Committee

General Chair

Jaydev P. Desai, *Georgia Institute of Technology*

Program Co-Chairs

Mahdi Tavakoli, *University of Alberta*

Iulian Iordachita, *Johns Hopkins University*

Publicity Co-Chairs

Alan Kuntz, *Vanderbilt University, USA*

Tayfun Ertop, *University of Tennessee - Knoxville, USA*

Publication Chair

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Sheila Russo, *Boston University, USA*

Giovanni Pittiglio, *Worcester Polytechnic Institute, USA*

Award Co-Chairs

Loris Fichera, *Worcester Polytechnic Institute, USA*

Junichi Tokuda, *Harvard Medical School, USA*

Emmanuel Van Der Poorten, *KU Lueven, Belgium*

Travel Awards Co-Chairs

Jun Sheng, *University of California - Riverside, USA*

Mark Draelos, *University of Michigan, USA*

Industry Co-Chairs

Caleb Rucker, *University of Tennessee - Knoxville, USA*

Jonathan DeLong, *University of Tennessee Medical Center, USA*

Local Arrangement Committee Co-Chairs

Tayfun Ertop, *University of Tennessee - Knoxville, USA*

Caleb Rucker, *University of Tennessee - Knoxville, USA*

ISMR at a Glance

Wednesday, April 22

8:00-9:00	Registration
9:00-12:30	Morning Workshop Session (Break - 10:30-11:00)
12:30-13:30	Lunch
13:30-17:00	Afternoon Workshop Session (Break - 15:00-15:30)
17:00-19:00	Reception
19:30-22:00	Dinner by Invitation Only

Thursday, April 23

8:00-8:30	Registration
8:30-9:00	Welcome and Opening Remarks
9:00-10:00	Paper Session #1
10:00-10:20	Poster Session
10:20-10:55	Morning Break and Refreshments
10:55-12:10	Paper Session #2
12:10-13:10	Lunch
13:10-14:10	Paper Session #3
14:10-14:55	Keynote
14:55-15:30	Afternoon Break and Refreshments
15:30-17:00	Paper Session #4
17:00-19:30	Banquet

Friday, April 24

8:00-8:30	Registration
8:30-9:45	Paper Session #5
9:45-10:20	Morning Break and Refreshments
10:20-11:20	Paper Session #6
11:20-12:05	Keynote
12:05-13:05	Lunch
13:05-14:05	Paper Session #7
14:05-14:40	Afternoon Break and Refreshments
14:40-15:40	Paper Session #8
15:40-16:00	Closing Remarks

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

Poster Session

10:00-10:20

Dual-Function FBG–Metallic Tube Sensing-Actuation for Parallel Continuum Robots with Real-Time Traction Force Estimation - *Tao Zhang, Youfeng Zhou, Jiewen Lai, Huxin Gao, Hongliang Ren*

Kinematic Modeling and Telemanipulation of a Hybrid-Continuum Needlescopic Surgical Robot - *Aabhas Jain, Ethan R. Wilke, Alejandro O. Chara, S. Duke Herrell III, Irving J. Zamora, Harold N. Lovvorn, Robert J. Webster III*

TriSaFe-Trans: A Safety-Aware Multimodal Intent Recognition Pipeline for Assistive Robotics - *Tipu Sultan, Kody Cool, Guangping Liu, Gajapriya Tamilselvan, Madi Babaiasl*

Exploring Linear and Nonlinear Mappings in Touchpad-Based Hand-Held Robot Control - *Jessie Chiella, Sara Purdue, Susheela Sharma Stern, Robert J. Webster III*

ReSNA: A Robotic-Enabled Surgical Navigation Assistant for Breast-Conserving Surgery - *Zixuan Liu, Bowen Xiang, Jon Heiselman, Jie Ying Wu, Ingrid M. Meszoely, Michael I. Miga*

Design and Development of a Teleoperation Framework for a Robotic Laser Surgery Platform - *Ravi Prakash, Vincent Wang, Karan Gupta, Muskaan Toshniwal, Shmily Qian, Yongjun Lu, Ariella Rukhlin, Olivia Liu, Ryan McNabb, Patrick Codd, Leila Bridgeman*

Comparing Active and Passive Gaze During Robot-Assisted Surgery Simulation - *Yizhou Li, Shuyuan Yang, Zonghe Chua*

SOAR: An Autonomous First Responder for Pediatric Firearm Emergencies - *Mira Jayant*

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*

Keynote Speaker

Gregory Mancini

Professor in the Division of General Surgery, The University of Tennessee Medical Science Center

Talk Title

Medtech Innovation in an era of healthcare change: tales from a front line surgeon

Time

14:10-14:55

Gregory J. Mancini, MD, is a board-certified general surgeon and Professor of Surgery at the University of Tennessee Graduate School of Medicine, Knoxville, with over 18 years of experience in minimally invasive and robotic surgery. His work with medical device companies has contributed to advancements in robotic platforms, energy devices, stapling technologies, and hernia repair materials, improving surgical outcomes. Dr. Mancini earned his B.A. from Columbia University and M.D. from Mercer University, where he received multiple honors, including Alpha Omega Alpha membership. He completed his surgical training at the University of Tennessee and a fellowship in Minimally Invasive Surgery at the University of Missouri. He has held progressive academic appointments at the University of Tennessee since 2006 and is currently a Professor of Surgery. He has received numerous awards for teaching and research, including induction into the UTHSC Academy of Master Educators. As Program Director of the Advanced MIS and Bariatric Fellowship since 2014, he has trained 12 fellows in advanced surgical techniques and research. Dr. Mancini's research includes developing an implantable wireless laparoscope in collaboration with the UT Bioengineering Lab, focusing on integration with robotic systems and AI-driven imaging to enhance surgical precision. He also serves as Vice President of the Center for Perioperative Medicine at UT Medical Center and is a founder of the Tennessee Institute of Surgical Innovation. He is an active member of multiple national surgical societies.

Map and Restaurants

UT Conference Center - 2026 ISMR Vennue
600 Henley Street, Knoxville, TN 37902

Nearby Restaurants

Chesapeake's Downtown - 600 Union Avenue - Seafood Restaurant

Cafe 4 - 4 Market Square -
American Restaurant

Balter Beerworks - 100 Broadway SW - American Brewpub

Brickstones Kitchen and Bar - 507 South Gay Street - Fusion Restaurant

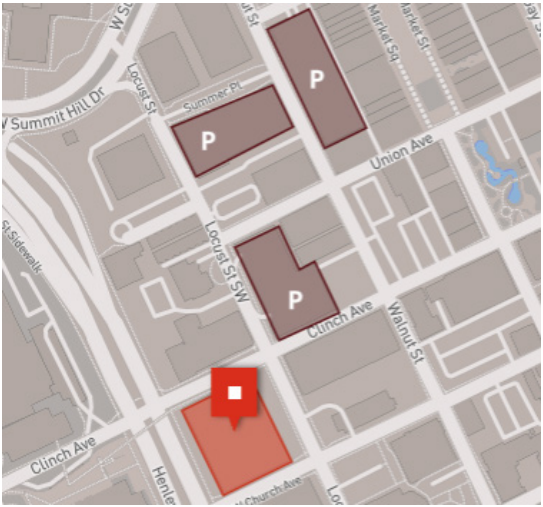
Bistro at the Bijou - 807 South Gay Street - SOuthern Restaurant

Calhoun's On The River - 400 Neyland Drive - Barbeque Restaurant

Kaizen Isakaya - 127 South Central Street - Thai Restaurant

KoPita - 507 South Gay Street - Mediterranian Restaurant

Map and Restaurants



Parking and Directions

Parking: Visitor parking can be found in the Locust Street Garage (closest), Langley Garage and Market Square Garage. All lots are only a few blocks from the venue. Parking is $7 per day maximum.

Public Transit: Knoxville offers a a fare-free bus service, which has a stop located just outide the UT Conference Center. Information can be found at katbus.com for the Downtown Connector route.

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	Enhancing the Radiopacity of Tendon-Driven Robotically Steerable Guidewires using Electroplating - *Nidhi Malhotra, Revanth Konda, Jimin Lee, Woon-Hong Yeo, Jaydev P. Desai*
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*

Keynote Speaker

Mahdi Tavakoli

Professor & Research Chair in Healthcare Robotics, University of Alberta Engineering

Talk Title

From Shared Autonomy to Learned Autonomy in Surgical Robotics

Time

11:20-12:05

Mahdi Tavakoli is a Professor in the Electrical and Computer Engineering Department and the Biomedical Engineering Department and a Senior University of Alberta Engineering Research Chair in Healthcare Robotics. He is also Co-Director of the Mechatronics & Robotics Co-op Engineering Program at the University of Alberta. He received his PhD degree in Electrical and Computer Engineering from the University of Western Ontario, Canada, in 2005. From 2006 to 2008, he was a post-doctoral researcher at Canadian Surgical Technologies and Advanced Robotics (CSTAR), Canada, and an NSERC Post-Doctoral Fellow at Harvard University, USA. Dr. Tavakoli's research interests involve medical robotics, image-guided surgery, and rehabilitation robotics. Dr. Tavakoli is the Specialty Chief Editor for Frontiers in Robotics and AI (Robot Design Section). He is a Senior Member of IEEE and an Associate Editor for the International Journal of Robotics Research, IEEE Transactions on Medical Robotics and Bionics, and Journal of Medical Robotics Research.

Paper Session #7

13:05-13:20	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*
13:20-13:35	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*
13:35-13:50	SurgiDiff: A Context-Aware Diffusion Recommender for Safe Surgical Autonomy - *Bita Azad, Sadra Zargarzadeh, Frank Rudzicz*
13:50-14:05	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

14:40-14:55	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*
14:55-15:10	Handheld Endoscopic Robot with Integrated Camera Cleaning for Skull Base Neurosurgery - *Boshen Qi, Xinyu Lu, Seth Christopher Gil, Jun Sheng*
15:10-15:25	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*
15:25-15:40	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*

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Intuitive advances minimally invasive care by helping physicians and their teams optimize care delivery to support the best outcomes possible. For nearly three decades we've created products and services born of inspiration and intelligence—from robotic-assisted surgical and bronchoscopy systems to data generation that unlocks the potential to benefit care systems worldwide.

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