

**2019 IEEE-RAS 19th
International Conference on
Humanoid Robots
(Humanoids 2019)**

**Toronto, Ontario, Canada
15 – 17 October 2019**



**IEEE Catalog Number: CFP19HUM-POD
ISBN: 978-1-5386-7631-8**

**Copyright © 2019 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:	CFP19HUM-POD
ISBN (Print-On-Demand):	978-1-5386-7631-8
ISBN (Online):	978-1-5386-7630-1
ISSN:	2164-0572

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

FOOTSTEP PLANNING FOR AUTONOMOUS WALKING OVER ROUGH TERRAIN	9
<i>Robert J. Griffin, Georg Wiedebach, Stephen McCrory, Sylvain Bertrand, Inho Lee, Jerry Pratt</i>	
POSITION-BASED LATERAL BALANCE CONTROL FOR KNEE-STRETCHED BIPED ROBOT	17
<i>Shuuji Kajita, Mehdi Benallegue, Rafael Cisneros Limon, Takeshi Sakaguchi, Mitsuharu Morisawa, Hiroshi Kaminaga, Iori Kumagai, Kenji Kaneko, Fumio Kanehiro</i>	
DYNAMIC WALKING ON COMPLIANT AND UNEVEN TERRAIN USING DCM AND PASSIVITY-BASED WHOLE-BODY CONTROL	25
<i>George Mesesan, Johannes Engelsberger, Gianluca Garofalo, Christian Ott, Alin Albu-Schäffer</i>	
MULTI-CONTACTS FORCE-REACTIVE WALKING CONTROL DURING PHYSICAL HUMAN-HUMANOID INTERACTION	33
<i>Taisuke Kobayashi, Emmanuel Dean-Leon, Julio Rogelio Guadarrama-Olvera, Florian Bergner, Gordon Cheng</i>	
QUINTIC SPLINE COLLOCATION FOR REAL-TIME BIPED WALKING-PATTERN GENERATION WITH VARIABLE TORSO HEIGHT	56
<i>Philipp Seiwald, Felix Sygulla, Nora-Sophie Staufenberg, Daniel Rixen</i>	
FORMAL CONNECTIONS BETWEEN TEMPLATE AND ANCHOR MODELS VIA APPROXIMATE SIMULATION	64
<i>Vincent Kurtz, Rafael Rodrigues Da Silva, Patrick M. Wensing, Hai Lin</i>	
ON FORCE SYNERGIES IN HUMAN GRASPING BEHAVIOR	72
<i>Julia Starke, Konstantinos Chatzilygeroudis, Aude Billard, Tamim Asfour</i>	
SELF-REPAIR AND SELF-EXTENSION BY TIGHTENING SCREWS BASED ON PRECISE CALCULATION OF SCREW POSE OF SELF-BODY WITH CAD DATA AND GRAPH SEARCH WITH REGRASPING A DRIVER	79
<i>Takayuki Murooka, Kei Okada, Masayuki Inaba</i>	
INTRODUCTION TO NEW ADAPTIVE PASSIVE JOINT MECHANISM WITH INDEPENDENT JOINT OPERATION	85
<i>Sunhyuk Baek, Hyunhwan Jeong</i>	
COMBINING CARTESIAN TRAJECTORIES WITH JOINT CONSTRAINTS FOR HUMAN-LIKE ROBOT-HUMAN HANDOVER	91
<i>Robin Rasch, Sven Wachsmuth, Matthias König</i>	
RESPONSE OBLIGATION ESTIMATION THAT CONSIDERS USERS' REPETITIVE UTTERANCES USING KNOWLEDGE-GUIDED RANDOM FOREST	99
<i>Kotaro Funakoshi, Ryota Yamagami, Shigeki Sugano, Mikio Nakano</i>	
REFLEX-BASED MOTION STRATEGY OF MUSCULOSKELETAL HUMANOIDS UNDER ENVIRONMENTAL CONTACT USING MUSCLE RELAXATION CONTROL	106
<i>Kento Kawaharazuka, Kei Tsuzuki, Moritaka Onitsuka, Yuya Koga, Yusuke Omura, Yuki Asano, Kei Okada, Koji Kawasaki, Masayuki Inaba</i>	
DEEP NETWORK UNCERTAINTY MAPS FOR INDOOR NAVIGATION	112
<i>Francesco Verdoja, Jens Lundell, Ville Kyrki</i>	
PUSH RECOVERY BY ANGULAR MOMENTUM CONTROL DURING 3D BIPEDAL WALKING BASED ON VIRTUAL-MASS-ELLIPSOID INVERTED PENDULUM MODEL	120
<i>Kaixuan Guan, Ko Yamamoto, Yoshihiko Nakamura</i>	
MULTI-CONTACT STABILITY OF HUMANOIDS USING ZMP AND CWC	126
<i>Zhenting Wang, Kensuke Harada, Weiwei Wan</i>	
BIPEDAL LOCOMOTION PLANNING FOR A HUMANOID ROBOT SUPPORTED BY ARM CONTACTS BASED ON GEOMETRICAL FEASIBILITY	132
<i>Iori Kumagai, Mitsuharu Morisawa, Mehdi Benallegue, Fumio Kanehiro</i>	
A NOVEL HIERARCHICAL CONTROL STRATEGY FOR BIPED ROBOT WALKING ON UNEVEN TERRAIN	140
<i>Chencheng Dong, Xuechao Chen, Zhangguo Yu, Zelin Huang, Qingqing Li, Qinqin Zhou, Qiang Huang</i>	
CONTROL OF A HIGH PERFORMANCE BIPEDAL ROBOT USING VISCOELASTIC LIQUID COOLED ACTUATORS	146
<i>Junhyeok Ahn, Donghyun Kim, Seung Hyeon Bang, Nicholas Paine, Luis Sentis</i>	
LEARNING TASK CONSTRAINTS FROM DEMONSTRATION FOR HYBRID FORCE/POSITION CONTROL	162
<i>Adam Conkey, Tucker Hermans</i>	

ROBUST HUMANOID LOCOMOTION USING TRAJECTORY OPTIMIZATION AND SAMPLE-EFFICIENT LEARNING	170
<i>Mohammad Hasan Yeganegi, Majid Khadiv, S. Ali A. Moosavian, Jia-Jie Zhu, Andrea Del Prete, Ludovic Righetti</i>	
HUMANOID WHOLE-BODY MOVEMENT OPTIMIZATION FROM RETARGETED HUMAN MOTIONS	178
<i>Waldez Gomes, Vishnu Radhakrishnan, Luigi Penco, Valerio Modugno, Jean-Baptiste Mouret, Serena Ivaldi</i>	
COST FUNCTION EVALUATION FOR OPTIMIZING DESIGN AND ACTUATION OF AN ACTIVE EXOSKELETON TO ERGONOMICALLY ASSIST LIFTING MOTIONS	186
<i>Monika Harant, Matthew Millard, Nejc Sarabon, Katja Mombaur</i>	
A WEAKLY SUPERVISED STRATEGY FOR LEARNING OBJECT DETECTION ON A HUMANOID ROBOT	194
<i>Elisa Maiettini, Giulia Pasquale, Vadim Tikhonoff, Lorenzo Rosasco, Lorenzo Natale</i>	
WHOLE-BODY POSTURE GENERATION BY ADJUSTING TOOL FORCE WITH COG MOVEMENT: APPLICATION TO SOIL DIGGING	202
<i>Takayuki Murooka, Riku Shigematsu, Kunio Kojima, Fumihito Sugai, Yohei Kakiuchi, Kei Okada, Masayuki Inaba</i>	
A CONTROL APPROACH FOR THE VARIABLE-HEIGHT INVERTED PENDULUM BASED ON SLIDING MODE CONTROL WITH INPUT SATURATION	208
<i>Gabriel Enrique Garcia Chavez</i>	
RESOURCE-AWARE OBJECT CLASSIFICATION AND SEGMENTATION FOR SEMI-AUTONOMOUS GRASPING WITH PROSTHETIC HANDS	215
<i>Felix Hundhausen, Denis Megerle, Tamim Asfour</i>	
ONLINE LEARNING OF FEED-FORWARD MODELS FOR TASK-SPACE VARIABLE IMPEDANCE CONTROL	222
<i>Michael Jacob Mathew, Saif Sidhik, Mohan Sridharan, Morteza Azad, Akinobu Hayashi, Jeremy Wyatt</i>	
AUTONOMOUS LEARNING OF ASSEMBLY TASKS FROM THE CORRESPONDING DISASSEMBLY TASKS	230
<i>Mihael Simonic, Leon Zlajpah, Ales Ude, Bojan Nemeč</i>	
ABSOLUTE HUMANOID LOCALIZATION AND MAPPING BASED ON IMU LIE GROUP AND FIDUCIAL MARKERS	237
<i>Mederic Fourmy, Dinesh Atchuthan, Thomas Flayols, Nicolas Mansard, Joan Solà</i>	
DATA-DRIVEN MODEL PREDICTIVE CONTROL FOR THE CONTACT-RICH TASK OF FOOD CUTTING	244
<i>Ioanna Mitsioni, Yiannis Karayiannidis, Johannes A. Stork, Danica Kragic</i>	
AN ADAPTIVE, HUMANLIKE ROBOT HAND WITH SELECTIVE INTERDIGITATION: TOWARDS ROBUST GRASPING AND DEXTEROUS, IN-HAND MANIPULATION	251
<i>George Kontoudis, Minas Liarokapis, Kyriakos G. Vamvoudakis</i>	
VIRTUAL REALITY TELEOPERATION OF A HUMANOID ROBOT USING MARKERLESS HUMAN UPPER BODY POSE IMITATION	259
<i>Matthias Hirschlmann, Christiana Tsiourti, Timothy Patten, Markus Vincze</i>	
COLLISION PREVENTING PHASE-PROGRESS CONTROL FOR VELOCITY ADAPTATION IN HUMAN-ROBOT COLLABORATION	266
<i>Dinmukhamed Zardykhan, Petr Svarny, Matej Hoffmann, Erfan Shahriari, Sami Haddadin</i>	
GENERATIVE ADVERSARIAL IMITATION LEARNING WITH DEEP P-NETWORK FOR ROBOTIC CLOTH MANIPULATION	274
<i>Yoshihisa Tsurumine, Yunduan Cui, Kimitoshi Yamazaki, Takamitsu Matsubara</i>	
AUTOMATED DESIGN OF SIMPLE AND ROBUST MANIPULATORS FOR DEXTEROUS IN-HAND MANIPULATION TASKS USING EVOLUTIONARY STRATEGIES	281
<i>Andre Meixner, Christopher Hazard, Nancy S Pollard</i>	
TERRAIN SEGMENTATION AND ROUGHNESS ESTIMATION USING RGB DATA: PATH PLANNING APPLICATION ON THE CENTAURO ROBOT	289
<i>Vivekanandan Suryamurthy, Vignesh Sushrutha Raghavan, Arturo Laurenzi, Nikos Tsagarakis, Dimitrios Kanoulas</i>	
DETECTION, TRACKING AND 3D MODELING OF OBJECTS WITH SPARSE RGB-D SLAM AND INTERACTIVE PERCEPTION	297
<i>Diogo Almeida, Esra Ataer-Cansizoglu, Radu Ioan Corcodel</i>	
OPTIMAL TRAJECTORY FOR ACTIVE SAFE FALLS IN HUMANOID ROBOTS	305
<i>Luca Rossini, Bernd Henze, Francesco Braghin, Maximo A. Roa</i>	
USING VIRTUAL REALITY TO EXAMINE THE NEURAL AND PHYSIOLOGICAL ANXIETY-RELATED RESPONSES TO BALANCE-DEMANDING TARGET-REACHING LEARNING TASKS	313
<i>Rachneet Kaur, Rongyi Sun, Liran Ziegelman, Richard Sowers, Manuel E. Hernandez</i>	
MECHANISTIC PROPERTIES OF FIVE-BAR PARALLEL MECHANISM FOR LEG STRUCTURE BASED ON SPRING LOADED INVERTED PENDULUM	320
<i>Hirofumi Shin, Tetsuya Ishikawa, Takumi Kamioka, Koh Hosoda, Takahide Yoshiike</i>	

MAGNETIC 3-AXIS SOFT AND SENSITIVE FINGERTIP SENSORS INTEGRATION FOR THE ICUB HUMANOID ROBOT	328
<i>Alexis Carlos Holgado, Nicola Piga, Tito Pradhono Tomo, Giulia Vezzani, Alexander Schmitz, Lorenzo Natale, Shigeki Sugano</i>	
EXPERIMENTAL EVALUATION AND MODELING OF PASSIVE FALLS IN HUMANOID ROBOTS.....	344
<i>Nicola Olivieri, Bernd Henze, Francesco Braghin, Maximo A. Roa</i>	
AUTONOMOUS BIMANUAL FUNCTIONAL REGRASPING OF NOVEL OBJECT CLASS INSTANCES	351
<i>Dmytro Pavlichenko, Diego Rodriguez, Christian Lenz, Max Schwarz, Sven Behnke</i>	
MODEL DECOUPLING AND CONTROL OF THE WHEELED HUMANOID ROBOT MOVING IN SAGITTAL PLANE.....	359
<i>Haitao Zhou, Xu Li, Haibo Feng, Jia Chen Li, Songyuan Zhang, Yili Fu</i>	
2D PUSH RECOVERY AND BALANCING OF THE EVE R3 - A HUMANOID ROBOT WITH WHEEL-BASE, USING MODEL PREDICTIVE CONTROL AND GAIN SCHEDULING	365
<i>Nikhil Gupta, Jesper Smith, Brandon Shrewsbury, Bernt Bornich</i>	
ANKLE-HIP-STEPPING STABILIZER ON TENDON-DRIVEN HUMANOID KENGORO BY INTEGRATION OF MUSCLE-JOINT-WORK SPACE CONTROLLERS FOR KNEE-STRETCHED HUMANOID BALANCE.....	373
<i>Yuki Asano, Shinsuke Nakashima, Iori Yanokura, Moritaka Onitsuka, Kento Kawaharazuka, Kei Tsuzuki, Yuya Koga, Yusuke Omura, Kei Okada, Masayuki Inaba</i>	
DEPLOYING THE NASA VALKYRIE HUMANOID FOR IED RESPONSE: AN INITIAL APPROACH AND EVALUATION SUMMARY	379
<i>Steven Jens Jorgensen, Michael Lanighan, Sylvain Bertrand, Andrew Watson, Joseph Altemus, Roger, Scott Askew, Lyndon Bridgwater, Beau Domingue, Charlie Kendrick, Jason H. Lee, Mark Paterson, Jairo Sanchez, Patrick Beeson, Seth Gee, Stephen Hart, Ana Huama</i>	
DUAL-ARM IN-HAND MANIPULATION USING VISUAL FEEDBACK.....	387
<i>Silvia Cruciani, Kaiyu Hang, Claes Christian Smith, Danica Kragic</i>	
DESIGNING GRASPING TOOLS FOR ROBOTIC ASSEMBLYBASED ON SHAPE ANALYSIS OF PARTS.....	395
<i>Kento Nakayama, Weiwei Wan, Kensuke Harada</i>	
VISUO-HAPTIC GRASPING OF UNKNOWN OBJECTS BASED ON GAUSSIAN PROCESS IMPLICIT SURFACES AND DEEP LEARNING.....	402
<i>Simon Ottenhaus, Daniel Renninghoff, Raphael Grimm, Fabio Ferreira, Tamim Asfour</i>	
LEVERAGING MULTIMODAL HAPTIC SENSORY DATA FOR ROBUST CUTTING	409
<i>Kevin Zhang, Mohit Sharma, Manuela Veloso, Oliver Kroemer</i>	
MANIPULATION PLANNING USING ENVIRONMENTAL CONTACTS TO KEEP OBJECTS STABLE UNDER EXTERNAL FORCES	417
<i>Lipeng Chen, Luis Felipe Cruz Figueredo, Mehmet R Dogar</i>	
ACTIVE LEARNING OF PROBABILISTIC MOVEMENT PRIMITIVES.....	425
<i>Adam Conkey, Tucker Hermans</i>	
STABILIZATION OF AN INVERTED PENDULUM VIA HUMAN BRAIN INSPIRED CONTROLLER DESIGN.....	433
<i>Hedyeh Jafari, George Nikolakopoulos, Thomas Gustafsson</i>	
ACTIVE VISION FOR EXTRACTION OF PHYSICALLY PLAUSIBLE SUPPORT RELATIONS	439
<i>Markus Grotz, David Sippel, Tamim Asfour</i>	
COMBINED TASK AND MOTION PLANNING FOR A DUAL-ARM ROBOT TO USE A SUCTION CUP TOOL	446
<i>Hao Chen, Weiwei Wan, Kensuke Harada</i>	
PLACING OBJECTS WITH PRIOR IN-HAND MANIPULATION USING DEXTEROUS MANIPULATION GRAPHS.....	453
<i>Joshua Alexander Haustein, Silvia Cruciani, Rizwan Asif, Kaiyu Hang, Danica Kragic</i>	
ANALYSIS OF AFFECTIVE HUMAN MOTION DURING FUNCTIONAL TASK PERFORMANCE: AN INVERSE OPTIMAL CONTROL APPROACH	461
<i>Pamela Carreno, Tatsuki Harada, Jonathan Feng-Shun Lin, Dana Kulic, Gentiane Venture</i>	
PERFORMANCE INDICATORS FOR STABILITY OF SLACKLINE BALANCING	469
<i>Kevin Stein, Katja Mombaur</i>	
DEEP CORRESPONDENCE LEARNING FOR EFFECTIVE ROBOTIC TELEOPERATION USING VIRTUAL REALITY	477
<i>Sanket Gaurav, Zainab Al-Qurashi, Amey Barapatre, George Peter Maratos, Tejas Sarma, Brian Ziebart</i>	
ONLINE PROCESSING FOR SPEECH-DRIVEN GESTURE MOTION GENERATION IN ANDROID ROBOTS.....	484
<i>Carlos Toshinori Ishi, Ryusuke Mikata, Takashi Minato, Hiroshi Ishiguro</i>	

LEARNING AND ADAPTATION OF INVERSE DYNAMICS MODELS: A COMPARISON	491
<i>Kevin Hitzler, Franziska Meier, Stefan Schaal, Tamim Asfour</i>	
DEVELOPMENT OF A HUMANOID DUAL ARM SYSTEM FOR A SINGLE-WHEELED BALANCING MOBILE ROBOT	499
<i>Roberto Shu, Ralph Hollis</i>	
ROBOTIC ANKLE MECHANISM CAPABLE OF KICKING WHILE JUMPING AND RUNNING AND ADAPTABLE TO CHANGE IN RUNNING SPEED	505
<i>Hiroki Mineshita, Takuya Otani, Kenji Hashimoto, Masanori Sakaguchi, Yasuo Kawakami, Hun-Ok Lim, Atsuo Takanishi</i>	
SENSOR-BASED WHOLE-BODY PLANNING/REPLANNING FOR HUMANOID ROBOTS	511
<i>Paolo Ferrari, Marco Cognetti, Giuseppe Oriolo</i>	
AS SYMMETRIC AS POSSIBLE : SHAPE COMPLETION WITH NON-RIGID REGISTRATION LEVERAGING GENERALIZED CYLINDER DECOMPOSITION	518
<i>Shuji Oishi, Masashi Yokozuka, Atsuhiko Banno</i>	
EMPLOYING IMU AND ARUCO MARKER BASED TRACKING TO DECODE THE CONTACT FORCES EXERTED BY ADAPTIVE HANDS	525
<i>Nathan Elangovan, Anany Dwivedi, Lucas Gerez, Che-Ming Chang, Minas Liarokapis</i>	
TRUNK PITCH OSCILLATIONS FOR JOINT LOAD REDISTRIBUTION IN HUMANS AND HUMANOID ROBOTS	531
<i>Ozge Drama, Alexander Badri-Sprowitz</i>	
A DEEP REINFORCEMENT LEARNING BASED APPROACH TOWARDS GENERATING HUMAN WALKING BEHAVIOR WITH A NEUROMUSCULAR MODEL	537
<i>Akhil Sadanandan Anand, Guoping Zhao, Hubert Roth, Andre Seyfarth</i>	
MOTION PLANNING THROUGH DEMONSTRATION TO DEAL WITH COMPLEX MOTIONS IN ASSEMBLY PROCESS	544
<i>Yan Wang, Kensuke Harada, Weiwei Wan</i>	
EXOSKELETON ARM PRONATION/SUPINATION ASSISTANCE MECHANISM WITH A GUIDED DOUBLE ROD SYSTEM	559
<i>Miha Dezman, Tamim Asfour, Ales Ude, Andrej Gams</i>	
PARALLEL LINK-BASED LIGHT-WEIGHT LEG DESIGN FOR BIPEDAL ROBOTS	565
<i>Yuichi Tazaki</i>	
DESIGN OF A FLEXIBLE ARTICULATED ROBOTIC HAND FOR A HUMANOID ROBOT	572
<i>Li Tian, Jing Liu, Nadia Magnenat Thalmann, Daniel Thalmann, Jianmin Zheng</i>	
A ROBOT DESIGN METHOD FOR WEIGHT SAVING AIMED AT DYNAMIC MOTIONS: DESIGN OF HUMANOID JAXON3-P AND REALIZATION OF JUMP MOTIONS	586
<i>Kunio Kojima, Yuta Kojio, Tatsuya Ishikawa, Fumihito Sugai, Yohei Kakiuchi, Kei Okada, Masayuki Inaba</i>	
CLOSED-CHAIN POSE ESTIMATION FROM WEARABLE SENSORS	594
<i>Vladimir Joukov, Jonathan Feng-Shun Lin, Dana Kulic</i>	
MODIFICATION OF MUSCLE ANTAGONISTIC RELATIONS AND HAND TRAJECTORY ON THE DYNAMIC MOTION OF MUSCULOSKELETAL HUMANOID	601
<i>Yuya Koga, Kento Kawaharazuka, Moritaka Onitsuka, Tasuku Makabe, Kei Tsuzuki, Yusuke Omura, Yuki Asano, Kei Okada, Masayuki Inaba</i>	
AFFORDANCE ACTION LEARNING WITH STATE TRAJECTORY REPRESENTATION FOR ROBOTIC MANIPULATION	607
<i>Zijia Li, Kei Okada, Masayuki Inaba</i>	
DESIGN AND ASSESSMENT OF A SINGLE-SIZE SEMI-SOFT ASSISTIVE MITTEN FOR PEOPLE WITH CERVICAL SPINAL CORD INJURIES	614
<i>Daisuke Kaneishi, Jessica En Shiuan Leu, Julia A O'Donnell, Campbell Affleck, Robert, Peter Matthew, Andrew McPherson, Masayoshi Tomizuka, Hannah Stuart</i>	
UNIFIED FOOTHOLD SELECTION AND MOTION PLANNING FOR LEGGED SYSTEMS IN REAL-TIME	622
<i>Steven Crews, Sapan Agrawal, Matthew Travers</i>	
COMTEST PROJECT: A COMPLETE MODULAR TEST STAND FOR HUMAN AND HUMANOID POSTURE CONTROL AND BALANCE	630
<i>Vittorio Lippi, Thomas Mergner, Thomas Seel, Christoph Maurer</i>	
FEATURE SPACE EXPLORATION FOR MOTION CLASSIFICATION BASED ON MULTI-MODAL SENSOR DATA FOR LOWER LIMB EXOSKELETONS	636
<i>Tilman Daab, Isabel Patzer, Ralf Mikut, Tamim Asfour</i>	
INTEGRATION OF DUAL-ARM MANIPULATION IN A PASSIVITY BASED WHOLE-BODY CONTROLLER FOR TORQUE-CONTROLLED HUMANOID ROBOTS	644
<i>Juan Miguel Garcia-Haro, Bernd Henze, George Mesesan, Santiago Martinez, Christian Ott</i>	

GAIT GENERATION USING INTRINSICALLY STABLE MPC IN THE PRESENCE OF PERSISTENT DISTURBANCES	651
<i>Filippo Maria Smaldone, Nicola Scianca, Valerio Modugno, Leonardo Lanari, Giuseppe Oriolo</i>	
VERTICAL COM MOTION GENERATION TO REDUCE SLIPPING AND MECHANICAL WORK DURING WALKING	657
<i>Sumin Park, Jaeheung Park</i>	
QP-BASED TASK-SPACE HYBRID / PARALLEL CONTROL FOR MULTI-CONTACT MOTION IN A TORQUE-CONTROLLED HUMANOID ROBOT	663
<i>Rafael Cisneros Limon, Mehdi Benallegue, Mitsuharu Morisawa, Fumio Kanehiro</i>	
ONLINE DCM TRAJECTORY GENERATION FOR PUSH RECOVERY OF TORQUE-CONTROLLED HUMANOID ROBOTS	671
<i>Milad Shafiee-Ashtiani, Giulio Romualdi, Stefano Dafarra, Francisco Javier Andrade Chavez, Daniele Pucci</i>	
WHOLE-BODY GEOMETRIC RETARGETING FOR HUMANOID ROBOTS	679
<i>Kourosh Darvish, Yeshasvi Tirupachuri, Giulio Romualdi, Lorenzo Rapetti, Diego Ferigo, Francisco Javier Andrade Chavez, Daniele Pucci</i>	
BUILDING A LIBRARY OF TACTILE SKILLS BASED ON FINGERVISION	717
<i>Boris Belousov, Alymbek Sadybakasov, Bastian Wibranek, Filipe Fernandes Veiga, Oliver Tessmann, Jan Peters</i>	
MOTION RETARGETING AND CONTROL FOR TELEOPERATED PHYSICAL HUMAN-ROBOT INTERACTION	723
<i>Akshit Kaplish, Katsu Yamane</i>	
REFINING 6D OBJECT POSE PREDICTIONS USING ABSTRACT RENDER-AND-COMPARE	739
<i>Arul Selvam Periyasamy, Max Schwarz, Sven Behnke</i>	
LEARNING OF COMPLEX-STRUCTURED TASKS FROM VERBAL INSTRUCTION	747
<i>Monica Nicolescu, Natalie Arnold, Janelle Blankenburg, David Feil-Seifer, Santosh Balajee Banisetty, Mircea Nicolescu, Andrew Palmer, Thor Monteverde</i>	
Author Index	