A Synergistic Growth in Medical Robotics

Leading experts from hospitals, research institutes, and robotics start-ups highlight the role of collaboration in accelerating clinical applications of medical robotics in China.

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WEI TIAN

President, Beijing Jishuitan Hospital

We found from our clinical practices that the future development of surgical solutions lies in intelligent technologies. Thus, I proposed the concept of Computer Assisted Minimally Invasive Spinal Surgery (CAMISS) in 2012. The core of CAMISS is to develop smart minimally invasive technologies to achieve efficient surgical planning and precise operation, as robotics plays a key role in mitigating surgical risks. As medical robotics emerges as a key international trend, it will inevitably play a huge role in the future of health care.

GUANG - ZHONG YANG

Dean, Institute of Medical Robotics, Shanghai Jiao Tong University

Improving early diagnosis and precision treatment for tumours, stroke, and cardiovascular diseases is integral to the development of key robotic technologies and systems at our institute. Focusing on robot-assisted minimally invasive surgeries, intelligent rehabilitation, and automated hospital services, we work with clinical and industrial partners to accelerate transformative research, clinical applications, technological innovation, and industrial growth. We also emphasize medical-engineering synergy as part of our talent training programmes, striving to nurture young professionals in medical robotics with expertise in technological innovation, clinical development and industrial application.

TIANMIAO WANG

Professor, Beihang University

As China forges through with medical robotic innovations, enhancing the integration between medicine and engineering is essential. The development of medical robotics is fundamentally about saving lives and improving health. Only by working with clinicians can we prioritize our research to best address medical needs. We also need innovation to drive technological advances. And to realise clinical applications, it is important to promote industrial growth.
At Beihang University, we are leveraging our research strengths and long-term partnerships with hospitals to make engineering innovations. We also aim to be an interdisciplinary hub for talent incubation in robotics.

SHUXIN WANG

Vice President and Professor in Mechanical Engineering, Tianjin University

Tianjin University pioneers in the field of intelligent medical engineering. In this prestigious research university, we utilize our academic strengths in engineering, and integrate innovative designs with smart health-care systems to advance the level of human health. Drawing on our engineering technologies, breakthroughs in robotics, and collaboration with clinicians, we have achieved a leading position in minimally invasive surgical robotics. By enhancing our collaboration with academia, technology firms and hospitals, we strive to cultivate engineering innovators, promote advances in smart health-care systems, and ultimately improve disease treatments and health status.

HONG LIU

Professor, Harbin Institute of Technology (HIT) Adviser, Agile Robots AG

For its increasingly central role in health care, medical robotics attracts attention from many research institutions, including HIT, one of China's best technological universities. Keen to apply state-of-the-art technologies, from robotics and new materials, to aerospace for industrial use, it houses a national key laboratory specializing in robotics development.
Force-controlled robotic arm, a critical component of medical robots, has been intensively investigated. I'm glad to see that Agile Robots is among the most competitive start-ups worldwide in this field. We look forward to collaborating with enhanced robotic intelligence.

SONGGEN ZHANG

Founder and Chairman, TINAVI

Having brought to market China's first home-grown orthopaedic surgical robot, TINAVI is a forerunner in medical robotics industry.
Working on orthopaedic surgical robots for 15 years, we have built partnerships with more than 80 hospitals, providing them smart, precise surgical solutions. I am very proud of working with our talented team members, from leading universities and firms worldwide, to improve our products and services. Aiming to be an innovator and leader in orthopaedic robotics, we expect to deliver more and smarter solutions for the domestic and global markets.

GUANGZHI WANG

Director, Department of Biomedical Engineering, Tsinghua University Chief Scientist, Sinovation Medical Technology

Our laboratory embarked on image-guided surgery since the 1990s, leading to China's first surgical navigation system. Working on promoting technological transformation in orthopaedics, neurosurgery and interventional therapy, we learnt the importance of linking all relevant sectors to better address clinical needs.
Recently, we partnered with Sinovation Medical, and developed a robotic system for stereotactic neurosurgery, which has been used in more than 100 top hospitals in China. Future surgical robots will be more intelligent, and more capable of perception, judgment and decision-making. We seek to develop such technologies to enable human-machine integration, providing more powerful and intelligent assistance to doctors.

RONG LIU

Professor, Chief Physician in Hepato-Pancreato-Biliary Surgery, General Hospital of the People's Liberation Army (PLAGH)

Over more than 30 years working on the clinical frontline, I have completed tens of thousands of hepatic, biliary, and pancreatic surgeries, and more than 4,000 robot-assisted ones. Having undertaken such a large number of surgeries, including some of the most difficult types, we have established a complete system for laparoscopic hepato-pancreato-biliary surgeries, and a technological system of surgical robotics at PLAGH.
Collaborating with Beijing Surgerii Technology, we are now developing general surgical robotic platforms for multi-port and single-port procedures, aiming at innovations that benefit patients in the most suitable way.

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