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Research on artificial intelligence tort liability

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Abstract: *With the development of high-tech industries, artificial intelligence has gradually entered the life of the general public, providing convenience for human beings in different fields. In addition, artificial intelligence has also brought about some legal issues, which have aroused discussions in the jurisprudence. Whether AI can assume legal responsibility as a complete legal subject in tort cases, how to allocate tort liability between producers and users of AI in tort cases and how to improve the relevant legal system in the face of these problems are all difficult issues that need to be resolved in practice. In the 21st century, with the rapid development of technology, these issues must be properly addressed to maintain the uniformity of application of the law in judicial practice.*

Keywords: *Artificial intelligence; Subject matter of law; Tort liability; Allocation of liability*

1. Introduction

Artificial intelligence, a product of the technological age, shines in different fields and facilitates human life. Compared to the previous purely manual manipulation of machines, AI has a higher degree of autonomous mobility and independent behaviour, and can behave without human control, and even has the ability to learn on its own. In addition, AI is less costly and more efficient in providing services and is therefore mostly chosen to replace human labour in life. The commission of acts is often accompanied by infringement, and AI, when used in our lives, may constitute infringement of others at any time, such as medical accidents that may occur with AI products applied in the medical field, or traffic accidents that may be caused by driverless motor vehicles applied in the traffic field. In these infringement cases, how to define the legal subject status of AI, how to allocate infringement liability and how to improve the relevant legal system are all realistic problems that need to be solved in practice. The development of the artificial intelligence industry is bound to bring about a series of problems, which must be supported by a sound legal system in order to solve them.

2. Legal subject status of artificial intelligence

The question of whether and to what extent artificial intelligence has the status of a legal subject determines the extent of its tort liability.[1]

The first view is that AI has the status of a full legal subject. This view affirms that AI has the status of a full legal subject, that it has a full legal personality recognized by law as a human-like person, that it has the ability to learn and understand similarly to humans, and that on top of this it has some creativity and communication skills. In addition, scholars who advocate this view also cite the example of the once-famous artificial intelligence "Sophia", which was granted citizenship by its country, Saudi Arabia, at the time, implying that there are countries that recognise artificial intelligence as a humanoid legal subject at the international level. This view is also based on the characteristics of artificial intelligence, arguing that artificial intelligence has a high degree of autonomous learning ability and intelligence, and is able to escape from human control and make independent choices to act, and therefore has a considerable degree of anthropomorphic characteristics, and its legal status should be comparable to that of humans, with full legal subject status. The second view is that AI has limited legal subject status. This view affirms that AI is capable of performing acts, but does not have an autonomous will and is not equivalent to a legally complete human being. The doctrine compares AI to slaves in ancient times, who did not have the capacity for independent and autonomous consciousness and behaviour, but were still essentially ordinary machines under human control. In other words, although AI has a human-like consciousness on the surface and can act independently, this behaviour is pre-determined by humans, not by AI based on its own judgement, and is not completely free from human control in essence. Therefore, in essence, artificial intelligence is only a kind of intelligent machine created by human beings to provide services, and does not have the conditions to become a

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legal subject. The third viewpoint directly does not recognize AI as a legal subject, which advocates that the existence of AI is merely a "tool" designed by humans to facilitate life, no different from ordinary computers and mobile phones, and that its human-like consciousness and independent behavior are only under human control in accordance with pre-set programming. The human-like consciousness and independent behaviour they exhibit are only under human control and in accordance with pre-programmed instructions[2] does not perform independent acts of its own volition, and therefore does not qualify as a legal subject.

Comparing the above three views, the author prefers the third view. The first view equates the legal subject status of AI with that of human beings, ignoring the difference between the two and not taking into account whether AI products have the ability to bear tort liability. Once the subject status of AI is legally recognized, it means that AI needs to take responsibility for the tort problems arising from itself, but the reality is that AI does not have the ability to take responsibility for The reality is that AI does not have the capacity to compensate victims. In addition, once the status of AI as a legal subject is recognised, it will be impossible to determine the legal nature of human behaviour in providing services using AI products. These are real problems in practice, and they all determine that AI cannot have the full status of a legal subject equal to that of humans. The second view only affirms the ability of AI to perform acts, without affirming that it has a sense of autonomous rights, and does not clearly express the legal attributes of AI. Secondly, artificial intelligence does not have a sense of autonomous rights and cannot have the ability to assume responsibility, which will lead to the inability to allocate tort liability and timely relief for victims.[3]

In contrast, the third view is more relevant to the actual situation and better addresses the problems in practice. Firstly, the human-like consciousness of AI is manifested through human pre-programming and cannot itself be divorced from human operational charges. Secondly, AI has some independent learning capability because humans pre-write computer programs and algorithms when manufacturing AI products, and it can run these programs to be able to make judgments and behaviours. In fact, AI is an intelligent product with a high degree of technological development, which cannot have independent volitional capacity, let alone become a subject of rights in law. Even though it has a certain degree of intelligence and anthropomorphism, which is very different from ordinary products, it is still essentially a tool and does not meet the composition of legal subject qualification. Finally, by denying the subject qualification of artificial intelligence, the tort liability can be allocated between the producer and the user, and the victim can receive timely compensation and relief.

3. Artificial Intelligence Infringement Forms and Liability Attribution

Without recognizing the status of AI as a legal subject, once the AI has caused infringement to others, the issue of responsibility of the AI itself can be disregarded and the subject of responsibility can be determined from the perspective of "people".

3.1. Infringement caused by operational errors in the use of artificial intelligence by users

After an AI product enters the market circulation, infringement can occur for different reasons and the liability for infringement needs to be analysed on a case-by-case basis. The user, as the first person to come into contact with the AI after it has been put into use, can easily cause the AI to infringe due to improper operation. In the event of such infringement, it should be verified that the AI product itself meets the standards for use in the marketplace. If there is no product inspection quality problem, the infringement that occurs at this point is caused solely by the fault of the user, and therefore the user should be held responsible for compensating others who have been harmed based on the degree of fault.

3.2. Infringement due to problems with the AI product itself

Before entering the market, AI products usually go through a rigorous product inspection and trial process, and most of the products put on the market meet the usage standards. However, despite this rigour, the market can be laden with defective products for various reasons, and the purchase and use of these defective AI products can lead to a significant degree of infringement. In the absence of fault on the part of the user, once infringement has occurred, it is important to verify whether the AI product itself is defective, and if so, the producer of the AI product should be held liable for infringement in such cases, regardless of whether the producer itself is at fault, as long as the product itself is faulty and

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causes infringement to others, compensation should be paid to others.

3.3. Infringement resulting from the producer's failure to perform his duties with due diligence

Producers play a very important role in the manufacturing process of AI products, in which it is easy for a failure to exercise due diligence to result in a defective product and consequent infringement. During the manufacturing process of an AI product, the producer must monitor the quality of the product to ensure that it meets the standards put on the market. In this process, if the producer does not conscientiously fulfil this obligation resulting in the product not meeting the standard of use and put into the market, the resulting case of infringement of artificial intelligence products shall be the producer's responsibility for infringement. In addition, the producer has a duty of care in relation to AI products, and if the producer fails to fulfil this duty to the user at the time of sale, the producer is also responsible for any resulting infringement. In judicial practice, the use of artificial intelligence often requires a strong professionalism, even if the producer has fulfilled the obligation of prompting and explaining, the user may not be able to fully understand, so the judge should be given a certain discretion to analyze the fault of the producer and the user for the specific circumstances of the case, and make a relatively fair decision.

3.4. Infringement due to uncontrolled artificial intelligence

On the premise that neither the producer nor the user is at fault, there is also a situation in reality where artificial intelligence is independent of human control and commits infringement, due to the highly intelligent nature of artificial intelligence products. Artificial intelligence has a certain degree of autonomy and intelligence, and has a certain ability to learn, so in practice it is likely to commit infringements without human control. In this case, the liability for infringement cannot simply be allocated according to the fault of the producer and the user, nor can the cause of infringement be attributed to the defects of the product itself. In this case, we must start from the degree of intelligence of the artificial intelligence itself and analyse the specific problems. According to the level of independent learning ability of AI products, AI can be divided into AI that can learn and acquire relevant knowledge spontaneously and AI that cannot learn spontaneously and dynamically. Secondly, AI products can also be classified into highly independent AI and ordinary AI according to their degree of independence in making judgments and selecting ways of behaviour. By classifying AI according to these criteria, it is possible to determine liability for torts that occur beyond human control for different types of AI. High-level AI has a high degree of spontaneous agency and the actions it takes are often not easily controlled by humans, so producers and users are only liable to a certain extent. Low-level AI is not spontaneous and its actions are usually based on pre-programmed programs. In the event of an AI infringement case due to personal reasons, they must bear the corresponding legal responsibility.

4. Suggestions for Improving Liability for Artificial Intelligence Torts

4.1. Application of the principle of strict liability for imputation

Strict liability arises in the common law system and is widely used in tort cases, such as the collapse of a building causing injury to others, where it can be proved that there is a causal link between the injury and the collapse, the manager or owner of the building can be held liable, provided that the manager or owner of the building can prove himself not at fault. It can be seen from the above formulation that strict liability has its own characteristics, i.e. on the one hand, it does not consider the fault of the tortfeasor as an element of liability, and on the other hand, it does not merely exclude fault. When dealing with AI infringement cases, strict liability can be applied by setting a uniform safety standard for the market of AI products, and prohibiting products that do not meet this standard from entering circulation in the market. In this way, when the infringement of AI products occurs, this unified safety standard can be used to measure whether the producer and user are at fault and to determine the cause of the infringement of AI products, so as to determine the subject of liability.

4.2. Establishment of a compulsory insurance and compensation fund system

Establishing a system of compulsory insurance and compensation funds[4]. Insurance is one of the effective ways of preventing damage. In order to reduce damage to AI producers and to protect their motivation and creativity, the state could include AI insurance in its legislation and make it mandatory

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for producers of AI products to take out such insurance to minimise the risk to producers. Such a measure is necessary, particularly for advanced AI products that provide services with a high degree of risk and a high potential for infringement, and where producers of such products should be insured. The services provided by such products are often highly relevant to human life and health and therefore need to be prioritised and insured against the risks. Artificial intelligence products have a certain degree of autonomous judgement, and if there is no problem with the use of the product by the user, the user cannot be required to pay for the infringement of the product at this time, and in practice the user is often the party who suffers the damage. In addition, artificial intelligence as a highly intelligent product, itself has a certain degree of danger and the possibility of infringement, the producer of the product should assume a greater degree of obligation and responsibility for the safety of the product, so the producer of artificial intelligence products to purchase insurance more in line with the actual requirements.

In addition to establishing a compulsory insurance system, the state could also set up a "High Risk AI Infringement Damage Fund"[5] through financial expenditure to provide relief to users of AI with a high likelihood of infringement. In this context, a higher duty of care should be imposed on users of such high-intelligence AI products due to the high likelihood of infringement. From the perspective of promoting the development of AI technology, imposing a high duty of care on users may discourage them from acquiring and using such AI products. The main purpose of the emergence of AI products is to free up manpower and provide services and convenience to the general public. If users are still required to exercise a high degree of care and vigilance when using AI products, this will obviously increase human labour and run counter to the original purpose of making AI products. However, if it is necessary to protect legitimate rights and interests from infringement, it is necessary to require users to maintain a high degree of caution when using the products, because users can, to a certain extent, manipulate the AI products and help the AI to make behaviours, as well as to stop the infringement of the AI products in a timely manner, so it is necessary to require users to maintain a high degree of caution in the process of use, to stop the infringement in a timely manner and to avoid the infringement. In this regard, AI is divided into different categories according to different criteria, on the basis of which it is determined whether users of the product need to exercise a high degree of caution in the use of the product and whether they need to have to take out product insurance, especially for those AI products that provide services with a high risk factor and a high probability of infringement, which must be insured for use in order to double prevent the AI from possibly constituting infringement. It seeks to avoid infringement from both the producer and the user side of the subject and to provide timely and adequate relief for the legal interests harmed.

5. Conclusions

When technology thrives, a nation thrives. In today's rapid development of high technology, the AI industry is bound to become the driving force of a country's development, driving the leapfrog development of the country's science and technology, economy and many other fields. In order to better protect the development of the AI industry and stimulate the enthusiasm and innovation of AI developers, it is necessary to properly address the issue of AI infringement, fulfil the principle of fair and prudent treatment, base on practice, continuously improve the legal system regulating the AI industry, take into account the interests of producers and users, and reasonably and legally determine the liability, so as to protect the development of AI technology. The law is in line with the latest developments. The law has kept pace with the times, in line with the needs of the development of the era of artificial intelligence and the requirements of building a country under the rule of law.

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