Development of Artificial Intelligence Technology in Computer Science Era

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Abstract: Artificial intelligence has indeed achieved breakthrough results in the field of learning and recognition, but it also faces thorny problems, such as the intractable problem of complex semantics caused by the emergence of machine translation. In recent years, the development of Internet technology and the wide application of big data cloud computing have enriched the possibility of intelligent algorithms, and artificial intelligence research has become the highlight. The main purpose of this paper is to study the development of artificial intelligence in the era of computer science. Experiments show that from the analysis of the changes in the proportion of the overall functional structure over the past 10 years, the proportion of employment in high-skilled industries has decreased by 2.42%, which is smaller than the decrease in the proportion of employment in medium-skilled industries by 4.59%, and the proportion of employment in low-skilled industries has increased by 7.01%. It can be seen that the proportion of employment in medium-skilled industries has dropped the most, and the proportion of employment in low-skilled industries has increased significantly, showing a relatively obvious phenomenon of employment polarization.

1. Introduction

The semantic problem is the first problem to be solved in the dilemma faced by artificial intelligence. The development bottleneck encountered by artificial intelligence in the field of natural language processing in the last century shows that the problem of semantics is the core reason for limiting artificial intelligence. Intelligent machines cannot realize semantic content, and simple syntactic operations are only data-level answers, not comprehension. The semantic realization of artificial intelligence machine translation is a difficulty that must be solved in the technical field, and the semantic problem has also become the focus of debate in the field of philosophy. This paper attempts to clarify the relevant concepts and contents of semantic problems in the process of exploring the development of artificial intelligence. On the basis of exploring the importance and necessity of research on artificial intelligence semantic problems, it sorts out the

logic of semantic problems and tries to give solutions [1-2].

There are many applications or development theories about AI. Among them, Tsuzuki described the intelligent manufacturing system developed based on the concept of the system by developing the automation and AI (artificial intelligence) technology of the welding and inspection process of aero-engine parts. Artificial intelligence programs have been created so that the robot can always weld under optimal conditions [3]. A technique using a machine learning approach based on multilayer neural networks was developed and applied, which is currently receiving the most attention in machines. Kerikme T analyzes the situation from an ethical and practical perspective [4]. The final conclusion is that the artificial intelligence that currently exists is so far from humans that there is simply no need to seriously consider the identity of legal persons or agents. Taken together, this is something humanity is not ready to do, and probably never will be that far.

This paper mainly takes the research reasons of artificial intelligence semantic problem as the idea, and sorts out the domestic and foreign research on artificial intelligence and related research. This paper introduces artificial intelligence and its related theoretical background, and introduces the theoretical background of artificial intelligence and semantic problems from three aspects: the historical origin of the concept of intelligence, the research approach of artificial intelligence, and the clarification of artificial intelligence semantic problems. Firstly, according to the clue of time, it discusses the generation, development and realization of the concept of intelligence from the three levels of ancient Greek philosophy, modern philosophy and modern computer. Discuss and clarify the semantic problems of artificial intelligence, and analyze the causes of semantic problems. Discuss the semantic exploration in the field of artificial intelligence, and show the data solutions to semantic problems in the field of artificial intelligence. For the solution direction given by artificial intelligence semantic problems, this paper seeks the answers from the perspectives of technical implementation, linguistics and cognitive neuroscience. The technological breakthrough of natural language processing, the construction of universal semantic theory and the establishment of the concept of system intelligence all provide possible directions for the solution of artificial intelligence semantic problems[5-6].

2. Design and Research of Artificial Intelligence Technology in Computer Science Era

2.1 Main Application Areas of Artificial Intelligence Technology

(1) Expert system

Expert system is the most important part of artificial intelligence system, and it is also one of the most representative branches of artificial intelligence technology from theory to practice. Expert system is a program system developed by scientists using intelligent technology. The system has complete knowledge programs in a specific field. Mastering and using relevant knowledge can replace people to complete corresponding behaviors and help humans deal with problems in corresponding fields. Its application fields are also very wide, such as the financial field, statistics and medical fields, all of which involve expert systems. Similar to the knowledge and thinking mode of our human experts, it can solve complex problems through its own massive knowledge and get the same answers as human experts. The expert system has developed to today and has become a comprehensive domain system covering several disciplines. In addition to supporting multiple languages, the system also has a wide variety of reasoning mechanisms and recognition mechanisms [7-8].

(2) Pattern recognition

Model recognition is the analysis and processing of data and information about miracles or

objects in any form of representation through mathematical methods, and is the whole process of speaking, identifying, explaining, describing and sharing these events and objects. The scientific basis for design identification is Shannon's detailed information process and Bayesian probability formula, an information processing tool that compares human rational thought processes. At this stage, the first model identification is roughly divided into two types, namely structural identification and statistical identification. After several years of development and research, the design recognition has been greatly improved. Remote intelligence, fingerprint recognition, text and speech recognition, iris recognition, visual recognition, manual character recognition, performance lookups and directories are all areas. Standard technology for product identification.

(3) Natural language understanding and automatic programming

Natural language understanding can be understood as human-machine dialogue, which is also an important part of the field of artificial intelligence technology. Finding a way to identify the human communication language in daily life is the core research content of natural language understanding. Natural language understanding and automatic programming design endow intelligent devices with anthropomorphic communication functions, assisting intelligent devices and humans to communicate freely. At this stage, the computer already has the ability to write low-difficulty programs by itself. At the same time, after the corresponding program of the computer scans the material text, the material text can be converted between different languages. Automatic programming refers to the design concept of a type of computer program with objectivity and instruction machinery. The main function is to improve the work efficiency of mechanized labor and increase the accuracy rate to 100%. It is widely used in pipelined repetitive work and research related software[9-10].

(4) Artificial Neural Network

Artificial neural network, also known as connection model or neural network, relies on the connection structure principle of nerves and regulating nerves to judge and identify information. This technology simulates the neural structure principle of one or several organisms, and uses intelligent technology to the construction principle is reproduced. The artificial neural network is used to study the behavioral connection characteristics and working principle of the neural network of the animal body, and at the same time, the corresponding technology is used to establish the system and algorithm. It can also act as human brain intelligence, has the ability to imitate human advanced behavior, and can provide better services for human beings. Research in most fields at this stage involves neural networks. Neural networks can be used as processing methods in practical applications in other fields, such as robotics, expert systems, knowledge engineering, and pattern recognition. After being continuously optimized and improved in the future, it will make great contributions in various fields.

(5) Robotics

Robotics is also called robotic engineering or robotics, and the most important research content is to create "anthropomorphic" application functions for robots and to establish the connection between robots and communication objects. There are many fields and disciplines involved in robotics, such as action planning, control technology, sensing, dynamics and kinematics. Robotics is one of the main branches of artificial intelligence technology, and the progress of robotics will drive the progress and development of artificial intelligence technology. It is precisely because of the "personification" of robots that industrial robots are widely used, and at the same time, they have also caused changes in social relations and caused many ethical issues [11-12].

2.2 Algorithm Research

Particle swarm optimization, that is, particles adjust their motion direction and speed through their own historical experience and group experience, and approach their own historical optimal solution and group optimal solution to search for the optimal solution.

Suppose that in the D-dimensional target search space, N particles form a community, and the i-th particle is represented as a D-dimensional vector:

$$X_i = (x_{i1}, x_{i2}, \ldots, x_{iD}), i = 1, 2, \ldots, N. \tag{1}$$

The velocity of the i-th particle is recorded as:

$$V_i = (v_{i1}, v_{i2}, \ldots, v_{iD}), i = 1, 2, \ldots, N. \tag{2}$$

The individual position of the best fitness value, the individual optimal solution:

$$P_{best} = (p_{i1}, p_{i2}, \ldots, p_{iD}), i = 1, 2, \ldots, N. \tag{3}$$

The best position of the group, the global optimal solution:

$$g_{best} = (p_{g1}, p_{g2}, \ldots, p_{gD}) \tag{4}$$

In the process of finding the optimal solution, the particle updates its position and velocity according to the following formula through the individual solution and the optimal solution, and gradually obtains the optimal solution together.

3. Experimental Research on Artificial Intelligence Technology in Computer Science Era

3.1 The Level of Ideological Awareness

(1) Follow "people-oriented"

In order to solve the ethical issues raised by AI technology, we need to strengthen the value consideration of AI technology. The development of science and technology also needs the idea of "people-oriented". From the perspective of Marxist theory, the ways and methods of human transformation and understanding of the world include science and technology. The use of science and technology is one of the activities of human beings that is different from animals, and reflects human self-consciousness, self-consciousness and pursuit of freedom consciousness. Therefore, the value standard of science and technology is measured by its essence, starting from its most basic nature, and taking human beings as the core, science and technology can show its meaning and value.

(2) Enhance scientists' sense of social responsibility

Compared with scientists in ordinary scientific research, artificial intelligence scientists not only need to undertake social responsibilities at the technical level, but also need to undertake more subdivided social responsibilities at the national and human levels. In the research and development of artificial intelligence technology, scientists should establish a correct view of scientific development and enhance their sense of social responsibility. They should not think that only one new technology needs to be developed, but should consider whether this technology is beneficial to the long-term development of human society. Scientists engaged in research in this field must assume the responsibilities in the early, middle and late stages of the technology research process, and at the same time pay attention to the responsibilities of the entire artificial intelligence

technology in the application stage; Cultural connotation is integrated into research; scientists must use artificial intelligence technology rationally.

(3) Improve the moral literacy of the public

The first is to help the public establish correct scientific concepts, so that they have a correct understanding of today's artificial intelligence technology. In the long run, technology will promote the development of human society, and it will also continue to optimize with social development. Secondly, what we need to do is to establish a correct ethical and moral concept of the public, and strive to improve people's overall quality and personal quality.

1) It is possible to actively publicize artificial intelligence technology and its related knowledge to the public through the Internet, communities, schools and other channels, so that people have a sufficient understanding of the positive and negative effects that the technology may bring. Ethical risks can be prepared psychologically and behaviorally, so as not to cause tension in the atmosphere of public opinion.

2) Strengthen the education of the moral concept of the public. In the process of popularizing and educating the public in the ethical concept, not only let the public understand the moral constraints, but also let people internalize it in their hearts and form a good society in the society. ethical and moral ethos.

3) Take action to strengthen public self-discipline in the use of artificial intelligence. In today's society, the phenomenon of technological alienation is becoming more and more obvious, and the situation is very serious. However, the biggest reason for this phenomenon is actually because the public is too dependent on artificial intelligence products, and they are not self-disciplined in the process of using products, so they want to improve the current situation. In this situation, the public needs to take practical actions to reduce their dependence on artificial intelligence products, pay attention to the improvement of self-discipline when using products, and rationally use artificial intelligence products instead of letting themselves be controlled by them.

3.2 Social System Level

(1) Ethics and ethics for building artificial intelligence technology

At the same time as the development of artificial intelligence technology, relevant ethics and moral standards should be established, and the construction of an ethical and moral standard system cannot be started until the development of artificial intelligence technology is very complete and advanced. This is because as the artificial intelligence system becomes more and more perfect and its technology becomes more and more advanced, the corresponding ethical standards it should follow should be set higher, and the formulation will be more complicated and difficult. If we want to better solve the ethical dilemma faced by artificial intelligence, we still need to be in the human-machine relationship, and artificial intelligence and human valuesand ethics must be consistent. From the perspective of the development trend of artificial intelligence and the orientation of the development of human society, we can clarify what the society needs today, not only does it not simply limit the research and development of artificial intelligence technology, but also needs to establish ethical norms that adapt to the times to promote The coordinated development of artificial intelligence and society. With the continuous development of artificial intelligence technology, it is necessary to continuously establish and improve the relevant ethical and moral norms system.

(2) Establish a legal system for artificial intelligence technology

Legislative issues for artificial intelligence can be approached from two aspects. First,

considering the current ambiguous human-machine relationship, whether it is possible to consider giving artificial intelligence the status of a legal subject. The current artificial intelligence is still in the stage of weak artificial intelligence technology. It can only respond and act according to instructions, and cannot become a legal subject. We need to consider that when artificial intelligence develops to a certain level, it should have some rights. This is also to allow Artificial intelligence can serve the society more effectively and be accepted by the public. Therefore, the relevant legislative departments should also take this into consideration and formulate relevant legal standards. The second is to establish a more mature legal system in all aspects involving artificial intelligence to regulate behavioral standards, that is, the code of conduct that artificial intelligence technology needs to obey in the corresponding field. To regulate the development of artificial intelligence from this legislative perspective, two points need to be considered: first, the development and use of human brain chips, language recognition, precision medicine, intelligent robots and autonomous driving systems need to be within the scope permitted by law. At the same time, it is necessary to establish strict safety guidelines, be equipped with reasonable corresponding facilities, and create an orderly and healthy management environment; secondly, when the technology causes those negative impacts during the application process, the attribution of responsibility for the negative impacts should be immediately determined, and the responsibility for the negative impacts should be determined according to the law. Standard and actual situation to investigate and analyze, scientifically and reasonably determine the attribution of responsibility, find out the specific link of the problem, and determine the responsible party.

(3) Strengthen the supervision mechanism and control of artificial intelligence technology

As an emerging comprehensive field technology, artificial intelligence technology has an extremely fast information transmission speed. If criminals use this feature with purpose, it will cause immeasurable harm to society. Therefore, in addition to formulating the necessary legal system, control and supervision must be carried out in the process of research and development, production and use of artificial intelligence technology. The first is to establish a special regulatory agency to strictly review and supervise companies and enterprises related to artificial intelligence technology, and strictly review the application of technical projects related to artificial intelligence technology, and evaluate the design concepts of all artificial intelligence products from an ethical level. What impact will artificial intelligence products have on future social groups; secondly, strictly supervise the use of artificial intelligence technology and personnel, scientific and technological researchers of artificial intelligence technology, conduct a comprehensive assessment of the moral concepts of the above-mentioned personnel, and eliminate the above-mentioned personnel Those who lack moral literacy themselves use anti-social design concepts or abuse artificial intelligence products to destroy the harmony and stability of society. At the same time, for the problems caused by the above-mentioned personnel, they should be held accountable layer by layer in accordance with legal procedures as quickly as possible.

3.3 Non-Institutional Level

(1) Establish industrial norms for artificial intelligence technology

In the planning for the development of artificial intelligence technology, we also need to regulate artificial intelligence technology and industry. In addition to the necessary systems, we also need to establish a market mechanism to guide researchers and manufacturers in the direction of artificial intelligence production. People often develop some products that are not environmentally friendly and unsafe because of the economic benefits of the market. The state and government can establish

an effective market mechanism and set up reward programs to give those AI products that meet the standards and meet the healthy development of human beings. At the same time, for smart products that do not meet the standards, the market should set up an elimination mechanism and a recycling mechanism to promote the industrial regulation of artificial intelligence technology.

(2) Establish a talent training center and exchange platform

One of the reasons for the ethical problems caused by the development of artificial intelligence technology is that because of the different cultures, valuesand knowledge levels of all parties, the cognition and grasp of artificial intelligence technology are also different. In order to realize the healthy development of artificial intelligence in the future, we still need to give full play to the strength of scientists, entrepreneurs and all walks of life, and integrate the fields of natural science and social science. Therefore, a talent training center and exchange platform for artificial intelligence technology should be established. The first is to establish a talent training center. The national and international levels should vigorously establish a training center for artificial intelligence technology and theoretical research, set up a study fund, and train more theoretical scholars and technical experts in artificial intelligence to promote artificial intelligence develop. The second is to establish a talent exchange center. The government can vigorously carry out academic exchanges between researchers, philosophers, and researchers with bloodstains. At the same time, it should also encourage relevant social organizations, associations and other institutions to provide them with opportunities to meet and communicate platform. Before the meeting, relevant organizations can also go to the public to do corresponding surveys, and they can communicate and discuss the problems that most need to be solved in the society, so as to achieve the unity of theory and practice.

4. Experimental Analysis of Artificial Intelligence Technology in Computer Science Era

4.1 Statistics of Employment Proportion

This paper classifies industries with different skill levels, sums the employment proportions of different industries in the same year, and obtains the employment proportion of a certain skill level industry in that year. The total number of industries in the national economic industry category is increased to 19 industry categories, and after classification, the employment proportions of the three categories of high, medium and low skill industries in 10 years are finally obtained, as show in Table 1.

Table 1: Changes in the proportion of industry employment by skill classification

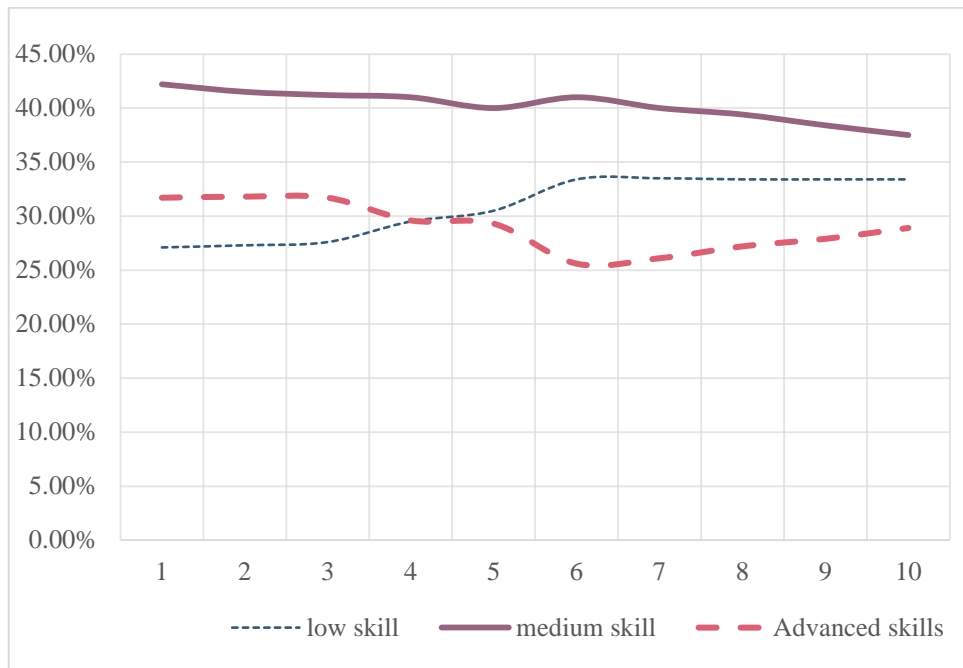| Years	low skill	medium skill	Advanced skills
1	27.1%	42.2%	31.7%
2	27.3%	41.5%	31.8%
3	27.6%	41.2%	31.7%
4	29.5%	41.0%	29.6%
5	30.5%	40.0%	29.3%
6	33.4%	41.0%	25.6%
7	33.5%	40.0%	26.1%
8	33.4%	39.4%	27.2%
9	33.4%	38.4%	27.9%
10	33.4%	37.5%	28.9%

Figure 1: Changes in the proportion of industry employment by skill classification

It can be seen from 1 that the employment skills structure of workers shows a polarization phenomenon. Among them, the proportion of employment in high-skilled industries remained basically unchanged in the first three years, at about 31.5%, and in the middle three years showed a downward trend, down to 25.7%. The proportion of employment in high-skilled industries gradually increased from the sixth year; the proportion of employment in low-skilled industries From the 1st to the 6th year, it showed an upward trend, and it basically stabilized at about 33.5% since the 6th year; the proportion of employment in the middle-skilled industry began to decline slowly from the first year, from 41.88% to 37.29% in the 10th year.

An analysis of the changes in the proportion of the overall functional structure over the past 10 years shows that the proportion of employment in high-skilled industries decreased by 2.42%, which was smaller than the decrease in the proportion of employment in medium-skilled industries by 4.59%, and the proportion of employment in low-skilled industries increased by 7.01%. The proportion of employment in skilled industries dropped the most, and the proportion of employment in low-skilled industries increased significantly, showing a relatively obvious phenomenon of employment polarization.
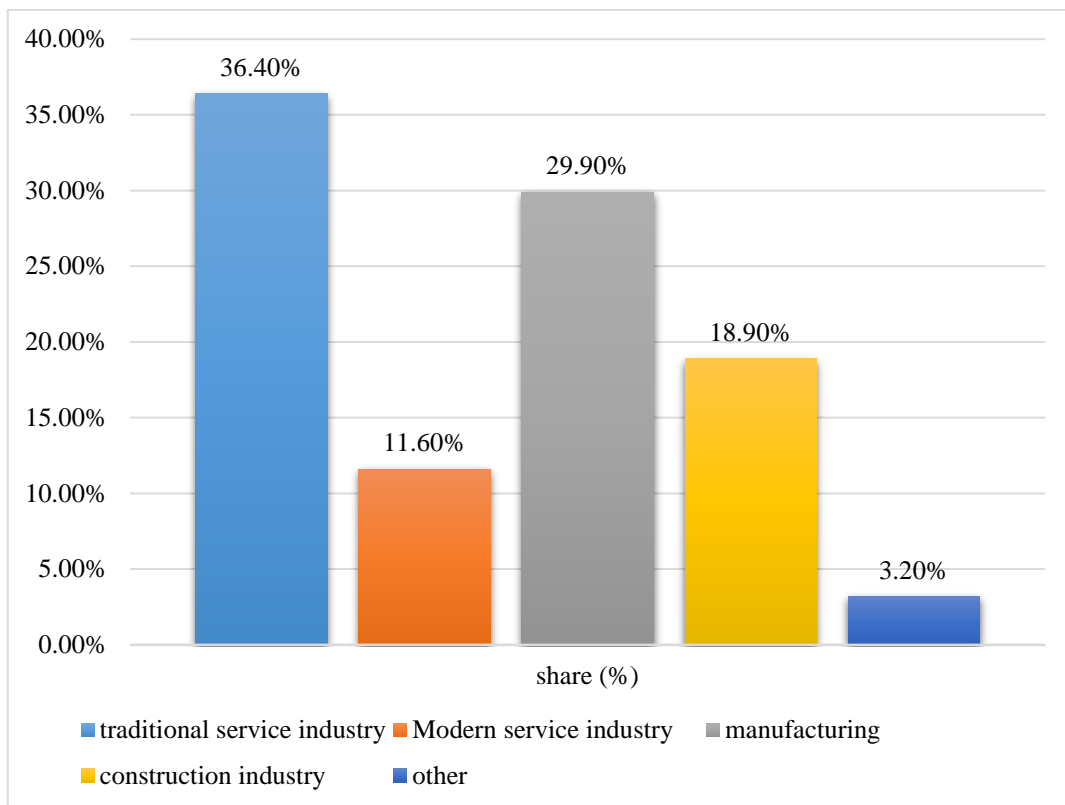
4.2 Industry Proportion

The following table 2 shows the proportion of rural workers employed in urban areas:

Table 2: Proportion of industry employees working in rural areas

Industry	traditional service industry	Modern service industry	manufacturing	construction industry	other
share(%)	36.40%	11.60%	29.90%	18.90%	3.20%

Figure 2: Proportion of industry employees working in rural areas

As can be seen from Figure 2, the highest proportion of rural migrant workers in my country is "traditional service industry", accounting for 36.4%, followed by "manufacturing industry", accounting for 29.9%, and "construction industry", accounting for 18%. , 9%, the least is "modern service industry", accounting for 11.6%. After specific analysis, it is concluded that most of the rural migrant workers choose industries with low skill requirements and less information technology content, such as wholesale and retail, accommodation and catering in the "traditional service industry", while "traditional service industries" include the "traditional service industry". "Modern service industry" requires high skills and high technical content, and most migrant workers can only stay away due to their low skills.

5. Conclusions

After decades of progress and development, artificial intelligence technology already has relatively mature concepts and technologies. The application of artificial intelligence technology in various industries has brought about tremendous changes in various industries. With the improvement and maturity of artificial intelligence technology, many traditional industries will face different challenges, and the ethical issues caused by them will gradually increase. Artificial intelligence technology has a significant impact on the development of human society, not only changing people's way of life and social relations, but also posing new challenges to people's development and the old ethical system. Therefore, we need to correctly understand the nature of artificial intelligence, establish correct values, adjust and change the ethical and moral system, establish a sound legal supervision mechanism and market operation mechanism, actively adapt to

the application and development of artificial intelligence technology, and give full play to the positive effects of artificial intelligence. It can reduce the risk and impact of artificial intelligence applications on society, and promote the harmonious development of society.

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