that time, computer AI technology developed slowly.

3.2. Application phase

The use of computer AI technology has gained popularity since the 1970s and has emerged as a key technical foundation for the creation of intelligent expert systems. The use of intelligent expert systems in China has received high accolades and has been crucial in advancing the country's development of computer technology. The intelligent expert system still has several flaws, which restrict the advancement of artificial intelligence in computers. It is vital to step up efforts to address issues and improve the accuracy and dependability of the intelligent expert system [7].

3.3. Integration phase

As modern science and technology continued to advance in the 1990s, computer AI technology gradually moved into the integration stage. The expert system's functionality has also been improved, and it can now incorporate a variety of functions, considerably expanding its range of potential applications. Simultaneously, as big data technology advances, computer AI technology will inevitably become more sophisticated, shattering existing restrictions in the sector and moving into a phase of rapid development [8].

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4. Application of computer AI technology

4.1. Application in the field of unmanned driving

In the part of programmed driving, by utilizing man-made consciousness innovation, the computer can naturally design the running course of the vehicle and consequently control the vehicle as per the client's requirements, with the goal that it can arrive at the objective easily. Additionally, the automobile can be remotely controlled in accordance with the computer's operational requirements by making use of the computer's intelligent technology [9]. For instance, the purpose of controlling the spacecraft remotely can be accomplished by utilizing work-related computer settings and artificial intelligence technology for remote control. The control's accuracy is higher than that of manual operation, ensuring the spacecraft's safety and lowering the risk of operation.

4.2. Application in the field of medical diagnosis

The advancement of computer AI technology has the potential to have a significant impact on medical research. For instance, in terms of medical diagnosis, a computer-based artificial intelligence technology can be used to analyze the patient's symptoms, obtain accurate diagnostic results, and enhance the process of medical diagnosis and treatment by collecting a large amount of patient data. Because of the constraints of customary clinical ideas, a few patients are as yet incredulous about the demonstrative finishes of computers. People need to be aware of the fact that the development of computer AI technology will unavoidably alter the manner in which the medical staff works, and they need to be willing to accept the new changes brought about by this technology in order to improve the overall level of medicine [10].

4.3. Application in the field of scientific research

Since the wise innovation of computer has strong sensible reasoning, the utilization of this innovation in logical examination can speed up the advancement of related research, work on the speed of change, and produce tremendous financial advantages. The use of computer AI technology enables in-depth problem analysis and the development of practical solutions for the use of scientific researchers. The development of the database is closely linked to the computer's capacity for logical reasoning. Making full use of the data in the database can help the computer analyze the problem more effectively and identify the problem's automatic generation. The use of computer-based artificial intelligence technology in scientific research has the potential to speed up problem processing and boost research efficiency.

4.4. Application in the field of problem solving

There will always be issues that need to be resolved right away in people's work and personal lives. People need to use a variety of approaches to find the solution to the problem in order to solve it quickly. However, it typically takes a lot of time. Under this present circumstance, with the assistance of computer man-made brainpower innovation, an issue recovery framework can be constructed. The system makes it easier for people to find solutions to related problems, making problem-solving more effective. Additionally, problems that need to be retrieved can be automatically completed with the assistance of perception technology and computer AI technology. This makes problem-solving as a whole more approachable. The technical level currently limits the retrieval of complex problems, and computer AI technology is still difficult to achieve. However, as technology continues to advance, it is likely that computer AI technology will one day be able to quickly and effectively resolve complex issues.

5. Development trend of computer AI technology

Machine learning, machine intelligence, and artificial intelligence are the three levels of current computer AI technology. From the analysis of the development of computer AI technology, it can be seen that due to the limitations of current technical conditions, artificial intelligence technology will

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remain in the stage of machine learning for a long time and many technical barriers need to be broken before it can truly enter the stage of artificial intelligence. At this stage, machine learning needs to be carried out within the controllable range of variables. Simply speaking, the development trend of computer AI technology can be summarized as follows:

5.1. Development of smart chip

The development of smart chips will greatly promote computer AI technology. Because of a lot of work to be dealt with, the computing power of the general CPU is limited, and it is difficult to make full use of it in practical applications. The development of a special AI chip can improve the operation speed of the training mode, enhance the intelligent operation ability in multiple working environments, and reduce the response time of the system. The development of smart chip also has great application potential in the field of automatic driving. To take the opportunity and vigorously develop automatic driving technology, it is necessary to highly combine computer AI technology with automobile system, focus on developing intelligent chips for automobile automatic driving, optimize intelligent driving algorithms, improve the intelligent level of automobiles, and make sufficient technical reserves to achieve the development goal of automatic driving. As far as the current technology level is concerned, there are still many areas to be improved urgently in automatic driving technology, such as intelligent algorithms and vehicle hardware and software. The ideal automatic driving technology of automobile should not only have the function of automatically analyzing the traffic changes, but also with the function of dynamic interaction and active perception, which leaves a huge space for researchers to explore and experiment.

5.2. Optimization of facial features

The precise location of human face has always been a challenging field for scientific research. In order to ensure a safe life and work environment for people, there are more and more surveillance cameras appearing in the surroundings. By using the high-precision features of human faces, the accurate recognition of human face features can be carried out on the crowd so that the occurrence of crimes can be prevented to a large extent. In addition, due to the rapid development of the mobile payment industry, the function of item management payment can be realized only by facial features. Since there is a growing demand for face recognition technology, the optimization of facial features is also a development trend of computer AI technology.

5.3. The practice of integrating intelligent technology into the Internet

The rapid development of 5G has laid a solid foundation for the establishment of the Internet of Things, which can be combined with the intelligent technology of computers to interconnect various electronic products and expand their application fields. At the same time, the use of large-scale Internet of Things technology and artificial intelligence technology can further improve the intelligence of intelligent systems through a large number of information technologies. With the development of artificial intelligence and the gradual improvement of 5G network, the integration of artificial intelligence technology and high-speed network can achieve remote medical services. No matter where patients are, medical experts can use the network to complete diagnosis or surgery, thus reducing the cost of medical services. Meanwhile, with the continuous development of robot technology, the traditional time-consuming and laborious artificial medical service can be replaced by intelligent robots in the future.

6. Conclusion

This paper elaborates the classification, development, application, and trend of computer AI technology. To sum up, computer AI technology is much more powerful than human thinking ability, so there is a lot of room for its development. At present, the academic world and large network manufacturers all attach great importance to computer AI technology, and governments have also

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provided financial supports in this domain. Although encouraging progress has been made, there are still many difficulties to overcome in future studies.

References

[1] Wang, L.L. Computer network security risk control in the context of artificial intelligence [J]. Network Security Technology and Application (09), 171-173 (2022).

[2] Wu, F., Wu, C., Zhu, Q. Integration of Science and Education and Collaboration of Industry and Education Promote the Cultivation of Artificial Intelligence Innovative Talents [J]. China University Teaching (Z1), 15-19 (2022).

[3] Liu, J., Zhang, X.Q. Construction and Exploration of Artificial Intelligence Introduction Course for Non-computer Majors [J]. China University Teaching (Z1), 46-51 (2022).

[4] Xie, L. Application of artificial intelligence in computer network technology in the era of big data [J]. Tech Wind (30), 86-88 (2021).

[5] Yuan, L., Cao, M.Y., Gardner, J., O'Leary, M. The Potential and Limitation of Artificial Intelligence in Educational Evaluation. Open Education Research 27(05), 4-14 (2021).

[6] Li, B., Qin, J., Tie, J. Research on Innovation and Entrepreneurship Education of Computer Majors under the Background of New Engineering and Artificial Intelligence [J]. Experimental Technology and Management 38(03), 18-22 (2021).

[7] Zhao, Y., Wang, D.X., Gu, L.X. New development trend of artificial intelligence technology in the field of computer-aided diagnosis. Science in China: Life Sciences 50(11), 1321-1334 (2020).

[8] Zhou, X.H., Wang, C.Y. Application and evaluation of artificial intelligence technology in computer-aided translation software. Chinese Translation 41(05), 121-129 (2020).

[9] Ju, H.X., Zhao, Z. Analysis of the Path to Improve the Quality of New Engineering Talents Training in the Era of Artificial Intelligence — Taking Computer Science Major of Stanford University as an Example [J]. Science and Education Development Review (00), 13-25 (2020).

[10] Wu, Y.F. Dilemma and Outlet of Criminal Law Application of Crimes Against Property in the Age of Artificial Intelligence [J]. Jurisprudence (05), 165-179 (2018).