



College of Engineering
Department of
Mechanical & Industrial Engineering

The Robert W. Courter Seminar Series

3:00-4:00pm, Friday, October 2nd, 2020

ZOOM: <https://lsu.zoom.us/meeting/register/tJApd-mhqzssHNAtbx8xlujIXfCf28JLgcJB>



Robotics-Assisted Medicine:
How to Facilitate Human-Robot Collaboration

by **Mahdi Tavakoli***

University of Alberta

Surgical, therapeutic, diagnostic, and rehabilitative interventions can be significantly enhanced using computer-integrated robotic systems with real-time decision-making capabilities that work under the direct, shared, or supervisory control of medical professionals (surgeons, therapists and physicians). Incorporating appropriate levels of autonomy in systems for healthcare delivery has the potential to lower the mental and physical loads on clinicians while improving the reliability, precision and safety of the interventions for patients. For example, an autonomous system can help to build computerized models of a medical intervention, learned through demonstration by human experts, and transfer the learned skill to a robot that is in charge of providing intelligent assistance to surgeons or therapists. In this seminar, Dr. Mahdi Tavakoli, Professor at the University of Alberta, discusses several applications of medical robotics and their related challenges, and offers solutions based on combining the capabilities of humans with the precision, accuracy, and fast decision-making capabilities of machines.

* Dr. Mahdi Tavakoli is a Professor in the Department of Electrical and Computer Engineering, University of Alberta, Canada. He received his BSc and MSc degrees in Electrical Engineering from Ferdowsi University and K.N. Toosi University, Iran in 1996 and 1999, respectively. He received his PhD degree in Electrical and Computer Engineering from the University of Western Ontario, Canada, in 2005. In 2006, he was a post-doctoral researcher at Canadian Surgical Technologies and Advanced Robotics (CSTAR), Canada. In 2007-2008, he was an NSERC Post-Doctoral Fellow at Harvard University, USA. Dr. Tavakoli's research interests broadly involve the areas of robotics and systems control. Specifically, his research focuses on haptics and teleoperation control, medical robotics, and image-guided surgery. Dr. Tavakoli is the lead author of Haptics for Teleoperated Surgical Robotic Systems (World Scientific, 2008). He is a Senior Member of IEEE and an Associate Editor for IEEE/ASME Transactions on Mechatronics, Journal of Medical Robotics Research, and Mechatronics.