

Title: Key technologies of intelligent diagnosis and treatment robots

Abstract: Health well-being has always been the unremitting demand and pursuit of human beings. The protection of human health well-being is thus an important task and the main assignment of the medical industry. In recent years, the continuous development of robotics, artificial intelligence, and other emerging technologies have injected new sources of innovation into the medical industry. To assist physicians in diagnosis and treatment, and to increase the quality of medical care, various intelligent diagnosis and treatment robot systems have been developing rapidly, and have gradually become indispensable tools for physicians.

This report will focus on the recent research by the team of Professor. Shanlin Yang of the Hefei University of Technology and the Key Laboratory of Process Optimization and Intelligent Decision-making of the Ministry of Education in the field of medical-engineering integration. The report consists of four types of intelligent diagnosis and treatment robots, including human-machine collaborative minimally invasive mirror-holding robot, ICU inspection robot, non-contact physiological and psychological detection robot, and intelligent minimally invasive endoscopic surgery robot. Begin with the research background and practical clinical needs, the report introduces the design goals, key technologies, and current research progress of the four types of robotic systems, and further discusses the future development trend of intelligent diagnosis and treatment robots.



Biography: Shanlin Yang, born in Huaining, Anhui province on October 5, 1948. He is an academician of the Chinese Academy of Engineering, an expert in management science and information system engineering, professor and doctoral supervisor of school of Management, Hefei University of Technology. He is currently the director of the Academic Committee of Hefei University of Technology, the National-Local Joint Engineering Research Center of Intelligent Decision-making and Information System Technology, and the National Engineering Laboratory for Big Data Distribution and Exchange Technologies.

Professor Yang has won the Second Prize of National Science and Technology Progress Award twice, the First Prize of Provincial and Ministerial Science and Technology Award six times, the First Prize of Natural Science Award of Ministry of Education once, and the Humanities and Social Science Award of Ministry of Education once. He has written and published 5 academic monographs and more than 400 academic papers in important journals and international academic conferences. Professor Yang has won the Second Prize of National Teaching Achievements three times, the National Teaching Master Award in 2008, the National May 1st Labor Medal in 2014, the Outstanding Contribution Award of Fudan Management in 2015, and the First National Innovation Prize in 2017. In 2018, he was awarded the "Lifetime Achievement Award in Systems Science and Systems Engineering" by System Engineering Society of China. In 2019, he was awarded the "National Model Teacher" by the Ministry of Human Resources and Social Security and the Ministry of Education.

The main academic membership and service works of Professor Yang include: chief editor of management science and engineering volume of Encyclopedia of China (third edition), deputy director of Strategic Advisory Committee of the Ministry of Education's Science and Technology Commission, the rotating chairman of the Chinese Academy of Management, vice president of The Chinese Society of Optimization, Overall Planning and Economic Mathematics, the chief editor of Forecasting magazine, etc.