



Seminars in Mechanical & Industrial Engineering

Distinguished Lecture

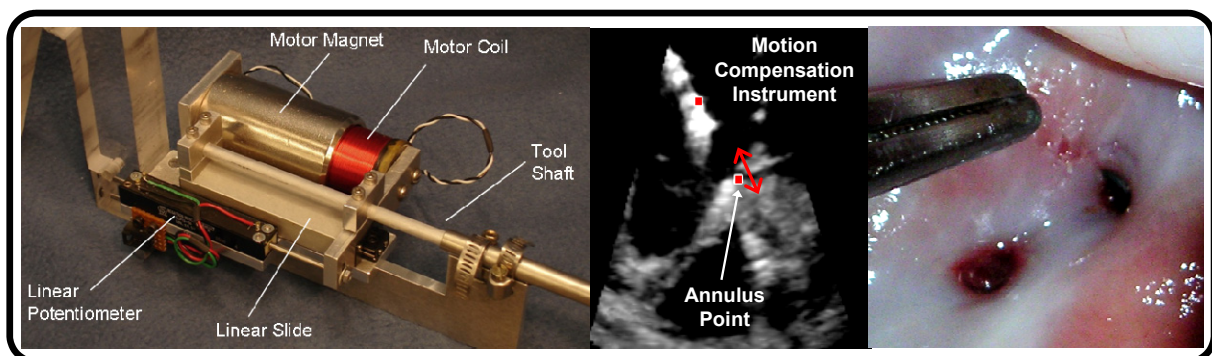
Friday, Oct. 16 · 2:10PM · Room MCI02
5 King's College Road

Fixing the Beating Heart: Ultrasound Guidance for Robotic Intracardiac Surgery

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Abstract. To treat defects within the heart, surgeons currently use stopped-heart techniques. These procedures are highly invasive and incur a significant risk of neurological impairment. We are developing methods for performing surgery within the heart while it is beating. New real-time 3-D ultrasound imaging allows visualization through the opaque blood pool. To track instruments within the heart we have developed a Radon transform-based algorithm, which is readily implemented in real-time on graphics processor units. For manipulation of rapidly moving cardiac tissue we have created a fast robotic device that can track the tissue based on ultrasound image features. This allows the surgeon to interact with the heart as if it was stationary. In vivo studies show that our approaches enhance dexterity and lower applied forces. Clinical applications include atrial septal defect closure and mitral valve annuloplasty.



All visitors are welcome!

To receive seminar invitations add your email address at <http://www.mie.utoronto.ca/seminars/>
The next seminar will take place on Oct. 23 at 2:10pm in MCI02. Dr. John Boyd from Golder Associates (Mississauga) will talk about "The Implications of Sustainability and Climate Change on the Practice of Engineering".