

2010 10th IEEE-RAS International Conference on Humanoid Robots

(Humanoids 2010)

**Nashville, Tennessee, USA
6 – 8 December 2010**



**IEEE Catalog Number: CFP10HUM-PRT
ISBN: 978-1-4244-8688-5**

TABLE OF CONTENTS

CONSTRAINED ACCELERATIONS FOR CONTROLLED GEOMETRIC REDUCTION: SAGITTAL-PLANE DECOUPLING FOR BIPEDAL LOCOMOTION.....	1
<i>Robert D. Gregg, Ludovic Righetti, Jonas Buchli, Stefan Schaal</i>	
STATIC MULTI-CONTACT INVERSE PROBLEM FOR MULTIPLE HUMANOID ROBOTS AND MANIPULATED OBJECTS	8
<i>Karim Bouyarmane, Abderrahmane Kheddar</i>	
GENERATION OF DYNAMIC MULTI-CONTACT MOTIONS: 2D CASE STUDIES	14
<i>Sebastien Lengagne, Paul Mathieu, Abderrahmane Kheddar, Eiichi Yoshida</i>	
MOTION PLANNING OF OPTIMAL THROW FOR WHOLE-BODY HUMANOID	21
<i>Joo H. Kim</i>	
A NEW CONTROL LAW FOR A 3D BIPED ROBOT BASED ON REGULATION OF THE ZERO MOMENT POINT AND JOINT PATH	27
<i>Ting Wang, Christine Chevallereau</i>	
WEIGHT-ADAPTIVE WALKING OF THE PASSENGER-CARRYING BIPED ROBOT, HUBO FX-1	33
<i>Jung-Hoon Kim, Jung-Yup Kim, Jun-Ho Oh</i>	
DEVELOPMENT OF A WALKING STABILIZING CONTROLLER FOR HUMANOID ROBOTS	40
<i>Teng-Hu Cheng, Han-Pang Huang, Jiu-Lou Yan, Yi-wen Chao</i>	
REALIZATION OF MINIATURE HUMANOID FOR OBSTACLE AVOIDANCE WITH REAL- TIME ZMP PREVIEW CONTROL USED FOR FULL-SIZED HUMANOID	46
<i>Younghum Jun, Robert Ellenberg, Paul Y. Oh</i>	
PUSH RECOVERY BY STEPPING FOR HUMANOID ROBOTS WITH FORCE CONTROLLED JOINTS.....	52
<i>Benjamin Stephens, Christopher Atkeson</i>	
STABILIZATION OF A HOPPING HUMANOID ROBOT FOR A PUSH.....	60
<i>Baek-Kyu Cho, Sangsin Park, Jun-Ho Oh</i>	
DESIGN OF THE DYNAMIC STABILITY PROPERTIES OF THE COLLECTIVE BEHAVIOR OF ARTICULATED BIPEDS	66
<i>Albert Mukovskiy, Jean-Jacques E. Slotine, Martin Giese</i>	
APPLIED JOINT-SPACE TORQUE AND STIFFNESS CONTROL OF TENDON-DRIVEN FINGERS	74
<i>Muhammad Abdallah, Robert Platt, Charles Wampler, Brian Hargrave</i>	
COMBINING MOTION PLANNING AND OPTIMIZATION FOR FLEXIBLE ROBOT MANIPULATION	80
<i>Jonathan Scholz, Mike Stilman</i>	
A NEURAL NETWORK METHOD OF LEARNING HUMAN MOTION BY OBSERVATION IN OPERATIONAL SPACE.....	86
<i>Adam Spiers, Guido Herrmann, Chris Melhuish, Tony Pipe</i>	
IMITATION LEARNING OF ARM GESTURES IN PRESENCE OF MISSING DATA FOR HUMANOID ROBOTS.....	92
<i>Anand Thobbi, Weihua Sheng</i>	
TRANSFERRING IMPEDANCE CONTROL STRATEGIES BETWEEN HETEROGENEOUS SYSTEMS VIA APPRENTICESHIP LEARNING	98
<i>Matthew Howard, Djordje Mitrovic, Sethu Vijayakumar</i>	
LEARNING MOTION DYNAMICS TO CATCH A MOVING OBJECT	106
<i>Seungsu Kim, Elena Gribovskaya, Aude Billard</i>	
EVALUATION OF FEATURE REPRESENTATION AND MACHINE LEARNING METHODS IN GRASP STABILITY LEARNING.....	112
<i>Janne Laaksonen, Ville Kyrki, Danica Kragic</i>	
SKYAI: HIGHLY MODULARIZED REINFORCEMENT LEARNING LIBRARY -CONCEPTS, REQUIREMENTS, AND IMPLEMENTATION	118
<i>Akihiko Yamaguchi, Tsukasa Ogasawara</i>	
A STUDY ON MUSICAL CONDUCTING ROBOTS AND THEIR USERS	124
<i>Brain Geuther, Autumn Breese, Yunfeng Wang</i>	
HETEROGENEOUS ARTIFICIAL AGENTS FOR TRIAGE NURSE ASSISTANCE.....	130
<i>Mitch Wilkes, Stan Franklin, Erdem Erdemir, Stephen Gordon, Steve Strain, Karen Miller, Kazuhiko Kawamura</i>	

ROBUST HANDS-FREE AUTOMATIC SPEECH RECOGNITION FOR HUMAN-MACHINE INTERACTION.....	138
<i>Randy Gomez, Tatsuya Kawahara, Kazuhiro Nakadai</i>	
ECCENTRICITY EDGE-GRAPHS FROM HDR IMAGES FOR OBJECT RECOGNITION BY HUMANOID ROBOTS.....	144
<i>David Gonzalez, Tamim Asfour, R. Dillmann</i>	
PERCEIVING CLUTTER AND SURFACES FOR OBJECT PLACEMENT IN INDOOR ENVIRONMENTS	152
<i>Martin Johannes Schuster, Jason K Okerman, Hai Nguyen, James Rehg, Charlie Kemp</i>	
PERCEPTION AND PROBABILISTIC ANCHORING FOR DYNAMIC WORLD STATE LOGGING.....	160
<i>Nico Blodow, Dominik Jain, Zoltan-Csaba Marton, Michael Beetz</i>	
DEVELOPMENT OF A BIPED ROBOT WITH TORQUE CONTROLLED JOINTS.....	167
<i>Christian Ott, Christoph Baumgartner, Johannes Mayr, Matthias Fuchs, Robert Burger, Dongheui Lee, Oliver Eiberger, Alin Albu-Schaffer, Markus Grebenstein, Gerd Hirzinger</i>	
REALIZATION OF FLEXIBLE MOTION BY MUSCULOSKELETAL HUMANOID "KOJIRO" WITH ADD-ON NONLINEAR SPRING UNITS.....	174
<i>Masahiko Osada, Nobuyuki Ito, Yuto Nakanishi, Masayuki Inaba</i>	
DEXTEROUS MECHANISM DESIGN FOR AN ANTHROPOMORPHIC ARTIFICIAL HAND: OSAKA CITY UNIVERSITY HAND I.....	180
<i>Raafat Ahmed Abd El-Azim, Atsushi Ueno, Shoji Tatsumi</i>	
DESIGN, REALIZATION AND SENSORIZATION OF A DEXTROUS HAND: THE ICUB DESIGN CHOICES	186
<i>Alexander Schmitz, Ugo Pattacini, Francesco Nori, Lorenzo Natale, Giorgio Metta, Giulio Sandini</i>	
DEVELOPMENT OF A MINI-HUMANOID PIANIST	192
<i>Alyssa Batula, Youngmoo Kim</i>	
MODELING AND SIMULATION OF MASTICATORY ROBOT	198
<i>Ming Cong, Zhanbo Chang, Yu Du, W. L. Xu</i>	
OPTIMIZING THE STEPPING OF A HUMANOID ROBOT FOR A SEQUENCE OF TASKS	204
<i>Oussama Kanoun, Jean-Paul Laumond</i>	
CONTROL OF INSTANTANEOUSLY COUPLED SYSTEMS APPLIED TO HUMANOID WALKING	210
<i>Eric Whitman, Christopher Atkeson</i>	
SIT-TO-STAND TASK ON A HUMANOID ROBOT FROM HUMAN DEMONSTRATION	218
<i>Michael Mistry, Akihiko Murai, Katsu Yamane, Jessica Hodgins</i>	
SAFE ADJUSTMENT REGIONS FOR LEGGED LOCOMOTION PATHS.....	224
<i>Joel Chestnutt, Yutaka Takaoka, Masahiro Doi, Keisuke Suga, Satoshi Kagami</i>	
HUMANOID WALKING COORDINATION THROUGH AN SINGLE SPATIAL PARAMETER	230
<i>Jean Christophe Palyart Lamarche, Olivier Bruneau, Jean-Guy Fontaine</i>	
WALKING IN UNKNOWN ENVIRONMENTS - A STEP TOWARDS MORE AUTONOMY	237
<i>Thomas Buschmann, Sebastian Lohmeier, Markus Schwenbacher, Valerio Favot, Heinz Ulbrich, Felix von Hundelshausen, Gerhard Rohe, Hans J. Wuensche</i>	
INCLINATION ESTIMATION AND BALANCE OF ROBOT USING VESTIBULAR DYNAMIC INCLINOMETER.....	245
<i>Vishesh Vikas, Carl Crane</i>	
A COMPARISON BETWEEN TWO BIO-INSPIRED ADAPTIVE MODELS OF VESTIBULO-OCULAR REFLEX (VOR) IMPLEMENTED ON THE ICUB ROBOT.....	251
<i>Elena Franchi, Egidio Falotico, Davide Zambrano, Giovanni Gerardo Muscolo, Laura Marazzato, Paolo Dario, Cecilia Laschi</i>	
CONTACT FORCE MEASUREMENT NOISE IN THE PARTIAL FEEDBACK LINEARIZATION CONTROL OF HUMANOID ROBOTS	257
<i>Douglas Isenberg, Michael Mclain, Yogendra P. Kakad</i>	
MUSCLE GEOMETRIC TOPOLOGY ESTIMATION BASED ON MUSCLE LENGTH - JOINT ANGLE NONLINEARITY IN TENDON-DRIVEN ROBOT SYSTEMS.....	263
<i>Yuto Nakanishi, Kazuo Hongo, Junichi Urata, Ikuo Mizuuchi, Masayuki Inaba</i>	
OBJECT IMPEDANCE CONTROL USING A CLOSED-CHAIN TASK DEFINITION	269
<i>Muhammad Abdallah, Charles Wampler, Robert Platt</i>	
COMPLIANCE CONTROL WITH DUAL-ARM HUMANOID ROBOTS: DESIGN, PLANNING AND PROGRAMMING	275
<i>Dragoljub Surdilovic, Yelve Yakut, Tuan Minh Nguyen, Xuan Ba Pham, Axel Vick, Roberto Martin Martin</i>	
DEXTEROUS ROBOTIC HAND GRASPING METHOD FOR AUTOMOTIVE PARTS	282
<i>Javier Adolfo Alcazar, Leandro Barajas</i>	

A METHODOLOGY FOR SETTING GRASPING FORCE FOR PICKING UP AN OBJECT WITH UNKNOWN WEIGHT, FRICTION, AND STIFFNESS	288
<i>Taisuke Sugaiwa, Genki Fujii, Shigeki Sugano, Hiroyasu Iwata</i>	
INTEGRATING ORIENTATION CONSTRAINTS INTO THE ATTRACTOR DYNAMICS APPROACH FOR AUTONOMOUS MANIPULATION	294
<i>Hendrik Reimann, Ioannis Iossifidis, Gregor Schoner</i>	
LEARNING END-EFFECTOR ORIENTATIONS FOR NOVEL OBJECT GRASPING TASKS	302
<i>Benjamin Balaguer, Stefano Carpin</i>	
REINFORCEMENT LEARNING FOR BALANCER EMBEDDED HUMANOID LOCOMOTION.....	308
<i>Akihiko Yamaguchi, Sang-Ho Hyon, Tsukasa Ogasawara</i>	
HUMANOIDS ROBOT TASK RECOGNITION FROM MOVEMENT ANALYSIS	314
<i>Sovannara Hak, Nicolas Mansard, Olivier Stasse</i>	
THE MIRROR CONTROLLER APPROACH TO SYNCHRONOUS MOTION IMITATION BY A ROBOT: WALKING AND DANCING	322
<i>Mehdi Benallegue, Pierre-Brice Wieber, Abderrahmane Kheddar, Bernard Espiau</i>	
LEARNING FROM DEMONSTRATION USING A MULTI-VALUED FUNCTION REGRESSOR FOR TIME-SERIES DATA	328
<i>Jesse Butterfield, Sarah Osentoski, Graylin Jay, Odest Chadwicke Jenkins</i>	
COMPLEMENTARY HUMANOID BEHAVIOR SHAPING USING CORRECTIVE DEMONSTRATION	334
<i>Cetin Mericli, Manuela Veloso, H. Levent Akin</i>	
MOOD AS AN AFFECTIVE COMPONENT FOR ROBOTIC BEHAVIOR WITH CONTINUOUS ADAPTATION VIA LEARNING MOMENTUM.....	340
<i>Sunghyun Park, Lilia Moshkina, Ronald Arkin</i>	
THE BERT2 INFRASTRUCTURE: AN INTEGRATED SYSTEM FOR THE STUDY OF HUMAN-ROBOT INTERACTION	346
<i>Alexander Lenz, Sergey Skachek, Katharina Hamann, Jasmin Steinwender, Tony Pipe, Chris Melhuish</i>	
TOWARDS SOCIAL INTEGRATION OF HUMANOID ROBOTS BY CONVERSATIONAL CONCEPT LEARNING	352
<i>Florian Kraft, Kevin Kilgour, Rainer Saam, Sebastian Stuker, Matthias Wolfel, Tamim Asfour, Alex Waibel</i>	
PERSON IDENTIFICATION THROUGH PERCEPTUAL FUSION.....	358
<i>Eric Martinson, Wallace Lawson, Greg Trafton</i>	
HIERARCHICAL OBJECT GEOMETRIC CATEGORIZATION AND APPEARANCE CLASSIFICATION FOR MOBILE MANIPULATION	365
<i>Zoltan-Csaba Marton, Dejan Pangercic, Radu Bogdan Rusu, Andreas Holzbach, Michael Beetz</i>	
OBJECT SEGMENTATION AND LEARNING THROUGH FEATURE GROUPING AND MANIPULATION	371
<i>Eva Stergarsek Kuzmic, Ales Ude</i>	
CROSS FOUR-BAR LINKAGE FOR THE KNEES OF A PLANAR BIPEDAL ROBOT.....	379
<i>Arnaud Hamon, Yannick Aoustin</i>	
DEVELOPMENT OF VERY SMALL HIGH OUTPUT MOTOR DRIVER FOR REALIZING FORCEFUL MUSCULOSKELETAL HUMANOIDS.....	385
<i>Nobuyuki Ito, Junichi Urata, Yuto Nakanishi, Kei Okada, Masayuki Inaba</i>	
ECCE1: THE FIRST OF A SERIES OF ANTHROPOMIMETIC MUSCULOSKELETAL UPPER TORSOS.....	391
<i>Hugo Marques, Michael Jantsch, Steffen Wittmeier, Owen Holland, Cristiano Alessandro, Alan Diamond, Max Lungarella, Rob Knight</i>	
IMPROVING IMITATED GRASPING MOTIONS THROUGH INTERACTIVE EXPECTED DEVIATION LEARNING.....	397
<i>Kathrin Grave, Jorg Stuckler, Sven Behnke</i>	
REINFORCEMENT LEARNING OF FULL-BODY HUMANOID MOTOR SKILLS	405
<i>Freerk Stulp, Jonas Buchli, Evangelos Theodorou, Stefan Schaal</i>	
LEARNING TABLE TENNIS WITH A MIXTURE OF MOTOR PRIMITIVES.....	411
<i>Katharina Muelling, Jens Kober, Jan Peters</i>	
LEARNING THE SKILL OF ARCHERY BY A HUMANOID ROBOT ICUB.....	417
<i>Petar Kormushev, Sylvain Calinon, Ryo Saegusa, Giorgio Metta</i>	
MULTI-HUMANOID WORLD MODELING IN STANDARD PLATFORM ROBOT SOCCER.....	424
<i>Brian Coltin, Somchaya Liemhetcharat, Cetin Mericli, Junyun Tay, Manuela Veloso</i>	
KNOWROB-MAP -- KNOWLEDGE-LINKED SEMANTIC OBJECT MAPS.....	430
<i>Moritz Tenorth, Lars Kunze, Dominik Jain, Michael Beetz</i>	

INTERACTIVE MUSICAL PARTICIPATION WITH HUMANOID ROBOTS THROUGH THE USE OF NOVEL MUSICAL TEMPO AND BEAT TRACKING TECHNIQUES IN THE ABSENCE OF AUDITORY CUES	436
<i>Daniel Lofaro, Paul Y. Oh, Jun-Ho Oh, Youngmoo Kim</i>	
FAST AND AUTOMATIC DETECTION AND SEGMENTATION OF UNKNOWN OBJECTS	442
<i>Gert Kootstra, Niklas Bergstrom, Danica Kragic</i>	
OMNI-DIRECTIONAL CLOSED-LOOP WALK FOR NAO.....	448
<i>David Gouaillier, Cyrille Collette, Chris Kilner</i>	
CONVOLUTION-SUM-BASED GENERATION OF WALKING PATTERNS FOR UNEVEN TERRAINS	455
<i>Hyungju Andy Park, Muhammad A. Ali, C. S. George Lee</i>	
FOURIER SERIES-BASED WALKING PATTERN GENERATION FOR A BIPED HUMANOID ROBOT.....	461
<i>Woo Park, Jung-Yup Kim</i>	
BIPEDAL WALKING TRAJECTORY GENERATION BASED ON ZMP AND EULER'S EQUATIONS OF MOTION.....	468
<i>Barkan Ugurlu, Atsuo Kawamura</i>	
AN APPROACH OF GENERIC SOLUTION FOR HUMANOID STEPPING OVER MOTION	474
<i>Mario Arbulu, Abderrahmane Kheddar, Eiichi Yoshida</i>	
A CONTROL ARCHITECTURE WITH STABILIZER FOR 3D STABLE DYNAMIC WALKING OF SHERPA BIPED ROBOT ON COMPLIANT GROUND	480
<i>Ahmed Chemori, Sebastien Le Floch, Sebastien Krut, Etienne Dombre</i>	
A GENERALIZED 3D INVERTED PENDULUM MODEL TO REPRESENT HUMAN NORMAL WALKING	486
<i>Sophie Sakka, Chris Hayot, Patrick Lacouture</i>	
MULTILINEAR DECOMPOSITION OF HUMAN WALKING PATHS.....	492
<i>Christian Alberto Ramirez Bejarano, Mario Castelan, Gustavo Arechavaleta</i>	
ATHLETE ROBOT WITH APPLIED HUMAN MUSCLE ACTIVATION PATTERNS FOR BIPEDAL RUNNING	498
<i>Ryuma Niiyama, Satoshi Nishikawa, Yasuo Kuniyoshi</i>	
CONTROLLING HUMANOID ROBOTS WITH HUMAN MOTION DATA: EXPERIMENTAL VALIDATION	504
<i>Katsu Yamane, Stuart Anderson, Jessica Hodgins</i>	
METHODS FOR IDENTIFYING AND ADAPTING MODELS OF HUMANOID ROBOTS PERFORMING DYNAMIC TASKS}	511
<i>Stuart Anderson, Jessica Hodgins</i>	
MANIPULATION OF DOCUMENTED OBJECTS BY A WALKING HUMANOID ROBOT	518
<i>Sebastien Dalibard, Alireza Nakhaei, Florent Lamiroux, Jean-Paul Laumond</i>	
OBSTACLE AVOIDANCE FOR A HUMANOID ARM USING CONFORMAL GEOMETRIC ALGEBRA	524
<i>Oscar Carbajal-Espinosa, Alexander Loukianov, Eduardo-Jose Bayro-Corrochano</i>	
DESIGN AND OPTIMIZATION OF A FUZZY-NEURAL HYBRID CONTROLLER FOR AN ARTIFICIAL MUSCLE ROBOTIC ARM USING GENETIC ALGORITHMS	530
<i>Erdem Erdemir, Mehmed Ozkan, Kazuhiko Kawamura, Mitch Wilkes, Murat Firat, Ali Polat</i>	
EXPLOITING SENSORIMOTOR STOCHASTICITY FOR LEARNING CONTROL OF VARIABLE IMPEDANCE ACTUATORS.....	536
<i>Djordje Mitrovic, Stefan Klanke, Sethu Vijayakumar, Matthew Howard</i>	
LEARNING OF GENERALIZED MANIPULATION STRATEGIES IN THE CONTEXT OF PROGRAMMING BY DEMONSTRATION.....	542
<i>Rainer Jakel, Sven R. Schmidt-Rohr, Martin Losch, Alexander Kasper, Rudiger Dillmann</i>	
TASK MODELING IN IMITATION LEARNING USING LATENT VARIABLE MODELS	548
<i>Carl Henrik Ek, Dan Song, Kai Huebner, Danica Kragic</i>	
UNSUPERVISED LEARNING OF ACTION PRIMITIVES.....	554
<i>Volker Krueger, Danica Kragic</i>	
ON-LINE PERIODIC MOVEMENT AND FORCE-PROFILE LEARNING FOR ADAPTATION TO NEW SURFACES.....	560
<i>Andrej Gams, Martin Do, Ales Ude, Tamim Asfour, Rudiger Dillmann</i>	
REMEMBERING INTERACTION EPISODES: AN UNSUPERVISED LEARNING APPROACH FOR A HUMANOID ROBOT.....	566
<i>Sebastian Gieselmann, Marc Hanheide, Britta Wrede</i>	

LEARNING TO DETECT THE FUNCTIONAL COMPONENTS OF DOORBELL BUTTONS USING ACTIVE EXPLORATION AND MULTIMODAL CORRELATION.....	572
<i>Vladimir Sukhoy, Alexander Stoytchev</i>	
FROM MONAURAL TO BINAURAL SPEAKER RECOGNITION FOR HUMANOID ROBOTS	580
<i>Karim Youssef, Sylvain Argentieri, Jean-Luc Zarader</i>	
A COMMON INTERFACE FOR HUMANOID SIMULATION AND HARDWARE	587
<i>Robert Ellenberg, Robert Sherbert, Paul Y. Oh, Alex Alspach, Roy James Gross, Jun-Ho Oh</i>	
PLANNING MULTI-ROBOT GRASPING MOTIONS	593
<i>Nikolaus Vahrenkamp, Enrico Kuhn, Tamim Asfour, Rudiger Dillmann</i>	
STIFFNESS MODELING FOR MULTI-FINGERED GRASPING WITH ROLLING CONTACTS	601
<i>Romain Michalec, Alain Micaelli</i>	
ANTAGONISTICALLY DRIVEN FINGER DESIGN FOR THE ANTHROPOMORPHIC DLR HAND ARM SYSTEM.....	609
<i>Markus Grebenstein, Maxime Chalon, Gerd Hirzinger, Roland Siegwart</i>	
REPRESENTATION OF PRE-GRASP STRATEGIES FOR OBJECT MANIPULATION	617
<i>Daniel Kappler, Lillian Chang, Markus Przybylski, Nancy S Pollard, Tamim Asfour, Rudiger Dillmann</i>	
BIO-INSPIRED MOTION STRATEGIES FOR A BIMANUAL MANIPULATION TASK.....	625
<i>Jan Steffen, Christof Elbrechter, Robert Haschke, Helge Joachim Ritter</i>	
COLLABORATING WITH KASPAR: USING AN AUTONOMOUS HUMANOID ROBOT TO FOSTER COOPERATIVE DYADIC PLAY AMONG CHILDREN WITH AUTISM	631
<i>Josh Wainer, Kerstin Dautenhahn, Ben Robins, Farshid Amirabdollahian</i>	
A MULTI-MODAL ARCHITECTURE FOR HUMAN-ROBOT COMMUNICATION	639
<i>Arjun Arumbakkam, Taizo Yoshikawa, Behzad Dariush, Kikuo Fujimura</i>	
ASSESSMENT OF HUMAN RESPONSE TO ROBOT FACIAL EXPRESSIONS THROUGH VISUAL EVOKED POTENTIALS	647
<i>Richard Craig, Ravi Vaidyanathan, Christopher James, Chris Melhuish</i>	
INTUITIVE MULTIMODAL INTERACTION AND PREDICTABLE BEHAVIOR FOR THE MUSEUM TOUR GUIDE ROBOT ROBOTINHO.....	653
<i>Matthias Nieuwenhuisen, Judith Gaspers, Oliver Tischler, Sven Behnke</i>	
REAL WORLD ISSUES WITH REAL-TIME CONTROL OF MABEL: A PLATFORM FOR EXPERIMENTAL CONTROL OF BIPEDAL LOCOMOTION	659
<i>Jeffrey Koncsol, Hae Won Park, Koushil Sreenath</i>	
DEVELOPMENT OF STIFFNESS CHANGEABLE MULTIJOINT CERVICAL STRUCTURE WITH SOFT SENSOR FLESH FOR MUSCULO-SKELETAL HUMANOIDS.....	665
<i>Tamon Izawa, Yuto Nakanishi, Nobuyuki Ito, Kazuo Hongo, Shigeki Ohta, Junichi Urata, Tomoaki Yoshikai, Kei Okada, Masayuki Inaba</i>	
DESIGN OF AN EMBEDDED NETWORKING INFRASTRUCTURE FOR WHOLE-BODY TACTILE SENSING IN HUMANOID ROBOTS	671
<i>Emanuele Baglini, Giorgio Cannata, Fulvio Mastrogiovanni</i>	
DEVELOPMENT OF THE ACTUATION OF A NEW WRIST FOR THE NEXT GENERATION OF THE HUMANOID ROBOT ARMAR	677
<i>Albert Albers, Christian Sander, Akin Simsek</i>	
Author Index	