

Research on the Legal Liability of Medical Robots

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Abstract

With the deep application of artificial intelligence technology in the medical field, the legal liability issues of medical robots show significant differences in the stages of weak and strong artificial intelligence. In the stage of weak artificial intelligence, medical robots, as technical tools, operate based on pre-set programs and their legal liability follows the principle of "human-centered" attribution: developers bear product liability for algorithm defects and data deviations; medical institutions bear medical malpractice liability for operational errors or professional review oversights; third-party data providers or maintainers share responsibility based on fault or contract. However, the black box of algorithms, the complexity of the liability chain, and the lag of laws make it difficult to determine the cause-and-effect relationship, which requires solutions such as enhancing algorithm transparency, reversing the burden of proof, and implementing dynamic regulatory systems. In the stage of strong artificial intelligence, medical robots may possess autonomous decision-making and learning capabilities, posing a disruptive challenge to the traditional liability framework. Medical robots can act independently beyond the programming designed by humans and have the ability for deep learning. However, this has not been fully achieved yet, thus requiring forward-looking research. This paper, centered on the development stages of artificial intelligence, combines technical characteristics and legal logic to systematically explore the legal liability distribution challenges and solutions for medical robots in the stages of weak artificial intelligence (Narrow AI) and strong artificial intelligence (General AI).

Keywords

Medical Robots, Strong Artificial Intelligence, Weak Artificial Intelligence, Legal Liability