

A hub for visionary research

With an interdisciplinary approach, a medical robotics institute in Shanghai, IMR@SJTU, is attracting international talent and accelerating **NEW TECHNOLOGIES AND CLINICAL APPLICATIONS.**

In the development of future generations of medical robotics,

new technologies and inspirations can originate from a diverse range of disciplines — from biology and medicine, to mechanics, materials science, electronics and artificial intelligence. The Institute of Medical Robotics at Shanghai Jiao Tong University (IMR@SJTU) has been established to harness the latest advances in these fields and promote multi-disciplinary collaboration. Its founding dean, Professor Guang-Zhong Yang, an internationally renowned scholar in robotics and the founding editor of *Science Robotics*, has led a concerted effort to promote robotics research, education, technological development

and clinical translation, by leveraging the unique engineering strength and strong clinical base in Shanghai.

Committed to providing solutions for early diagnosis and personalized treatment of major illnesses such as cancer, cardiovascular, and neurodegenerative diseases, IMR@SJTU is focusing its research on the development of agile, intelligent, and minimally invasive medical robotics technologies. The vision of IMR@SJTU is to promote academia-industry and medicine-engineering collaboration to accelerate the translation of research results, develop new talents and forge international collaborations. It aims to drive key technologies in medical robotics, and lead

research innovation and development of high-end medical equipment. It is also building a base for young professionals, supporting bench-to-bed transformation of new robotics technologies.

IMR@SJTU is establishing 10 centres, covering basic science research in micro-nano robotics, perception and cognition, bioinspired and biohybrid systems, biophotonics, and smart materials, as well as applied research in surgical robotics, rehabilitation and assistive robotics. Centres dedicated to precision mechatronics, intelligent human-robot interaction, and image-guided therapy and intervention have already undertaken national key projects with fully fledged research facilities.

With its drive to support clinical translation, IMR@SJTU is partnering with leading teaching hospitals in Shanghai to establish joint research centres focusing on different clinical specialties. New breakthroughs are already emerging in the use of medical robots for urological, cardiopulmonary, oral and craniofacial diseases, as well as assistive robots based on soft exoskeletons. The Institute is also making significant inroads in the development of new fibrebot technologies integrating micro-actuation,

imaging, sensing and endoluminal therapy, and drug delivery.

IMR@SJTU has recently established a 7,000 m² medical robotics incubator at the neoBay, next to the SJTU campus, where a number of promising new medical robotics start-ups are located. Products under development range from surgical and rehabilitation robots, to medical imaging and targeted cancer therapy devices with robotic assistance.

IMR@SJTU is also broadening its international collaboration through regular research exchange with world-renowned research institutions and organization of international conferences, academic forums and competitions in medical robotics. It aims to be a global hub for scholars conducting cutting-edge research in medical robotics, as well as innovators who have the vision to drive both basic science, and applied research, towards successful clinical adoption and commercialization. ■



医疗机器人研究院
Institute of Medical Robotics



+86-21-34208200
Shanghai Jiao Tong University
Shanghai, China
imr@sjtu.edu.cn



Design of a robotic prosthetic leg



Image-guided robotic procedures in the theatre

