Detailed Conference Programme

TIME		DAY 2: TUESDAY, 4 APRIL 2023
7:30 - 8:30		**Registration / Breakfast** *ORCHID Bayview Foyer*
8:30 - 9:00		**Opening Ceremony** *Main Session: PEONY Junior Ballroom*
9:00 - 9:45		**Plenary 1 (Virtual): Human-scale Soft Robotics** Chris Atkeson, *Carnegie Mellon University, United States*
9:45 - 10:05		**Tea Break** *Exhibition Hall - ROSELLE Junior Ballroom*
10:05 - 12:30		**Oral 1 [Design & Mechanisms]** *Main Session: PEONY Junior Ballroom* Session Chair: Takuya Umedachi
	67	A Crawling Robot That Utilizes Propagation of Deformation Waves of a Bistable Lattice Actuated by a Single Motor Yuto Horioka, Masahiro Shimizu, Takuya Umedachi
	79	A preliminary study on an innovative soft robotic artificial heart ventricle Lucrezia Lorenzon, Giulia Beccali, Matteo Cianchetti
	93	A Multi-Segment, Soft Growing Robot with Selective Steering Alexander M. Kübler, Sebastián Urdaneta Rivera, Frances Raphael, Julian Förster, Roland Siegwart, Allison M. Okamura
	116	GelSight EndoFlex: A Soft Endoskeleton Hand with Continuous High-Resolution Tactile Sensing Sandra Q. Liu, Leonardo Zamora Yañez, Edward Adelson
	168	Earthworm-inspired multimodal soft actuator Jonathan Tirado, Jonas Jørgensen, Ahmad Rafsanjani
	197	The Folded Pneumatic Artificial Muscle (foldPAM): Towards Programmability and Control Via End Geometry Sicheng Wang, Eugenio Frias Miranda, Laura Blumenschein
	202	Composite Soft Pneumatic Actuators Using 3D Printed Skins Ajinkya Bhat, Jonathan Ambrose, Chen-Hua Yeow
12:30 - 13:30		**Lunch** *Lunch Hall - SIMPOR Junior Ballroom*
13:30 - 15:00		**Sustainability Forum** *Main Session: PEONY Junior Ballroom*
15:00 - 15:20		**Tea Break** *Exhibition Hall - ROSELLE Junior Ballroom*
15:20 - 17:40		**Oral 2 [Modeling]** *Main Session: PEONY Junior Ballroom* Session Chairs: Johannes T Overvelde, Jamie Paik
	5	Design of 3D-Printed Continuum Robots Using Topology Optimized Compliant Joints Yilun Sun, Tim C. Lueth
	30	Bayesian Optimization of Pneumatic Soft Grippers Via Reconfigurable Modular Molds Tristan Sim Yook Min, Loong Yi Lee, Surya G. Nurzaman
	38	Dynamic Modeling of an Origami Prismatic Joint Mustafa Mete, Jian-Lin Huang, Jamie Paik
	39	Articulated Legs Allow Energy Optimization across Different Speeds for Legged Robots with Elastically Suspended Loads Anna Astolfi, Marcello Calisti
	87	Modeling the Behavior of Elastic Pouch Motors Maziar Arfaee, Jolanda Kluin, Johannes T B Overvelde
	101	Development of a Modular and Submersible Soft Robotic Arm and Corresponding Learned Kinematics Models William David Robert Null, James Menezes, Y Z
	156	Evaluation and Comparison of Reversible Water Electrolysis As a Means for Pneumatic Actuation Kristan Hilby, Peter Morice, Michael Aling, Ian Hunter

Detailed Conference Programme

17:40 - 18:10	**Poster Lightning A [Materials & Design]** *Main Session: PEONY Junior Ballroom* Session Chairs: David Howard, Lucia Beccai	
	10	Kinematic-Model-Free Tip Position Control of Reconfigurable and Growing Soft Continuum Robots Ahmad AlAttar, Ikhlas Ben Hmida, Federico Renda, Petar Kormushev
	24	A Combined Rigid-Soft Thruster Based on Jetting Propulsion Christoph Stoeffler, Adriano del Río, Rene Sonntag, Florian Hoffmann, Frank Kirchner
	75	Climbing Mini-Machines Using Plant-Inspired Micropatterned Adhesive Wheels Fabricated Via Two-Photon Lithography Isabella Fiorello, Alessio Mondini, Barbara Mazzolai
	81	The Jamming Donut: A Free-Space Gripper Based on Granular Jamming Therese Joseph, Sarah Baldwin, Lillian Guan, James Brett, David Howard
	110	Robo-Squid: Experimental Investigation of Pulsed Jet Propulsion Based on Magnetohydrodynamics Saba Firouznia, Ciqun Xu, Hemma Philamore, Jonathan Rossiter
	127	Continuous Skin Eversion Enables an Untethered Soft Robot to Burrow in Granular Media Korkut Eken, Nick Gravish, Michael T. Tolley
	138	Active Vibration Fluidization for Granular Jamming Grippers Cameron Coombe, James Brett, Raghav Mishra, Gary W Delaney, David Howard
	140	Three-Dimensional Shape Construction in a Soft Large-Scale Vision-Based Tactile Sensor with a Single Rotational Camera Satoshi Nagasawa, Van Ho
	155	Reconfigurable kirigami skins steer a soft robot Burcu Seyidoğlu, Saravana Prashanth Murali Babu, Ahmad Rafsanjani
	169	GelSight Baby Fin Ray: A Compact, Compliant, Flexible Finger with High-Resolution Tactile Sensing Sandra Q. Liu, Yuxiang Ma, Edward Adelson

	DAY 3: WEDNESDAY, 5 APRIL 2023	
8:00 - 8:30	**Registration / Breakfast** *ORCHID Bayview Foyer*	
8:30 - 9:15	**Plenary 2: Biology as Prototype** *Main Session: PEONY Junior Ballroom* Julian Vincent, *Heriot-Watt University, United Kingdom*	
	Poster A [Materials & Design] *Poster Area - ROSELLE & SIMPOR Bayview Foyer*	
	10	Kinematic-Model-Free Tip Position Control of Reconfigurable and Growing Soft Continuum Robots Ahmad AlAttar, Ikhlas Ben Hmida, Federico Renda, Petar Kormushev
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169	GelSight Baby Fin Ray: A Compact, Compliant, Flexible Finger with High-Resolution Tactile Sensing Sandra Q. Liu, Yuxiang Ma, Edward Adelson
8	A Vacuum-Powered Soft Mesh Gripper for Compliant and Effective Grasping Xinquan Liang, Yuzhe Wang, Sibel Musaoglu Ocak
9	One-Piece 3D-Printed Legs Using Compliant Mechanisms That Produce Effective Propulsive Force for Hexapod Robot Locomotion Atsushi Kaneko, Dai Owaki, Masahiro Shimizu, Takuya Umedachi
11	DragonClaw: A Low-Cost Pneumatic Gripper with Integrated Magnetic Sensing Vani Sundaram, Raunaq Mahesh Bhirangi, Mark Rentschler, Abhinav Gupta, Tess Hellebrekers
16	Hydrogel-Actuated Soft Sucker with Mucus Secretion Tianqi Yue, Alexander Keller, Daniel Gosden, Hermes Gadelha, Jonathan Rossiter
17	A Soft Gripper for Automating Split Operation of Silkworm Oki Morikage, Zhongkui Wang, Shinichi Hirai, Akira Nonaka
22	Variable Response Characteristics of a Soft Sensorized Hydrogel Using Mesoscale Cellular Structures Naoki Tano, Ryman Hashem, David Hardman, Fumiya Iida
26	Sea Shell Bioinspired Variable Stiffness Mechanism Enabled by Hybrid Jamming Transition Luca Arleo, Jasmine Pozzi, Niccolò Pagliarani, Matteo Cianchetti
28	A Soft Pneumatic Actuator with Multiple Motion Patterns Based on Length-Tuning Strain-Limiting Layers Quan Xiong, Xuanyi Zhou, Chen-Hua Yeow
29	Design and Validation of Tunable Stiffness Actuator Using Soft-Rigid Combined Layer Jamming Mechanism Seoyeon Ham, Brian Byunghyun Kang, Kevin Abishek, Hyunglae Lee, Wansoo Kim
34	Biodegradable Humidity Actuators for Sustainable Soft Robotics Using Deliquescent Hydrogels Alexander Keller, Qiukai Qi, Kumaresan Yogeenth, Andrew Conn, Jonathan Rossiter
37	Robotized Additive Manufacturing of Silicone for Skeleton-Reinforced Linear Soft Actuators Jérémy Sand, Benoît WACH, Maciej BEDNARCZYK, Laurent Barbé, Francois Geiskopf
40	Easy Cleaning of 3D SLA/DLP Printed Soft Fluidic Actuators with Complex Internal Geometry Benn Proper, Brandon Caasenbrood, Irene Kuling
42	Variable Kinematics enabled by Layer Jamming Transition in a Soft Bending Actuator Niccolò Pagliarani, Giacomo Picardi, Syeda Shadab Zehra Zaidi, Matteo Cianchetti
43	Squeeze-In Functionality for a Soft Parallel Robot Gripper Metodi Netzev, Alexandre Angleraud, Roel S. Pieters
44	Design and Fabrication of Multi-Pouch Inflatable Holding Structure with Higher Payload Yuyang Song, Umesh Gandhi, Danil Prokhorov
45	Rapid Energy Release in Inflatable Soft Actuators through Reversible Bond Breaking Elias De Smet, Bert Van Raemdonck, Dominiek Reynaerts, Benjamin Gorissen
48	Spatial Position Estimation of Lightweight and Delicate Objects Using a Soft Haptic Probe Mohammad Sheikh Sofla, Srikishan Vayakkattil, Marcello Calisti
52	Robotic Fish Driven by Twisted and Coiled Polymer Actuators at High Frequencies Tsam Lung You, Jonathan Rossiter, Hemma Philamore
53	A Decrease in Impedance of Monolithic Activated Carbon Cloth Electrodes at Increased Charge Density Oleksandr Syzoniuk, Saoni Banerji, Alvo Aabloo, Indrek Must
55	Passive Shape Locking for Multi-Bend Growing Inflated Beam Robots Rianna Jitosho, Sofia Simón-Trench, Allison M. Okamura, Brian Do
58	Hydraulic Modulation of Silicone Knuckles for Variable Control of Joint Stiffness Satyam Bhawsinghka, Natasha Troxler, Stephanie Walker, Joseph Davidson
60	HISSbot: Sidewinding with a Soft Snake Robot Farhan Rozaidi, Emma Waters, Olivia Dawes, Jennifer Yang, Joseph Davidson, Ross Hatton

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9:15 - 10:05	62	Design and Manufacture of Edible Microfluidic Logic Gates Shuhang Zhang, Bokeon Kwak, Dario Floreano
	68	Dual Multilayer Extension Actuator for High Extension and High Compression Force Applications Jonathan Ambrose, Dylan Cheah, Chen-Hua Yeow
	69	Shape-Forming Donut-Shaped Soft Gripper Cole Sterck, Olivia Kim, Thomas Anton, Mable Fok
	70	Development of a Gripper for component-friendly Handling of Complex Capital Goods Ditzia Susana García Morales, Richard Blümel, Annika Raatz
	71	A Multi-Material Robotic Finger with Integrated Proprioceptive and Tactile Capabilities Produced with a Circular Process Antonia Georgopoulou, Stijn Hamelryckx, Kai Junge, Simon Rogler, Josie Hughes, Frank Clemens
	77	An Optical Shape Sensor for Integration in Soft Grippers Malte Grube, Robert Seifried
	78	A Comprehensive Dataset of Grains for Granular Jamming in Soft Robotics: Grip Strength and Shock Absorption David Howard, Jack Anthony O'Connor, Jordan Letchford, Therese Joseph, Sophia Lin, Sarah Baldwin, Gary W Delaney
	80	Are Active Soft Particles Suitable for Particle Jamming Actuators? Qianyi Chen, Dingena L. Schott, Jovana Jovanova
	82	Mechanics of Tubular Meshes Made of Helical Fibers and Application to Modeling McKibben Artificial Muscles Jacopo Quaglierini, Marino Arroyo, Antonio De Simone
	85	Balloon Pin Array Gripper: Mechanism for Deformable Grasping with Two-Step Shape Adaptation Yuto Kemmotsu, Kenjiro Tadakuma, Kazuki Abe, Masahiro Watanabe, Masashi Konyo, Satoshi Tadokoro
	88	Development of a monolithic pneumatic soft actuator for fruit grasping Federico Bernabei, Matteo Lo Preti, Seonggun Joe, Lucia Beccai
	90	3D Printable Origami-Inspired Pneumatic Soft Actuator with Modularized Design Tatsuya Kako, Zheng Wang, Yoshiki Mori, Hongying Zhang, Zhongkui Wang
	91	FinFix: A Soft Gripper with Contact-Reactive Reflex for High-Speed Pick and Place of Fragile Objects Willem Heeringa, Cosimo Della Santina, Gerwin Smit
	96	Hygroscopically-Driven Transient Actuator for Environmental Sensor Deployment Manuela Patrizia Heinrich, Fabian Wiesemüller, Xavier Aeby, Yusuf Furkan Kaya, Deeptanshu Sivaraman, Huy Nguyen Pham, Sukho Song, Gustav Nystrom, Mirko Kovac
	98	A Soft Approach to Convey Vibrotactile Feedback in Wearables through Mechanical Hysteresis Nathaniel Fino, Zane A. Zook, Barclay Jumet, Daniel Preston, Marcia OMalley
	100	Bio-Inspired Miniature Soft Robots Fueled by Light Ming Gu, Tim Echtermeyer
	104	GelBat: An Edible Gelatin-Based Battery Hsing-Yu Chen, Alexander Keller, Andrew Conn, Jonathan Rossiter
	106	The Xeno-Tongue Gripper: Granular Jamming Suction Cup with Bellow-Driven Self-Morphing Kieran Gilday, Ryman Hashem, Arsen Abdulali, Fumiya Iida
	109	Programmable Inflatable Origami Saravana Prashanth Murali Babu, Riddhi Das, Barbara Mazzolai, Ahmad Rafsanjani
	113	Comparing and Configuring Soft Tendon Designs for Variable Stiffness Actuators on a Robot Arm Laurenz Elstner, Raquel Tirach, Erik Kyrkjebø, Martin F. Stoelen
	114	Effects of Lateral Undulation in Granular Medium Burrowing with a Peristaltic Soft Robot Riddhi Das, Saravana Prashanth Murali Babu, Alessio Mondini, Barbara Mazzolai
	118	Soft Air Pocket Force Sensors for Large Scale Flexible Robots Michael Mitchell, Ciera McFarland, Margaret M. Coad

Detailed Conference Programme

	122	Hybrid Soft-Rigid Continuum Robot Inspired by Spider Monkey Tail Mary C. Doerfler, Katalin Schäffer, Margaret M. Coad
	123	Deployable Robotic Structures Via Passive Rigidity on a Soft, Growing Robot Francesco Fuentes, Laura Blumenschein
	132	Soft Inflatable Fingers: An Overview of Design, Prototyping and Sensorisation for Various Applications Faisal ALJaber, Ahmed Hassan, Taqi Abrar, Hareesh Godaba, Ivan Vitanov, Kaspar Althoefer
	135	A Soft Wearable Robot to Support Scapular Adduction and Abduction for Respiratory Rehabilitation Kosuke Isobe, Masakazu Hirokawa, Kenji Suzuki
	143	Evolving variable stiffness fiber patterns for multi-shape robotic sheets Atoosa Parsa, Medha Goyal, Bilige Yang, Josh Bongard, Rebecca Kramer-Bottiglio
	145	Design of a Multi-Degree-Of-Freedom Elastic Neck Exoskeleton for Persons with Dropped Head Syndrome Santiago Price Torrendell, Yang Chen, Hideki Kadone, Modar Hassan, Kenji Suzuki
	148	Variable Length-Angle and Stiffness Joint Mechanism That Enables Extension, Contraction and Rotation Elements by S-Shape Folded Flat Tube Kagetora Takahashi, Kenjiro Tadakuma, Masahiro Watanabe, Kazuki Abe, Satoshi Tadokoro
	151	Manta Ray Inspired Multistable Soft Robot Juan Osorio, Kendal Tinsley, Chelsea Tinsley, Andres Arrieta
	153	A Modular Bio-Inspired Robotic Hand with High Sensitivity Chao Liu, Andrea Moncada, Hanna Matusik, Deniz Irem Erus, Daniela Rus
	158	Design and Additive Manufacturing of a Hedgehog-Inspired Soft Robot Companion Gumawang Hiramandala, Theo Calais, Thileepan Stalin, Aaron Chooi, ABY RAJ PLAMOOTIL MATHAI, Snehal Jain, Elgar Kanhere, Pablo Valdivia y Alvarado
	162	Development and Characterization of an Origami-Based Vacuum-Driven Bending Actuator for Soft Gripping Asitha Lakruwan Kulasekera, Sasheeka Himaruwan Hewa Dewa, Chanuka Lihini Tennakoon
	196	Reconfigurable, Multi-Material, Voxel-Based Soft Robots Julie Legrand, Seppe Terryn, Ellen Roels, Bram Vanderborght
10:05 - 10:25	**Tea Break** *Exhibition Hall - ROSELLE Junior Ballroom*	
10:25 - 12:30	**Oral 3 [Design & Materials]** *Main Session: PEONY Junior Ballroom* Session Chairs: Ronald Henry Heisse, Jovana Jovanova	
	12	A Sodium Azide-Powered Free-Piston Gas Compressor for Mobile Pneumatic Systems Ronald Henry Heisser, Tharm Sribhibhadh, Steven Adelmund, Kevin Shimasaki, Nathan Usevitch, Amirhossein H. Memar, Amirhossein Amini, Andrew A. Stanley
	13	Design of a Soft Bio-Inspired Tissue Transport Mechanism Vera Gesina Kortman, Jovana Jovanova, Aimee Sakes
	97	Composite Stretchable Sensors for the Detection of Asymmetric Deformations in a Soft Manipulator David Hardman, Ryman Hashem, Fumiya Iida
	150	Passive Suction Enhanced Adhesion Pads for Soft Grippers Aaron Chooi, Theo Calais, Dontu Saikrishna, Snehal Jain, Arturo Castillo Ugalde, Gumawang Hiramandala, Elgar Kanhere, Thileepan Stalin, Pablo Valdivia y Alvarado
	170	Towards a Modular Framework for Visco-Hyperelastic Simulations of Soft Material Manipulators with Well-Parameterised Material Max Bartholdt, Rebecca Berthold, Moritz Schappler
	198	Deployable Soft Origami Modular Robotic Arm with Variable Stiffness Using Facet Buckling Min Jo Park, Woongbae Kim, Sung Yol Yu, Jungmin Cho, Wonkyeong Kang, Junghwan Byun, Useok Jeong, Kyu-Jin Cho
12:30 - 13:30	**Lunch** *Lunch Hall - SIMPOR Junior Ballroom*	

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13:30 - 14:15	**Plenary 3: Overcoming the Adhesion Paradox and Switchability Conflict on Rough Surfaces with Shape Memory Polymers** *Main Session: PEONY Junior Ballroom* Huajian Gao, *Nanyang Technological University, Singapore*	
14:15 - 15:15	**Women in Soft Robotics Panel** *Main Session: PEONY Junior Ballroom*	
15:15 - 15:35	**Tea Break** *Exhibition Hall - ROSELLE Junior Ballroom*	
15:35 - 17:40	**Oral 4 [Control]** *Main Session: PEONY Junior Ballroom* Session Chairs: Josie Hughes, Egidio Falotico	
	27	Characterisation and Control Platform for Pneumatically Driven Soft Robots: Design and Applications Jialei Shi, Wenlong Gaozhang, Hanyu Jin, Ge Shi, Helge Arne Wurdemann
	47	A Small Soft-Bodied Crawling Robot with Electromagnetic Legs and Neural Control for Locomotion on Various Metal Terrains Naris Asawalertsak, Worameth Nantareekurn, Poramate Manoonpong
	74	Plant-Inspired Behavior-Based Controller to Enable Reaching in Redundant Continuum Robot Arms Enrico Donato, Yasmin Ansari, Cecilia Laschi, Egidio Falotico
	103	Full-Body Grasping Strategy for Planar Underactuated Soft Manipulators Using Passivity-Based Control Khanh Hoang Chu, Brandon Caasenbrood, Mahboubeh Keyvanara, Irene Kuling, Hendrik Nijmeijer
	111	Proprioceptive Sensing of Soft Tentacles with Model Based Reconstruction for Controller Optimization Andrea Vicari, Nana Obayashi, Francesco Stella, Gaétan Raynaud, Karen Mulleners, Cosimo Della Santina, Josie Hughes
	133	Multi-Sensory Fusion of Wearable Sensors for Automatic Grasping and Releasing with Soft-Hand Exoskeleton Erjiage Guan, John Nassour, Gordon Cheng
17:40 - 18:10	**Poster Lightning B [Control & Modeling]** *Main Session: PEONY Junior Ballroom* Session Chairs: Daniel Aukes, Lorenzo Masia	
	35	FONS: A Python Framework for Simulating Nonlinear Inflatable Actuator Networks Arne Baeyens, Bert Van Raemdonck, Edoardo Milana, Dominiek Reynaerts, Benjamin Gorissen
	63	Subtract to Adapt: Autotomic Robots Q. Tyrell Davis, Stephanie Woodman, Rebecca Kramer-Bottiglio, Josh Bongard, Melanie Landesberg
	92	Multi-Modal Sensor Fusion for Learning Rich Models for Interacting Soft Robots Thomas George Thuruthel, Fumiya Iida
	108	Modelling the Inflation of an Elastic Membrane with a Load Ge Shi, Azadeh Shariati, Jialei Shi, Nicolas Herzig, Sara Adela Abad Guaman, Helge Arne Wurdemann
	119	Linear Kinematics for General Constant Curvature and Torsion Manipulators Bill Fan, Farhan Rozaidi, Capprin Bass, Gina Olson, Melinda Malley, Ross Hatton
	124	Design and Characterization of Viscoelastic McKibben Actuators with Tunable Force-Velocity Curves Michael Bennington, Tuo Wang, Jiaguo Yin, Sarah Bergbreiter, Carmel Majidi, Victoria Webster-Wood
	129	Wheelless Soft Robotic Snake Locomotion: Study on Sidewinding and Helical Rolling Gaits Dimuthu Dharshana Kodippili Arachchige, Dulanjana M. Perera, Sanjaya Mallikarachchi, Iyad Kanj, Yue Chen, Isuru S. Godage
	195	Autonomous Robotic System for Breast Biopsy with Deformation Compensation Sandro Ferrari, Eleonora Tagliabue, Bogdan Mihai Maris, Paolo Fiorini
	200	Tunable Dynamic Walking Via Soft Twisted Beam Vibration Yuhao Jiang, Fuchen Chen, Daniel Aukes
	203	Environment-Based Assistance Modulation for a Hip Exosuit Via Computer Vision Enrica Tricomi, Mirko Mossini, Francesco Missiroli, Nicola Lotti, Xiaohui Zhang, Michele Xiloyannis, Loris Roveda, Lorenzo Masia

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TIME	DAY 4: THURSDAY, 6 APRIL 2023	
8:00 - 8:30	**Registration / Breakfast** *ORCHID Bayview Foyer*	
8:30 - 9:15	**Plenary 4 (Virtual): The Multiscale Competency of Biology: Cancer, Cellular Collective Intelligence, and Biorobotics** *Main Session: PEONY Junior Ballroom* Michael Levin, *Tufts University, United States*	
	Poster B [Control & Modeling] *Poster Area - ROSELLE & SIMPOR Bayview Foyer*	
	35	FONS: A Python Framework for Simulating Nonlinear Inflatable Actuator Networks Arne Baeyens, Bert Van Raemdonck, Edoardo Milana, Dominiek Reynaerts, Benjamin Gorissen
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	1	Mechanical Modeling and Optimal Model-Based Design of a Soft Pneumatic Actuator Wu-Te Yang, Hannah Stuart, Masayoshi Tomizuka
	7	Effects of Compliance on Path-Tracking Performance of a Miniature Robot Mustafa Ugur, Burak Arslan, Alperen Özzeybek, Onur Ozcan
	14	EDAMS: An Encoder-Decoder Architecture for Multi-Grasp Soft Sensing Object Recognition Oliver Shorthose, Alessandro Albini, Luca Scimeca, Liang He, Perla Maiolino
	15	Measuring a Soft Resistive Strain Sensor Array by Solving the Resistor Network Inverse Problem Yuchen Zhao, CHOO KEAN KHAW, Yifan Wang
	18	Inferring Environmental Interactions of Soft Everting Robots from Acoustic Signals Allison Raines, Andrew Lewis, Joel Hwee, Blake Hannaford
	19	Shape Sensing with Electrostatic Differential Capacitance for Ultrasound Imaging by Flexible Array Transducer Chisato Hojo, Kawagishi Hiroki, Hiroki Shigemune, Ryosuke Tsumura
	21	RISO: Combining Rigid Grippers with Soft Switchable Adhesives Shaunak Mehta, Yeunhee Kim, Joshua Hoegerman, Michael Bartlett, Dylan Losey
	23	SCoReR: Sensorized Collision Resilient Aerial Robot Alihan Bakir, Doga Ozbek, Amirali Abazari, Onur Ozcan
	25	Differentiable Surrogate Models for Design and Trajectory Optimization of Auxetic Soft Robots Chonghui Zhang, Audrey Sedal, Yaoyao Fiona Zhao
	32	Integrated Design of a Bio-Inspired Soft Gripper for Mushrooms Harvesting Steeve Mbakop, Alice Lagache, Gilles TAGNE, Rochdi Merzouki

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9:15 - 10:05	36	Elbow Soft Robot Rehabilitation System for Hemiplegic Stroke Patients Based on sEMG Control Qifeng Xun, Benjamin, Wee Keong Ang, Chen-Hua Yeow
	41	Collapse of Straight Soft Growing Inflated Beam Robots under Their Own Weight Ciera McFarland, Margaret M. Coad
	46	3D Kinematics and Quasi-Statics of a Growing Robot Eversion Flavie PRZYBYLSKI, Yinoussa ADAGOLODJO, Jeremie Dequidt, Pierre Berthet-Rayne, Christian Duriez
	49	Learning-based Position and Stiffness Feedforward Control of Antagonistic Soft Pneumatic Actuators using Gaussian Processes Tim-Lukas Habich, Sarah Kleinjohann, Moritz Schappler, Svenja Spindeldreier
	50	Policy Adaptation Using an Online Regressing Network in a Soft Robotic Arm Muhammad Sunny Nazeer, Diego Bianchi, Giulia Campinoti, Cecilia Laschi, Egidio Falotico
	56	An Efficient Framework for the Solution of Contact Mechanics Problems in Soft Robotics Kevin Wandke, Y Z
	64	Anti-Slipping Adaptive Grasping Control with a Novel Optoelectronic Soft Sensor Michael Seokyoung Han, Dan Popa, Cindy Harnett
	65	Learning a Controller for Soft Robotic Arms and Testing Its Generalization to New Observations, Dynamics, and Tasks Carlo Alessi, Helmut Hauser, Alessandro Lucantonio, Egidio Falotico
	72	Reduced Finite Element Modelling and Closed-Loop Control of Pneumatic-Driven Soft Continuum Robots Paul André Guy Marie Chaillou, Jialei Shi, Alexandre Kruszewski, Isabelle Fournier, Helge Arne Wurdemann, Christian Duriez
	73	Piecewise Affine Curvature Model: A Reduced-Order Model for Soft Robot-Environment Interaction Beyond PCC Francesco Stella, Qinghua Guan, Jinsong Leng, Cosimo Della Santina, Josie Hughes
	76	Shape-Invariant Indirect Hardness Estimation for a Soft Vacuum-Actuated Gripper with an Onboard Depth Camera Ting Rang Ling, Mohammed Ayoub Juman, Surya G. Nurzaman, Chee Pin Tan
	84	Dynamics of Suspended Cable Driven Parallel Robots Using the Geometric Variable Strain Approach Anup Teejo Mathew, Ikhlas Ben Hmida, suad alhaj, Ahmed Nader Ahmed, Rashid K. Abu Al-Rub, Bashar El-Khasawneh, Federico Renda
	86	Shape and Tip Force Estimation of Concentric Tube Robots Based on Actuation Readings Alone Abdulaziz Y. Alkayas, Daniel Feliu, Anup Teejo Mathew, Caleb Rucker, Federico Renda
	94	Self-Reconfiguring Soft Modular Cellbots Ridhi Bansal, Helmut Hauser, Jonathan Rossiter
	99	Soft Robotic Tactile Perception of Softer Objects Based on Learning of Spatiotemporal Pressure Patterns Tetsushi Nonaka, Arsen Abdulali, Chapa Sirithunge Hewa Pelendage, Kieran Gilday, Fumiya Iida
	105	Design Optimization for Bellow Soft Pneumatic Actuators in Shape-Matching Yao Yao, Yuwen Chen, Liang He, Perla Maiolino
	112	Dynamic Model of an Online Programmable Textile Soft Actuator Ludwig Dellinger, John Nassour, Gordon Cheng
	115	Soft Continuum Actuator Tip Position and Contact Force Prediction, Using Electrical Impedance Tomography and Recurrent Neural Networks Amirhosein Alian, George Mylonas, James Avery
	117	Smell Driven Navigation for Soft Robotic Arms: Artificial Nose and Control Francesco Piqué, Francesco Stella, Josie Hughes, Egidio Falotico, Cosimo Della Santina
	121	Design, Characterization, and Modeling of Barometric Tactile Sensors for Underwater Applications Aiden Shaevitz, Mathew L. Johnston, Joseph Davidson

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	126	Modular Sensor Integration into Soft Robots Using Stretchable Wires for Nuclear Infrastructure Inspection and Radiation Spectroscopy Calder Wilson, Joseph Karam, Callen Votzke, Farhan Rozaidi, Camille J. Palmer, Ross Hatton, Mathew L. Johnston
	128	Dynamically Feasible Trajectory Generation for Soft Robots Haley Sanders, Marc Killpack
	130	Modelling Handed Shearing Auxetics: Selective Piecewise Constant Strain Kinematics and Dynamic Simulation Maximilian Stölzle, Lillian Chin, Ryan Truby, Daniela Rus, Cosimo Della Santina
	131	Towards a Pump-Controlled, Propellant-Powered Pneumatic Source for Untethered Soft Robots: Modelling and Experiments Samuel Dutra Gollob, Ellen Roche
	134	Kinematic Modeling of a Soft Everting Robot from Inflated Beam Theory Joel Hwee, Andrew Lewis, Allison Raines, Blake Hannaford
	136	Whole-Arm Grasping Strategy for Soft Arms to Capture Space Debris Camilla Agabiti, Etienne Ménager, Egidio Falotico
	139	Teleoperation of Soft Modular Robots: Study on Real-Time Stability and Gait Control Dulanjana M. Perera, Dimuthu Dharshana Kodippili Arachchige, Sanjaya Mallikarachchi, Talal Ghafoor, Iyad Kanj, Yue Chen, Isuru S. Godage
	147	Exploring Dynamically Controlled Frisbee Throws Using a Highly Compliant Robotic Arm Kai Junge, Josie Hughes
	149	Towards Open Loop Control of Soft Multistable Grippers from Energy-Based Modeling Harith Morgan, Juan Osorio, Andres Arrieta
	154	Stretchable Optical Waveguide Sensor Suitability for Wrinkle Degree Detection in Soft Robots Williamson John G., Joshua Schultz
	161	A Data-Driven Topology Optimization Framework for Designing Robotic Grippers Valerio Bo, Enrico Turco, Maria Pozzi, Monica Malvezzi, Domenico Prattichizzo
	166	Soft Fluidic Closed-Loop Controller for Untethered Underwater Glider Maya Angeles, Kalina Bonofiglio, Matthew Haahr, Josh Palmer, Brandon Simpson, Lauryn Whiteside, Yijia Wu, Markus Nemitz
	171	Automated Design of Pneumatic Soft Grippers through Design-Dependent Multi-Material Topology Optimization Joshua Pinskier, Prabhat Kumar, David Howard, Matthijs Langelaar
	173	Fabrication and Characterization of a Passive Variable Stiffness Joint Based on Shear Thickening Fluids Philip. H Johnson, Marcello Calisti, Mini Chakravarthini Rai
	201	Control and Morphology Optimization of Passive Asymmetric Structures for Robotic Swimming Nana Obayashi, Andrea Vicari, Kai Junge, Kamran Shakir, Josie Hughes
10:05 - 10:25	**Tea Break** *Exhibition Hall - ROSELLE Junior Ballroom*	
10:25 - 12:30	**Oral 5 [Applications]** *Main Session: PEONY Junior Ballroom* Session Chair: Van Ho	
	20	Design of a Pneumatically Driven Inchworm-Like Gas Pipe Inspection Robot with Autonomous Control Yang Shen, Ryu Isono, Satoshi Kodama, Yoka Konishi, Taiga Inoue, Akihiko Onuki, Ryo Maeda, Jia-Yeu Lin, Hiroyuki ISHII, Atsuo Takanishi
	125	Soft Robotic Link with Controllable Transparency for Vision-Based Tactile and Proximity Sensing Quan Luu, Dinh Nguyen, Nhan Huu Nguyen, Van Ho
	160	GelSight360: An Omnidirectional Camera-Based Tactile Sensor for Dexterous Robotic Manipulation Megha Tippur, Edward Adelson
	165	Sensorizing a Compression Sleeve for Continuous Pressure Monitoring and Lymphedema Treatment Using Pneumatic or Resistive Sensors Joseph DelPreto, Cheryl Brunelle, Alphonse Taghian, Daniela Rus

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	194	Large Torsion Thin Artificial Muscles Tensegrity Structure for Twist Manipulation Ryota Kobayashi, Hiroyuki Nabae, Koichi Suzumori
	199	Electrical Impedance Tomographic Shape Sensing for Soft Robots Wenci Xin, Fangmeng ZHU, Peiyi Wang, Zhexin Xie, Zhiqiang Tang, Cecilia Laschi
12:30 - 13:30		**Lunch** *Lunch Hall - SIMPOR Junior Ballroom*
13:30 - 14:15		**Plenary 5: Making Wearable Materials Smarter** *Main Session: PEONY Junior Ballroom* Chiara Dariao, *California Institute of Technology, United States*
14:15 - 15:15		**Soft Robotics Industry Panel** *Main Session: PEONY Junior Ballroom*
15:15 - 15:35		**Tea Break** *PEONY Bayview Foyer*
15:35 - 18:30		**Lab Tours** Nanyang Technological University, National University of Singapore Singapore University of Technology and Design, St John's Island National Marine Lab
19:00 - 22:00		**Banquet & Awards** *Hotel Fort Canning, Grand Marquee, Level 2* *11 Canning Walk, Singapore 178881*