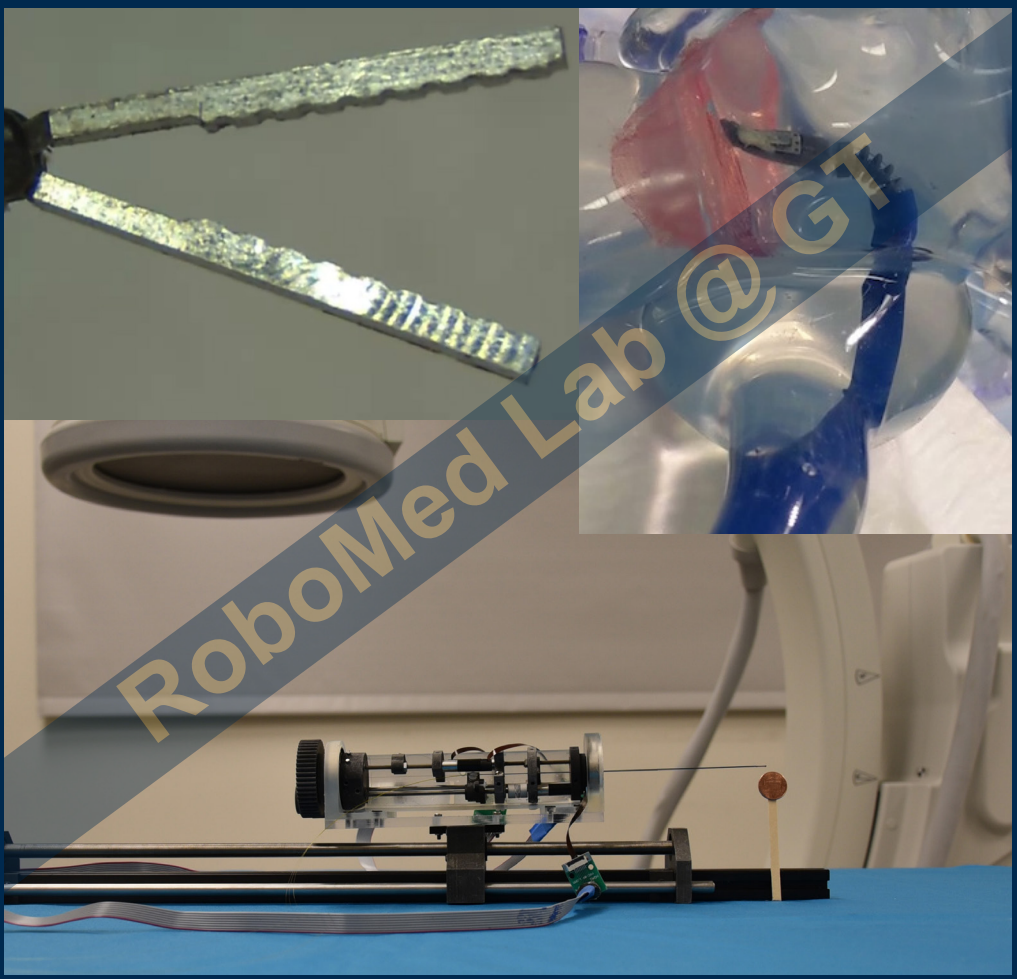
2023

Spring School on Medical Robotics

International Symposium on Medical Robotics



April 17 - 21, 2023

Georgia Institute of Technology, Atlanta, GA, USA

Organizing Committee

General Chair [2023 SSMR and 2023 ISMR]:	**Jaydev P. Desai**, Georgia Institute of Technology, USA
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Travel Awards Co-Chairs [2023 ISMR]:	**Zion Tse**, University of York, UK

Speakers

2023 Spring School on Medical Robotics

Kimberly Hoang

Title: *Clinical robotics in neurosurgery: where are we now and we where are we headed?*

Emmanuel Vander Pooten

Title: *Assistive technology for steering flexible instruments and catheters*

Michael Fisher

Title: *Considerations for Regulated Medical Devices*

Kirsten Williams

Title: *Robotic Advances to Address Clinical Challenges*

Joseph Singapogu

Title: *Towards Improved Patient Outcomes via Simulator-based Clinical Skills Training*

Nabil Simaan

Title: *Design Considerations for Continuum Robots and Statically Balanced Mechanisms for Medical Applications: from shape sensing to minimalistic actuation*

Jaydev Desai

Title: *Steerable Technologies for Transcatheter and Endovascular Interventions*

Mahdi Tavakoli

Title: *Machine Learning and Intelligent Control for Robot-assisted Surgery and Rehabilitation*

Speakers

2023 Spring School on Medical Robotics

Ann Majewicz Fey

Title: *Hardware and Algorithmic Tools to Enhance Surgical Training and Surgical Manipulation*

Christos Bergeles

Title: *V(i)PER: My ongoing clinical translation journey in regenerative retinal therapy delivery*

Helge Wurdemann

Title: *Soft, stiffness-controllable medical devices – future applications and impact*

Iulian Iordachita

Title: *Enabling Technology for Safe Robot-assisted Retinal Surgery*

Jon Lewin

Title: *Innovation and Information-Intensive Intervention*

Jessica Burgner-Kahrs

Title: *Through the Keyhole with Continuum Robots*

Aaron Young

Title: *AI Systems for Wearable Lower-Limb Robotic Systems for Patients with Walking Disability*

Kevin Cleary

Title: *MRI Robotics for Minimally Invasive Procedures in the Bore of the Magnet*

Keynote Speakers

2023 International Symposium on Medical Robotics

Pietro Valdastri

Title: *Soft Robotics for Early Detection and Treatment of Cancer*

Bio: Pietro Valdastri is Full Professor and Chair in Robotics and Autonomous Systems at the University of Leeds. He directs the Science and Technologies Of Robotics in Medicine (STORM) Lab, focusing on intelligent robots to fight cancer, the Institute of Robotics, Autonomous System and Sensing (IRASS), and the Robotics at Leeds network. He received his Laurea degree in Electronic Engineering from the University of Pisa in 2001 and his PhD in Biomedical Engineering from Scuola Superiore Sant'Anna in 2006. After the PhD, he became Assistant Professor in Biomedical Engineering at the BioRobotics Institute of Scuola Superiore Sant'Anna. In 2011, Prof Valdastri moved to Vanderbilt University as an Assistant Professor in Mechanical Engineering until 2016, when he relocated to Leeds.

He has published more than 160 peer reviewed journal papers in the field of medical robotics and has been principal investigator on grants in excess of $16M supported by NSF, NIH, ERC, EU-H2020, Cancer Research UK, The Royal Society, EPSRC, Innovate UK and industry, including the NSF CAREER Award with the proposal "Lifesaving Capsule Robots" in 2015, the ERC Consolidator Grant Award with the proposal "NoLiMiTs – Novel Lifesaving Magnetic Tentacles" in 2019, and the KUKA Innovation Award for his robotic colonoscopy platform in 2019. Prof. Valdastri is a Royal Society Wolfson Research Fellow, a Fellow Member of the Institute of Electrical and Electronics Engineers (IEEE), the Editor for Medical and Rehabilitation Robotics of the IEEE Robotics and Automation Letters, and a member of the steering committee of the International Society for Medical Innovation and Technology (iSMIT). STORM Lab's research has been featured by several tech news outlets, including BBC, The Times, The Washington Post, The Financial Times, New Scientist, The Spectator, WIRED, IEEE Spectrum, Medgadget, Daily Mail, The Engineer, Medical Design Technology Magazine, Medical Xpress, Newswise, NSF Science Now. Prof Valdastri also completed a successful entrepreneurial cycle with WinMedical s.r.l., a company he co-founded in 2009 and that was acquired by a larger enterprise in 2017. He recently started a new company, Atlas Endoscopy Limited, to bring his robotic colonoscopy platform to patient fruition.

SSMR: April 17-18, 2023
At-A-Glance

Monday, April 17. 2023			Tuesday, April 18, 2023		
Time	**Speaker**	**Location**	**Time**	**Speaker**	**Location**
8:00am - 8:30am	Registration	Marcus Nanotechnology Building, Georgia Institute of Technology, USA	8:00am - 8:30am	Registration	Marcus Nanotechnology Building, Georgia Institute of Technology, USA
8:30am - 9:15am	Kimberly Hoang, Emory University, USA		8:30am - 9:15am	Mahdi Tavakoli, University of Alberta, Canada	
9:15am - 10:00am	Emmanuel Vander Poorten, KU Leuven, Belgium		9:15am - 10:00am	Christos Bergeles, King's College London, UK	
10:00am - 10:30am	Break and Refreshments		10:00am - 10:30am	Break and Refreshments	
10:30am - 11:15am	Michael Fisher, Georgia Institute of Technology, USA		10:30am - 11:15am	Helge Wurdemann, University College London, UK	
11:15am - 12:00pm	Kirsten Williams, Emory University, USA		11:15am - 12:00pm	Iulian Iordachita, Johns Hopkins University, USA	
12:00pm - 1:00pm	Lunch		12:00pm - 1:00pm	Lunch	
1:00pm - 1:45pm	Joseph Singapogu, Clemson University, USA		1:00pm - 1:45pm	Jon Lewin, Emory University, USA	
1:45pm - 2:30pm	Nabil Simaan, Vanderbilt University, USA		1:45pm - 2:30pm	Jessica Burgner-Kahrs, University of Toronto, Canada	
2:30pm - 3:00pm	Break and Refreshments		2:30pm - 3:00pm	Break and Refreshments	
3:00pm - 3:45pm	Jaydev Desai, Georgia Institute of Technology, USA		3:00pm - 3:45pm	Aaron Young, Georgia Institute of Technology, USA	
3:45pm - 4:30pm	Ann Majewicz Fey, University of Texas at Austin, USA		3:45pm - 4:30pm	Kevin Cleary, Children's National Hospital, USA	

SSMR & ISMR Workshops: April 19, 2023
At-A-Glance

Wednesday, April 19, 2023			
Time	**Workshops for 2023 ISMR**		
8:00am - 8:30am	Registration		
8:30am - 12:00pm	Hands-On Machine Learning in Simulation and Reality with the da Vinci Research Kit	Recent Progress in MRI-Guided Robotics	The Holistic Forum of Medical Robotic Junior Professors: From Rehabilitation to Surgical Robots
	Location: Marcus 1116	Location: Marcus 1117	Location: Marcus 1118
10:00am - 10:30am	Break and Refreshments		
12:00pm - 1:00pm	Lunch		
1:30pm - 5:00pm		Building Software Systems for Image-Guided Robot-Assisted Interventions with SlicerROS2	The Holistic Forum of Medical Robotic Junior Professors: From Rehabilitation to Surgical Robots
		Location: Marcus 1117	Location: Marcus 1118
3:00pm - 3:30pm	Break and Refreshments		
5:30pm - 7:30pm	2023 SSMR and ISMR Reception		
7:30pm - 10:00pm	2023 SSMR and ISMR Dinner (By Invitation Only)		

ISMR: April 20-21, 2023

At-A-Glance

Thursday, April 20, 2023	
8:00am - 8:30am	Registration
8:45am - 9:00am	Welcome and Opening Remarks
9:00am - 10:15am	Oral Presentations - Session 1
	Paper 7
	Paper 48
	Paper 58
	Paper 31
	Paper 39
	Paper 19
10:20am - 10:40am	Rapid-Fire Poster Presentations
10:40am - 11:00am	Break and Refreshments
11:00am - 12:15pm	Oral Presentations - Session 2
	Paper 18
	Paper 41
	Paper 42
	Paper 8
	Paper 36
	Paper 56
12:30pm - 1:30pm	Lunch
1:35pm - 2:20pm	Keynote
2:25pm - 3:40pm	Oral Presentations - Session 3
	Paper 64
	Paper 5
	Paper 16
	Paper 12
	Paper 53
	Paper 60
3:40pm - 4:00pm	Break and Refreshments
4:00pm - 5:30pm	Oral Presentations - Session 4
	Paper 33
	Paper 11
	Paper 2
	Paper 23
	Paper 13
	Paper 4
	Paper 28
6:00pm - 8:00pm	2023 ISMR Banquet

Friday, April 21, 2023	
8:00am - 9:00am	Registration
9:00am - 10:15am	Oral Presentations - Session 5
	Paper 37
	Paper 24
	Paper 55
	Paper 6
	Paper 27
	Paper 43
10:15am - 10:35am	Break and Refreshments
10:35am - 11:50pm	Oral Presentations - Session 6
	Paper 17
	Paper 20
	Paper 63
	Paper 10
	Paper 49
	Paper 57
12:00pm - 1:00pm	Lunch
1:00pm - 2:15pm	Oral Presentations - Session 7
	Paper 21
	Paper 59
	Paper 34
	Paper 47
	Paper 38
	Paper 45
2:15pm - 2:35pm	Break and Refreshments
2:35pm - 3:50pm	Oral Presentations - Session 8
	Paper 29
	Paper 51
	Paper 50
	Paper 9
	Paper 52
	Paper 46
3:50pm - 4:00pm	Closing Remarks

Monday
April 17, 2023

Location: Marcus Nanotechnology Building, Georgia Institute of Technology

8:00am - 8:30am	Registration

SESSION 1

8:30am - 9:15am	**Kimberly Hoang** Emory University, USA
9:15am - 10:00am	**Emmanuel Vander Poorten** KU Leuven, Belgium
10:00am - 10:30am	Break and Refreshments

SESSION 2

10:30am - 11:15am	**Michael Fisher** Georgia Institute of Technology, USA
11:15am - 12:00pm	**Kirsten Williams** Emory University, USA
12:00pm - 1:00pm	Lunch

SESSION 3

1:00pm - 1:45pm	**Joseph Singapogu** Clemson University, USA
1:45pm - 2:30pm	**Nabil Simaan** Vanderbilt University, USA
2:30pm - 3:00pm	Break and Refreshments

SESSION 4

3:15pm - 3:45pm	**Jaydev Desai** Georgia Institute of Technology, USA
3:45pm - 4:30pm	**Mahdi Tavakoli** University of Alberta, Canada

Tuesday
April 18, 2023

Location: Marcus Nanotechnology Building, Georgia Institute of Technology

8:00am - 8:30am	Registration

SESSION 5

8:30am - 9:15am	**Ann Majewicz Fey** University of Texas at Austin, USA
9:15am - 10:00am	**Christos Bergeles** King's College London, UK
10:00am - 10:30am	Break and Refreshments

SESSION 6

10:30am - 11:15am	**Helge Wurdemann** University College London, UK
11:15am - 12:00pm	**Iulian Iordachita** Johns Hopkins University, USA
12:00pm - 1:00pm	Lunch

SESSION 7

1:00pm - 1:45pm	**Jon Lewin** Emory University, USA
1:45pm - 2:30pm	**Jessica Burgner-Kahrs** University of Toronto, Canada
2:30pm - 3:00pm	Break and Refreshments

SESSION 8

3:15pm - 3:45pm	**Aaron Young** Georgia Institute of Technology
3:45pm - 4:30pm	**Kevin Cleary** Children's National Hospital, USA

Wednesday
April 19, 2023

Workshops for 2023 SSMR and 2023 ISMR

8:00am - 8:30am	Registration

Morning Session: 8:30am - 12:00pm

Title: Hands-On Machine Learning in Simulation and Reality with the da Vinci Research Kit
Location: Marcus 1116

Title: Recent Progress in MRI-Guided Robotics
Location: Marcus 1117

Title: The Holistic Forum of Medical Robotic Junior Professors: From Rehabilitation to Surgical Robots
Location: Marcus 1118

10:00am - 10:30am	Break and Refreshments
12:00pm - 1:00pm	Lunch

Afternoon Session: 1:30pm - 5:00pm

Title: Building Software Systems for Image-Guided Robot-Assisted Interventions with SlicerROS2
Location: Marcus 1117

Title: The Holistic Forum of Medical Robotic Junior Professors: From Rehabilitation to Surgical Robots
Location: Marcus 1118

3:00pm - 3:30pm	Break and Refreshments
5:30pm - 7:30pm	2023 SSMR and ISMR Reception
7:30pm - 10:00pm	2023 SSMR and ISMR Dinner (By Invitation only)

Thursday
April 20, 2023

Location: Marcus Nanotechnology Building, Georgia Institute of Technology

8:00am - 8:30am Registration

Welcome and Opening Remarks

8:45am - 9:00am **Jaydev P. Desai**
Georgia Institute of Technology, USA

Oral Presentations - Session 1

9:00am - 10:15am

- Gunderman, Anthony; Azizkhani, Milad; Sengupta, Saikat; Cleary, Kevin; Chen, Yue. *Open Source MR-Safe Pneumatic Radial Inflow Motor and Encoder (PRIME): Design and Manufacturing Guidelines*
- Cheng, Alexandra; Lezcano, Dimitri A.; Kim, Jin Seob; Iordachita, Ioan Iulian. *Optical Fiber-Based Needle Shape Sensing: Three-Channel Single Core vs. Multicore Approaches*
- Bonnefoy, Aurelie; Otmani, Sabrina; Mansard, Nicolas; Stasse, Olivier; Michon, Guilhem; Watier, Bruno. *Modelisation of a Human-Exoskeleton Interaction for Cerebral Palsy*
- Heemeyer, Florian; Chautems, Christophe; Boehler, Quentin; Merino, Jose Luis; Nelson, Bradley J. *An Evaluation Platform for Catheter Ablation Navigation*
- Subedi, Divas; Jiang, Wenfan; Rahman, Ramisa Tahsin; Zhang, Heidi; Huang, Kevin; Su, Yun-Hsuan. *Smoothness Constrained Curiosity Driven Multicamera Trajectory Optimization for Robot-Assisted Minimally Invasive Surgery*
- Cai, Yilin; Orekhov, Andrew L.; Choset, Howie. *Statics Modeling of Discrete Joint Surgical Probes with Tendon-Based Stiffening*

Rapid Fire Poster Session

10:20am - 10:40am

- Gao, Weibo; Di Lallo, Antonio; Su, Hao. *A Portable Powered Soft Exoskeleton for Shoulder Assistance During Functional Movements: Design and Evaluation*
- Search, Jacob; Zani Jr., Sabino; Codda, Patrick J.; Manna, Brian P.. *Bioimpedance-based Tissue Identification from Similarity Scores of Frequency Response*
- Chen, Danyi; Dan, Matei; Shetty, Varun; Taylor, Thomas H.; Gao, Weibo; Dominguez, Israel; Ranjan, Shipali; Su, Hao. *Design and Control of an Open-Source Agile Bipedal Humanoid Robot with High-Torque Density Motors for Household Assistance*
- DeLorey, Charles; Kobayashi, Satoshi; Masaki, Fumitaro; Hata, Nobuhiko. *Optimization, fabrication, and validation of 3-section planar continuum robot for ureteroscopy*
- Padasdao, Blayton; Lafreniere, Samuel; Konh, Bardia. *Real-Time Ultrasound Tracking and Closed-Loop Control of a Tendon-Driven Continuum Robotic Tool in Water Medium*

- Yang, Ethan D.; Johnson, Lianne R.; Steadman, Randolph H.; Jones, Stephen L.; Tomey, Daniel; Corzo, Maria Paula; Secchi, Roberto; Bonsu, Nana-yaw; Elzein, Steven; Oviedo, Rodolfo J.; O'Malley, Marcia K.. *Extracting Tool Tip Movements from Robotic Surgery Videos via Region-Based Convolutional Neural Networks*
- Swami, Chinmay Prakash; Luo, Shuzhen; Su, Hao. *Physics-informed and Data-driven Reinforcement Learning for Exoskeleton Control in the Real World*
- Acar, Ayberk; Li, Yizhou; Puentes, Paola Ruiz; Soberanis-Mukul, Roger; Gupta, Iris; Bhowmick, Joyraj; Ghazi, Ahmed; Unberath, Mathias; Wu, Jie Ying. *S-NINE: Stereo Nine Point Calibration for Virtual and Augmented Reality Consoles*
- Dominguez, Israel; Yu, Shuangyue; Zhang, Sainan; Zhu, Junxi; Su, Hao. *Hip Exoskeletons for Mobility Augmentation: Mechatronics Design*
- Kantu, Nikhil Tej; Gao, Weibo; Dominguez, Israel; Su, Hao. *Modular and Portable Robot for Image-Guided Endovascular Interventions*

10:40am - 11:00am Break and Refreshments

Oral Presentations - Session 2

11:00am - 12:15pm

- Draelos, Mark; Ortiz, Pablo; Narawane, Amit; McNabb, Ryan P.; Kuo, Anthony N.; Izatt, Joseph A.. *Robotic Optical Coherence Tomography of Human Subjects with Posture-Invariant Head and Eye Alignment in Six Degrees of Freedom*
- Demaree, David; Zhang, Haohan. *A Structurally Enhanced Neck Exoskeleton to Assist with Head-Neck Motion*
- Ravigopal, Sharan R.; Williams, Kirsten M.; Desai, Jaydev P.. *Towards Closed-Loop Control of the Modified COAST Guidewire under Fluoroscopic Imaging for Endotracheal and Endovascular Interventions*
- Pittiglio, Giovanni; Mencattelli, Margherita; Dupont, Pierre E.. *Closed-Form Kinematic Model and Workspace Characterization for Magnetic Ball Chain Robots*
- Sharma, Susheela; Sun, Yuewan; Go, Sarah; Amadio, Jordan P.; Khadem, Mohsen; Eskandari, Amir Hossein; Alambeigi, Farshid. *Towards Biomechanics-Aware Design of a Steerable Drilling Robot for Spinal Fixation Procedures with Flexible Pedicle Screws*
- Greene, Nicholas; Luo, Wenkai; Kazanzides, Peter. *dVPose: Automated Data Collection and Dataset for 6D Pose Estimation of Robotic Surgical Instruments*

12:30pm - 1:30pm Lunch

Keynote

1:35pm - 2:20pm **Pietro Valdastri**
University of Leeds, UK

Oral Presentations - Session 3

2:25pm - 3:40pm

- Johnson, Cole; Cho, Jeongwoo; Maldonado-Contreras, Jairo; Chaluvadi, Saketh; Young, Aaron J.. *Adaptive Lower-Limb Prosthetic Control: Towards Personalized Intent Recognition & Context Estimation*

- Schaeffer, Leon; Herrmann, David; Boehm, Valter. *Preliminary theoretical considerations of a hand orthosis based on a prestressed, compliant structure*
- Ou, Yafei; Tavakoli, Mahdi. *Towards Safe and Efficient Reinforcement Learning for Surgical Robots Using Real-Time Human Supervision and Demonstration*
- Van Assche, Kaat; Zhang, Yao; Ourak, Mouloud; Verschooten, Eric; Joris, Philip X.; Vander Poorten, Emmanuel B.. *Physiological Motion Compensation in Patch Clamping Using Electrical Bio-Impedance Sensing*
- Chen, An Chi; Hadi, Muhammad; Kazanzides, Peter; Azimi, Ehsan. *Mixed Reality Based Teleoperation of Surgical Robotics*
- Lu, Alex; Ramos, Felipe; Lin, Jui-Te; Morimoto, Tania K.. *Enabling Higher Performance Concentric Tube Robots Via Multiple Constant-Curvature Tubes*

3:40pm - 4:00pm Break and Refreshments

Oral Presentations - Session 4

4:00pm - 5:30pm

- Schwarz, Stephan Andreas; Thomas, Ulrike. *Vision-Based Shared Control for Telemanipulated Nasopharyngeal Swab Sampling*
- Libby, Jacqueline; Somwanshi, Aniket Anil; Stancati, Federico; Tyagi, Gayatri; Patel, Aadit; Bhatt, Naigam; Rizzo, John-Ross; Atashzar, S. Farokh. *What Happens When Pneu-Net Soft Robotic Actuators Get Fatigued?*
- Blankenship, Madeline M.; Bodine, Cathy. *Development of a Preliminary Use Case for Socially Assistive Robot-Augmented Early Intervention with Clinical Stakeholders*
- Zeng, Lingyun; Sadati, Seyedmohammadhadi; Bergeles, Christos. *Koopman Operator-Based Extended Kalman Filter for Cosserat Rod Wrench Estimation*
- Cai, Yuyu; Davoodi, Ayoob; Li, Ruixuan; Ourak, Mouloud; Niu, Kenan; Deprest, Jan; Vander Poorten, Emmanuel B.. *Development of Robot-Assisted Ultrasound System for Fetoscopic Tracking in Twin to Twin Transfusion Syndrome Surgery*
- Guzman, Luis; Mateos, Luis. *Smart Room with AI Capabilities for Efficient and Safe Doctor Checkup in the COVID Era*
- Brenner, Charles; Herrin, Kinsey; Ambrose, Alexander; Emling, Brian; Schmitz, Michael; Welling, Richard; Hammond III, Frank L.. *The Modernization of Preoperative Scoliosis Curvature Correction Methods for Pediatric Patients*

6:00pm - 8:00pm 2023 ISMR Banquet

Friday
April 21, 2023

Location: Marcus Nanotechnology Building, Georgia Institute of Technology

8:00am - 9:00am Registration

Oral Presentations - Session 5

9:00am - 10:15am

- Raina, Deepak; Chandrashekhara, SH; Voyles, Richard; Wachs, Juan; Saha, Subir Kumar. *Deep Kernel and Image Quality Estimators for Optimizing Robotic Ultrasound Controller using Bayesian Optimization*
- Kibria, Zunaed; Kotamraju, Bhanu Prasad; Commuri, Sesh. *An Intelligent Control Approach for Reduction of Gait Asymmetry in Transfemoral Amputees*
- Qi, Boshen; Chen, Hengjie; Langley, Jason; Badie, Behnam; Hu, Xiaoping; Sheng, Jun. *Towards an MRI-Compatible Flexible Endoscopic Robot for Transsphenoidal Neurosurgery*
- Wang, Yanzhou; Xu, Yangsheng; Kwok, Ka-Wai; Iordachita, Ioan Iulian. *In Situ Flexible Needle Adjustment Towards MRI-Guided Spinal Injections Based on Finite Element Simulation*
- Battaglia, Edoardo; Majewicz Fey, Ann. *cHand: Open Source Hand Posture Visualization in CHAI3D*
- Kuo, Wen-Yi; Ma, Xihan; Deshmukh, Dhirajsinh Rajendra; Zhang, Haichong K.. *Automatic Contact Force-regulated End-effector Using Pneumatic Actuator for Safe Robotic Ultrasound Imaging*

10:15am - 10:35am Break and Refreshments

Oral Presentations - Session 6

10:35am - 11:50pm

- Zou, Zhiling; Burgner-Kahrs, Jessica; Looi, Thomas; Drake, James. *Concentric Tube Robot Optimization and Path Planning for Epilepsy Surgeries*
- Jiang, Yiwei; Zhou, Haoying; Fischer, Gregory Scott. *Markerless Suture Needle Tracking From A Robotic Endoscope Based On Deep Learning*
- Zhang, Jintan; Kazanzides, Peter. *Velocity Control for the da Vinci Research Kit*
- Smith, Mariana E.; Esser, Daniel S.; Rox, Margaret; Kuntz, Alan; Webster III, Robert James. *A Radial Folding Mechanism to Enable Surgical Continuum Manipulators to Fit through Smaller Ports*
- Tavakkolmoghaddam, Farid; Wang, Yang; Bales, Charles; Jiang, Yiwei; Nycz, Christopher J; Zhao, Zhanyue; Fischer, Gregory Scott. *Passive Model-based Error Compensation for Beveled-tip Needle Deflection*
- Yan, Junyan; Chen, Peng; Chen, Jibiao; Xue, Jiaqi; Xu, Chao; Qiu, Yufu; Fang, Haiyang; Lu, Yiang; Wong, George Kwok Chu; Liu, Yun-Hui; Yuan, Wu; Cheng, Shing Shin. *Design and Evaluation of a Flexible Sensorized Robotic OCT Neuroendoscope*

12:00pm - 1:00pm Lunch

Oral Presentations - Session 7

1:00pm - 2:15pm

- Vafadar, Saman; Saghbiny, Elie; Harlé, Antoine; Morel, Guillaume. *Using a Force-Controlled Robot for Probing-Based Registration and Automated Bone Drilling in Pedicle Screw Placement Procedures*
- Dharmarajan, Karthik; Panitch, William; Shi, Baiyu; Huang, Huang; Chen, Lawrence Yunliang; Low, Thomas; Fer, Danyal; Goldberg, Ken. *A Trimodal Framework for Robot-Assisted Vascular Shunt Insertion When a Supervising Surgeon Is Local, Remote, or Unavailable*
- Malhotra, Nidhi; Hoang, Kimberly; Desai, Jaydev P.. *Towards the development of a MEMS-based force sensor for in vivo tumor tissue demarcation*
- Ahmad, Mirza Awais; Ourak, Mouloud; Vercauteren, Tom; Deprest, Jan; Vander Poorten, Emmanuel B.. *Towards in-utero Navigational Assistance: A Multi Task Neural Network for Segmentation and Pose Estimation in Fetoscopy*
- Chitalia, Yash; Donder, Abdulhamit; Dupont, Pierre E.. *Modeling Tendon-actuated Concentric Tube Robots*
- Prakash, Ravi; Yamamoto, Kent K.; Oca, Siobhan R.; Ross, Weston; Codd, Patrick J.. *Brain-Mimicking Phantom for Photoablation and Visualization*

2:15pm - 2:35pm Break and Refreshments

Oral Presentations - Session 8

2:35pm - 3:50pm

- Davy, Joshua; da Veiga, Tomas; Pittiglio, Giovanni; Chandler, James Henry; Valdastri, Pietro. *Independent Control of Two Magnetic Robots Using External Permanent Magnets: A Feasibility Study*
- Wei, Haochen; Chen, Chi Chiung Grace; Kazanzides, Peter. *An abdominal phantom with instrument tracking for laparoscopic training*
- Baweja, Paramjit Singh; Gondokaryono, Radian; Kahrs, Lueder Alexander. *Experimental Trials with a Shared Autonomy Controller Framework and the da Vinci Research Kit: Pattern Cutting Tasks using Thin Elastic Materials*
- Ma, Guangshen; Ross, Weston; Codd, Patrick J.. *N-Mirror Robot System for Laser Surgery: A Simulation Study*
- Kapuria, Siddhartha; Mohanraj, Tarunraj G.; Venkatayogi, Nethra; Kara, Ozdemir Can; Hirata, Yuki; Minot, Patrick; Kapusta, Ariel; Ikoma, Naruhiko; Alambeigi, Farshid. *Towards Reliable Colorectal Cancer Polyps Classification via Vision Based Tactile Sensing and Confidence-Calibrated Neural Networks*
- Lee, Dawit; Kang, Inseung; Kogler, Geza F.; Hammond III, Frank L.; Young, Aaron J.. *User and Environmental Context Adaptive Knee Exoskeleton Assistance using Electromyography*

Closing Remarks

3:50pm - 4:00pm

Jaydev P. Desai
Georgia Institute of Technology, USA

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hello robot™

Hello Robot is the developer of Stretch - a robotic research platform designed to assist people with everyday manual tasks. Stretch can manipulate objects from the ground to countertop height, weighs only 51 lbs with a compact design that works well in cluttered real-world environments, and is significantly more affordable than any comparable mobile manipulator. Designed to be accessible for all kinds of research, Stretch features entirely open-source software with both Python and Robot Operating System (ROS) interfaces, extensible and customizable hardware, and pre-built demonstrations of autonomous function. Hello Robot currently has the world's largest active community in indoor mobile manipulation, including many researchers in the assistive robotics community. Our mission is to build a future where robots can enhance life for everyone, including children, older adults, and people with disabilities.

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ATI Industrial Automation is the world-leading engineering-based developer of robotic accessories and robot arm tooling, including Automatic Tool Changers, Multi-Axis Force/Torque Sensing Systems, Utility Couplers, Material Removal Tools, Robotic Collision Sensors, Manual Tool Changers, and Compliance Devices. Our robot end-effector products are found in thousands of successful applications around the world. Since 1989, our team of mechanical, electrical, and software engineers has been developing cost-effective, state-of-the-art end-effector products and solutions that improve robotic productivity.

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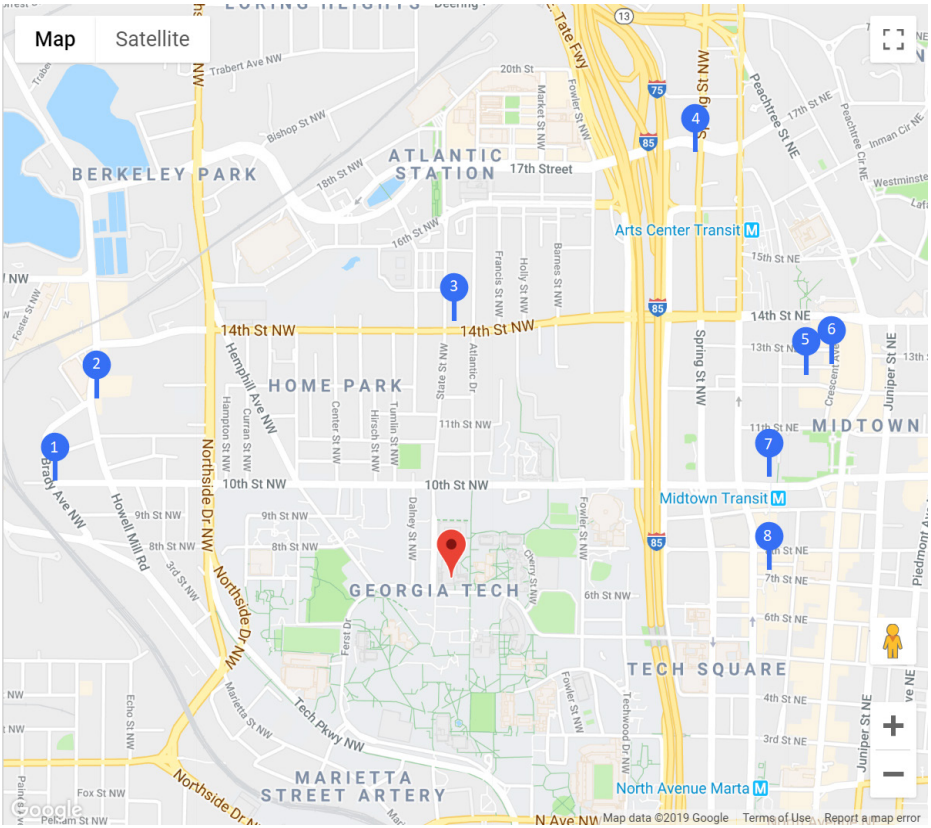
Stäubli Robotics is a leading player in robotics around the world, consistently delivering engineering as effective and reliable as our service and support. Stäubli offers a complete range of 4-axis and 6-axis robotic systems, collaborative and mobile robotics as well as software to meet the most exacting demands of the market internationally. Stäubli robots combine speed, performance and safety.

Worldwide, Stäubli is a leading manufacturer of quick release couplings, robotics systems and textile machinery. With a workforce of more than 5,500 employees, Stäubli is present in 29 countries supported by a comprehensive distribution network in 50 countries worldwide.

Notes

Restaurants



1. Miller Union - 999 Brady Ave. NW - American Restaurant - (678)733-8550
2. Barcelona Wine Bar - 1085 Howell Mill Rd. (Inside Westside Ironworks) - Spanish Restaurant - (404)872-8000
3. Wagaya Westside - 339 14th St. NW - Japanese Restaurant - (470)575-5799
4. Nan Thai Fine Dining - 1350 Spring St. NW #1 - Thai Restaurant - (404)870-9933
5. Tabla - 77 12th St. NE #2 - Indian Restaurant - (404)464-8571
6. Lure - 1106 Crescent Ave. NE - Seafood Restaurant - (404)817-3650
7. The Consulate - 10 10th St. NW - Tapas Restaurant - (404)254-5760
8. Ecco Midtown - 40 7th St. NE - European Restaurant - (404)347-9555

2023 Spring School on Medical Robotics and 2023 International Symposium on Medical Robotics
Georgia Institute of Technology, Atlanta, USA