

# On the Development and Application of Computer Artificial Intelligence Technology

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**Abstract:** *With artificial intelligence (AI) technology as the focus of present research and application, the new cross-technology formed by AI and multiple technologies has found wide application in mobile Internet, finance, medical care, education and other industries. Currently, countries around the world are constantly accelerating the development and application of AI technology by increasing policy support and funding for its development. This paper analyzes the development direction and application potential of AI technology by studying the development of AI technology and exploring the key technologies of AI.*

**Keywords:** *Artificial Intelligence; Development; Application*

## 1. Introduction

Since computer is the most important tool in the development of modern science and technology, its research and application have gradually become a kind of technology. Computer has opened a new chapter for the revolution in productivity and the mode of production. In the rapid development of scientific and technological revolution, AI technology derived from computer technology has once again driven the progress of human science and technology, leading human society into the age of technology and modernization. Computer's precision and efficiency in data analysis and processing and diversified operations enable it to fully play a role in various fields, thus ensuring the quality of its development. And the progress of AI technology can be regarded as the groundbreaking technological innovation in computer development. The application and research of computer AI technology provide the industry with a better development, and promote social progress.

## 2. Research review of AI technology

### 2.1. Concept of AI

As a new technology derived from current computer science, AI is used to simulate, extend and expand artificial intelligence, thus becoming a new theory, method and technology. Through the development of AI, people can have a deeper understanding of the essence of intelligence, and then produce a mechanical technology that is more suitable for and closer to human intelligence. Such a mechanical technology, from the perspective of human beings, can complete relevant activities that need to be done by human beings. At present, AI technology mainly involves intelligent robots, intelligent voice, expert systems, image recognition, etc. They all reflect that AI can be viewed as the container of human intelligence. To sum up, AI technology enables machines to think like human beings by simulating human thinking mode and processing mode.[1]

### 2.2. Core of AI technology

At the birth of AI, computers imitate and learn from human abilities, on the basis of which a new technology has been developed by means of continuous research and development. The application of modern AI regards AI as a practical tool to support human beings in production and life, a significant change compared with previous AI. At present, automobile manufacturers apply AI technology to driverless cars and self-driving functions, which changes the way people think about traditional cars to a certain extent and the way people travel.

In recent years, during the development of computer AI technology in China, it has been recognized that the core technology of AI technology is machine learning. Target information can be sent to

machines and processed by AI technology. Then machines can clearly define specific targets. In the process of deep learning, machine algorithms can continuously learn from examples, identify specific types of targets, and generate models in the learning phase, so that the probability of mis-classification can be continuously reduced.[2] AI customer service, the most common AI technology, can automatically reply to questions in related fields, and the reply is not preset. In fact, after the machine reads a large number of sample data, this technology objectively analyzes its rule and builds a model of self-recognition, so as to improve the accuracy of questions and answers.

### **3. The history and research progress of computer AI technology**

#### ***3.1. The history of computer AI technology***

The research and development (R&D) of computer AI technology has gone through multiple stages. The first stage began in the 1950s when AI technology was initially proposed and recognized by many scholars. At this stage, plenty of research was conducted based on computer technology with certain achievements. The LISP (List Processing) language and mechanical theorem proving were developed in this period, making a great sensation in the relevant fields at that time. With the continuous social and technological progress, these technologies have gradually failed to meet the needs of current development.

The second stage was in the 1970s when the research and application of AI technology developed slowly because the development of computer technology could hardly support that of AI technology. However, with subsequent breakthroughs in computer technology and the support of scientific theories, new AI technologies continued to emerge. The early AI expert system was one of the products at this stage, the advent of which made the research on AI officially shift from troughs into rapid development.[3]

The third stage was around the 1980s when computer technology developed to the fifth generation, with its ability in data analysis and program processing being enhanced. The theory of AI technology was also gradually taking shape. The information technology and intelligent technology weren't reflected in AI until the beginning of the new century when AI technology developed to the fourth stage. With the rapid development of its depth of research and scope of application, AI technology has greatly influenced the whole society, resulting in tremendous social changes.

#### ***3.2. The research progress of computer AI technology***

With the continuous social progress, computer AI technology has formed a set of rules for development in its rapid development. Since the 1970s, the theory of AI has entered the stage of research and exploration. As in its early stage, AI technology at that time mainly shows its characteristics and manifestations in the extension of the concept of knowledge engineering and the function of intelligent language.

Based on the current development of computer AI technology, the main direction of present research is to explore neural networks and conduct network and fuzzy processing, so that AI technology can achieve automatic reasoning, an important goal in the development of AI technology. Meanwhile, as the basis for the development of computer AI technology, the combination of computer technology and AI theory can ensure the dynamic properties of a system. In addition, research on computer AI also involves the improvement of user interface which allows higher convenience in production and life and improves the application of AI [3].

Finally comes the ability of data mining. The computer database can help the machine learn quickly, find the internal rules and connections in various objective events from the cases, and acquire knowledge automatically and autonomously. At present, AI technology is still in the stage of integration. However, in future research, it is bound to solve diversified problems, which can greatly promote social progress.

### **4. Application of computer AI technology**

#### ***4.1. Application in the field of aerospace***

AI technology has found wide application in aerospace, mainly in the remote control of spacecraft. Vital for the spacecraft design in China, AI can be integrated to achieve remote self-planning and allow a

spacecraft to set tasks and goals in the process of R&D, making spacecraft R&D more convenient to a certain extent. With the support of AI technology, the intelligence system of a spacecraft can realize the planning of operation trajectory, and make the spacecraft perform relevant operations by sending the control command to it. At the same time, the system can clearly define the operation state of the spacecraft, send corresponding work commands to it, and adjust its parameters and operation trajectory, so as to ensure its stable operation. Therefore, in the field of aerospace, AI technology can collect data and information quickly and accurately, which is of great significance to the development and innovation of China's aerospace industry(As shown in table 1).

Table 1: Application of artificial intelligence in the whole life cycle of aero-engine product development

Key points of aero-engine product development	Applications of Artificial Intelligence
Technical Research Sessions	In the technology research segment, the AI platform for networked users can support researchers across geographies, organizations, and disciplines to conduct technology exploration.
Product Design	In the product design segment, AI helps to realize the intelligence of the design process and establish a knowledge-driven integrated R&D environment and a process-driven collaborative design environment.
Manufacturing process	In manufacturing, AI technology applications focus on intelligent robotics and human-machine interaction to reduce human involvement in complex, demanding environments and improve the accuracy of the manufacturing execution process.
Testing and verification	In the test verification link, the establishment of a data analysis platform and machine learning platform through artificial intelligence and big data analysis technology is conducive to gradually replacing physical tests with test simulation and significantly shortening the product development cycle.

#### 4.2. Application in intelligent education

Table 2: Cases of Artificial Intelligence Education Applications

No.	Core Techniques	Affiliated organization	Technology application	Application introduction
1	Natural Language Understanding and Semantic Analysis	Microsoft	Microsoft Xiaoice	It can train users to speak English
2		IBM	Watson	Watson's cognitive computing system that can use natural language to answer user questions
3		Apple	Siri	Siri can use natural language to answer questions and help users with tasks such as searching
4	Learning Analysis	McGrawHill Education	Aleks	Provides K-12, higher education instructional assessment and one-on-one online tutoring systems for
5			Connect Master	For university teachers and students Adaptive learning system for university teachers and students
6			LearnSmart	Interactive materials, based on student responses to randomized tests, changing the lesson course content
7			UC Berkeley	Gradescope
8	Virtual Reality	EON Reality	EON Virtual Trainer	Apply artificial intelligence technology to build Virtual Classroom
9		MIT&Smithsonian	Vanished	Real-world games to support collaborative learning

Computer AI technology is also widely used in the field of education, with the customized technology of education design as a typical representative. Education design, the core of intelligent education technology, can provide corresponding conditions for the progress of education technology. By means of AI diagnosis and analysis, teachers can complete more targeted and personalized curriculum design (As shown in table 2).

#### 4.3. Application in WITMED (Wise Information Technology of Med)

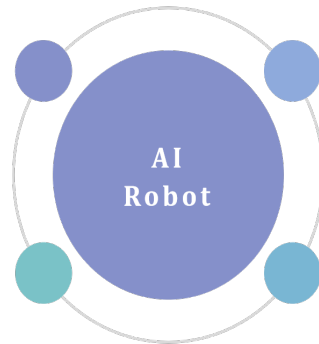
Under the traditional medical model, due to the shortage of medical resources, hospitals and clinics are always overcrowded. Patients often miss the ideal time for treatment because they cannot receive timely treatment. However, AI's automated workflow can greatly reduce the working steps of doctors and nurses, give priority to emergencies, and automatically analyze patient data. Therefore, the application of AI in the medical field can be said to be a timely help (As shown in figure1).

##### Surgical Robot

The surgical robot is an intelligent surgical platform that is widely used in several departments

##### Rehabilitation Robot

Rehabilitation robots are robots that play a role in the rehabilitation medical process, mainly including rehabilitation robots, intelligent wheelchairs, prostheses, etc.



##### Assistive robot

Assistive robots are medical robots that can sense and process sensory information to give feedback to the user for operation, and are mainly used to meet the demand for medical care in mobility-impaired or elderly groups.

##### Service robots

Service robots are robots that help health care workers share some heavy and tedious transport and basic tasks, such as medical transport robots and sterilization robots.

Figure 1: Application of intelligent robots in medical field

On the basis of conventional medical diagnosis, modern AI medical diagnosis, with the help of AI technology, can avoid the interference of objective factors to doctors in the medical process, as well as the misjudgment of the patient's condition. Besides, with data sharing, it can provide better training of knowledge for existing medical staff, so that they can have a deeper understanding of diseases and cases. Through the intelligent analysis of patient's big data information, medical staff can have a more accurate understanding of the patient's specific condition, so that the treatment plan can be optimized.

Traditional medical research starts with formulating a hypothesis, then designing an experiment to test it, and finally analyzing the results to draw conclusions. Data-driven medical research can rely on data for each part of hypothesis formulation, experiment design, and result analysis, especially for the hypothesis formulation part. In addition, some research can even be done directly through AI models.

Drug development is an important application of AI in medical research. With the development of big data in medicine, artificial intelligence technology is gradually introduced into every stage of drug development in order to improve the efficiency of drug development. For example, in the preclinical research stage, possible drug targets are mined from medical literature through text analysis technology, and compounds are screened by analyzing the molecular structure of drugs through machine learning algorithms; in the clinical trial stage, patient cohorts are automatically constructed through electronic medical record analysis technology; and in the post-marketing stage, drug side effects are discovered through technologies such as electronic medical record analysis and multimedia data analysis.

## 5. Conclusion

Through the research on AI technology, more intelligent concepts and technologies can be continuously innovated, and the application of AI technology can be increased, which can make people's traditional thinking networked to better adapt to the work and life in the current era, and improve the production efficiency of the industry. Vigorously promoting the application of AI technology not only enables the society to develop towards technology and modernization, but also improves the ability of social innovation.

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