SEMINAR

Human-Machine Partnerships in Computer-Integrated Interventional Medicine

Date: 15 January, 2026 (Thursday)
Time: 4:00 p.m. – 5:00 p.m.
Venue: LE7, Library Extension Building
             HKU

Speakers: Prof. Russell H. Taylor and Prof. Peter Kazanzides
             Department of Computer Science
             The Johns Hopkins University
             U.S.A.

Abstract:

Advances in robotic technology and artificial intelligence are enabling three-way partnerships between physicians, technology, and information to improve treatment processes. Computer-integrated interventional medicine (CIIM) systems combine innovative algorithms, robotic devices, imaging systems, sensors, and human-machine interfaces to work cooperatively with surgeons in the planning and execution of surgery and other interventional procedures. For individual patients, CIIM systems can enable less invasive, safer, and more cost-effective treatments. Since these systems have the ability to act as "flight data recorders" in the operating room, they can enable the use of statistical methods to improve treatment processes for future patients and to promote physician training. In this talk,

This talk will illustrate these themes with examples from our past and current work, with special attention to the human-machine partnership aspects, and will offer some thoughts about future research opportunities and system evolution. In addition to an overview describing key issues and opportunities, we will provide an extended example focusing on the use of augmented reality in minimally invasive robotic surgery.

Speaker Biography:

Russell H. Taylor has over 35 years' experience in medical robotics and over 50 in robotics research. He received his Ph.D. in Computer Science from Stanford in 1976. After spending 1976 to 1995 as a Research Staff Member and research manager at IBM Research, he moved to Johns Hopkins University, where he is the John C. Malone Professor of Computer Science with joint appointments in Mechanical Engineering, Radiology, Surgery and Otolaryngology – Head and Neck Surgery. His research for the past 35 years has focused on medical robotics and computer-integrated interventional medicine. He is the author of over 650 peer-reviewed journal and conference papers and holds 100 patents. He is a Member of the US National Academy of Engineering and has received many other significant awards and honors.

Peter Kazanzides has over 35 years of experience in medical robotics, starting as a postdoctoral researcher with Dr. Russell H. Taylor at IBM Research in 1989. He received his Ph.D. in Electrical Engineering from Brown University in 1988. After concluding his postdoctoral position in 1990, Dr. Kazanzides co-founded Integrated Surgical Systems (ISS) to commercialize the medical robotics research performed at IBM and the University of California, Davis. He served as the Director of Robotics and Software at ISS and was responsible for the design, implementation, validation and support of the ROBODOC System, which was used for more than 20,000 hip and knee replacement surgeries. Dr. Kazanzides joined Johns Hopkins University in 2002 and is currently appointed as a Research Professor of Computer Science. His research interests include medical robotics, space robotics, and mixed reality.

Prof. Russell H. Taylor   Prof. Peter Kazanzides

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. Z.L. Jiang at 3910 2658.