

2020 3rd IEEE International Conference on Soft Robotics (RoboSoft 2020)

**New Haven, Connecticut, USA
15 May – 15 July 2020**



**IEEE Catalog Number: CFP20023-POD
ISBN: 978-1-7281-6571-4**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20023-POD
ISBN (Print-On-Demand):	978-1-7281-6571-4
ISBN (Online):	978-1-7281-6570-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

FEEDBACK CONTROL OF A SOFT SWINGING APPENDAGE.....	1
<i>Travis Burch, John Lathrop, William Scott, Derek Paley</i>	
SOFT NON-VOLATILE MEMORY FOR NON-ELECTRONIC INFORMATION STORAGE IN SOFT ROBOTS	7
<i>Markus Nemitz, Christoffer Abrahamsson, Lukas Wille, Adam Andrew Stokes, Daniel Preston, George Whitesides</i>	
AUTONOMOUS SELF-HEALING PNEUMATIC MCKIBBEN MUSCLE BASED ON A NEW HYDROGEL MATERIAL	13
<i>Antonio López-Díaz, Ana Martín Pacheco, Alicia Naranjo, Cristina Martín, M. Antonia Herrero, Ester Vázquez, Andres S. Vazquez</i>	
DEVELOPMENT OF ULTRALIGHT HYBRID PNEUMATIC ARTIFICIAL MUSCLE FOR LARGE CONTRACTION AND HIGH PAYLOAD.....	19
<i>Seonggun Joe, Hongbo Wang, Massimo Totaro, Lucia Beccai</i>	
NEATSKIN: A DISCRETE IMPEDANCE TOMOGRAPHY SKIN SENSOR	25
<i>Euan Judd, Krishna Manaswi Digumarti, Jonathan Rossiter, Helmut Hauser</i>	
THE QUAD-SPATULA GRIPPER: A NOVEL SOFT-RIGID GRIPPER FOR FOOD HANDLING.....	31
<i>Ahmad Gafer, Dane Heymans, Domenico Prattichizzo, Gionata Salvietti</i>	
NEUROMORPHIC CLOSED-LOOP CONTROL OF A FLEXIBLE MODULAR ROBOT BY A SIMULATED SPIKING CENTRAL PATTERN GENERATOR.....	38
<i>Alex Spaeth, Maryam Tebyani, David Haussler, Mircea Teodorescu</i>	
PRECISE IN-HAND MANIPULATION OF SOFT OBJECTS USING SOFT FINGERTIPS WITH TACTILE SENSING AND ACTIVE DEFORMATION.....	44
<i>Qiujie Lu, Liang He, Thrishantha Nanayakkara, Nicolas Rojas</i>	
OPTIMIZATION OF THE INITIAL DEFORMED SHAPE OF A CIRCULAR ELASTIC JUMPING ROBOT	50
<i>Takahiro Matsuno, Shinichi Hirai</i>	
PATH PLANNING AND CONTROL OF MOBILE SOFT MANIPULATORS WITH OBSTACLE AVOIDANCE.....	56
<i>Steeve Mbakop, Gilles Tagne, Othman Lakhal, Rochdi Merzouki, Sergey Drakunov</i>	
SOFT ROBOTIC MODULE FOR SENSING AND CONTROLLING CONTACT FORCE.....	62
<i>Alice Buso, Rob B.N. Scharff, Eugeni Doubrovski, Jun Wu, Charlie C.L. Wang, Peter Vink</i>	
CHARACTERIZATION OF A SOFT GRIPPER WITH DETACHABLE FINGERS THROUGH RAPID EVAPORATION.....	68
<i>Han-Joo Lee, Noe Melchor, Hayoung Chung, Kenneth Loh</i>	
A BENDING SENSOR INSENSITIVE TO PRESSURE: SOFT PROPRIOCEPTION BASED ON ABRADED OPTICAL FIBRES	74
<i>Hareesh Godaba, Ivan Vitanov, Faisal ALJaber, Ahmad Ataka, Kaspar Althoefer</i>	

A LOW-PROFILE VACUUM ACTUATOR: TOWARDS A SIT-TO-STAND ASSIST EXOSUIT	80
<i>Asitha Lakruwan Kulasekera, Rancimal Binoy Arumathanthri, Damith Suresh Chathuranga, Thilina Dulantha Lalitharatne, R. A. R. C. Gopura</i>	
DEEP LEARNING-BASED WHOLE-ARM SOFT TACTILE SENSATION	86
<i>Soichiro Yoshigi, Jia Wang, Sotaro Nakayama, Van Ho</i>	
DRIFT-FREE LATENT SPACE REPRESENTATION FOR SOFT STRAIN SENSORS	92
<i>Thomas George Thuruthel, Kieran Gilday, Fumiya Iida</i>	
ROBOTIC JELLYFISH ACTUATED BY SOFT FINRAY EFFECT STRUCTURED TENTACLES	98
<i>Valentina Lo Gatto, Jonathan Rossiter, Helmut Hauser</i>	
A FLEXIBLE CONNECTOR FOR SOFT MODULAR ROBOTS BASED ON MICROPATTERNED INTERSURFACE JAMMING	104
<i>Yu Alexander Tse, Shuai Liu, Yang Yang, Michael Yu Wang</i>	
A SYSTEMATIC APPROACH TO CREATING TERRAIN-CAPABLE HYBRID SOFT/HARD MYRIAPOD ROBOTS	110
<i>Yasemin Ozkan-Aydin, Baxi Zhong, Enes Aydin, Daniel Goldman</i>	
AN EASY USE AUXILIARY ARM: DESIGN AND CONTROL OF A PORTABLE CONTINUUM MANIPULATOR FOR ENHANCED DEXTERITY BY SOFT-RIGID ARMS COLLABORATION	118
<i>Bingbin Yu, Sankaranarayanan Natarajan</i>	
FEM BASED WORKSPACE ESTIMATION FOR SOFT ROBOTS: A FORWARD-BACKWARD INTERVAL ANALYSIS APPROACH	124
<i>W. Amehri, Gang Zheng, Alexandre Kruszewski</i>	
MINICORE: A MINIATURE, FOLDABLE, COLLISION RESILIENT QUADCOPTER.....	130
<i>Levent Dilaveroglu, Onur Ozcan</i>	
CLASSIFICATION OF COMPONENTS OF AFFECTIVE TOUCH USING RAPIDLY-MANUFACTURABLE SOFT SENSOR SKINS	136
<i>Benjamin Shih, Emily Lathrop, Iman Adibnazari, Ricky Martin, Yong-Lae Park, Michael T. Tolley</i>	
DEMONSTRATION OF TELEOPERATED BUMBLEBEE-QUADCOPTER SYSTEM FOR COLLISION AVOIDANCE	142
<i>Shunsuke Shigaki, Masahiro Shimizu, Hiroki Kobayashi, Risa Ishiguro, Takuya Umedachi, Koh Hosoda</i>	
LOW-COST PAPER BASED PRESSURE SENSING ELEMENT AS ARTIFICIAL SKIN MODULE FOR PROSTHETIC HAND.....	148
<i>Rishabh B. Mishra, Sherjeel M. Khan, Sohail Faizan Shaikh, Aftab M. Hussain, Muhammad Mustafa Hussain</i>	
COMPLIANT AND LARGE-STRAIN TWISTED STRING ACTUATORS USING SUPERCOILED POLYMERS.....	155
<i>Jun Zhang, David Bombara, Steven Fowzer, Cianan Brennan</i>	

MIXING STATE ESTIMATION OF PERISTALTIC CONTINUOUS MIXING CONVEYOR WITH DISTRIBUTED SENSING SYSTEM BASED ON SOFT INTESTINE MOTION	162
<i>Kota Wakamatsu, Katsuma Inoue, Daiki Hagiwara, Haruka Adachi, Daisuke Matsui, Shunichi Kurumaya, Rie Nishihama, Manabu Okui, Kohei Nakajima, Yasuo Kuniyoshi, Taro Nakamura</i>	
SENSING AND CONTROL OF FRICTION MODE FOR CONTACT AREA VARIABLE SURFACES (FRICTION-VARIABLE SURFACE STRUCTURE)	169
<i>Seita Nojiri, Akihiko Yamaguchi, Yosuke Suzuki, Tokuo Tsuji, Tetsuyou Watanabe</i>	
SOFT ROBOTIC LOCOMOTION BY PERISTALTIC WAVES IN GRANULAR MEDIA	177
<i>Riddhi Das, Saravana Prashanth Murali Babu, Stefano Palagi, Barbara Mazzolai</i>	
SELF-SENSING ELASTOMERIC MEMBRANE FOR HAPTIC BUBBLE ARRRAAY.....	183
<i>Jose Barreiros, Ilbey Karakurt, Priyanshu Agarwal, Talha Agcayazi, Shawn Reese, Katherine Healy, Yigit Menguc</i>	
SHAPE MEMORY SILICONE USING PHASE-CHANGING INCLUSIONS.....	191
<i>Trevor Buckner, Michelle Ching-Sum Yuen, Rebecca Kramer-Bottiglio</i>	
A SOFT IONIC SENSOR FOR SIMULTANEOUS PRESSURE AND STRAIN MEASUREMENTS	198
<i>Anshul Gupte, Lorenzo Kinnicutt, Kevin McDonald, Tommaso Ranzani</i>	
IN-HAND SMALL-OBJECT COUNTING FROM TACTILE SENSOR ARRAYS INSTALLED ON SOFT FINGERTIPS.....	204
<i>Matthew Ishige, Takuya Umedachi, Yoshihisa Ijiri, Yoshihiro Kawahara</i>	
SENSORIZED PHANTOM FOR CHARACTERIZING LARGE AREA DEFORMATION OF SOFT BODIES FOR MEDICAL APPLICATIONS.....	210
<i>Josie Hughes, Perla Maiolino, Thrishantha Nanayakkara, Fumiya Iida</i>	
A BOUNDARY-CONSTRAINED SWARM ROBOT WITH GRANULAR JAMMING.....	217
<i>Mohammad Amin Karimi, Vahid Alizadehyazdi, Bruno-Pier Busque, Heinrich Jaeger, Matthew Spenko</i>	
AFREES: ACTIVE FIBER REINFORCED ELASTOMERIC ENCLOSURES	223
<i>Kyle Yoshida, Xinyi Ren, Laura Blumenschein, Allison M. Okamura, Ming Luo</i>	
DEVELOPMENT OF CONTINUUM SPINE MECHANISM FOR HUMANOID ROBOT: BIOMIMETIC SUPPLE AND CURVILINEAR SPINE DRIVEN BY TENDON	230
<i>Yuriko Kakehashi, Kei Okada, Masayuki Inaba</i>	
ELECTROMECHANICAL CHARACTERIZATION OF 3D PRINTABLE CONDUCTIVE ELASTOMER FOR SOFT ROBOTICS	236
<i>Suhan Kim, Sukjun Kim, Houriyeh Majditehran, Dinesh Patel, Carmel Majidi, Sarah Bergbreiter</i>	
TOWARDS VISION-BASED ROBOTIC SKINS: A DATA-DRIVEN, MULTI-CAMERA TACTILE SENSOR	243
<i>Camill Trueeb, Carmelo Sferrazza, Raffaello D'Andrea</i>	
DESIGN AND CHARACTERIZATION OF A MINIATURE HYDRAULIC POWER SUPPLY FOR HIGH-BANDWIDTH CONTROL OF SOFT ROBOTICS	249
<i>Damiano Padovani, Eric J. Barth</i>	

SCALABLE SIM-TO-REAL TRANSFER OF SOFT ROBOT DESIGNS.....	255
<i>Sam Kriegman, Amir Mohammadi Nasab, Dylan S. Shah, Hannah Steele, Gabrielle Branin, Michael Levin, Josh Bongard, Rebecca Kramer-Bottiglio</i>	
SOFT THERMAL ACTUATORS WITH EMBEDDED LIQUID METAL MICRODROPLETS FOR IMPROVED HEAT MANAGEMENT	263
<i>Xiaonan Huang, Zhijian Ren, Carmel Majidi</i>	
A TENDON-DRIVEN ORIGAMI HOPPER TRIGGERED BY PROPRIOCEPTIVE CONTACT DETECTION.....	269
<i>Wei-Hsi Chen, Shivangi Misra, J. Diego Caporale, Daniel Koditschek, Shu Yang, Cynthia Sung</i>	
SHEAR STRENGTHENED GRANULAR JAMMING FEET FOR IMPROVED PERFORMANCE OVER NATURAL TERRAIN.....	277
<i>Emily Lathrop, Iman Adibnazari, Nick Gravish, Michael T. Tolley</i>	
EVALUATION OF A CIRCUMFERENTIAL EXTENDING ANTAGONIST ACTUATOR IN A SOFT ARM	283
<i>Maxwell Asselmeier, Ross Hatton, Yigit Menguc, Gina Olson</i>	
CLOSED-FORM NON-SINGULAR CONSTANT-CURVATURE CONTINUUM MANIPULATOR KINEMATICS	291
<i>Thiomas Allen, Levi Rupert, Timothy R. Duggan, Gabriel Hein, Kevin Albert</i>	
SOFT ROBOT CONTROL WITH A LEARNED DIFFERENTIABLE MODEL	298
<i>James Bern, Yannick Schnider, Pol Banzet, Nitish Kumar, Stelian Coros</i>	
COORDINATED SOFT ROBOT MULTI-ARM MANIPULATION.....	305
<i>Dustan Kraus, Alex Jensen, Marc Killpack</i>	
A NOVEL SOFT GLOVE FOR HAND TREMOR SUPPRESSION: EVALUATION OF LAYER JAMMING ACTUATOR PLACEMENT.....	313
<i>Isira Awantha Vithanage, Ashan Tharidu Wanasinghe, Pasindu Kavindya, Asitha Lakruwan Kulasekera, Damith Suresh Chathuranga</i>	
POSITION CONTROL OF A 3D PRINTED SOFT FINGER WITH INTEGRATED SOFT PNEUMATIC SENSING CHAMBERS	319
<i>Charbel Tawk, Emre SARIYILDIZ, Hao Zhou, Marc Panhuis, Geoffrey M. Spinks, Gursel Alici</i>	
A PETAL-ARRAY CAPACITIVE TACTILE SENSOR WITH MICRO-PIN FOR ROBOTIC FINGERTIP SENSING.....	325
<i>Bin Fang, Yang Chen, Fuchun Sun, DongChao Yang, Xu Zhang, Ziwei Xia, Huaping Liu</i>	
A 3D PRINTED SOFT FORCE SENSOR FOR SOFT HAPTICS.....	331
<i>Dilpreet Singh, Charbel Tawk, Rahim Mutlu, Emre SARIYILDIZ, Vitor Sencadas, Gursel Alici</i>	
TOWARDS DESIGN OF A DEFORMABLE PROPELLER FOR DRONE SAFETY	337
<i>Dinh Nguyen, Giuseppe Loianno, Van Ho</i>	
ANALYSIS AND OPTIMIZATION OF FULLY FOAM-BASED CAPACITIVE SENSORS.....	343
<i>Massimo Totaro, Irene Bernardeschi, Hongbo Wang, Lucia Beccai</i>	
A TENDON-DRIVEN, PRELOADED, PNEUMATICALLY ACTUATED, SOFT ROBOTIC GRIPPER WITH A TELESCOPIC PALM.....	349
<i>Jiawei Meng, Lucas Gerez, Jayden Chapman, Minas Liarokapis</i>	

INSTANT SOFT ROBOT: A SIMPLE RECIPE FOR QUICK AND EASY MANUFACTURING.....	355
<i>Jan Fras, Jakub G&#322;Ã³wka, Kaspar Althofer</i>	
INVESTIGATING THE MECHANICS OF HUMAN-CENTERED SOFT ROBOTIC ACTUATORS WITH FINITE ELEMENT ANALYSIS	362
<i>Keith Buffinton, Benjamin Wheatley, Soheil Habibi, Joon Shin, Brielle Cenci, Amanda Christy</i>	
CONTINUOUS CONTROL OF A SOFT CONTINUUM ARM USING DEEP REINFORCEMENT LEARNING	370
<i>Sreeshankar Satheeshbabu, Naveen Kumar Uppalapati, Tianshi Fu, Girish Krishnan</i>	
ENABLING ACTUATION AND SENSING IN ORGANS-ON-CHIP USING ELECTROACTIVE POLYMERS.....	377
<i>Paul Motreuil Ragot, Andres Hunt, Dhanesh Kasi, Bruno Brajon, Arn M. J. M. van den Maagdenberg, Valeria Orlova, Massimo Mastrangeli, Pasqualina M. Sarro</i>	
ANALYZING THE EFFECT OF SOFT ARM DESIGN ON OBSTACLE NAVIGATION THROUGH COLLISION	383
<i>Abigail Rafter, Geoffrey Hollinger, Yigit Menguc, Gina Olson</i>	
IMAGE-BASED APPROACH TO RECONSTRUCT CURLING IN CONTINUUM STRUCTURES	391
<i>Jie Fan, Emanuela Del Dottore, Francesco Visentin, Barbara Mazzolai</i>	
SOFT FOOT SENSOR DESIGN AND TERRAIN CLASSIFICATION FOR DYNAMIC LEGGED LOCOMOTION	397
<i>Xiaofeng Guo, Bryan Blaise, Jennifer Molnar, Jeremiah Coholich, Shantanu Padte, Ye Zhao, Frank L. Hammond</i>	
COMPLIANCE-TUNING SOFT INFLATABLE WHEELS FOR ROBOT MOBILITY ON VARIOUS TERRAINS.....	405
<i>Abdulaziz Almusa, Raymond Galeza, Mingyue Wang, Carmel Majidi</i>	
SCALABLE TACTILE SENSING FOR AN OMNI-ADAPTIVE SOFT ROBOT FINGER	411
<i>Zeyi Yang, Sheng Ge, Fang Wan, Yujia LIU, Chaoyang Song</i>	
HYBRID SOFT-RIGID FOOT WITH DRY ADHESIVE MATERIAL DESIGNED FOR A GECKO-INSPIRED CLIMBING ROBOT.....	417
<i>Donghao Shao, Jian Chen, Aihong Ji, Zhendong Dai, Poramate Manoonpong</i>	
SOFT VARIABLE STIFFNESS JOINTS FOR CONTROLLABLE GRASP SYNERGIES IN UNDERACTUATED ROBOTIC HANDS.....	425
<i>Elizabeth Fox, Frank L. Hammond</i>	
DYNAMIC MODELING AND JOINT DESIGN OF A CABLE DRIVEN SOFT GRIPPER.....	432
<i>Sumitaka Honji, Kenji Tahara</i>	
ROBOTIC CANE AS A SOFT SUPERLIMB FOR ELDERLY SIT-TO-STAND ASSISTANCE.....	438
<i>XIA WU, Haiyuan Liu, Ziqi Liu, Mingdong Chen, Fang Wan, Chenglong Fu, Harry Asada, Zheng Wang, Chaoyang Song</i>	
OPTIMIZATION OF A SOFT ROBOTIC BLADDER ARRAY FOR DISSIPATING HIGH IMPACT LOADS: AN INITIAL STUDY IN DESIGNING A SMART HELMET.....	446
<i>Jonathan Aston, Nikolaus Benko, Takara Truong, Alia binti Mohd Zaki, Nathaniel Olsen, Ebsa Eshete, Nathaniel Luttmer, Brittany Coats, Mark Minor</i>	

TOWARDS AN UNTETHERED KNIT FABRIC SOFT CONTINUUM ROBOTIC MODULE WITH EMBEDDED FABRIC SENSING	454
<i>Huy Nguyen Pham, Zhi Qiao, Sam Seidel, sunny amatya, Imran Irfan Bin Mohd, Wenlong Zhang</i>	
DESIGN OF HIGH TORQUE VARIABLE STIFFNESS ACTUATOR WITH FAST ADJUSTMENT AND WIDE RANGE OF STIFFNESS USING LEVER AND PARALLEL MECHANISM.....	460
<i>Hirofumi Shin, Tetsuya Ishikawa, Takumi Kamioka, Ryo Yamaguchi, Chunjiang Fu, Takahide Yoshiike</i>	
DESIGN OF PNEUMATIC ORIGAMI MUSCLE ACTUATORS (POMAS) FOR A SOFT ROBOTIC HAND ORTHOSIS FOR GRASPING ASSISTANCE.....	466
<i>Tae Hwa Hong, Se-Hun Park, Ji-Hong Park, Nam-Jong Paik, Yong-Lae Park</i>	
A COMPUTATIONAL DESIGN FRAMEWORK FOR PRESSURE-DRIVEN SOFT ROBOTS THROUGH NONLINEAR TOPOLOGY OPTIMIZATION	472
<i>Brandon Caasenbrood, Alexander Pogromsky, Hendrik Nijmeijer</i>	
EFFICIENT BAYESIAN EXPLORATION FOR SOFT MORPHOLOGY-ACTION CO-OPTIMIZATION	478
<i>Luca Scimeca, Perla Maiolino, Fumiya Iida</i>	
TO GRASP OR NOT TO GRASP: AN END-TO-END DEEP-LEARNING APPROACH FOR PREDICTING GRASPING FAILURES IN SOFT HANDS.....	484
<i>Visar Arapi, Zhang Yujie, Giuseppe Averta, Manuel Giuseppe Catalano, Daniela Rus, Cosimo Della Santina, Matteo Bianchi</i>	
CLOSING THE LOOP WITH LIQUID-METAL SENSING SKIN FOR AUTONOMOUS SOFT ROBOT GRIPPING	492
<i>Jessica Yin, Tess Hellebrekers, Carmel Majidi</i>	
NONLINEARITY COMPENSATION IN A MULTI-DOF SHOULDER SENSING EXOSUIT FOR REAL-TIME TELEOPERATION.....	499
<i>Rejin John Varghese, Anh Nguyen, Etienne Burdet, Guang-Zhong Yang, Benny Ping Lai Lo</i>	
SELF-SINTERING LIQUID METAL COLLOIDAL INKS FOR FACILE MANUFACTURE OF STRETCHABLE CONDUCTORS.....	507
<i>Michelle Ching-Sum Yuen, Megan A. Creighton, Christopher E. Tabor</i>	
DISCRETIZED MODELING OF PLANAR PNEUMATIC CONTINUUM MANIPULATORS.....	513
<i>Erik Skorina, Cagdas Onal</i>	
DYNAMIC MODELING OF A HYDROGEL-BASED CONTINUUM ROBOTIC ARM WITH EXPERIMENTAL VALIDATION.....	519
<i>Azadeh Doroudchi, Roozbeh Khodambashi Emami, Amir Salimi Lafmejani, Daniel Aukes, Spring Berman</i>	
EMULATING A SENSOR USING SOFT MATERIAL DYNAMICS: A RESERVOIR COMPUTING APPROACH TO PNEUMATIC ARTIFICIAL MUSCLE	526
<i>Ryo Sakurai, Mistuhiro Nishida, Sakurai Hideyuki, Yasumichi Wakao, Nozomi Akashi, Yuna Minami, Yasuo Kuniyoshi, Kohei Nakajima</i>	
EXTENSIBLE HIGH FORCE MANIPULATOR FOR COMPLEX EXPLORATION.....	534
<i>Josie Hughes, Cosimo Della Santina, Daniela Rus</i>	

FIRE-RESISTANT DEFORMABLE SOFT GRIPPER BASED ON WIRE JAMMING MECHANISM.....	541
<i>Kenjiro Tadakuma, Toshiaki Fujimoto, Masahiro Watanabe, Tori Shimizu, Eri Takane, Masashi Konyo, Satoshi Tadokoro</i>	
MECHANICALLY STRENGTHENED ELECTROADHESION BASED SOFT GRIPPER WITH MULTI-LAYERED DIELECTRIC ELASTOMER ACTUATOR.....	549
<i>Geonwoo Hwang, Jihwan Park, David Santiago Diaz Cortes, Ki-Uk Kyung</i>	
A VISION-BASED COLLOCATED ACTUATION-SENSING SCHEME FOR A COMPLIANT TENDON-DRIVEN ROBOTIC HAND	555
<i>Kieran Gilday, Thomas George Thuruthel, Fumiya Iida</i>	
EELWORM: A BIOINSPIRED MULTIMODAL AMPHIBIOUS SOFT ROBOT	561
<i>Edoardo Milana, Bert Van Raemdonck, Kevin Cornelis, Enrique Dehaerne, Jef De Clerck, Yarno De Groof, Toon De Vil, Benjamin Gorissen, Dominiek Reynaerts</i>	
MODULAR PLATFORM FOR THE EXPLORATION OF FORM-FUNCTION RELATIONSHIPS IN SOFT SWIMMING ROBOTS	567
<i>Bangyuan Liu, Frank L. Hammond</i>	
STRUCTURAL OPTIMIZATION OF ADAPTIVE SOFT FIN RAY FINGERS WITH VARIABLE STIFFENING CAPABILITY	574
<i>Khaled Elgeneidy, Adel Fansa, Irfan Hussain, Khaled Goher</i>	
TOWARD A SOFT ROBOTIC ANKLE-FOOT ORTHOSIS (SR-AFO) EXOSUIT FOR HUMAN LOCOMOTION: PRELIMINARY RESULTS IN LATE STANCE PLANTARFLEXION ASSISTANCE.....	580
<i>Carly Thalman, Tiffany Hertzell, Hyunglae Lee</i>	
A NEW EXPLORATION STRATEGY FOR SOFT ROBOTS BASED ON PROPRIOCEPTION	587
<i>Francesco Visentin, Giovanna A. Naselli, Barbara Mazzolai</i>	
MECHANICALLY PROGRAMMABLE, DEGRADABLE & INGESTIBLE SOFT ACTUATORS.....	593
<i>Josie Hughes, Daniela Rus</i>	
CABLE-DRIVEN JAMMING OF A BOUNDARY CONSTRAINED SOFT ROBOT	601
<i>Koki Tanaka, Mohammad Amin Karimi, Bruno-Pier Busque, Declan Mulroy, Qiyuan Zhou, Richa Batra, Ankit Srivastava, Heinrich Jaeger, Matthew Spenko</i>	
VERSATILE ROTARY ACTUATORS FOR SMALL-SCALE ROBOTIC SYSTEMS.....	607
<i>Iman Adibnazari, Byung Jun Jeon, Yong-Lae Park, Michael T. Tolley</i>	
TUNABLE ANISOTROPIC STIFFNESS WITH SQUARE FIBER JAMMING	613
<i>Buse Aktas, Robert D. Howe</i>	

Author Index