2026 ISMR Workshops

Surgical and Interventional Microrobotics: Current Frontiers and Future Directions

Format: Full-Day
Organizers: Xiaoguang Dong, Yue Chen

The Holistic Forum of Medical Robotics Junior Professors

Format: Full-Day
Organizers: Mark Draelos, Jie Ying Wu, Yash Chitalia, Giovanni Pittiglio

SlicerROS2 as an In Silico Testing Environment for Medical Robotics Research

Format: Half-Day (Morning)
Organizers: Junichi Tokuda, Laura Patricia Connolly, Simon Leonard, Lidia Al-Zogbi, Mariana C. Bernardes, Anton Deguet, Axel Krieger, Pedro Moreira

Ethics of using data from semi-automated surgical robots

Format: Half-Day (Afternoon)
Organizers: Jie Ying Wu, Elisa Gordon

Paper Session #1

9:00-9:15	Enhancing the Radiopacity of Tendon-Driven Robotically Steerable Guidewires using Electroplating - *Nidhi Malhotra, Revanth Konda, Jimin Lee, Woon-Hong Yeo, Jaydev P. Desai*
9:15-9:30	Design and Control of an Underactuated Exoskeleton for Loaded Walking - *Musharrat Mau, Alan Asbeck*
9:30-9:45	A Mobile Magnetic Manipulation Platform for Gastrointestinal Navigation with Deep Reinforcement Learning Control - *Zhifan Yan, Chang Liu, Yiyang Jiang, Wenxuan Zheng, Xinhao Chen, Axel Krieger*
9:45-10:00	Design and Evaluation of a Steerable Polymer-Based Soft Continuum Neuroendoscope - *Nidhi Malhotra, Revanth Konda, Jaydev P. Desai*

Paper Session #2

10:55-11:10   A Supervised Autonomous Resection and Retraction Framework for Transurethral Enucleation of the Prostatic Median Lobe - *Mariana Smith, Tanner Watts, Susheela Sharma Stern, Brendan Burkhart, Hao Li, Alejandro O. Chara, Nithesh Kumar, James Ferguson, Ayberk Acar, Jesse F. d'Almeida, Lauren Branscombe, Lauren Shepard, Ahmed Ghazi, Ipek Oguz, Jie Ying Wu, Robert J. Webster III, Axel Krieger, Alan Kuntz*

11:10-11:25   An Open Simulation Platform for Team Training in Robotic Surgery - *Yihui Yao, Rayhan Papar, Haochen Wei, Peter Kazanzides*

11:25-11:40   Needle-And-Thread Suturing With Concentric Tube Robots for Tracheal Stent Fixation - *Jesse F. d'Almeida, Lauren Branscombe, Alejandro O. Chara, Susheela Sharma Stern, Fabien Maldonado, Alan Kuntz, Robert J. Webster III*

11:40-11:55   A Robotic Simulation Environment for Ultrasound Imaging of Soft Tissue - *Jintan Zhang, Yixuan Wu, Adnan Munawar, Peter Kazanzides*

11:55-12:10   The First Needlescopic Wristed Grasper to Surpass da Vinci Grasping Performance - *Ethan R. Wilke, Aabhas Jain, Alejandro O. Chara, Duke Herrell III, Irving J. Zamora, Harold N. Lovvorn, Robert J. Webster III*

Paper Session #3

13:10-13:25   Towards Robot-Assisted MRI-Guided Lumbar Injections - *Tyler Lehrfeld, Qinhan Wang, Aabhas Jain, Vivek Chari, Iulian Iordachita*

13:25-13:40   Design and Modeling of a Polymer-Based Hydraulic Continuum Robot for Minimally Invasive Surgery - *Chenyu Gu, Timothy A. Brumfiel, Nidhi Malhotra, Jaydev P. Desai*

13:40-13:55   Design of Patient-Specific Robot for Left Coronary Artery Access: Algorithm and Demonstration - *Amber K. Rothe, Jaydev P. Desai*

13:55-14:10   Identification of Nitinol Robotic Needles in Magnetic Resonance Imaging Via Simulation-Driven Deep Learning - *Hengjie Chen, Boshen Qi, Saeed Rezaeian, Arshia Akbari, Jason Langley, Xiaoping Hu, Jun Sheng*

Paper Session #4

15:30-15:45   Flat Inflatable Hydraulic Artificial Muscle (fiHAM)
Actuator Based Wearable Robot for Exoskeleton
*- Alex V. Harris, Jason Bi, Katsuo Kurabayashi,
Ruofeng Wei, Junichi Tokuda, Rui Li*

15:45-16:00   An Effectiveness Study of Dithering for Improved
Force Estimation on the dVRK-Si System - *Sara
Martuscelli, Hao Yang, Elena De Momi, Jie Ying Wu,
Peter Kazanzides*

16:00-16:15   Imaging Eyes in Motion: Dynamic Compensation with
Robotic Optical Coherence Tomography - *Genggeng
Zhou, Yi Wang, Yihan Ling, Guangshen Ma, Ryan
P. McNabb, Anthony N. Kuo, Nita Valikodath, Mark
Draelos*

16:15-16:30   An Anatomy-Specific Guidewire Shaping Robot for
Improved Vascular Navigation - *Aabha Tamhankar,
Jay Patil, Giovanni Pittiglio*

16:30-16:45   WheelArm-Sim: A Manipulation and Navigation
Combined Multimodal Synthetic Data Generation
Simulator for Unified Control in Assistive Robotics
*- Guangping Liu, Tipu Sultan, Vittorio Di Giorgio,
Nicholas Hawkins, Flavio Esposito, Madi Babaiasl*

16:45-17:00   Halbach-Based Magnetic Configuration for Reduced
Instrument Interference in Minimally Invasive Surgery
*- Tao Zhang, Jixiu Li, Truman Cheng, Calvin S. H. Ng,
Philip W. Y. Chiu, Zheng Li*

Paper Session #5

8:30-8:45   Sensory Robotic Cover for Safe Human-Robot Interaction during Autonomous Emergency Ultrasound Triage - *Madison Veliky, Olivia Richards, Nabil Simaan*

8:45-9:00   Design of Magnetic Continuum Robots with Tunable Force Response Using Rotational Ring Pairs - *Alex Sayres, Giovanni Pittiglio*

9:00-9:15   Dual-EKF System Identification and Model Predictive Path Integral Control of a Retinal Microsurgical Robot - *Mojtaba Esfandiari, Pengyuan Du, Haochen Wei, Makoto Jinno, Peter Gehlbach, Adnan Munawar, Peter Kazanzides, Iulian Iordachita*

9:15-9:30   Proprioceptive Sinus Endoscopy: Calibrating Rigid Endoscope Bending with a Novel Strain-Sensing Sleeve - *Zhifan Yan, Manish Sahu, Iulian Iordachita, Masaru Ishii, Russell Taylor*

9:30-9:45   Towards a Novel Wearable Robotic Vest for Hemorrhage Suppression - *Harshith Jella, Pejman Kheradmand, Joseph Klein, Behnam Moradkhani, Yash Chitalia*

Paper Session #6

10:20-10:35   Console-Free Mixed Reality Teleoperation of the da Vinci Research Kit - *Matteo Magnani, Laura Cruciani, Elena De Momi, Peter Kazanzides*

10:35-10:50   Towards Autonomous Instrument Tray Assembly for Sterile Processing Applications - *Raghavasimhan Sankaranarayanan, Paul Stuart, Nicholas Ahn, Arno Sungarian, Yash Chitalia*

10:50-11:05   Comparative Analysis of Autonomous Robotic and Manual Techniques for Ultrasonic Sacral Osteotomy: A Preliminary Study - *Daniyal Maroufi, Yash Kulkarni, Justin E. Bird, Jeffrey H. Siewerdsen, Farshid Alambeigi*

11:05-11:20   A Framework to Optimize Channel and Active Area Usage in Multicore Fibers for Needle Shape Sensing - *Kayleigh Huk, Jacynthe Francoeur, Yinsong Ma, Jin Seob Kim, Iulian Iordachita*

Paper Session #7

11:20-11:35   PushCVAE: Generative Autonomous Nonprehensile Surgical Retraction from Monocular Endoscopic Images - *Tanner Watts, Susheela Sharma Stern, Alejandro O. Chara, Jesse F. d'Almeida, Joseph C. Liechty, Britton Jordan, Alan Kuntz*

11:35-11:50   The OncoReach Stylet for Brachytherapy: Design Evaluation and Pilot Study - *Pejman Kheradmand, Kent Yamamoto, Emma Webster, Keith Sowards, Gianna Hatheway, Katharine Jackson, Sabino Zani, Julie Raffi, Diandra Ayala-Peacock, Scott Silva, Joanna Bertram, Yash Chitalia*

11:50-12:05   SurgiDiff: A Context-Aware Diffusion Recommender for Safe Surgical Autonomy - *Bita Azad, Sadra Zargarzadeh, Frank Rudzicz*

12:05-12:20   A Taxonomic Framework for Human-Robot Interaction in Healthcare - Research Gaps and Future Research Directions - *Muhammad Shahbaz Shah, Bethany Cole, Samuel Olatunji*

Paper Session #8

13:20-13:35   Dynamic Motion Metrics for Objective Evaluation of Laparoscopic Camera Navigation Skill - *Cameron M. Reid, Annika Haughey, Shannon Barter, Kent K. Yamamoto, Steven Thornton, Louise L. Jackson, Sabino Zani, Joanna Deaton Bertram, Brian Mann*

13:35-13:50   Handheld Endoscopic Robot with Integrated Camera Cleaning for Skull Base Neurosurgery - *Boshen Qi, Xinyu Lu, Seth Christopher Gil, Jun Sheng*

13:50-14:05   A High-Fidelity Synthetic Data Generation Toolkit for Vision-Based Localization Models in Intraocular Robotic Microsurgery - *Siying Zhu, Yub Heo, Mojtaba Esfandiari, Hisashi Ishida, Lalithkumar Seenivasan, Peter Kazanzides, Peter Gehlbach, Iulian Iordachita, Adnan Munawar*

14:05-14:20   Soft Robotic Catheters Enabled by Miniaturized Bending and Torsional Hydraulic Soft Actuators - *Parmida AfshariNejad*, Kyungjoon Lee, Steven Vu, Aadya Penchala, Sophia Sevic, Vinesh Manian, Jun Sheng*