Guest Seminar

Advancing Medical Intervention through Robotic Technologies

by

Prof. K W Samuel AU

Department of Mechanical and Automation Engineering
Co-Director, Chow Yuk Ho Technology Centre for Innovative Medicine
The Chinese University of Hong Kong

Date    : 13 Mar 2019 (Wednesday)
Time   : 1:30pm
Venue : LT-H (Lifts 27-28)

Abstract
Over the past decade, medical robotic technologies have crossed the chasm that lies between laboratory bench-top prototypes and commercial products, and made a significant clinical impact to the field of medical intervention such as the Accuray CyberKnife and the Intuitive Surgical da Vinci robots. Through the adoption of these technologies, a synergetic union of surgeon and robot has established and helped surgeons to overcome many limitations of the traditional treatment. Next-generation medical robotic systems are now on the horizon and can significantly extend surgeons' ability to plan and carry out medical interventions more accurately and less invasively.

In this talk, we will review the background of the surgical robot, its present capabilities, limitations, and acceptance. We will present some of our research efforts to extend the boundaries of medical intervention through advanced sensing, flexible robotic technology, and intelligent control algorithms. Furthermore, we will share our journey on using da Vinci Research Kit (dVRK) as a gateway to facilitate the medical research and robotic education at CUHK. This talk will also share some of the challenges in taking research concepts and prototypes toward final, deliverable products.

Biography:
Professor Kwok Wai Samuel Au received the B.Eng. and M.Phil degrees in Mechanical and Automation Engineering from the Chinese University of Hong Kong (CUHK), Hong Kong in 1997 and 1999, respectively. He completed his Ph.D. degree in Mechanical Engineering at MIT in 2007, where he invented (with Prof. Hugh Herr) the MIT Robotic Ankle-foot Prosthesis. This invention was named one of the Best Inventions of Year by TIME magazine in 2007 and was later commercialized by iWalk, Inc.

Dr. Au is an Associate Professor of the Department of Mechanical and Automation Engineering at CUHK since Sept, 2016. Before joining CUHK, he was the manager of Systems Analysis of the New Product Development Department at Intuitive Surgical, Inc. At Intuitive Surgical, he co-invented and was leading the software and control algorithm development for the FDA cleared da Vinci Si Single-Site surgical platform (2012), Single-Site Wristed Needle Driver (2014), and da Vinci Xi Single-Site surgical platform (2016). Since the official launch at Dec 2012, over 150K patients have received the single incision surgery through this platform. He was also a founding team member for the early development of the robotic-assisted catheter system for lung biopsy (FDA cleared da Vinci ION platform) at Intuitive Surgical. Dr. Au is the author and co-author of over 18 peer-reviewed manuscripts and conference journals. He currently holds 12 US patents (and over 6 pending US Patents). His inventions/works featured in numerous magazines such as New York Times and Technology Review. He has won numerous awards including the first prize in the American Society of Mechanical Engineers (ASME) Student Mechanism Design Competition in 2007, Intuitive Surgical Problem Solving Award in 2010, and Intuitive Surgical Inventor Award in 2011.

All are welcome!

Room 4572, Academic Building, Clear Water Bay, Kowloon (http://bien.ust.hk) Tel: (852) 23588483
All are welcome!

Room 4572, Academic Building, Clear Water Bay, Kowloon  (http://bien.ust.hk) Tel: (852) 23588483