Trends of Robot Application——Ethical Response

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With the rapid development of science and technology and the arrival of the information age, computer technology has also gained rapid development, and has a very wide application prospect in the current social environment. But at the same time, robots may also induce a variety of ethical problems, the existence of these ethical problems also affect the sustainable development of robots. This paper mainly aims at the change of robot application trend and related ethical issues, hoping to provide some reference for robot application and development.

1. Introduction

With the rapid development of robot technology and artificial intelligence technology, the scope of robot application is becoming wider and wider, and the types of robots are becoming more and more, which not only brings great convenience to people, but also liberates manpower and improves people's quality of life. But different types of robots will also bring a lot of ethical and moral problems, affecting the continuous research and development of robots. Therefore, it is necessary to strengthen the exploration of the ethical problems that may be caused in the process of robot application, based on the actual situation of society and the prospect of the development of the times, strengthen the value evaluation of the rationality of robot technology, and carry out reasonable ethical regulation on the application of robot in development.

2. Overview of Robotics

Robot refers to the combination of machines and people to produce similar to human physical and mental work of the machine, robots can work according to the artificially set procedures, but also the application of artificial intelligence technical procedures for autonomous work. At present, the robot equipment in the market is divided into three generations, the first generation of robots is mainly through the work flow prepared in advance within the staff, or through the way of teaching and reproduction to carry out activities. The first generation of robots only has the ability to store, remember and repeat work, and lacks the ability to respond to the external environment. The second generation robot has certain intelligence characteristic, but at the same time also needs the technical personnel's help, according to the technical personnel pre-programmed program completes or repeats a certain work automatically. The second generation robot has visu-

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al sensors, sensory sensors, information processing functions and non-visual sensors, which can be called sensory robots. The third generation machines, the artificial intelligence robots, can identify, digest, understand and reason out solutions on their own[1].

3. Robot Ethics

Ethics generally refers to the theory of moral problems, which studies the emergence, essence, development, function, evaluation and law of education and cultivation of morality. Morality comes into being in the interest relationship between nature and all the development and survival of society, which refers to the norms of good and evil in social behavior and the sum of behavioral activities and psychological consciousness. As one of the social ideology, morality is fed back through the living conditions and social material based on certain social and economic relations, while the ethics of studying morality is reflected by all the codes of conduct of people, such as rights and obligations, good and evil, ideal and mission. Robot ethics is an important part of mechanical ethics, which refers to the human-centered ethics on the use and construction of robots. Robotic ethics is an important direction of ethical research and a prominent manifestation of high-tech ethics[2].

With the rapid development of science and technology and the rapid progress of artificial intelligence technology, the scope of robot research is constantly expanding, and the field of application is gradually expanding, which makes the connection between human beings and machines more closely. To some extent, people naturally want robot technology and function to be more and more perfect, so that they can better serve people's life and production. But at the same time, the continuous improvement of robot function and the gradual improvement of intelligent level will also pose a threat to people's safety to a certain extent. How to avoid the negative part of the robot and give full play to the positive side of the robot has become one of the most critical problems in the field of interpersonal relations. Robotic ethics constrains the development of robots by constructing a relevant system of the robot's code of conduct, making them more safe and stable[3].

4. Application Status of Robot

4.1 Application Status of Military Robots

Military robots can be divided into aerial robots, ground robots, space robots and underwater robots according to their applications. Military robots play an increasingly im-

portant role in the battlefield. To some extent, the development of military robots is the biggest driver of the development of robot technology. The United States spends more than $6 billion a year on UAV systems used in war, and the investment is increasing year by year. The United States as a military power, robot technology has a significant development advantage. American X47B drones have taken the lead in aircraft carrier take-off and landing, can achieve full autonomous take-off and landing without human manipulation. UAVs have become the backbone of targeted killings and beheadings by national armies, and the United States has also used ground robots to conduct explosive ordnance disposal and indoor reconnaissance missions. Now, the United States has invested a lot of time and material resources in the research of ground transport robots and unmanned transport aircraft. In the future, the United States may take the joint operation mode of man-machine cooperation system as the development goal to study unmanned tanks to compensate for the transportation logistics supply capacity. With the rapid development of high-tech technology, the performance of military forces in the future will become more and more dependent on military robots[4].

4.2 Application of Civil Robots

The rapid development of artificial intelligence technology makes a variety of high-tech equipment emerge in endlessly, robot technology is one of the important applications in the field of artificial intelligence development. Robot more and more rich functions are gradually refreshing people's cognition, through the AlphaGo of big data and deep learning technology can even defeat the master of human go. Boston robots can do backflips and other skills, and brain-controlled robots are increasingly functional. At the same time, the application of robots in daily life is becoming more and more popular. At present, robots have been widely used in automobile manufacturing, lathe processing and deep-sea exploration and other manufacturing industries. Many express delivery companies have gradually introduced a large number of drones and robots to improve distribution efficiency and reduce the input of human resources. The continuous development of science and technology also makes the function of robot more and more perfect, more intelligent and automatic. The lights-out plant operated by the Japanese robot company is completely self-produced by robots and does not need to be regulated, and has achieved good applications in the industrial field. The application of robot technology in the current medical industry also has a good prospect, can be assisted by human manipulation, by the robot to complete high-precision surgery, greatly reduce the op-

eration accidents caused by human factors, improve the success rate of surgery[5].

5. Ethical Issues in Robotics

With the continuous development of robot technology and artificial intelligence technology, many human characteristics are gradually given to the machine. The robot not only has the tool attribute, but also has the unique existence value, which brings certain threat to the human subjectivity. People also have a certain panic about the development of robots, robots are no longer limited to the extension of human limbs or the enhancement of related human functions, have the ability of reasoning and autonomous decision-making, have human feelings and autonomous will, which may lead to the loss of human subjective status and threaten the survival and development of people. With the rapid progress of modern information technology, the ability of intelligent robot in natural language understanding, creativity, perception and social, has gradually broken through, which has brought great impetus to social development, but also created great material power for people[6].

According to the investigation and research, the robot can infer by logic rules, make reasonable decision and make independent judgment. The development of robots not only needs to solve the traditional ethical problems, but also induces a series of new ethical problems. With the continuous development and wide application of robot technology, the problems of accidents between various machines and people are also constantly appearing, such as the accidents of collision and death of driverless cars and the accidents of accidental injury of children by machines, which affect the safety of people. This kind of robot killing and wounding events gradually threaten people's safety, involving the problem of accident liability determination, whether the designer or the machine is responsible for such events is not specific. Image recognition technology and machine learning technology make driverless cars easy to go on the road, but also bring about the ethical dilemma of machine design thinking. The contradiction between the privacy and data sharing involved in robot data acquisition also brings a series of ethical problems[7].

Military robots have more powerful destructive power than human soldiers. Under the armed of modern science and technology, robots are becoming more and more lethal. Although they can avoid human soldiers fighting in harsh environments and greatly reduce casualties, robots themselves also have no sympathy for human beings and are truly cold-blooded killing machines. Although people can solve this ethical problem by agreeing that robots do not fight humans and that robots fight robots, there are various difficulties in practical operation. The ethical problem of military robots is the most discussed in the research of robot ethics. The main aspects of the research are how to control the destructive power of military robots, how to make military robots more moral than human beings, and how to avoid the indiscriminate killing of innocent people by military robots [8].

First of all, it is necessary to carry on the ethical design to the robot, so that the military robot has a good ethical judgment ability, and can follow the specific ethical norms to avoid ruthless killing, but the setting of specific ethical norms and how to realize computer programs are also the focus of research. In a battlefield environment, even well-trained soldiers can hardly distinguish between combatants and non-combatants. It is also very difficult to make the robot distinguish reliably under the existing technical conditions. Secondly, the control of the degree of autonomy of military robots is also a key problem in the application of military robots. At present, the important trend of military robot research and development in the world is to improve the degree of robot autonomy, but if people give too much decision-making power to the robot, it will be easier to induce the war, and if the robot makes a wrong judgment and causes the war to break out, or the execution error in the course of the war, the distribution of responsibility is a key problem. In addition, it is necessary to limit the time and scope of use of military robots in ethical research, and prohibit them from carrying biological, chemical and nuclear weapons of mass destruction. But to do this requires a wider range of international cooperation, a few countries agree that there is not much application value, the use of military robots needs to be limited by the form of international feedback and the extent of use. The current monitoring treaty is still less content for military robots, the relevant consultation and negotiation is imminent, the research on military robot ethics is a lot of principled and theoretical, in order to truly achieve the international control of military robots, but also need to be more in-depth and detailed exploration, as far as possible to reduce the large-scale damage caused by military robots [6].

There are many types of civil robots, which are widely used in various industries, which greatly liberate the productivity and improve the quality of life of people. Robots are more involved in people's daily life. For example, robots can take care of children and the elderly in home care, effectively deal with family emergency emergencies, and do a good job in handling traffic accidents and fire accidents. With regard to education, children's learning can be mentored, and the handling of robots is more ef-

fective and scientific than human beings. But at present, robots can not communicate with human emotion, and are relatively weak in emotional perception. In traffic accidents and fire accidents, if the rescue is carried out through the robot, the survival rate of the rescue object can be improved. In the same way, the procedure set under environmental conditions will stipulate that the robot chooses the priority of higher survival rate to carry on the rescue, but under the condition of ethics, the human will usually choose to save the women and children, which is also an urgent problem to be solved in the development process before the future. In the process of people's daily work, more and more robots replace the traditional human work mode into the field of manufacturing and engineering, which greatly saves the production cost and improves the economic benefit. Even in some fields, robots can completely replace the mode of manual work, so how the replaced workers solve their own work needs is also an important problem to be solved in the robot age.

6. Reflections on the Application of Robots

The rapid development of robot technology has brought great contribution to society, but at the same time, it also brings serious threat to the main position of human beings. In the era of artificial intelligence, how to solve a series of ethical problems brought by the application and development of robots is the key problem in the development of robot technology at present. At present, the world has not established an authoritative organization to manage the development and application of robot technology, nor has it formulated a general law to regulate the development of robot technology. Therefore, it is necessary to make feasible laws for the standard control of robot technology, and the robot technology with autonomous thinking and autonomous decision-making ability has not been applied on a large scale in the society at present, and there are not many ethical problems that appear temporarily, but it is still necessary to prevent the ethical problems in advance for the development of robot technology. The legislature needs to take corresponding actions to define a clear scope and create good conditions for the development of robot technology. The use of codes to prevent injury can be prohibited without the approval of the relevant bodies and laws. Law enforcement agencies also need to be empowered to take security action. The rapid development of artificial intelligence technology makes the relationship between robot and human more and more close, and the ethical and moral problems related to the development of robot need to be solved by society, government and individual. At the government level, we need to strength-

en the establishment and improvement of the system of relevant laws and regulations, social research workers and experts need to work hard to develop robots with emotion, wisdom and independent discrimination against human beings, and individuals need to strengthen their understanding of robot subjects and enhance citizens' moral and cultural literacy. Through the joint efforts of the government, society and individuals to achieve the harmonious development of human beings and robots.

7. Conclusion

To sum up, the rapid development of robot technology not only brings great convenience to people's life, but also has ethical problems, which brings certain risks to people's survival and development. Therefore, it is necessary to strengthen the research on the ethical problems related to robot technology, do a good job in the ethical design and ethical norms of robots, coordinate the relationship between people and people and between people and robots in the robot age, and create good conditions for the sustainable and stable development of robot technology, so that robot technology can better benefit human life.

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