

# **2013 IEEE International Conference on Robotics and Automation**

**(ICRA 2013)**

**Karlsruhe, Germany  
6 - 10 May 2013**

**Pages 1-835**



**IEEE Catalog Number: CFP13RAA-POD  
ISBN: 978-1-4673-5640-4**

# TABLE OF CONTENTS

<b>INSTANTANEOUS CONTROL OF A VERTICALLY HOPPING LEG'S TOTAL STEP-TIME</b> .....	1
<i>J. Bhatti, P. Iravani, A. Plummer, M. Sahinkaya</i>	
<b>MINIMALISTIC MODELS OF AN ENERGY EFFICIENT VERTICAL HOPPING ROBOT</b> .....	7
<i>X. Yu, F. Iida</i>	
<b>A NOVEL ONE-MOTOR DRIVEN ROBOT THAT JUMPS AND WALKS</b> .....	13
<i>J. Zhang, G. Song, G. Qiao, Z. Li, W. Wang, A. Song</i>	
<b>STAR, A SPRAWL TUNED AUTONOMOUS ROBOT</b> .....	20
<i>D. Zarrouk, A. Pullin, N. Kohut, R. Fearing</i>	
<b>FLEA INSPIRED CATAPULT MECHANISM WITH ACTIVE ENERGY STORAGE AND RELEASE FOR SMALL SCALE JUMPING ROBOT</b> .....	26
<i>J. Koh, S. Jung, M. Noh, S. Kim, K. Cho</i>	
<b>A NONLINEAR FEEDBACK CONTROLLER FOR AERIAL SELF-RIGHTING BY A TAILED ROBOT</b> .....	32
<i>E. Chang-Siu, T. Libby, M. Brown, R. Full, M. Tomizuka</i>	
<b>PROBABILISTIC SURFACE MATCHING FOR BATHYMETRY BASED SLAM</b> .....	40
<i>S. Zandara, P. Ridao, D. Ribas, A. Mallios, A. Palomer</i>	
<b>ROBUST VISION-AIDED NAVIGATION USING SLIDING-WINDOW FACTOR GRAPHS</b> .....	46
<i>H. Chiu, S. Williams, F. Dellaert, S. Samarasekera, R. Kumar</i>	
<b>TEMPORALLY SCALABLE VISUAL SLAM USING A REDUCED POSE GRAPH</b> .....	54
<i>H. Johannsson, M. Kaess, M. Fallon, J. Leonard</i>	
<b>ROBUST MAP OPTIMIZATION USING DYNAMIC COVARIANCE SCALING</b> .....	62
<i>P. Agarwal, G. Tipaldi, L. Spinello, C. Stachniss, W. Burgard</i>	
<b>SPARSER RELATIVE BUNDLE ADJUSTMENT (SRBA): CONSTANT-TIME MAINTENANCE AND LOCAL OPTIMIZATION OF ARBITRARILY LARGE MAPS</b> .....	70
<i>J. Blanco, J. Gonzalez-Jimenez, J. Fernandez-Madrigal</i>	
<b>AUTOMATED MODEL APPROXIMATION FOR ROBOTIC NAVIGATION WITH POMDPS</b> .....	78
<i>D. Grady, M. Moll, L. Kavraki</i>	
<b>A DYNAMIC BAYESIAN APPROACH TO SIMULTANEOUS ESTIMATION AND FILTERING IN GRASP ACQUISITION</b> .....	85
<i>L. Zhang, S. Lyu, J. Trinkle</i>	
<b>ROBUST GRIP FORCE ESTIMATION UNDER ELECTRIC FEEDBACK USING MUSCLE STIFFNESS AND ELECTROMYOGRAPHY FOR POWERED PROSTHETIC HAND</b> .....	93
<i>M. Kasuya, M. Seki, K. Kawamura, Y. Kobayashi, M. Fujie, H. Yokoi</i>	
<b>THE NEXT BEST TOUCH FOR MODEL-BASED OBJECT LOCALIZATION</b> .....	99
<i>P. Hebert, T. Howard, N. Hudson, J. Ma, J. Burdick</i>	
<b>A SENSORIMOTOR ACCOUNT OF VISUAL AND TACTILE INTEGRATION FOR OBJECT CATEGORIZATION AND GRASPING</b> .....	107
<i>M. Sanchez-Fibla, A. Duff, P. Verschure</i>	
<b>UNCERTAINTY AWARE GRASPING AND TACTILE EXPLORATION</b> .....	113
<i>S. Dragiev, M. Toussaint, M. Gienger</i>	
<b>DUAL ARM STATE ESTIMATION FOR COORDINATED BIMANUAL MANIPULATION</b> .....	120
<i>P. Hebert, N. Hudson, J. Ma, J. Burdick</i>	
<b>EMBEDDING HIGH-LEVEL INFORMATION INTO LOW LEVEL VISION: EFFICIENT OBJECT SEARCH IN CLUTTER</b> .....	126
<i>C. Teo, A. Myers, C. Fermuller, Y. Aloimonos</i>	
<b>EFFICIENT TEMPORAL CONSISTENCY FOR STREAMING VIDEO SCENE ANALYSIS</b> .....	133
<i>O. Miksik, D. Munoz, J. Bagnell, M. Hebert</i>	
<b>3D SPATIAL RELATIONSHIPS FOR IMPROVING OBJECT DETECTION</b> .....	140
<i>T. Southey, J. Little</i>	
<b>GEOMETRIC DATA ABSTRACTION USING B-SPLINES FOR RANGE IMAGE SEGMENTATION</b> .....	148
<i>T. Morwald, A. Richtsfeld, J. Prankl, M. Zillich, M. Vincze</i>	
<b>CLEARING A PILE OF UNKNOWN OBJECTS USING INTERACTIVE PERCEPTION</b> .....	154
<i>D. Katz, M. Kazemi, J. Bagnell, A. Sientz</i>	
<b>POSE ESTIMATION OF RIGID TRANSPARENT OBJECTS IN TRANSPARENT CLUTTER</b> .....	162
<i>I. Lysenkov, V. Rabaud</i>	
<b>FACIAL COMMUNICATIVE SIGNAL INTERPRETATION IN HUMAN-ROBOT INTERACTION BY DISCRIMINATIVE VIDEO SUBSEQUENCE SELECTION</b> .....	170
<i>C. Lang, S. Wachsmuth, M. Hanheide, H. Wersing</i>	
<b>REAL-TIME AND CONTINUOUS HAND GESTURE SPOTTING: AN APPROACH BASED ON ARTIFICIAL NEURAL NETWORKS</b> .....	178
<i>P. Neto, D. Pereira, J. Pires, A. Moreira</i>	
<b>COOPERATIVE TABLETOP WORKING FOR HUMANS AND HUMANOID ROBOTS: GROUP INTERACTION WITH AN AVATAR</b> .....	184
<i>H. Mamode, P. Bremmer, A. Pipe, B. Carse</i>	

<b>A STATISTICAL APPROACH FOR UNCERTAIN STABILITY ANALYSIS OF MOBILE ROBOTS</b> .....	191
<i>M. Norouzi, J. Miro, G. Dissanayake</i>	
<b>SAFETY ISSUES IN HUMAN-ROBOT INTERACTIONS</b> .....	197
<i>M. Vasic, A. Billard</i>	
<b>EVALUATION OF HUMAN SAFETY IN THE DLR ROBOTIC MOTION SIMULATOR USING A CRASH TEST DUMMY</b> .....	205
<i>K. Sharma, S. Haddadin, S. Minning, J. Heindl, T. Bellmann, S. Parusel, T. Rokahr, A. Albu-Schaeffer</i>	
<b>A NOVEL DUAL FORCE SENSING INSTRUMENT WITH COOPERATIVE ROBOTIC ASSISTANT FOR VITREORETINAL SURGERY</b> .....	213
<i>X. He, M. Balicki, P. Gehlbach, J. Handa, R. Taylor, I. Iordachita</i>	
<b>MINIMALLY-INVASIVE INTRACEREBRAL HEMORRHAGE REMOVAL USING AN ACTIVE CANNULA</b> .....	219
<i>P. Swaney, J. Burgner, R. Lathrop, H. Gilbert, K. Weaver, R. Webster</i>	
<b>DESIGN, CALIBRATION AND PRELIMINARY TESTING OF A ROBOTIC TELEMANIPULATOR FOR OCT GUIDED RETINAL SURGERY</b> .....	225
<i>H. Yu, J. Shen, K. Joos, N. Simaan</i>	
<b>ROBOTIC-ASSISTED MICRO-SURGERY OF THE THROAT: THE TRANS-NASAL APPROACH</b> .....	232
<i>A. Bajo, L. Dharamsi, J. Netterville, C. Garrett, N. Simaan</i>	
<b>A SINGLE ARM, SINGLE CAMERA SYSTEM FOR AUTOMATED SUTURING</b> .....	239
<i>S. Iyer, T. Looi, J. Drake</i>	
<b>A FRAMEWORK FOR ANALYSIS OF SURGEON ARM POSTURE VARIABILITY IN ROBOT-ASSISTED SURGERY</b> .....	245
<i>I. Nisky, M. Hsieh, A. Okamura</i>	
<b>SUSTAINABLE PRODUCTION AUTOMATION - ENERGY OPTIMIZATION OF ROBOT CELLS</b> .....	252
<i>O. Wigstrom, B. Lennartson</i>	
<b>QUASI-STATIC EVALUATION OF A MODULAR AND RECONFIGURABLE MANUFACTURING CELL</b> .....	258
<i>A. Das, S. Savoie</i>	
<b>A NOVEL VIRTUAL METROLOGY SCHEME FOR PREDICTING MACHINING PRECISION OF MACHINE TOOLS</b> .....	264
<i>H. Tieng, H. Yang, M. Hung, F. Cheng</i>	
<b>MODEL-FREE FUZZY TIGHTENING CONTROL FOR BOLT/NUT JOINT CONNECTIONS OF WIND TURBINE HUBS</b> .....	270
<i>C. Deters, E. Secco, H. Wuerdemann, H. Lam, L. Seneviratne, K. Althoefer</i>	
<b>ROBOT SELF-ASSEMBLY BY FOLDING: A PRINTED INCHWORM ROBOT</b> .....	277
<i>S. Felton, M. Tolley, C. Onal, D. Rus, R. Wood</i>	
<b>SYSTEM IDENTIFICATION FOR OUTPUT-DEPENDENT BOUNDED NOISES AND ITS APPLICATION IN LEARNING PERSONALIZED THERMAL COMFORT MODEL</b> .....	283
<i>Y. Zhao, Q. Zhao</i>	
<b>LINEAR CONTROL DESIGN, ALLOCATION, AND IMPLEMENTATION FOR THE OMNICOPTER MAV</b> .....	289
<i>Y. Long, D. Cappelleri</i>	
<b>FIRST FLIGHT TESTS FOR A QUADROTOR UAV WITH TILTING PROPELLERS</b> .....	295
<i>M. Ryll, H. Bulthoff, P. Giordano</i>	
<b>SCALABLE REWARD LEARNING FROM DEMONSTRATION</b> .....	303
<i>B. Michini, M. Cutler, J. How</i>	
<b>CONFIGURABLE REAL-TIME SIMULATION SUITE FOR COAXIAL ROTOR UAVS</b> .....	309
<i>C. Huerzeler, K. Alexis, R. Siegart</i>	
<b>DEVELOPMENT OF A QUAD ROTOR TAIL-SITTER VTOL UAV WITHOUT CONTROL SURFACES AND EXPERIMENTAL VERIFICATION</b> .....	317
<i>A. Oosedo, S. Abiko, A. Konno, T. Koizumi, T. Furu, M. Uchiyama</i>	
<b>INFRASTRUCTURE-FREE SHIPDECK TRACKING FOR AUTONOMOUS LANDING</b> .....	323
<i>S. Arora, S. Jain, S. Scherer, S. Nuske, L. Chamberlain, S. Singh</i>	
<b>TEMPORAL LOGIC CONTROL FOR AN AUTONOMOUS QUADROTOR IN A NONDETERMINISTIC ENVIRONMENT</b> .....	331
<i>A. Ulusoy, M. Marrazzo, K. Oikonomopoulos, R. Hunter, C. Belta</i>	
<b>DESIGN AND DEVELOPMENT OF A SAFE ROBOT MANIPULATOR USING A NEW ACTUATION CONCEPT</b> .....	337
<i>P. Yadmellat, A. Shafer, M. Kermani</i>	
<b>MAXIMIZING OUTPUT WORK OF PZT STACKS WHILE GAINING LARGE DISPLACEMENT AMPLIFICATION</b> .....	343
<i>J. Torres, S. Tsukahara, H. Asada</i>	
<b>EFFECTOR FORM DESIGN FOR 1DOF PLANAR ACTUATION</b> .....	349
<i>A. Rodriguez, M. Mason</i>	
<b>PNEUMATIC FLEXIBLE HOLLOW SHAFT ACTUATOR WITH HIGH SPEED AND LONG STROKE MOTION</b> .....	357
<i>K. Wakana, H. Namari, M. Konyo, S. Tadokoro</i>	
<b>FLEXIBLE VACUUM GRIPPER WITH AUTONOMOUS SWITCHABLE VALVES</b> .....	364
<i>T. Takahashi, K. Nagato, M. Suzuki, S. Aoyagi</i>	
<b>ROADMAPS USING GRADIENT EXTREMAL PATHS</b> .....	370
<i>I. Filippidis, K. Kyriakopoulos</i>	

<b>PREDICTION OF HUMAN AVOIDANCE BEHAVIOR BY LIFELONG LEARNING FOR SOCIALLY COMPLIANT ROBOT NAVIGATION</b> .....	376
<i>C. Weinrich, M. Volkhardt, E. Einhorn, H. Gross</i>	
<b>TERRAIN MODEL-BASED ANTICIPATIVE CONTROL FOR ARTICULATED VEHICLES WITH LOW BANDWIDTH ACTUATORS</b> .....	382
<i>G. Freitas, F. Lizarralde, L. Hsu, M. Bergerman</i>	
<b>AUTONOMOUS EXPLORATION OF LARGE-SCALE BENTHIC ENVIRONMENTS</b> .....	390
<i>A. Bender, S. Williams, O. Pizarro</i>	
<b>MOBILITY EROSION: HIGH SPEED MOTION SAFETY FOR MOBILE ROBOTS OPERATING IN OFF-ROAD TERRAIN</b> .....	397
<i>S. Karumanchi, K. Iagnemma, S. Scheding</i>	
<b>PADDLE TRAJECTORY GENERATION FOR ACCESSING SOFT TERRAIN BY AN EPADDLE LOCOMOTION MECHANISM</b> .....	403
<i>Y. Yang, Y. Sun, S. Ma</i>	
<b>TRAJECTORY GENERATOR FOR AUTONOMOUS VEHICLES IN URBAN ENVIRONMENTS</b> .....	409
<i>J. Perez, J. Godoy, J. Villagra, E. Onieva</i>	
<b>PLANNING WITH APPROXIMATE PREFERENCES AND ITS APPLICATION TO DISAMBIGUATING HUMAN INTENTIONS IN NAVIGATION</b> .....	415
<i>B. Neuman, M. Likhachev</i>	
<b>HUMAN-FRIENDLY ROBOT NAVIGATION IN DYNAMIC ENVIRONMENTS</b> .....	423
<i>J. Guzzi, A. Giusti, L. Gambardella, G. Theraulaz, G. Caro</i>	
<b>PLANNING UNDER TOPOLOGICAL CONSTRAINTS USING BEAM-GRAPHS</b> .....	431
<i>V. Narayanan, P. Vernaza, M. Likhachev, S. LaValle</i>	
<b>RAPYUTA: THE ROBOEARTH CLOUD ENGINE</b> .....	438
<i>D. Hunziker, M. Gajamohan, M. Waibel, R. D'Andrea</i>	
<b>A VISUAL ROBOT-PROGRAMMING ENVIRONMENT FOR MULTIDISCIPLINARY EDUCATION</b> .....	445
<i>J. Cross, C. Bartley, E. Hammer, I. Nourbakhsh</i>	
<b>A SCENE GRAPH BASED SHARED 3D WORLD MODEL FOR ROBOTIC APPLICATIONS</b> .....	453
<i>S. Blumenthal, H. Bruyninckx, W. Nowak, E. Prassler</i>	
<b>A NEW SKILL BASED ROBOT PROGRAMMING LANGUAGE USING UML/P STATECHARTS</b> .....	461
<i>U. Thomas, G. Hirzinger, B. Rumpe, C. Schulze, A. Wortmann</i>	
<b>ROS COMMANDER (ROSCO): BEHAVIOR CREATION FOR HOME ROBOTS</b> .....	467
<i>H. Nguyen, M. Ciocarlie, K.Hsiao, C. Kemp</i>	
<b>ROSLINK: INTERFACING LEGACY SYSTEMS WITH ROS</b> .....	475
<i>F. Libera, H. Ishiguro</i>	
<b>AN INTEGRATED MODEL-BASED DIAGNOSIS AND REPAIR ARCHITECTURE FOR ROS-BASED ROBOT SYSTEMS</b> .....	482
<i>S. Zaman, G. Steinbauer, J. Maurer, P. Lepej, S. Uran</i>	
<b>COMMUNICATION BETWEEN LINGODROIDS WITH DIFFERENT COGNITIVE CAPABILITIES</b> .....	490
<i>S. Heath, D. Ball, R. Schulz, J. Wiles</i>	
<b>CARTESIAN POSITION AND FORCE CONTROL WITH ADAPTIVE IMPEDANCE/COMPLIANCE CAPABILITIES FOR A HUMANOID ROBOT ARM</b> .....	496
<i>R. Luo, Y. Perng, B. Shih, Y. Tsai</i>	
<b>RISK-SENSITIVE INTERACTION CONTROL IN UNCERTAIN MANIPULATION TASKS</b> .....	502
<i>J. Medina, D. Sieber, S. Hirche</i>	
<b>NONLINEAR OSCILLATIONS FOR CYCLIC MOVEMENTS IN VARIABLE IMPEDANCE ACTUATED ROBOTIC ARMS</b> .....	508
<i>D. Lakatos, F. Petit, A. Albu-Schaffer</i>	
<b>OPTIMAL CONTROL FOR MAXIMIZING VELOCITY OF THE COMPACT™ COMPLIANT ACTUATOR</b> .....	516
<i>L. Chen, M. Garabini, M. Laffranchi, N. Kashiri, N. Tsagarakis, A. Bicchi, D. Caldwell</i>	
<b>APPLIED CONTROL OF BINARY ROBOTS BASED ON INFLUENCE VECTORS</b> .....	523
<i>A. Girard, J. Plante</i>	
<b>SOFTCUBES: TOWARDS A SOFT MODULAR MATTER</b> .....	530
<i>S. Yim, M. Sitti</i>	
<b>DETERMINISTIC DISTRIBUTED ALGORITHM FOR SELF-RECONFIGURATION OF MODULAR ROBOTS FROM ARBITRARY TO STRAIGHT CHAIN CONFIGURATIONS</b> .....	537
<i>S. Wong, J. Walter</i>	
<b>FABLE: DESIGN OF A MODULAR ROBOTIC PLAYWARE PLATFORM</b> .....	544
<i>M. Pacheco, M. Moghadam, A. Magnusson, B. Silverman, H. Lund, D. Christensen</i>	
<b>RIGID 2D SPACE-FILLING FOLDS OF UNBROKEN LINEAR CHAINS</b> .....	551
<i>Z. Li, D. Balkcom, A. Dollar</i>	
<b>AN ADAPTIVE DESCRIPTOR FOR UNCALIBRATED OMNIDIRECTIONAL IMAGES - TOWARDS SCENE RECONSTRUCTION BY TRIFOCAL TENSOR</b> .....	558
<i>M. Liu, B. Alper, R. Siegwart</i>	
<b>MOBILE ROBOT NAVIGATION SYSTEM IN OUTDOOR PEDESTRIAN ENVIRONMENT USING VISION-BASED ROAD RECOGNITION</b> .....	564
<i>C. Siagian, C. Chang, L. Itti</i>	
<b>HOMOLOGICAL SENSING FOR MOBILE ROBOT LOCALIZATION</b> .....	572
<i>J. Derenick, A. Speranzon, R. Ghrist</i>	

<b>URBAN 3D SEMANTIC MODELLING USING STEREO VISION .....</b>	<b>580</b>
<i>S. Sengupta, E. Greveson, A. Shahrokni, P. Torr</i>	
<b>SIMULTANEOUS LOCALISATION AND MAPPING ON A MULTI-DEGREE OF FREEDOM BIOMIMETIC WHISKERED ROBOT .....</b>	<b>586</b>
<i>M. Pearson, C. Fox, J. Sullivan, T. Prescott, T. Pipe, B. Mitchinson</i>	
<b>LEARNING A REAL TIME GRASPING STRATEGY .....</b>	<b>593</b>
<i>B. Huang, S. El-Khoury, M. Li, J. Bryson, A. Billard</i>	
<b>LEARNING A DICTIONARY OF PROTOTYPICAL GRASP-PREDICTING PARTS FROM GRASPING EXPERIENCE .....</b>	<b>601</b>
<i>R. Detry, C. Ek, M. Madry, D. Kragic</i>	
<b>LEARNING GRASPS FOR UNKNOWN OBJECTS IN CLUTTERED SCENES .....</b>	<b>609</b>
<i>D. Fischinger, M. Vincze, Y. Jiang</i>	
<b>PLANNING IN-HAND MANIPULATION WITH MULTIFINGERED HANDS CONSIDERING TASK CONSTRAINTS .....</b>	<b>617</b>
<i>K. Hertkorn, M. Roa, C. Borst</i>	
<b>MULTI-FINGERED ROBOTIC HAND PLANNER FOR OBJECT RECONFIGURATION THROUGH A ROLLING CONTACT EVOLUTION MODEL .....</b>	<b>625</b>
<i>J. Ramon, V. Perdereau, F. Medina</i>	
<b>LEARNING CONVOLUTIONAL FILTERS FOR INTEREST POINT DETECTION .....</b>	<b>631</b>
<i>A. Richardson, E. Olson</i>	
<b>REPLACING PROJECTIVE DATA ASSOCIATION WITH LUCAS-KANADE FOR KINECTFUSION .....</b>	<b>638</b>
<i>B. Peasley, S. Birchfield</i>	
<b>3D NON-RIGID DEFORMABLE SURFACE ESTIMATION WITHOUT FEATURE CORRESPONDENCE .....</b>	<b>646</b>
<i>B. Willimon, I. Walker, S. Birchfield</i>	
<b>GAZE SELECTION DURING MANIPULATION TASKS .....</b>	<b>652</b>
<i>K. Welke, D. Schiebener, T. Asfour, R. Dillmann</i>	
<b>VISIBILITY-BASED VIEWPOINT PLANNING FOR GUARD ROBOT USING SKELETONIZATION AND GEODESIC MOTION MODEL .....</b>	<b>660</b>
<i>I. Ardiyanto, J. Miura</i>	
<b>NEW SHANK MECHANISM FOR HUMANOID ROBOT MIMICKING HUMAN-LIKE WALKING IN HORIZONTAL AND FRONTAL PLANE .....</b>	<b>667</b>
<i>T. Otani, A. Iizuka, D. Takamoto, H. Motohashi, T. Kishi, P. Kryczka, N. Endo, I. Jamone, K. Hashimoto, T. Takashima, H. Lim, A. Takanishi</i>	
<b>COMPLIANT HUMANOID COMAN: OPTIMAL JOINT STIFFNESS TUNING FOR MODAL FREQUENCY CONTROL .....</b>	<b>673</b>
<i>N. Tsagarakis, S. Morfey, G. Cerda, Z. Li, D. Caldwell</i>	
<b>HUMANOID ROBOT AS AN EVALUATOR OF ASSISTIVE DEVICES .....</b>	<b>679</b>
<i>K. Miura, E. Yoshida, Y. Kobayashi, Y. Endo, F. Kanehoro, K. Homma, I. Kajitani, Y. Matsumoto, T. Tanaka</i>	
<b>SHOES-WEARABLE FOOT MECHANISM MIMICKING CHARACTERISTICS OF HUMAN'S FOOT ARCH AND SKIN .....</b>	<b>686</b>
<i>K. Hashimoto, H. Motohashi, T. Takashima, H. Lim, A. Takanishi</i>	
<b>A MOBILE MOTION CAPTURE SYSTEM BASED ON INERTIAL SENSORS AND SMART SHOES .....</b>	<b>692</b>
<i>P. Jung, G. Lim, K. Kong</i>	
<b>CLOSED-LOOP COMMUTATION CONTROL OF AN MRI-POWERED ROBOT ACTUATOR .....</b>	<b>698</b>
<i>C. Bergeles, P. Vartholomeos, L. Qin, P. Dupont</i>	
<b>TWO-AXIS BEND SENSOR DESIGN, KINEMATICS AND CONTROL FOR A CONTINUUM ROBOTIC ENDOSCOPE .....</b>	<b>704</b>
<i>Y. Chen, J. Oliveira, I. Hunter</i>	
<b>WIRELESS TISSUE PALPATION: PROOF OF CONCEPT FOR A SINGLE DEGREE OF FREEDOM .....</b>	<b>711</b>
<i>M. Beccani, C. Natali, M. Rentschler, P. Valdastrì</i>	
<b>INTERLEAVED CONTINUUM-RIGID MANIPULATION: AN AUGMENTED APPROACH FOR ROBOTIC MINIMALLY-INVASIVE FLEXIBLE CATHETER-BASED PROCEDURES .....</b>	<b>718</b>
<i>B. Conrad, J. Jung, R. Penning, M. Zinn</i>	
<b>CONTINUOUS SHAPE ESTIMATION OF CONTINUUM ROBOTS USING X-RAY IMAGES .....</b>	<b>725</b>
<i>E. Lobaton, J. Fu, L. Torres, R. Alterovitz</i>	
<b>IMPROVING POINT-CLOUD ACCURACY FROM A MOVING PLATFORM IN FIELD OPERATIONS .....</b>	<b>733</b>
<i>H. Almqvist, M. Magnusson, T. Stoyanov, A. Lilienthal</i>	
<b>STEREO VISION BASED TREE PLANTING SPOT DETECTION .....</b>	<b>739</b>
<i>T. Kempainen, A. Visala</i>	
<b>TRACTION/BRAKING FORCE DISTRIBUTION ALGORITHM FOR OMNI-DIRECTIONAL ALL-WHEEL-INDEPENDENT-DRIVE VEHICLES .....</b>	<b>746</b>
<i>T. Lam, J. Yan, H. Qian, Y. Xu</i>	
<b>MOMENTUM BASED TRAVERSAL OF MOBILITY CHALLENGES FOR AUTONOMOUS GROUND VEHICLES .....</b>	<b>752</b>
<i>C. Ordóñez, N. Gupta, O. Chuy, E. Collins</i>	
<b>VISUALIZATION OF COMPREHENSIVE WORK TENDENCY USING END-POINT FREQUENCY MAP FOR HUMAN-OPERATED WORK MACHINES .....</b>	<b>760</b>
<i>M. Kamezaki, H. Iwata, S. Sugano</i>	

<b>SOLAR POWERED UNMANNED AERIAL VEHICLE FOR CONTINUOUS FLIGHT: CONCEPTUAL OVERVIEW AND OPTIMIZATION</b> .....	766
<i>S. Morton, L. Scharber, N. Papanikolopoulos</i>	
<b>COOPERATIVE CONTROL USING DATA-DRIVEN FEEDBACK FOR MOBILE SENSORS</b> .....	772
<i>B. Hodgkinson, D. Lipinski, L. Peng, K. Mohseni</i>	
<b>QUAD-ROTOR MAV TRAJECTORY PLANNING IN WIND FIELDS</b> .....	778
<i>J. Guerrero, J. Escareno, Y. Bestaoui</i>	
<b>WIND-ENERGY BASED PATH PLANNING FOR UNMANNED AERIAL VEHICLES USING MARKOV DECISION PROCESSES</b> .....	784
<i>W. Al-Sabban, L. Gonzalez, R. Smith</i>	
<b>MULTIPLE GLIDING UAV COORDINATION FOR STATIC SOARING IN REAL TIME APPLICATIONS</b> .....	790
<i>J. Cobano, D. Alejo, S. Vera, G. Heredia, A. Ollero</i>	
<b>OPTIMAL PASSIVE DYNAMICS FOR PHYSICAL INTERACTION: THROWING A MASS</b> .....	796
<i>H. Vejdani, J. Hurst</i>	
<b>A NOVEL ENERGY EFFICIENT CONTROLLABLE STIFFNESS JOINT</b> .....	802
<i>D. Ball, P. Ross, J. Wall, R. Chow</i>	
<b>DESIGN, FABRICATION, AND EXPERIMENTS OF AN ELECTROMAGNETIC ACTUATOR FOR FLAPPING WING MICRO AIR VEHICLES</b> .....	809
<i>J. Roll, B. Cheng, X. Deng</i>	
<b>OCTOPUS INSPIRED WALKING ROBOT: DESIGN, CONTROL AND EXPERIMENTAL VALIDATION</b> .....	816
<i>T. Zheng, I. Godage, D. Branson, R. Kang, E. Guglielmino, G. Medrano-Cerda, D. Caldwell</i>	
<b>AN OMNIDIRECTIONAL ELECTROMAGNET FOR REMOTE MANIPULATION</b> .....	822
<i>A. Petruska, J. Abbott</i>	
<b>HIERARCHICAL SUB-TASK DECOMPOSITION FOR REINFORCEMENT LEARNING OF MULTI-ROBOT DELIVERY MISSION</b> .....	828
<i>H. Kawano</i>	
<b>COOPERATIVE GRASPING CONTROL OF MULTIPLE MOBILE MANIPULATORS WITH OBSTACLE AVOIDANCE</b> .....	836
<i>H. Yang, D. Lee</i>	
<b>COMPUTATIONALLY EFFICIENT TRAJECTORY PLANNING AND TASK ASSIGNMENT FOR LARGE TEAMS OF INTERCHANGEABLE ROBOTS</b> .....	842
<i>M. Turpin, N. Michael, V. Kumar</i>	
<b>COORDINATION OF MULTIPLE FIXED-WING UAVS TRAVERSING INTERSECTING PERIODIC PATHS</b> .....	849
<i>V. Goncalves, L. Pimenta, C. Maia, G. Pereira</i>	
<b>IKEABOT: AN AUTONOMOUS MULTI-ROBOT COORDINATED FURNITURE ASSEMBLY SYSTEM</b> .....	855
<i>R. Knepper, T. Layton, J. Romanishin, D. Rus</i>	
<b>A STRATEGY FOR TRANSPORTING TALL OBJECTS WITH A SWARM OF MINIATURE MOBILE ROBOTS</b> .....	863
<i>J. Chen, M. Gauci, R. Grob</i>	
<b>TECHNIQUES TO PRESERVE THE STABILITY OF A TRAJECTORY SCALING ALGORITHM</b> .....	870
<i>C. Guarino, L. Bioanco, F. Ghilardelli</i>	
<b>A NEW ROTARY HEXAPOD FOR MICROPOSITIONING</b> .....	877
<i>J. Coulombe, I. Bonev</i>	
<b>K-ROBOTS CLUSTERING OF MOVING SENSORS USING CORESETS</b> .....	881
<i>D. Feldman, S. Gil, R. Knepper, B. Julian, D. Rus</i>	
<b>JOINT DETECTION AND TRACKING OF BOUNDARIES USING COOPERATIVE MOBILE SENSOR NETWORKS</b> .....	889
<i>W. Kim, D. Kwak, H. Kim</i>	
<b>WORST-CASE PERFORMANCE OF A MOBILE SENSOR NETWORK UNDER INDIVIDUAL SENSOR FAILURE</b> .....	895
<i>H. Park, S. Hutchinson</i>	
<b>LOCALLY CONSTRAINED CONNECTIVITY CONTROL IN MOBILE ROBOT NETWORKS</b> .....	901
<i>R. Williams, G. Sukhatme</i>	
<b>DECENTRALIZED P2P NETWORK COORDINATION WITH AN ADAPTIVE TRANSMISSION CYCLE DECISION MECHANISM AND A SIMPLIFIED PULSE-COUPLED OSCILLATOR</b> .....	907
<i>A. Kamimura, K. Tomita, H. Kurokawa</i>	
<b>COVERING SPACE WITH SIMPLE ROBOTS: FROM CHAINS TO RANDOM TREES</b> .....	914
<i>A. Ghoshal, D. Shell</i>	
<b>A BIO-INSPIRED PLUME TRACKING ALGORITHM FOR MOBILE SENSING SWARMS IN TURBULENT FLOW</b> .....	921
<i>D. Chang, W. Wu, D. Webster, M. Weissburg, F. Zhang</i>	
<b>DECENTRALIZED SEARCHING OF MULTIPLE UNKNOWN AND TRANSIENT RADIO SOURCES</b> .....	927
<i>C. Kim, D. Song, J. Yi</i>	
<b>DISTRIBUTED COVERAGE USING GEODESIC METRIC FOR NON-CONVEX ENVIRONMENTS</b> .....	933
<i>M. Thanou, Y. Stergiopoulos, A. Tzes</i>	
<b>REINFORCEMENT LEARNING WITH MISSPECIFIED MODEL CLASSES</b> .....	939
<i>J. Joseph, A. Geramifard, J. Roberts, J. How, N. Roy</i>	
<b>ATTITUDE CONTROL OF SATELLITES WITH DELAY IN ATTITUDE MEASUREMENT</b> .....	947
<i>S. Bahrani, M. Namvar, F. Aghili</i>	

<b>COLLISION AVOIDANCE USING GYROSCOPIC FORCES FOR COOPERATIVE LAGRANGIAN DYNAMICAL SYSTEMS</b> .....	953
<i>L. Sabattini, C. Secchi, C. Fantuzzi</i>	
<b>WHAT'S WRONG WITH COLLISION DETECTION IN MULTIBODY DYNAMIC SIMULATION?</b> .....	959
<i>D. Flickinger, J. Williams, J. Trinkle</i>	
<b>A CONVERGENCE ANALYSIS FOR POSE GRAPH OPTIMIZATION VIA GAUSS-NEWTON METHODS</b> .....	965
<i>L. Carlone</i>	
<b>EXPENSIVE MULTIOBJECTIVE OPTIMIZATION FOR ROBOTICS</b> .....	973
<i>M. Tesch, J. Schneider, H. Choset</i>	
<b>PROVABLY-CORRECT STOCHASTIC MOTION PLANNING WITH SAFETY CONSTRAINTS</b> .....	981
<i>C. Yoo, R. Fitch, S. Sukkarieh</i>	
<b>GAS LEAK LOCALIZATION IN INDUSTRIAL ENVIRONMENTS USING A TDLAS-BASED REMOTE GAS SENSOR AND AUTONOMOUS MOBILE ROBOT WITH THE TRI-MAX METHOD</b> .....	987
<i>G. Bonow, A. Kroll</i>	
<b>LOW-COST EMBEDDED SYSTEM FOR RELATIVE LOCALIZATION IN ROBOTIC SWARMS</b> .....	993
<i>J. Faigl, T. Krajnik, J. Chudoba, L. Preucil, M. Saska</i>	
<b>A UNIFIED FRAMEWORK FOR GRASPING AND SHAPE ACQUISITION VIA PRETOUCH SENSING</b> .....	999
<i>L. Jiang, J. Smith</i>	
<b>DUAL-MODE COMPLIANT OPTICAL TACTILE SENSOR</b> .....	1006
<i>E. Knoop, J. Rossiter</i>	
<b>THE DLR ARTIFICIAL SKIN STEP I: UNITING SENSITIVITY AND COLLISION TOLERANCE</b> .....	1012
<i>M. Strohmayer, H. Worn, G. Hirzinger</i>	
<b>PRELIMINARY DESIGN OF MULTI-AXIAL CONTACT FORCE SENSOR FOR MINIMALLY INVASIVE ROBOTIC SURGERY GRASPER</b> .....	1019
<i>D. Lee, U. Kim, H. Moon, J. Koo, W. Yoon, H. Choi</i>	
<b>ROBUST INCREMENTAL ONLINE INFERENCE OVER SPARSE FACTOR GRAPHS: BEYOND THE GAUSSIAN CASE</b> .....	1025
<i>D. Rosen, M. Kaess, J. Leonard</i>	
<b>TOWARDS RELATIVE CONTINUOUS-TIME SLAM</b> .....	1033
<i>S. Anderson, T. Barfoot</i>	
<b>ESTIMATION-INFORMED, RESOURCE-AWARE ROBOT NAVIGATION FOR ENVIRONMENTAL MONITORING APPLICATIONS</b> .....	1041
<i>L. Parker, R. Coogle, A. Howard</i>	
<b>IMITATION LEARNING FOR NATURAL LANGUAGE DIRECTION FOLLOWING THROUGH UNKNOWN ENVIRONMENTS</b> .....	1047
<i>F. Duvallet, T. Kollar, A. Stentz</i>	
<b>OPENSTREETSLAM: GLOBAL VEHICLE LOCALIZATION USING OPENSTREETMAPS</b> .....	1054
<i>G. Floros, B. Zander, B. Leibe</i>	
<b>AUTONOMOUS PERSON PACING WITH MODEL PREDICTIVE EQUILIBRIUM POINT CONTROL</b> .....	1060
<i>J. Park, B. Kuipers</i>	
<b>FINDING SMALL, VERSATILE SETS OF HUMAN GRASPS TO SPAN COMMON OBJECTS</b> .....	1068
<i>I. Bullock, T. Feix, A. Dollar</i>	
<b>GRASP MAPPING USING LOCALITY PRESERVING PROJECTIONS AND KNN REGRESSION</b> .....	1076
<i>Y. Lin, Y. Sun</i>	
<b>SPARSE SUMMARIZATION OF ROBOTIC GRASPING DATA</b> .....	1082
<i>M. Hjelm, C. Ek, R. Detry, H. Kjellstrom, D. Kragic</i>	
<b>SYNGRASP: A MATLAB TOOLBOX FOR GRASP ANALYSIS OF HUMAN AND ROBOTIC HANDS</b> .....	1088
<i>M. Malvezzi, G. Gioioso, G. Salvietti, D. Prattichizzo, A. Bicchi</i>	
<b>SEQUENTIAL IMPROVEMENT OF GRASP BASED ON SENSITIVITY ANALYSIS</b> .....	1094
<i>C. Mavrogiannis, C. Bechlioulis, K. Kyriakopoulos</i>	
<b>GRASPING OBJECTS WITH HOLES: A TOPOLOGICAL APPROACH</b> .....	1100
<i>F. Pokorny, J. Stork, D. Kragic</i>	
<b>FAST HUMAN DETECTION FOR INDOOR MOBILE ROBOTS USING DEPTH IMAGES</b> .....	1108
<i>B. Choi, C. Mericli, J. Biswas, M. Veloso</i>	
<b>GMM-BASED 3D OBJECT REPRESENTATION AND ROBUST TRACKING IN UNCONSTRUCTED DYNAMIC ENVIRONMENTS</b> .....	1114
<i>S. Koo, D. Lee, D. Kwon</i>	
<b>TRACKING-BASED INTERACTIVE SEGMENTATION OF TEXTURELESS OBJECTS</b> .....	1122
<i>K. Hausman, F. Balint-Benczedi, D. Pangercic, Z. Marton, R. Ueda, K. Okada, M. Beetz</i>	
<b>TRACKING DEFORMABLE OBJECTS WITH POINT CLOUDS</b> .....	1130
<i>J. Schulman, A. Lee, J. Ho, P. Abbeel</i>	
<b>PRECISION TRACKING WITH SPARSE 3D AND DENSE COLOR 2D DATA</b> .....	1138
<i>D. Held, J. Levinson, S. Thrun</i>	
<b>JOINT SELF-LOCALIZATION AND TRACKING OF GENERIC OBJECTS IN 3D RANGE DATA</b> .....	1146
<i>F. Moosmann, C. Stiller</i>	
<b>REALIZATION AND USER EVALUATION OF A COMPANION ROBOT FOR PEOPLE WITH MILD COGNITIVE IMPAIRMENTS</b> .....	1153
<i>C. Schroeter, S. Mueller, M. Volkhardt, E. Einhorn</i>	
<b>GESTURE-BASED ROBOT CONTROL WITH VARIABLE AUTONOMY FROM THE JPL BIOSLEEVE</b> .....	1160
<i>M. Wolf, C. Assad, M. Vernacchia, J. Fromm, H. Jethani</i>	

<b>SEPO: SELECTING BY POINTING AS AN INTUITIVE HUMAN-ROBOT COMMAND INTERFACE</b> .....	1166
<i>C. Quintero, R. Fomena, A. Shademan, N. Wolleb, T. Dick, M. Jagersand</i>	
<b>SEMANTIC MANAGEMENT OF HUMAN-ROBOT INTERACTION IN AMBIENT INTELLIGENCE ENVIRONMENTS USING N-ARY ONTOLOGIES</b> .....	1172
<i>N. Ayari, A. Chibani, Y. Amirat</i>	
<b>DYNAMIC STRATEGY SELECTION FOR PHYSICAL ROBOTIC ASSISTANCE IN PARTIALLY KNOWN TASKS</b> .....	1180
<i>J. Medina, M. Lawitzky, A. Molin, S. Hirche</i>	
<b>HIERARCHICAL PROCESSING ARCHITECTURE FOR AN AIR-HOCKEY ROBOT SYSTEM</b> .....	1187
<i>A. Namiki, S. Matsushita, T. Ozeki, K. Nonami</i>	
<b>ON THE COMPUTATIONAL DESIGN OF CONCENTRIC TUBE ROBOTS: INCORPORATING VOLUME-BASED OBJECTIVES</b> .....	1193
<i>J. Burgner, H. Gilbert, R. Webster</i>	
<b>A NOVEL TROCAR-LESS, MULTI-POINT OF VIEW, MAGNETIC ACTUATED LAPAROSCOPE</b> .....	1199
<i>T. Ranzani, M. Silvestri, A. Argiolas, M. Vatteroni, A. Menciassi</i>	
<b>MECHANICAL DESIGN OF A DISTAL SCANNER FOR CONFOCAL MICROLAPAROSCOPE: A CONIC SOLUTION</b> .....	1205
<i>M. Erden, B. Rosa, J. Szewczyk, G. Morel</i>	
<b>INTRODUCING STRAS: A NEW FLEXIBLE ROBOTIC SYSTEM FOR MINIMALLY INVASIVE SURGERY</b> .....	1213
<i>A. Donno, L. Zorn, P. Zanne, F. Nageotte, M. Mathelin</i>	
<b>A NEW ENT MICROSURGERY ROBOT: ERROR ANALYSIS AND IMPLEMENTATION</b> .....	1221
<i>C. He, K. Olds, I. Iordachita, R. Taylor</i>	
<b>TOWARDS CLINICALLY OPTIMIZED MRI-GUIDED SURGICAL MANIPULATOR FOR MINIMALLY INVASIVE PROSTATE PERCUTANEOUS INTERVENTIONS: CONSTRUCTIVE DESIGN</b> .....	1228
<i>S. Eslami, G. Fischer, S. Song, J. Tokuda, N. Hata, C. Tempany, I. Iordachita</i>	
<b>IN-HAND RADIO FREQUENCY IDENTIFICATION (RFID) FOR ROBOTIC MANIPULATION</b> .....	1234
<i>T. Deyle, C. Tralie, M. Reynolds, C. Kemp</i>	
<b>BOOTSTRAPPING NAVIGATION AND PATH PLANNING USING HUMAN POSITIONAL TRACES</b> .....	1242
<i>A. Alempijevic, R. Fitch, N. Kirchner</i>	
<b>REPLACING THE OFFICE INTERN: AN AUTONOMOUS COFFEE RUN WITH A MOBILE MANIPULATOR</b> .....	1248
<i>A. Pratkanis, A. Leeper, K. Salisbury</i>	
<b>AUTOMATED DOORWAY DETECTION FOR ASSISTIVE SHARED-CONTROL WHEELCHAIRS</b> .....	1254
<i>M. Derry, B. Argall</i>	
<b>AUTONOMOUS DIRT DETECTION FOR CLEANING IN OFFICE ENVIRONMENTS</b> .....	1260
<i>R. Bormann, F. Weisshardt, G. Arbeiter, J. Fischer</i>	
<b>LEARNING MANIPULATION ACTIONS FROM A FEW DEMONSTRATIONS</b> .....	1268
<i>N. Abdo, H. Kretzschmar, L. Spinello, C. Stachniss</i>	
<b>PATH OPTIMIZATION FOR ABSTRACTLY REPRESENTED TASKS WITH RESPECT TO EFFICIENT CONTROL</b> .....	1276
<i>S. Petsch, D. Burschka</i>	
<b>FUNCTIONAL OBJECT DESCRIPTORS FOR HUMAN ACTIVITY MODELING</b> .....	1282
<i>A. Pieropan, C. Ek, H. Kjellstrom</i>	
<b>ON THE USE OF PROBABILISTIC RELATIONAL AFFORDANCE MODELS FOR SEQUENTIAL MANIPULATION TASKS IN ROBOTICS</b> .....	1290
<i>B. Moldovan, P. Moreno, M. Otterlo</i>	
<b>ONLINE LEARNING FOR BEHAVIOR SWITCHING IN A SOFT ROBOTIC ARM</b> .....	1296
<i>T. Li, K. Nakajima, R. Pfeifer</i>	
<b>MANIPULATION OF MULTIPLE OBJECTS IN CLOSE PROXIMITY BASED ON VISUAL HIERARCHICAL RELATIONSHIPS</b> .....	1303
<i>K. Nagahama, K. Yamazaki, K. Okada, M. Inaba</i>	
<b>OFF-LINE PATH INTEGRAL REINFORCEMENT LEARNING USING STOCHASTIC ROBOT DYNAMICS APPROXIMATED BY SPARSE PSEUDO-INPUT GAUSSIAN PROCESSES: APPLICATION TO HUMANOID ROBOT MOTOR LEARNING IN THE REAL ENVIRONMENT</b> .....	1311
<i>N. Sugimoto, J. Morimoto</i>	
<b>FEEDBACK ERROR LEARNING FOR RHYTHMIC MOTOR PRIMITIVES</b> .....	1317
<i>N. Gopalan, M. Deisenroth, J. Peters</i>	
<b>SKILL LEARNING USING TEMPORAL AND SPATIAL ENTROPIES FOR ACCURATE SKILL ACQUISITION</b> .....	1323
<i>S. Lee, G. Han, I. Suh, B. You</i>	
<b>LEARNING OBJECTIVE FUNCTIONS FOR MANIPULATION</b> .....	1331
<i>M. Kalakrishnan, P. Pastor, L. Righetti, S. Schaal</i>	
<b>INNOVATIVE DESIGN OF A CLAW-WHEEL TRANSFORMABLE ROBOT</b> .....	1337
<i>J. Chou, L. Yang</i>	
<b>EFFICIENT NEIGHBOURHOOD-BASED INFORMATION GAIN APPROACH FOR EXPLORATION OF COMPLEX 3D ENVIRONMENTS</b> .....	1343
<i>P. Quin, G. Paul, A. Alempijevic, D. Liu, G. Dissanayake</i>	
<b>OMNICLIMBER-II: AN OMNIDIRECTIONAL CLIMBING ROBOT WITH HIGH MANEUVERABILITY AND FLEXIBILITY TO ADAPT TO NON-FLAT SURFACES</b> .....	1349
<i>M. Tavakoli, C. Viegas, L. Marques, J. Pires, A. Almeida</i>	



<b>TOWARDS MANEUVERABILITY IN PLANE WITH A DYNAMIC CLIMBING PLATFORM</b> .....	1355
<i>J. Dickson, J. Patel, J. Clark</i>	
<b>DEVELOPMENT OF A SUCTION CUP WITH A DISC SPRING</b> .....	1362
<i>T. Matsuno, A. Kakogawa, S. Ma</i>	
<b>FLIGHT CONTROLLER DESIGN OF A FLAPPING-WING MAV IN A MAGNETICALLY LEVITATED ENVIRONMENT</b> .....	1368
<i>D. Lee, J. Han</i>	
<b>ESTIMATING ATTITUDE AND WIND VELOCITY USING BIOMIMETIC SENSORS ON A MICROROBOTIC BEE</b> .....	1374
<i>S. Fuller, A. Sands, A. Haggerty, M. Karpelson, R. Wood</i>	
<b>A FLAPPING-WING MICROROBOT WITH A DIFFERENTIAL ANGLE-OF-ATTACK MECHANISM</b> .....	1381
<i>Z. Teoh, R. Wood</i>	
<b>IDENTIFICATION OF FLIGHT AERODYNAMICS FOR FLAPPING-WING MICROROBOTS</b> .....	1389
<i>P. Chirarattananon, R. Wood</i>	
<b>FLAPPING WINGS VIA DIRECT-DRIVING BY DC MOTORS</b> .....	1397
<i>M. Azhar, D. Campolo, G. Lau, L. Hines, M. Sitti</i>	
<b>CAPILLARY SELF-ALIGNMENT ASSISTED HYBRID ROBOTIC HANDLING FOR ULTRA-THIN DIE STACKING</b> .....	1403
<i>V. Liimatainen, M. Kharboutly, D. Rostoucher, M. Gauthier, Q. Zhou</i>	
<b>DEVELOPMENT AND ASSESSMENT OF A NOVEL HYDRAULIC DISPLACEMENT AMPLIFIER FOR PIEZO-ACTUATED LARGE STROKE PRECISION POSITIONING</b> .....	1409
<i>H. Tang, Y. Li, X. Xiao</i>	
<b>DESIGN AND FABRICATION OF A NOVEL COMPLIANT ROTARY NANOPositionING STAGE</b> .....	1415
<i>Q. Xu</i>	
<b>ROBOTIC NANOWIRE HANDLING FOR PROTOTYPIC NEMS DEVICES</b> .....	1421
<i>M. Bartenwerfer, S. Fatikow</i>	
<b>TOWARDS FLEXIBLE, AUTOMATED MICROASSEMBLY WITH CAGING MICROMANIPULATION</b> .....	1427
<i>D. Cappelleri, Z. Fu</i>	
<b>AUTOMATED NANOPROBING UNDER SCANNING ELECTRON MICROSCOPY</b> .....	1433
<i>Z. Gong, B. Chen, J. Liu, Y. Sun</i>	
<b>TOWARDS AUTOMATED OPTOELECTROWETTING ON DIELECTRIC DEVICES FOR MULTI-AXIS DROPLET MANIPULATION</b> .....	1439
<i>V. Shekar, M. Campbell, S. Akella</i>	
<b>HIGH SPEED CLOSED LOOP CONTROL OF A DIELECTROPHORESIS-BASED SYSTEM</b> .....	1446
<i>M. Kharboutly, M. Cauthier</i>	
<b>THREE-DIMENSIONAL, AUTOMATED MAGNETIC BIOMANIPULATION WITH SUBCELLULAR RESOLUTION</b> .....	1452
<i>S. Schurle, M. Sakar, A. Meo, J. Moller, B. Kratochvil, C. Chen, V. Vogel, B. Nelson</i>	
<b>DESIGNING DYNAMICS AND CONTROL OF ISOTROPIC GOUGH-STEWART MICROMANIPULATORS</b> .....	1458
<i>J. McInroy, J. O'Brien, A. Allais</i>	
<b>VISION-BASED TELEOPERATION OF UNMANNED AERIAL AND GROUND VEHICLES</b> .....	1465
<i>C. Ha, D. Lee</i>	
<b>A VISUAL AND FORCE FEEDBACK FOR MULTI-ROBOT TELEOPERATION IN OUTDOOR ENVIRONMENTS: A PRELIMINARY RESULT</b> .....	1471
<i>A. Hong, H. Bulthoff, H. Son</i>	
<b>MODEL-BASED TELEROBOTIC CONTROL WITH VIRTUAL FIXTURES FOR SATELLITE SERVICING TASKS</b> .....	1479
<i>T. Xia, S. Leonard, I. Kandaswamy, A. Blank, L. Whitcomb, P. Kazanzides</i>	
<b>REPRESENTATION OF VEHICLE DYNAMICS IN HAPTIC TELEOPERATION OF AERIAL ROBOTS</b> .....	1485
<i>X. Hou, R. Mahony, F. Schill</i>	
<b>FREQUENCY SEPARATION IN PROJECTION-BASED FORCE REFLECTION ALGORITHMS FOR BILATERAL TELEOPERATORS</b> .....	1492
<i>A. Takhmar, I. Polushin, R. Patel</i>	
<b>A COMPACT DIRECT-DRIVE LINEAR SYNCHRONOUS MOTOR WITH MUSCLE-LIKE PERFORMANCE</b> .....	1498
<i>B. Ruddy, I. Hunter</i>	
<b>COMPUTING WITH A MUSCULAR-HYDROSTAT SYSTEM</b> .....	1504
<i>K. Nakajima, H. Hauser, R. Kang, E. Guglielmino, D. Caldwell, R. Pfeifer</i>	
<b>FAST, STRONG AND COMPLIANT PNEUMATIC ACTUATION FOR DEXTEROUS TENDON-DRIVEN HANDS</b> .....	1512
<i>V. Kumar, Z. Xu, E. Todorov</i>	
<b>THE GEAR MECHANISM WITH PASSIVE ROLLERS: THE INPUT MECHANISM TO DRIVE THE OMNIDIRECTIONAL GEAR AND WORM GEARING</b> .....	1520
<i>R. Tadakuma, K. Tadakuma, M. Takagi, S. Onishi, G. Matsui, K. Ioka, Y. Tsumaki, M. Higashimori, M. Kaneko</i>	
<b>DEVELOPMENT AND CONTROL OF A THREE DOF SPHERICAL INDUCTION MOTOR</b> .....	1528
<i>M. Kumagai, R. Hollis</i>	
<b>COLLABORATIVE LOCALIZATION WITH HETEROGENEOUS INTER-ROBOT MEASUREMENTS BY RIEMANNIAN OPTIMIZATION</b> .....	1534
<i>J. Knuth, P. Barooh</i>	
<b>EFFICIENT AND CONSISTENT VISION-AIDED INERTIAL NAVIGATION USING LINE OBSERVATIONS</b> .....	1540
<i>D. Kottas, S. Roumeliotis</i>	

<b>MOBILE ROBOT LOCALIZATION USING MULTIPLE OBSERVATIONS BASED ON PLACE RECOGNITION AND GPS</b> .....	1548
<i>T. Saito, Y. Kuroda</i>	
<b>SYNTHETIC 2D LIDAR FOR PRECISE VEHICLE LOCALIZATION IN 3D URBAN ENVIRONMENT</b> .....	1554
<i>Z. Chong, B. Qin, T. Bandyopadhyay, M. Ang, E. Frazzoli, D. Rus</i>	
<b>ENHANCED MAGNETIC LOCALIZATION WITH ARTIFICIAL NEURAL NETWORK FIELD MODELS</b> .....	1560
<i>F. Wu, N. Robert, D. Frey, S. Foong</i>	
<b>A NEW "GRASPING BY CAGING" SOLUTION BY USING EIGEN-SHAPES AND SPACE MAPPING</b> .....	1566
<i>W. Wan, R. Fukui, M. Shimosaka, T. Sato, Y. Kuniyoshi</i>	
<b>MEASUREMENT FRAMEWORK OF PARTIAL CAGE QUALITY BASED ON PROBABILISTIC MOTION PLANNING</b> .....	1574
<i>T. Makapunyo, T. Phoka, P. Pipattanasomporn, N. Nipaman, A. Sudsang</i>	
<b>EVALUATION OF GRASP FORCE EFFICIENCY CONSIDERING HAND CONFIGURATION AND USING NOVEL GENERALIZED PENETRATION DISTANCE ALGORITHM</b> .....	1580
<i>Y. Zheng, K. Yamane</i>	
<b>INDEPENDENT CONTACT REGIONS FOR LOCAL FORCE CLOSURE GRASPS</b> .....	1588
<i>H. Kruger, A. Stappen</i>	
<b>A PARALLEL ROBOTS FRAMEWORK TO STUDY PRECISION GRASPING AND DEXTEROUS MANIPULATION</b> .....	1595
<i>J. Borras, A. Dollar</i>	
<b>ANALYSIS OF HUMAN BEHAVIOR RECOGNITION ALGORITHMS BASED ON ACCELERATION DATA</b> .....	1602
<i>B. Bruno, F. Mastrogiovanni, A. Sgorbissa, T. Vernazza, R. Zaccaria</i>	
<b>PREDICTING HUMAN INTENTION IN VISUAL OBSERVATIONS OF HAND/OBJECT INTERACTIONS</b> .....	1608
<i>D. Song, N. Kyriazis, I. Oikonomidis, C. Papazov, A. Argyros, D. Burschka, D. Kragic</i>	
<b>A 3D MOTION TRACKING METHOD BASED ON NONPARAMETRIC BELIEF PROPAGATION</b> .....	1616
<i>G. Simas, R. Bern, S. Botelho</i>	
<b>A 3D-POINT-CLOUD FEATURE FOR HUMAN-POSE ESTIMATION</b> .....	1623
<i>K. Chan, C. Koh, C. Lee</i>	
<b>SYNTHESIZING OBJECT RECEIVING MOTIONS OF HUMANOID ROBOTS WITH HUMAN MOTION DATABASE</b> .....	1629
<i>K. Yamane, M. Revfi, T. Asfour</i>	
<b>VERTICAL VIBRATION SUPPRESSION FOR A POSITION CONTROLLED BIPED ROBOT</b> .....	1637
<i>S. Kajita, F. Asano, M. Morisawa, K. Miura, K. Kaneko, F. Kanehiro, K. Yokoi</i>	
<b>EXPERIMENTALLY-BASED OPTIMIZATION OF CONTACT PARAMETERS IN DYNAMICS SIMULATION OF HUMANOID ROBOTS</b> .....	1643
<i>M. Vivian, M. Reggiani, M. Sartori</i>	
<b>ONLINE LEARNING OF LOW DIMENSIONAL STRATEGIES FOR HIGH-LEVEL PUSH RECOVERY IN BIPEDAL HUMANOID ROBOTS</b> .....	1649
<i>S. Yi, B. Zhang, D. Hong, D. Lee</i>	
<b>WHOLE-BODY MOTION PLANNING FOR MANIPULATION OF ARTICULATED OBJECTS</b> .....	1656
<i>F. Burget, A. Hornug, M. Bennewitz</i>	
<b>IMPRESSION SURVEY OF THE EMOTION EXPRESSION HUMANOID ROBOT WITH MENTAL MODEL BASED DYNAMIC EMOTIONS</b> .....	1663
<i>T. Kishi, T. Kojima, N. Endo, M. Destephe, T. Otani, L. Jamone, P. Kryczka, G. Trovato, K. Hashimoto, S. Cosentino, A. Takanishi</i>	
<b>NEEDLE PATH PLANNING FOR AUTONOMOUS ROBOTIC SURGICAL SUTURING</b> .....	1669
<i>R. Jackson, M. Cavisoglu</i>	
<b>REAL-TIME NEEDLE DETECTION AND TRACKING USING A VISUALLY SERVOED 3D ULTRASOUND PROBE</b> .....	1676
<i>P. Chatelain, A. Krupa, M. Marchal</i>	
<b>ROBOT-ASSISTED LUNG MOTION COMPENSATION DURING NEEDLE INSERTION</b> .....	1682
<i>S. Atashzar, I. Khalaji, M. Shahbazi, A. Talasaz, R. Patel, M. Naish</i>	
<b>REAL-TIME THREE-DIMENSIONAL FLEXIBLE NEEDLE TRACKING USING TWO-DIMENSIONAL ULTRASOUND</b> .....	1688
<i>G. Vrooijink, M. Abayazid, S. Misra</i>	
<b>TISSUE FIXATION BY SUCTION INCREASES THE ACCURACY OF ROBOTIC NEEDLE INSERTION</b> .....	1694
<i>T. Wedlick, D. Lin, A. Okamura</i>	
<b>2D HIGH SPEED FORCE FEEDBACK TELEOPERATION OF OPTICAL TWEEZERS</b> .....	1700
<i>Z. Ni, C. Pacoret, R. Benosman, S. Regnier</i>	
<b>DYNAMICS ANALYSIS AND AUTOMATED CONTROL OF CELL CHEMOTAXIS MOVEMENT USING A ROBOT-AIDED OPTICAL MANIPULATION TOOL</b> .....	1706
<i>X. Gou, H. Yang, X. Yan, Y. Wang, D. Sun</i>	
<b>DEVELOPMENT OF A SPOT PICKER ROBOT FOR PROTEOMICS APPLICATIONS</b> .....	1712
<i>R. Sengar, A. Upadhyay, D. Badodkar, R. Puri, M. Singh, V. Gadre, M. Rajan</i>	
<b>TOWARDS HIGH-SPEED AUTOMATED MICROMANIPULATION</b> .....	1718
<i>E. Avcı, C. Nguyen, K. Ohara, M. Kojima, Y. Mae, T. Arai</i>	
<b>LOCATING END-EFFECTOR TIPS IN AUTOMATED MICROMANIPULATION</b> .....	1724
<i>J. Liu, Z. Gong, K. Tang, Z. Lu, Y. Sun</i>	
<b>DESIGN OF A MICRO-CARTRIDGE SYSTEM FOR THE ROBOTIC ASSEMBLY OF EXCHANGEABLE AFM-PROBE TIPS</b> .....	1730
<i>M. Bartenwerfer, V. Eichhorn, S. Fatikow</i>	

<b>AN OPEN SOURCE AND OPEN HARDWARE EMBEDDED METRIC OPTICAL FLOW CMOS CAMERA FOR INDOOR AND OUTDOOR APPLICATIONS</b> .....	1736
<i>D. Honegger, L. Meier, P. Tanskanen, M. Pollefeys</i>	
<b>LOW-SPEED OPTIC-FLOW SENSOR ONBOARD AN UNMANNED HELICOPTER FLYING OUTSIDE OVER FIELDS</b> .....	1742
<i>G. Sabiron, P. Chavent, T. Raharijaona, P. Fabiani, F. Ruffier</i>	
<b>FIRST RESULTS IN DETECTING AND AVOIDING FRONTAL OBSTACLES FROM A MONOCULAR CAMERA FOR MICRO UNMANNED AERIAL VEHICLES</b> .....	1750
<i>T. Mori, S. Scherer</i>	
<b>VISION-BASED STATE ESTIMATION FOR AUTONOMOUS ROTORCRAFT MAVS IN COMPLEX ENVIRONMENTS</b> .....	1758
<i>S. Shen, Y. Mulgaonkar, N. Michael, V. Kumar</i>	
<b>LEARNING MONOCULAR REACTIVE UAV CONTROL IN CLUTTERED NATURAL ENVIRONMENTS</b> .....	1765
<i>S. Ross, N. Melik-Barkhudarov, K. Shankar, A. Wendel, D. Dey, J. Bagnell, M. Hebert</i>	
<b>INCREMENTAL SMOOTHING VS. FILTERING FOR SENSOR FUSION ON AN INDOOR UAV</b> .....	1773
<i>S. Lange, N. Sunderhauf, P. Protzel</i>	
<b>AUTONOMOUS KNOWLEDGE ACQUISITION BASED ON ACTIVE LEARNING: APPLICATION TO HUMANOID ROBOTS IN INDOOR ENVIRONMENT</b> .....	1779
<i>D. Ramik, C. Sabourin, K. Madani</i>	
<b>PROACTIVE PLANNING USING A HYBRID TEMPORAL INFLUENCE DIAGRAM FOR HUMAN ASSISTIVE ROBOTS</b> .....	1785
<i>W. Kwon, I. Suh</i>	
<b>IMPROVING THE EFFICIENCY OF ONLINE POMDPs BY USING BELIEF SIMILARITY MEASURES</b> .....	1792
<i>J. Ballesteros, L. Merino, M. Trujillo, A. Viguria, A. Ollero</i>	
<b>A HIERARCHICAL APPROACH TO MANIPULATION WITH DIVERSE ACTIONS</b> .....	1799
<i>J. Barry, L. Kaelbling, T. Lozano-Perez</i>	
<b>PLANNING IN CONSTRAINT SPACE: AUTOMATED DESIGN OF FUNCTIONAL STRUCTURES</b> .....	1807
<i>C. Erdogan, M. Stillman</i>	
<b>TOOL-ASSISTED VERIFICATION OF BEHAVIOUR NETWORKS</b> .....	1813
<i>C. Armbrust, L. Kiebusch, T. Ropertz, K. Berns</i>	
<b>FAST TEMPORAL PROJECTION USING ACCURATE PHYSICS-BASED GEOMETRIC REASONING</b> .....	1821
<i>L. Mosenlechner, M. Beetz</i>	
<b>EFFICIENT TOUCH BASED LOCALIZATION THROUGH SUBMODULARITY</b> .....	1828
<i>S. Javdani, M. Klingensmith, J. Bagnell, N. Pollard, S. Srinivasa</i>	
<b>ADAPTIVE AND PREDICTIVE CONTROL OF A MOBILE ROBOTS FLEET: APPLICATION TO OFF-ROAD FORMATION REGULATION</b> .....	1836
<i>P. Cartade, J. Braconnier, R. Lenain, B. Thuilot</i>	
<b>OPTIMIZED TRANSIT PLANNING AND LANDING OF AERIAL ROBOTIC SWARMS</b> .....	1843
<i>T. Dono, T. Chung</i>	
<b>PERCEPTION-DRIVEN MULTI-ROBOT FORMATION CONTROL</b> .....	1851
<i>A. Ahmad, T. Nascimento, A. Conceicao, A. Moreira, P. Lima</i>	
<b>RELATIVE LOCALIZATION AND IDENTIFICATION IN A HETEROGENEOUS MULTI-ROBOT SYSTEM</b> .....	1857
<i>P. Stegagno, M. Cagnetti, L. Rosa, P. Peliti, G. Oriolo</i>	
<b>A SWARM AGGREGATION ALGORITHM BASED ON LOCAL INTERACTION WITH ACTUATOR SATURATIONS AND INTEGRATED OBSTACLE AVOIDANCE</b> .....	1865
<i>A. Leccese, A. Gasparri, A. Priolo, G. Oriolo, G. Ulivi</i>	
<b>COOPERATIVE FORMATION CONTROL OF UNDERACTUATED MARINE VEHICLES FOR TARGET SURVEILLANCE UNDER SENSING AND COMMUNICATION CONSTRAINTS</b> .....	1871
<i>D. Panagou, K. Kyriakopoulos</i>	
<b>COOPERATIVE MULTI-TARGET LOCALIZATION WITH NOISY SENSORS</b> .....	1877
<i>P. Dames, V. Kumar</i>	
<b>MULTI-ROBOT INFORMATION SHARING FOR COMPLEMENTING LIMITED PERCEPTION: A CASE STUDY OF MOVING BALL INTERCEPTION</b> .....	1884
<i>R. Wang, M. Veloso, S. Seshan</i>	
<b>COOPERATIVE COEVOLUTION-BASED MODEL PREDICTIVE CONTROL FOR MULTI-ROBOT FORMATION</b> .....	1890
<i>S. Lee, H. Kim, H. Myung</i>	
<b>DEXTEROUS MANIPULATION OF A RHYTHMIC GYMNASTICS RIBBON WITH CONSTANT, HIGH-SPEED MOTION OF A HIGH-SPEED MANIPULATOR</b> .....	1896
<i>Y. Yamakawa, A. Namiki, M. Ishikawa</i>	
<b>ON THE EFFECT OF STRUCTURAL ELASTICITY ON THE STABILITY AND PERFORMANCE OF PARALLEL MANIPULATORS</b> .....	1902
<i>M. Wahle, B. Corves</i>	
<b>ACTIVE PRELOAD CONTROL OF A REDUNDANTLY ACTUATED STEWART PLATFORM FOR BACKLASH PREVENTION</b> .....	1908
<i>B. Ding, B. Cazzolato, S. Grainger, R. Stanley, J. Costi</i>	
<b>TIME-OPTIMAL PATH FOLLOWING FOR ROBOTS WITH TRAJECTORY JERK CONSTRAINTS USING SEQUENTIAL CONVEX PROGRAMMING</b> .....	1916
<i>F. Debrouwere, W. Loock, G. Pipeleers, Q. Dinh, M. Diehl, J. Schutter, J. Swevers</i>	

<b>MODEL-BASED IMITATION LEARNING BY PROBABILISTIC TRAJECTORY MATCHING</b> .....	1922
<i>P. Englert, A. Paraschos, J. Peters, M. Deisenroth</i>	
<b>RELATIVE TASK PRIORITIZATION FOR DUAL-ARM WITH MULTIPLE, CONFLICTING TASKS: DERIVATION AND EXPERIMENTS</b> .....	1928
<i>J. Lee, P. Chang, R. Jamisola</i>	
<b>PASSIVE VELOCITY FIELD CONTROL FOR CONTOUR TRACKING OF ROBOTS WITH MODEL-FREE CONTROLLER</b> .....	1934
<i>A. Munoz-Vazquez, V. Parra-Vega, A. Sanchez, O. Garcia, F. Ruiz-Sanchez, S. Rosales</i>	
<b>EXTENDING THE ITASC CONSTRAINT-BASED ROBOT TASK SPECIFICATION FRAMEWORK TO TIME-INDEPENDENT TRAJECTORIES AND USER-CONFIGURABLE TASK HORIZONS</b> .....	1941
<i>W. Decre, H. Bruyninckx, J. Schutter</i>	
<b>ROBUST KINEMATIC CONTROL OF MANIPULATOR ROBOTS USING DUAL QUATERNION REPRESENTATION</b> .....	1949
<i>L. Figueredo, B. Adorno, J. Ishihara, G. Borges</i>	
<b>REGRESSOR-FREE TRACKING OF ROBOTS WITH SELF-TUNING PD-LIKE CONTROL</b> .....	1956
<i>J. Armendariz, V. Parra-Vega, R. Garcia-Rodriguez, S. Hirai, S. Rosales, F. Machorro-Fernandez</i>	
<b>ANALYSIS OF MANIPULATOR STRUCTURES UNDER JOINT-FAILURE WITH RESPECT TO EFFICIENT CONTROL IN TASK-SPECIFIC CONTEXTS</b> .....	1963
<i>S. Petsch, D. Burschka</i>	
<b>ROBOT PLACEMENT BASED ON REACHABILITY INVERSION</b> .....	1970
<i>N. Vahrenkamp, T. Asfour, R. Dillmann</i>	
<b>CONTINUOUS KINEMATIC CONTROL WITH TERMINAL ATTRACTORS FOR HANDLING TASK TRANSITIONS OF REDUNDANT ROBOTS</b> .....	1976
<i>G. Jarquin, G. Arechavaleta, V. Parra-Vega</i>	
<b>INVERSE KINEMATICS FOR SHAPE RENDERING INTERFACES</b> .....	1982
<i>S. Klare, A. Peer</i>	
<b>SELF-MOTION ANALYSIS OF EXTENSIBLE CONTINUUM MANIPULATORS</b> .....	1988
<i>A. Kapadia, I. Walker</i>	
<b>A PROBABILISTIC APPROACH FOR MEASURING THE FAULT TOLERANCE OF ROBOTIC MANIPULATORS</b> .....	1995
<i>H. Abdi, A. Maciejewski, S. Nahavandi</i>	
<b>TOPOLOGY-CONSTRAINED FLOCKING IN LOCALLY INTERACTING MOBILE NETWORKS</b> .....	2002
<i>R. Williams, G. Sukhatme</i>	
<b>FAULT-TOLERANCE ASSESSMENT OF A DARWINIAN SWARM EXPLORATION ALGORITHM UNDER COMMUNICATION CONSTRAINTS</b> .....	2008
<i>M. Couceiro, R. Rocha, N. Ferreira</i>	
<b>DECENTRALISED COORDINATION OF MOBILE ROBOTS FOR TARGET TRACKING WITH LEARNT UTILITY MODELS</b> .....	2014
<i>Z. Xu, R. Fitch, S. Sukkarieh</i>	
<b>CONTROL OF NOISY DIFFERENTIAL-DRIVE VEHICLES FROM TIME-BOUNDED TEMPORAL LOGIC SPECIFICATIONS</b> .....	2021
<i>I. Cizelj, C. Belta</i>	
<b>BALANCING AND HOPPING MOTION OF A PLANAR HOPPER WITH ONE ACTUATOR</b> .....	2027
<i>M. Azad, R. Featherstone</i>	
<b>THEORETICAL FOUNDATIONS OF HIGH-SPEED ROBOT TEAM DEPLOYMENT</b> .....	2033
<i>S. Carpin, T. Chung, B. Sadler</i>	
<b>QUANTIFYING ANTHROPOMORPHISM OF ROBOT HANDS</b> .....	2041
<i>M. Liarokapis, P. Artemiadis, K. Kyriakopoulos</i>	
<b>A COMPLIANT HAND BASED ON A NOVEL PNEUMATIC ACTUATOR</b> .....	2047
<i>R. Deimel, O. Brock</i>	
<b>DEVELOPMENT OF FIVE-FINGER MULTI-DOF MYOELECTRIC HANDS WITH A POWER ALLOCATION MECHANISM</b> .....	2054
<i>T. Seki, T. Nakamura, R. Kato, S. Morishita, H. Yokoi</i>	
<b>DESIGN PARAMETERS OF FLEXIBLE GRIPPERS FOR GRASPING</b> .....	2060
<i>A. Vazquez, I. Payo, R. Fernandez, J. Becedas, J. Jimenez</i>	
<b>SIMULATION-BASED TOOLS FOR EVALUATING UNDERACTUATED HAND DESIGNS</b> .....	2067
<i>D. Aukes, M. Cutkosky</i>	
<b>EVALUATION OF GRASP STIFFNESS IN UNDERACTUATED COMPLIANT HANDS</b> .....	2074
<i>M. Malvezzi, D. Prattichizzo</i>	
<b>POSE ESTIMATION USING LOCAL STRUCTURE-SPECIFIC SHAPE AND APPEARANCE CONTEXT</b> .....	2080
<i>A. Buch, D. Krafit, J. Kamarainen, H. Petersen, N. Kruger</i>	
<b>OBJECT DISCOVERY IN 3D SCENES VIA SHAPE ANALYSIS</b> .....	2088
<i>A. Karpathy, S. Miller, L. Fei-Fei</i>	
<b>ATTRIBUTE BASED OBJECT IDENTIFICATION</b> .....	2096
<i>Y. Sun, L. Bo, D. Fox</i>	
<b>MULTIMODAL CUE INTEGRATION THROUGH HYPOTHESES VERIFICATION FOR RGB-D OBJECT RECOGNITION AND 6DOF POSE ESTIMATION</b> .....	2104
<i>A. Aldoma, F. Tombari, J. Prankl, A. Richtsfeld, L. Stefano, M. Vincze</i>	

<b>A FEATURE DESCRIPTOR FOR TEXTURE-LESS OBJECT REPRESENTATION USING 2D AND 3D CUES FROM RGB-D DATA</b> .....	2112
<i>J. Fischer, R. Bormann, G. Arbeiter, A. Verl</i>	
<b>EXPLOITING DOMAIN KNOWLEDGE FOR OBJECT DISCOVERY</b> .....	2118
<i>A. Collet, B. Xiong, C. Gurau, M. Hebert, S. Srinivasa</i>	
<b>ROBOT REALITY - A MOTION CAPTURE SYSTEM THAT MAKES ROBOTS BECOME HUMAN AND VICE VERSA</b> .....	2126
<i>S. Schulz, F. Lier, I. Lutkebohle, S. Wachsmuth</i>	
<b>WHAT YOU DO IS WHO YOU ARE: THE ROLE OF TASK CONTEXT IN PERCEIVED SOCIAL ROBOT PERSONALITY</b> .....	2134
<i>M. Joosse, M. Lohse, J. Perez, V. Evers</i>	
<b>SURGICAL INSTRUMENT HANDLING AND RETRIEVAL IN THE OPERATING ROOM WITH A MULTIMODAL ROBOTIC ASSISTANT</b> .....	2140
<i>M. Jacob, Y. Li, J. Wachs</i>	
<b>ANALYSIS OF TASK-BASED GESTURES IN HUMAN-ROBOT INTERACTION</b> .....	2146
<i>A. Haddadi, E. Croft, B. Gleeson, K. MacLean, J. Alcazar</i>	
<b>ROBOT NAVIGATION IN DENSE HUMAN CROWDS: THE CASE FOR COOPERATION</b> .....	2153
<i>P. Trautman, J. Ma, R. Murray, A. Krause</i>	
<b>HAND AND BODY ASSOCIATION IN CROWDED ENVIRONMENTS FOR HUMAN-ROBOT INTERACTION</b> .....	2161
<i>S. Mckeague, J. Liu, G. Yang</i>	
<b>MUSCLE-REFLEX CONTROL OF ROBUST SWING LEG PLACEMENT</b> .....	2169
<i>R. Desai, H. Geyer</i>	
<b>ANKLEBOT-ASSISTED LOCOMOTOR TRAINING AFTER STROKE: A NOVEL DEFICIT-ADJUSTED CONTROL APPROACH</b> .....	2175
<i>A. Roy, H. Krebs, J. Barton, R. Macko, L. Forrester</i>	
<b>MECHANICAL DESIGN OF A PORTABLE KNEE-ANKLE-FOOT ROBOT</b> .....	2183
<i>H. Yu, M. Cruz, G. Chen, S. Huang, C. Zhu, E. Chew, Y. Ng, N. Thakor</i>	
<b>DESIGN OF A PASSIVE TRANSFEMORAL PROSTHESIS USING DIFFERENTIAL FLATNESS THEORY</b> .....	2189
<i>C. Zhang, S. Agrawal</i>	
<b>TELE-IMPEDANCE BASED STIFFNESS AND MOTION AUGMENTATION FOR A KNEE EXOSKELETON DEVICE</b> .....	2194
<i>N. Karavas, A. Ajoudani, N. Tsagarakis, J. Saglia, A. Bicchi, D. Caldwell</i>	
<b>STABLE HUMAN-ROBOT INTERACTION CONTROL FOR UPPER-LIMB REHABILITATION ROBOTICS</b> .....	2201
<i>J. Zhang, C. Cheah, S. Collins</i>	
<b>3D SCAN REGISTRATION USING THE NORMAL DISTRIBUTIONS TRANSFORM WITH GROUND SEGMENTATION AND POINT CLOUD CLUSTERING</b> .....	2207
<i>A. Das, J. Servos, S. Waslander</i>	
<b>VISAGGE: VISIBLE ANGLE GRID FOR GLASS ENVIRONMENTS - LIDAR MAPPING FOR GLASS, METAL, MIRRORS, AND OTHER NON-DIFFUSE SURFACES</b> .....	2213
<i>P. Foster, Z. Sun, J. Park, B. Kuipers</i>	
<b>EVALUATION OF MAP QUALITY BY MATCHING AND SCORING HIGH-LEVEL, TOPOLOGICAL MAP STRUCTURES</b> .....	2221
<i>S. Schwertfeger, A. Birk</i>	
<b>VISUAL MAPPING USING LEARNED STRUCTURAL PRIORS</b> .....	2227
<i>O. Haines, J. Martinez-Carranza, A. Calway</i>	
<b>NORMAL DISTRIBUTIONS TRANSFORM OCCUPANCY MAPS: APPLICATION TO LARGE-SCALE ONLINE 3D MAPPING</b> .....	2233
<i>J. Saarinen, H. Andreasson, T. Stoyanov, J. Ala-Luhtala, A. Lilienthal</i>	
<b>ROBOT PLANNING WITH A SEMANTIC MAP</b> .....	2239
<i>J. Rogers, H. Christensen</i>	
<b>POISSON-DRIVEN DIRT MAPS FOR EFFICIENT ROBOT CLEANING</b> .....	2245
<i>J. Hess, M. Beinhofer, D. Kuhner, P. Ruchti, W. Burgard</i>	
<b>ROUTE DESCRIPTION INTERPRETATION ON AUTOMATICALLY LABELED ROBOT MAPS</b> .....	2251
<i>C. Landsiedel, R. Nijs, K. Kuhnlenz, D. Wollherr, M. Buss</i>	
<b>ADAPTIVE-FRAME-RATE MONOCULAR VISION AND IMU FUSION FOR ROBUST INDOOR POSITIONING</b> .....	2257
<i>Y. Tian, J. Zhang, J. Tan</i>	
<b>EFFICIENT IMPLEMENTATION FOR BLOCK MATRIX OPERATIONS FOR NONLINEAR LEAST SQUARES PROBLEMS IN ROBOTIC APPLICATIONS</b> .....	2263
<i>L. Polok, M. Solony, V. Ila, P. Smrz, P. Zencik</i>	
<b>PROBABILISTIC APPROACH FOR BUILDING AUDITORY MAPS WITH A MOBILE MICROPHONE ARRAY</b> .....	2270
<i>N. Kallakuri, J. Even, Y. Morales, C. Ishi, N. Hagita</i>	
<b>RGB-D FLOW: DENSE 3-D MOTION ESTIMATION USING COLOR AND DEPTH</b> .....	2276
<i>E. Herbst, X. Ren, D. Fox</i>	
<b>ASCENDING STAIRWAY MODELING FROM DENSE DEPTH IMAGERY FOR TRAVERSABILITY ANALYSIS</b> .....	2283
<i>J. Delmerico, D. Baran, P. David, J. Ryde, J. Corso</i>	

<b>LEARNING DEPTH FROM APPEARANCE FOR FAST ONE-SHOT 3-D MAP INITIALIZATION IN VSLAM SYSTEMS</b> .....	2291
<i>S. Mota-Gutiérrez, J. Hayet, S. Ruiz-Correa, R. Hasimoto-Beltran, C. Zubieta-Rico</i>	
<b>EFFICIENT 3-D SCENE ANALYSIS FROM STREAMING DATA</b> .....	2297
<i>H. Hu, D. Munoz, J. Bagnell, M. Hebert</i>	
<b>FAST VISUAL ODOMETRY AND MAPPING FROM RGB-D DATA</b> .....	2305
<i>I. Dryanovski, R. Valenti, J. Xiao</i>	
<b>3D THERMAL MAPPING OF BUILDING INTERIORS USING AN RGB-D AND THERMAL CAMERA</b> .....	2311
<i>S. Vidas, P. Moghadam, M. Bosse</i>	
<b>COLORIZATION OF 3D GEOMETRIC MODEL UTILIZING LASER REFLECTIVITY</b> .....	2319
<i>S. Oishi, R. Kurazume, Y. Iwashita, T. Hasegawa</i>	
<b>MOBILE BIN PICKING WITH AN ANTHROPOMORPHIC SERVICE ROBOT</b> .....	2327
<i>M. Nieuwenhuisen, D. Droeschel, D. Holz, J. Stuckler, A. Berner, J. Li, R. Klein, S. Behnke</i>	
<b>TOWARDS REAL-WORLD GAS DISTRIBUTION MAPPING AND LEAK LOCALIZATION USING A MOBILE ROBOT WITH 3D AND REMOTE GAS SENSING CAPABILITIES</b> .....	2335
<i>V. Bennetts, A. Lilienthal, A. Khaliq, V. Sese, M. Trincavelli</i>	
<b>SENSORY SUBSTITUTION VIA CUTANEOUS SKIN STRETCH FEEDBACK</b> .....	2341
<i>S. Schorr, Z. Quek, R. Romano, I. Nisky, W. Provancher, A. Okamura</i>	
<b>A HAPTIC SURFACE SCANNING AND MACHINING PARALLEL MANIPULATOR FOR REGISTRATION-FREE BONE RESURFACING DURING ARTHROPLASTY</b> .....	2347
<i>I. Gertler, Y. Shapiro, A. Wolf</i>	
<b>A METHOD FOR CONSTRAINT-BASED SIX DEGREE-OF-FREEDOM HAPTIC INTERACTION WITH STREAMING POINT CLOUDS</b> .....	2353
<i>F. Ryden, H. Chizeck</i>	
<b>REAL-TIME RECONSTRUCTION OF CONTACT SHAPES FOR LARGE AREA ROBOT SKIN</b> .....	2360
<i>L. Muscari, L. Seminara, F. Mastrogiovanni, M. Valle, M. Capurro, G. Cannata</i>	
<b>A SIMPLE AND COMPLIANT FORCE SENSING PALM FOR THE MLAB SIMPLE HAND</b> .....	2367
<i>G. Zeglin, A. Rodriguez, M. Mason</i>	
<b>A NOVEL DESIGN OF A WEARABLE DEVICE FOR MEASURING FORCE AND TORQUE IN VASCULAR SURGERY</b> .....	2374
<i>D. Wang, C. Yang, Y. Zhang, J. Xiao, Y. Dong, T. Wang</i>	
<b>BIMANUAL HAPTIC TELEOPERATION FOR DISCOVERING AND UNCOVERING BURIED OBJECTS</b> .....	2380
<i>H. Tappeiner, R. Klatzky, P. Rowe, J. Pedersen, R. Hollis</i>	
<b>STABLE HAPTIC INTERACTION USING PASSIVE AND ACTIVE ACTUATORS</b> .....	2386
<i>C. Rossa, J. Lozada, A. Micaelli</i>	
<b>BILATERAL HAPTIC TELEOPERATION OF VTOL UAVS</b> .....	2393
<i>S. Omari, M. Hua, G. Ducard, T. Hamel</i>	
<b>TOWARD DYNAMICAL SENSOR MANAGEMENT FOR REACTIVE WALL-FOLLOWING</b> .....	2400
<i>A. De, D. Koditschek</i>	
<b>LAZY TOGGLE PRM: A SINGLE-QUERY APPROACH TO MOTION PLANNING</b> .....	2407
<i>J. Denny, K. Shi, N. Amato</i>	
<b>PLANNING PERIODIC PERSISTENT MONITORING TRAJECTORIES FOR SENSING ROBOTS IN GAUSSIAN RANDOM FIELDS</b> .....	2415
<i>X. Lan, M. Schwager</i>	
<b>USE OF RELAXATION METHODS IN SAMPLING-BASED ALGORITHMS FOR OPTIMAL MOTION PLANNING</b> .....	2421
<i>O. Arslan, P. Tsiotras</i>	
<b>OPTIMAL SAMPLING-BASED PLANNING FOR LINEAR-QUADRATIC KINODYNAMIC SYSTEMS</b> .....	2429
<i>G. Goretkin, A. Perez, R. Platt, G. Konidaris</i>	
<b>RESOLUTION INDEPENDENT DENSITY ESTIMATION FOR MOTION PLANNING IN HIGH-DIMENSIONAL SPACES</b> .....	2437
<i>B. Gipson, M. Moll, L. Kavraki</i>	
<b>ANYTIME INCREMENTAL PLANNING WITH E-GRAPHS</b> .....	2444
<i>M. Phillips, A. Dornbush, S. Chitta, M. Likhachev</i>	
<b>INCREMENTAL MICRO-UAV MOTION PLANNING FOR EXPLORING UNKNOWN ENVIRONMENTS</b> .....	2452
<i>M. Pivtoraiko, D. Mellinger, V. Kumar</i>	
<b>UNBIASED, SCALABLE SAMPLING OF CLOSED KINEMATIC CHAINS</b> .....	2459
<i>Y. Zhang, K. Hauser, J. Luo</i>	
<b>GLOBAL MOTION PLANNING FOR MODULAR ROBOTS WITH LOCAL MOTION PRIMITIVES</b> .....	2465
<i>V. Vonasek, M. Seska, K. Kosnar, L. Preucil</i>	
<b>UNIFIED STATE ESTIMATION FOR A BALLBOT</b> .....	2471
<i>L. Hertig, D. Schindler, M. Bloesch, C. Remy, R. Siegwart</i>	
<b>OPTIMAL CONTROL AND DESIGN GUIDELINES FOR SOFT JUMPING ROBOTS: SERIES ELASTIC ACTUATION AND PARALLEL ELASTIC ACTUATION IN COMPARISON</b> .....	2477
<i>R. Incaimi, L. Sestini, M. Garabini, M. Catalano, G. Grioli, A. Bicchi</i>	
<b>LOAD IDENTIFICATION AND COMPENSATION FOR A CABLE-DRIVEN PARALLEL ROBOT</b> .....	2485
<i>W. Kraus, V. Schmidt, P. Rajendra, A. Pott</i>	
<b>SCREW THEORY BASED-DESIGN AND TRACKING CONTROL OF AN ENDOSCOPIC PARALLEL MANIPULATOR FOR LAPAROSCOPIC SURGERY</b> .....	2491
<i>K. Ibrahim, A. Ramadan, M. Fanni, Y. Kobayashi, A. Abo-Ismael, M. Fujie</i>	

<b>BIOMECHANICAL MODELING OF ABDOMINAL MUSCLE SYSTEM CONSIDERING TENDINOUS INTERSECTION AND ABDOMINAL CAVITY'S COMPRESSIBILITY .....</b>	<b>2497</b>
<i>A. Murai, Y. Nakamura</i>	
<b>MODELING, CHARACTERIZATION AND CONTROL OF ANTAGONISTIC SMA SPRINGS FOR USE IN A NEUROSURGICAL ROBOT .....</b>	<b>2503</b>
<i>M. Ho, J. Desai</i>	
<b>ENERGY-BASED STATE-FEEDBACK CONTROL OF SYSTEMS WITH MECHANICAL OR VIRTUAL SPRINGS .....</b>	<b>2509</b>
<i>I. Mikhailova</i>	
<b>SENSOR PLACEMENT AND SELECTION FOR BEARING SENSORS WITH BOUNDED UNCERTAINTY .....</b>	<b>2515</b>
<i>P. Tokekar, V. Isler</i>	
<b>MULTIROBOT COMMUNICATION NETWORK TOPOLOGY VIA CENTRALIZED PAIRWISE GAMES .....</b>	<b>2521</b>
<i>H. Bayram, H. Bozma</i>	
<b>ENERGY EFFICIENT DATA COLLECTION WITH MOBILE ROBOTS IN HETEROGENEOUS SENSOR NETWORKS .....</b>	<b>2527</b>
<i>J. Goerner, N. Chakraborty, K. Sycara</i>	
<b>SPARE THE MULE, HELP YOUR NEIGHBORS: ROBOT ROUTE PLANNING FOR DATA RETRIEVAL ON LARGE SCALE SENSOR NETWORKS .....</b>	<b>2534</b>
<i>D. Lucani, P. Sijit, J. Sousa</i>	
<b>KINEMATIC BATCH CALIBRATION FOR LEGGED ROBOTS .....</b>	<b>2542</b>
<i>M. Bloesch, M. Hutter, C. Gehring, M. Hoepflinger, R. Siegwart</i>	
<b>COST OF LOCOMOTION OF A DYNAMIC HEXAPEDAL ROBOT .....</b>	<b>2548</b>
<i>D. Zarrouk, R. Fearing</i>	
<b>A REACTIVE CONTROLLER FRAMEWORK FOR QUADRUPEDAL LOCOMOTION ON CHALLENGING TERRAIN .....</b>	<b>2554</b>
<i>V. Barasuol, J. Buchli, C. Semini, M. Frigerio, E. Pieri, D. Caldwell</i>	
<b>PROBABILISTIC VALIDATION OF A STOCHASTIC KINEMATIC MODEL FOR AN EIGHT-LEGGED ROBOT .....</b>	<b>2562</b>
<i>K. Karydis, I. Poulakakis, H. Tanner</i>	
<b>TOWARD A VOCABULARY OF LEGGED LEAPING .....</b>	<b>2568</b>
<i>A. Johnson, D. Koditschek</i>	
<b>THREE DIMENSIONAL INDEPENDENT CONTROL OF MULTIPLE MAGNETIC MICROROBOTS .....</b>	<b>2576</b>
<i>E. Diller, J. Giltinan, P. Jena, M. Sitti</i>	
<b>STAMP-STIFFNESS CALIBRATED MICRO CONTACT PRINTING .....</b>	<b>2582</b>
<i>N. Tanaka, H. Ota, K. Fukumori, M. Yamato, T. Okano</i>	
<b>BONDING METHODS FOR MODULAR MICRO-ROBOTIC ASSEMBLIES .....</b>	<b>2588</b>
<i>E. Diller, N. Zhang, M. Sitti</i>	
<b>3D FABRICATION AND MANIPULATION OF HYBRID NANOROBOTS BY LASER .....</b>	<b>2594</b>
<i>S. Fukada, K. Onda, H. Maruyama, T. Masuda, F. Arai</i>	
<b>TINYTERP: A TINY TERRESTRIAL ROBOTIC PLATFORM WITH MODULAR SENSING .....</b>	<b>2600</b>
<i>A. Sabelhaus, D. Mirsky, L. Hill, N. Martins, S. Bergbreiter</i>	
<b>CANONICAL CORRELATION ANALYSIS FOR MUSCLE SYNERGIES ORGANIZED BY SENSORY-MOTOR INTERACTIONS IN MUSCULOSKELETAL ARM MOVEMENTS .....</b>	<b>2606</b>
<i>H. Suetani, J. Morimoto</i>	
<b>LEARNING TASK ERROR MODELS FOR MANIPULATION .....</b>	<b>2612</b>
<i>P. Pastor, M. Kalakrishnan, J. Binney, J. Kelly, L. Righetti, G. Sukhatme, S. Schaal</i>	
<b>LOCALLY WEIGHTED LEARNING MODEL PREDICTIVE CONTROL FOR NONLINEAR AND TIME VARYING DYNAMICS .....</b>	<b>2619</b>
<i>C. Lehnert, G. Wyeth</i>	
<b>LEARNING SEQUENTIAL MOTOR TASKS .....</b>	<b>2626</b>
<i>C. Daniel, G. Neumann, O. Kroemer, J. Peters</i>	
<b>GAUSSIAN PROCESSES FOR INFORMATIVE EXPLORATION IN REINFORCEMENT LEARNING .....</b>	<b>2633</b>
<i>J. Chung, N. Lawrance, S. Sukkarieh</i>	
<b>FUNCTIONAL ASSESSMENT OF A MULTIGRASP MYOELECTRIC PROSTHESIS: AN AMPUTEE CASE STUDY .....</b>	<b>2640</b>
<i>S. Dalley, D. Bennett, M. Goldfarb</i>	
<b>AN EXPERIMENTAL ROBOTIC TESTBED FOR ACCELERATED DEVELOPMENT OF ANKLE PROSTHESES .....</b>	<b>2645</b>
<i>J. Caputo, S. Collins</i>	
<b>INVESTIGATION OF HUMAN ANKLE MECHANICAL IMPEDANCE DURING LOCOMOTION USING A WEARABLE ANKLE ROBOT .....</b>	<b>2651</b>
<i>H. Lee, N. Hogan</i>	
<b>AN ELECTROMYOGRAM BASED FORCE CONTROL COORDINATED IN ASSISTIVE INTERACTION .....</b>	<b>2657</b>
<i>T. Noda, J. Furukawa, T. Teramae, S. Hyon, J. Morimoto</i>	
<b>ANALYSIS OF INTERACTION BETWEEN THERAPIST AND HEMIPLEGIC PATIENT FOR CONTROL OF LATERAL PELVIC MOTION DURING ROBOTIC GAIT TRAINING .....</b>	<b>2663</b>
<i>T. Watanabe, T. Tono, Y. Nakashima, K. Kawamura, J. Inoue, Y. Kijima, Y. Toyonaga, T. Yuji, Y. Higashi, T. Fujimoto, M. Fujie</i>	
<b>AN APPROACH-PATH INDEPENDENT FRAMEWORK FOR PLACE RECOGNITION AND MOBILE ROBOT LOCALIZATION IN INTERIOR HALLWAYS .....</b>	<b>2669</b>
<i>K. Yousef, J. Park, A. Kak</i>	

<b>PLACE RECOGNITION USING KEYPOINT VOTING IN LARGE 3D LIDAR DATASETS</b> .....	2677
<i>M. Bosse, R. Zlot</i>	
<b>UNSUPERVISED 3D CATEGORY DISCOVERY AND POINT LABELING FROM A LARGE URBAN ENVIRONMENT</b> .....	2685
<i>Q. Zhang, X. Song, X. Shao, H. Zhao, R. Shibasaki</i>	
<b>GEOMETRICAL FLIRT PHRASES FOR LARGE SCALE PLACE RECOGNITION IN 2D RANGE DATA</b> .....	2693
<i>G. Tipaldi, L. Spinello, W. Burgard</i>	
<b>UNSUPERVISED ENVIRONMENT RECOGNITION AND MODELING USING SOUND SENSING</b> .....	2699
<i>A. Kalmbach, Y. Girdhar, G. Dudek</i>	
<b>A TWO-LAYER PROBABILISTIC MODEL BASED ON TIME-DELAY COMPENSATION FOR BINAURAL SOUND LOCALIZATION</b> .....	2705
<i>H. Liu, Z. Fu, X. Li</i>	
<b>AN ICP INSPIRED INVERSE SENSOR MODEL WITH UNKNOWN DATA ASSOCIATION</b> .....	2713
<i>P. Anderson, Y. Hunter, B. Hengst</i>	
<b>FAST PLACE RECOGNITION WITH PLANE-BASED MAPS</b> .....	2719
<i>E. Fernandez-Moral, W. Mayol-Cuevas, V. Arevalo, J. Gonzalez-Jimenez</i>	
<b>FEATURE-BASED MAP MERGING WITH DYNAMIC CONSENSUS ON INFORMATION INCREMENTS</b> .....	2725
<i>R. Aragues, C. Sagues, Y. Mezouar</i>	
<b>DYNAMIC SCENE MODELS FOR INCREMENTAL, LONG-TERM, APPEARANCE-BASED LOCALISATION</b> .....	2731
<i>E. Johns, G. Yang</i>	
<b>A MODULAR, OPEN-SOURCE 3D PRINTED UNDERACTUATED HAND</b> .....	2737
<i>R. Ma, L. Odhner, A. Dollar</i>	
<b>IMPLEMENTATION AND CONTROL OF THE VELVET FINGERS: A DEXTEROUS GRIPPER WITH ACTIVE SURFACES</b> .....	2744
<i>V. Tincani, G. Grioli, M. Catalano, M. Garabini, S. Grechi, G. Fantoni, A. Bicchi</i>	
<b>KINETIC AND DIMENSIONAL OPTIMIZATION FOR A TENDON-DRIVEN GRIPPER</b> .....	2751
<i>M. Ciocarlie, F. Hicks, S. Stanford</i>	
<b>DEVELOPMENT OF ANTHROPOMORPHIC ROBOT HAND WITH DUAL-MODE TWISTING ACTUATION AND ELECTROMAGNETIC JOINT LOCKING MECHANISM</b> .....	2759
<i>Y. Shin, K. Rew, K. Kim, S. Kim</i>	
<b>AN OPTICAL JOINT POSITION SENSOR FOR ANTHROPOMORPHIC ROBOT HANDS</b> .....	2765
<i>G. Palli, S. Pirozzi</i>	
<b>AUTOMATED STABLE GRASPING WITH TWO-FINGERED MICROHAND USING MICRO FORCE SENSOR</b> .....	2771
<i>H. Yabugaki, K. Ohara, M. Kojima, Y. Mae, T. Tanikawa, T. Arai</i>	
<b>FABRICATION OF THERMORESPONSIVE GEL BLOCKS USING HYSTERESIS TOWARDS CELL ASSEMBLY</b> .....	2777
<i>M. Takeuchi, M. Nakajima, H. Tajima, T. Fukuda</i>	
<b>DISPENSING OF MONO-DISPERSED MICRO-BUBBLES FOR CELL ABLATION</b> .....	2783
<i>H. Kuriki, Y. Yamanishi, S. Sakuma, S. Akagi, F. Arai</i>	
<b>AUTOMATED INDIRECT MANIPULATION OF IRREGULAR SHAPED CELLS WITH OPTICAL TWEEZERS FOR STUDYING COLLECTIVE CELL MIGRATION</b> .....	2789
<i>S. Chowdhury, A. Thakur, C. Wang, P. Svec, W. Losert, S. Gupta</i>	
<b>AUTOMATED LASER-INDUCED CELL FUSION BASED ON MICROWELL ARRAY</b> .....	2795
<i>X. Wang, S. Chen, C. Kong, R. Li, D. Sun</i>	
<b>DYNAMICS CALIBRATION OF OPTICALLY TRAPPED CELLS WITH ADAPTIVE CONTROL TECHNOLOGY</b> .....	2801
<i>H. Chen, C. Wang, D. Sun</i>	
<b>OBSERVABILITY OF CELL STIFFNESS IN MICRO-CHANNEL METHOD</b> .....	2807
<i>C. Tsai, M. Kaneko, S. Sakuma, F. Arai</i>	
<b>MANIPULATION-BASED ACTIVE SEARCH FOR OCCLUDED OBJECTS</b> .....	2814
<i>L. Wong, L. Kaelbling, T. Lozano-Perez</i>	
<b>SPARSE TANGENTIAL NETWORK (SPARTAN): MOTION PLANNING FOR MICRO AERIAL VEHICLES</b> .....	2820
<i>H. Cover, S. Choudhury, S. Scherer, S. Singh</i>	
<b>VARIABLE STRUCTURE BACKSTEPPING CONTROL VIA A HIERARCHICAL MANIFOLD SET FOR GRACEFUL GROUND VEHICLE PATH FOLLOWING</b> .....	2826
<i>M. Xin, M. Minor</i>	
<b>COLLISION AVOIDANCE FOR MULTIPLE AGENTS WITH JOINT UTILITY MAXIMIZATION</b> .....	2833
<i>J. Alonso-Mora, M. Rufli, R. Siegwart, P. Beardsley</i>	
<b>MESO-SCALE PLANNING FOR MULTI-AGENT NAVIGATION</b> .....	2839
<i>L. He, J. Berg</i>	
<b>MULTI-MODAL ESTIMATION WITH KERNEL EMBEDDINGS FOR LEARNING MOTION MODELS</b> .....	2845
<i>L. McCalman, S. O'Callaghan, F. Ramos</i>	
<b>PLANNING HOW TO LEARN</b> .....	2853
<i>H. Bai, D. Hsu, W. Lee</i>	
<b>MOTION PLANNING IN OBSERVATIONS SPACE WITH LEARNED DIFFEOMORPHISM MODELS</b> .....	2860
<i>A. Censi, A. Nilsson, R. Murray</i>	
<b>OPTIMIZING MOTION PRIMITIVES TO MAKE SYMBOLIC MODELS MORE PREDICTIVE</b> .....	2868
<i>A. Orthey, M. Toussaint, N. Jetchev</i>	



<b>A ROBUST INTEGRATED SYSTEM FOR SELECTING AND COMMANDING MULTIPLE MOBILE ROBOTS</b> .....	2874
<i>S. Pourmehr, V. Monajjemi, J. Wawerla, R. Vaughan, G. Mori</i>	
<b>GENERALIZED LASER THREE-POINT ALGORITHM FOR MOTION ESTIMATION OF CAMERA-LASER FUSION SYSTEM</b> .....	2880
<i>Y. Bok, D. Choi, I. Kweon</i>	
<b>BUNDLE ADJUSTMENT USING SINGLE-TRACK VEHICLE MODEL</b> .....	2888
<i>J. Nilsson, J. Fredriksson, A. Odblom</i>	
<b>IMU-ASSISTED MONOCULAR VISUAL ODOMETRY INCLUDING THE HUMAN WALKING MODEL FOR WEARABLE APPLICATIONS</b> .....	2894
<i>J. Hu, C. Tseng, M. Chen, K. Sun</i>	
<b>VEHICLE TRACKING USING ULTRASONIC SENSORS &amp; JOINED PARTICLE WEIGHTING</b> .....	2900
<i>P. Kohler, C. Connette, A. Verl</i>	
<b>BRAIN-INSPIRED SENSOR FUSION FOR NAVIGATING ROBOTS</b> .....	2906
<i>M. Milford, A. Jacobson</i>	
<b>DYNAMIC PARAMETER IDENTIFICATION OF A 6 DOF INDUSTRIAL ROBOT USING POWER MODEL</b> .....	2914
<i>M. Gautier, S. Briot</i>	
<b>WORKPIECE PLACEMENT OPTIMIZATION FOR MACHINING OPERATIONS WITH A KUKA KR270-2 ROBOT</b> .....	2921
<i>S. Caro, C. Dumas, S. Garnier, B. Furet</i>	
<b>FORCE AND TRAJECTORY CONTROL OF INDUSTRIAL ROBOTS IN STIFF CONTACT</b> .....	2927
<i>F. Lange, W. Bertleff, M. Suppa</i>	
<b>IMU-RGBD CAMERA 3D POSE ESTIMATION AND EXTRINSIC CALIBRATION: OBSERVABILITY ANALYSIS AND CONSISTENCY IMPROVEMENT</b> .....	2935
<i>C. Guo, S. Roumeliotis</i>	
<b>AN ANALYTICAL LEAST-SQUARES SOLUTION TO THE LINE SCAN LIDAR-CAMERA EXTRINSIC CALIBRATION PROBLEM</b> .....	2943
<i>C. Guo, S. Roumeliotis</i>	
<b>DYNAMIC IDENTIFICATION OF FLEXIBLE JOINT MANIPULATORS WITH AN EFFICIENT CLOSED LOOP OUTPUT ERROR METHOD BASED ON MOTOR TORQUE OUTPUT DATA</b> .....	2949
<i>M. Gautier, A. Jubien, A. Janot, P. Robert</i>	
<b>A DURBIN-WU-HAUSMAN TEST FOR INDUSTRIAL ROBOTS IDENTIFICATION</b> .....	2956
<i>A. Janot, P. Vandanjon, M. Gautier</i>	
<b>PRELIMINARY EXPERIMENTS IN COMPARATIVE EXPERIMENTAL IDENTIFICATION OF SIX DEGREE-OF-FREEDOM COUPLED DYNAMIC PLANT MODELS FOR UNDERWATER ROBOT VEHICLES</b> .....	2962
<i>S. Martin, L. Whitcomb</i>	
<b>SYSTEM IDENTIFICATION AND CONTROL OF A SMALL-SCALE PARAMOTOR</b> .....	2970
<i>J. Umenberger, A. Goktogan</i>	
<b>GUARANTEED SEARCH WITH LARGE TEAMS OF UNMANNED AERIAL VEHICLES</b> .....	2977
<i>A. Kleiner, A. Kolling</i>	
<b>SERENDIPITY RENDEZVOUS AS A MITIGATION OF EXPLORATION'S INTERRUPTIBILITY FOR A TEAM OF ROBOTS</b> .....	2984
<i>H. Hourani, E. Hauck, S. Jeschke</i>	
<b>MULTI-ROBOT TASK SCHEDULING</b> .....	2992
<i>Y. Zhang, L. Parker</i>	
<b>IMPROVING THE PERFORMANCE OF MULTI-ROBOT SYSTEMS BY TASK SWITCHING</b> .....	2999
<i>C. Sung, N. Ayanian, D. Rus</i>	
<b>DISTRIBUTED ALGORITHM DESIGN FOR MULTI-ROBOT TASK ASSIGNMENT WITH DEADLINES FOR TASKS</b> .....	3007
<i>L. Luo, N. Chakraborty, K. Sycara</i>	
<b>FAIR SUBDIVISION OF MULTI-ROBOT TASKS</b> .....	3014
<i>J. Higuera, G. Dudek</i>	
<b>ACTIVE TOUCH FOR ROBOT PERCEPTION UNDER POSITION UNCERTAINTY</b> .....	3020
<i>N. Lepora, U. Martinez-Hernandez, T. Prescott</i>	
<b>FINGERNAIL IMAGE REGISTRATION USING ACTIVE APPEARANCE MODELS</b> .....	3026
<i>T. Grieve, J. Hollerbach, S. Mascaro</i>	
<b>TORQUE ESTIMATION TECHNIQUE OF ROBOTIC JOINT WITH HARMONIC DRIVE TRANSMISSION</b> .....	3034
<i>H. Zhang, S. Ahmad, G. Liu</i>	
<b>A PROBABILISTIC FRAMEWORK FOR TASK-ORIENTED GRASP STABILITY ASSESSMENT</b> .....	3040
<i>Y. Bekiroglu, D. Song, L. Wang, D. Kragic</i>	
<b>USING ROBOTIC EXPLORATORY PROCEDURES TO LEARN THE MEANING OF HAPTIC ADJECTIVES</b> .....	3048
<i>V. Chu, I. McMahon, L. Riano, C. McDonald, Q. He, J. Perez-Tejada, M. Arrigo, N. Fitter, J. Nappo, T. Darrell, K. Kuchenbecker</i>	
<b>TACTILE IDENTIFICATION OF OBJECTS USING BAYESIAN EXPLORATION</b> .....	3056
<i>D. Xu, G. Loeb, J. Fishel</i>	
<b>MODELING NONCONVEX WORKSPACE CONSTRAINTS FROM DIVERSE DEMONSTRATIONS SETS FOR CONSTRAINED MANIPULATOR VISUAL SERVOING</b> .....	3062
<i>A. Chan, E. Croft, J. Little</i>	
<b>AVOIDING MOVING OBSTACLES DURING VISUAL NAVIGATION</b> .....	3069
<i>A. Cherubini, B. Grechanichenko, F. Spindler, F. Chaumette</i>	

<b>OVERCOMING UNKNOWN OCCLUSIONS IN EYE-IN-HAND VISUAL SEARCH.....</b>	<b>3075</b>
<i>S. Radmard, D. Meger, E. Croft, J. Little</i>	
<b>IMPROVING IMAGE-BASED VISUAL SERVOING WITH REFERENCE FEATURES FILTERING.....</b>	<b>3083</b>
<i>J. Solanes, L. Armesto, J. Tornero, V. Girbes</i>	
<b>CLOSED-LOOP UNCERTAINTY MODELING FOR VISUAL SERVOING.....</b>	<b>3089</b>
<i>A. Assa, F. Janabi-Sharifi</i>	
<b>VISION-BASED PATH FOLLOWING USING THE 1D TRIFOCAL TENSOR.....</b>	<b>3095</b>
<i>D. Sabatta, R. Siegwart</i>	
<b>GENERATION OF DYNAMIC HUMANOID BEHAVIORS THROUGH TASK-SPACE CONTROL WITH CONIC OPTIMIZATION.....</b>	<b>3103</b>
<i>P. Wensing, D. Orin</i>	
<b>REACTIVE STEPPING STRATEGIES FOR BIPEDAL WALKING BASED ON NEUTRAL POINT AND BOUNDARY CONDITION OPTIMIZATION.....</b>	<b>3110</b>
<i>C. Santacruz, Y. Nakamura</i>	
<b>L2-GAIN OPTIMIZATION FOR ROBUST BIPEDAL WALKING ON UNKNOWN TERRAIN.....</b>	<b>3116</b>
<i>H. Dai, R. Tedrake</i>	
<b>ENERGY-BASED OPTIMAL STEP PLANNING FOR HUMANOIDS.....</b>	<b>3124</b>
<i>W. Huang, J. Kim, C. Atkeson</i>	
<b>MULTI-OBJECTIVE PARAMETER CPG OPTIMIZATION FOR GAIT GENERATION OF A BIPED ROBOT.....</b>	<b>3130</b>
<i>M. Oliveira, V. Matos, C. Santos, L. Costa</i>	
<b>OPTIMAL MOTION PLANNING FOR HUMANOID ROBOTS.....</b>	<b>3136</b>
<i>A. Khoury, F. Lamiroux, M. Taix</i>	
<b>SLIDING MODE BASED ATTITUDE ESTIMATION FOR ACCELERATED AERIAL VEHICLES USING GPS/IMU MEASUREMENTS.....</b>	<b>3142</b>
<i>I. Ahmad, A. Benallegue, A. Hadri</i>	
<b>VISUAL-INERTIAL FUSION FOR QUADROTOR MICRO AIR VEHICLES WITH IMPROVED SCALE OBSERVABILITY.....</b>	<b>3148</b>
<i>D. Abeywardena, Z. Wang, S. Kodagoda, G. Dissanayake</i>	
<b>SENSOR DATA FUSION IN UWB-SUPPORTED INERTIAL NAVIGATION SYSTEMS FOR INDOOR NAVIGATION.....</b>	<b>3154</b>
<i>L. Zwirello, X. Li, T. Zwick, C. Ascher, S. Werling, G. Trommer</i>	
<b>CELLO: A FAST ALGORITHM FOR COVARIANCE ESTIMATION.....</b>	<b>3160</b>
<i>W. Vega-Brown, A. Bachrach, A. Bry, J. Kelly, N. Roy</i>	
<b>ANALYTICALLY-GUIDED-SAMPLING PARTICLE FILTER APPLIED TO RANGE-ONLY TARGET TRACKING.....</b>	<b>3168</b>
<i>G. Huang, S. Roumeliotis</i>	
<b>MODELING AND FUSING NEGATIVE INFORMATION FOR DYNAMIC EXTENDED MULTI-OBJECT TRACKING.....</b>	<b>3176</b>
<i>K. Wyffels, M. Campbell</i>	
<b>OCCUPANCY GRID MAPPING WITH MARKOV CHAIN MONTE CARLO GIBBS SAMPLING.....</b>	<b>3183</b>
<i>R. Merali, T. Barfoot</i>	
<b>VISION-BASED CORRIDOR NAVIGATION FOR HUMANOID ROBOTS.....</b>	<b>3190</b>
<i>A. Faragasso, G. Oriolo, A. Paolillo, M. Vendittelli</i>	
<b>PERCEPTION-DRIVEN NAVIGATION: ACTIVE VISUAL SLAM FOR ROBOTIC AREA COVERAGE.....</b>	<b>3196</b>
<i>A. Kim, R. Eustice</i>	
<b>FOUR PATH FOLLOWING CONTROLLERS FOR RHOMBIC LIKE VEHICLES.....</b>	<b>3204</b>
<i>N. Silva, L. Baglivo, A. Vale, M. Cecco</i>	
<b>FEATURE CO-OCCURRENCE MAPS: APPEARANCE-BASED LOCALISATION THROUGHOUT THE DAY.....</b>	<b>3212</b>
<i>E. Johns, G. Yang</i>	
<b>USING MONOCULAR VISUAL SLAM TO MANUALLY CONVOY A FLEET OF AUTOMATIC URBAN VEHICLES.....</b>	<b>3219</b>
<i>P. Avanzini, E. Royer, B. Thuilot, J. Derutin</i>	
<b>A NAVIGATION SYSTEM FOR ROBOTS OPERATING IN CROWDED URBAN ENVIRONMENTS.....</b>	<b>3225</b>
<i>R. Kummerle, M. Ruhnke, B. Steder, C. Stachniss, W. Burgard</i>	
<b>TOWARD THE DESIGN AND ANALYSIS OF BLIND, BOUNCING ROBOTS.....</b>	<b>3233</b>
<i>L. Erickson, S. LaValle</i>	
<b>IN-HAND ROLLING MOTION PLANNING USING INDEPENDENT CONTACT REGION (ICR) WITH GUARANTEED GRASP QUALITY MARGIN.....</b>	<b>3239</b>
<i>H. Jeong, J. Cheong</i>	
<b>EFFICIENT BIN-PICKING AND GRASP PLANNING BASED ON DEPTH DATA.....</b>	<b>3245</b>
<i>D. Buchholz, M. Fütterlieb, S. Winkelbach, F. Wahl</i>	
<b>DYNAMIC NONPREHENSILE SHAPING OF A DEFORMABLE OBJECT BY USING ITS GAIT-LIKE BEHAVIORS.....</b>	<b>3251</b>
<i>M. Higashimori, T. Inahara, M. Kaneko</i>	
<b>INTERACTIVE NON-PREHENSILE MANIPULATION FOR GRASPING VIA POMDPS.....</b>	<b>3257</b>
<i>M. Horowitz, J. Burdick</i>	
<b>FAST GRASP PLANNING BY USING CORD GEOMETRY TO FIND GRASPING POINTS.....</b>	<b>3265</b>
<i>Y. Li, J. Saut, J. Pettre, A. Sahbani, P. Bidaud, F. Multon</i>	

<b>ROBUST ROBOTIC GRASPING USING IR NET-STRUCTURE PROXIMITY SENSOR TO HANDLE OBJECTS WITH UNKNOWN POSITION AND ATTITUDE</b> .....	3271
<i>S. Ye, K. Suzuki, Y. Suzuki, M. Ishikawa, M. Shimojo</i>	
<b>ANIMAL-INSPIRED DESIGN AND AERODYNAMIC STABILIZATION OF A HEXAPEDAL MILLIROBOT</b> .....	3279
<i>D. Haldane, K. Peterson, F. Bermudez, R. Fearing</i>	
<b>CONTROL OF DYNAMIC GAITS FOR A QUADRUPEDAL ROBOT</b> .....	3287
<i>C. Gehring, S. Coros, M. Hutter, M. Bloesch, M. Hoepflinger, R. Siegwart</i>	
<b>UNSUPERVISED IDENTIFICATION AND PREDICTION OF FOOHOLD ROBUSTNESS</b> .....	3293
<i>M. Hoepflinger, M. Hutter, C. Gehring, M. Bloesch, R. Siegwart</i>	
<b>PRECISE DYNAMIC TURNING OF A 10 CM LEGGED ROBOT ON A LOW FRICTION SURFACE USING A TAIL</b> .....	3299
<i>N. Kohut, A. Pullin, D. Haldane, D. Zarrouk, R. Fearing</i>	
<b>DESIGN PRINCIPLES FOR HIGHLY EFFICIENT QUADRUPEDS AND IMPLEMENTATION ON THE MIT CHEETAH ROBOT</b> .....	3307
<i>S. Seok, A. Wang, M. Chuah, D. Otten, J. Lang, S. Kim</i>	
<b>ACTIVELY-COMPLIANT LOCOMOTION CONTROL ON ROUGH TERRAIN: CYCLIC JUMPING AND TROTTLING EXPERIMENTS ON A STIFF-BY-NATURE QUADRUPED</b> .....	3313
<i>B. Ugurlu, K. Kotaka, T. Narikiyo</i>	
<b>CENTRAL PATTERN GENERATORS AUGMENTED WITH VIRTUAL MODEL CONTROL FOR QUADRUPED ROUGH TERRAIN LOCOMOTION</b> .....	3321
<i>M. Ajalloeian, S. Pouya, A. Sproewitz, A. Ijspeert</i>	
<b>BENEFITS OF AN ACTIVE SPINE SUPPORTED BOUNDING LOCOMOTION WITH A SMALL COMPLIANT QUADRUPED ROBOT</b> .....	3329
<i>M. Khoramshahi, A. Sprowitz, A. Tuleu, M. Ahmadabadi, A. Ijspeert</i>	
<b>RUNNING IN THE HORIZONTAL PLANE WITH A MULTI-MODAL DYNAMICAL ROBOT</b> .....	3335
<i>B. Miller, J. Clark, A. Darnell</i>	
<b>ENERGY REQUIREMENTS OF AN INCHWORM CRAWLING ON A FLEXIBLE SURFACE AND COMPARISON TO AN EARTHWORM</b> .....	3342
<i>D. Zarrouk, M. Shoham</i>	
<b>ANALYSIS OF DYNAMIC BIPEDAL ROBOT WALKING WITH STICK-SLIP TRANSITIONS</b> .....	3348
<i>B. Gamus, Y. Or</i>	
<b>A ROBOTIC EXOSKELETON FOR OVERGROUND GAIT REHABILITATION</b> .....	3356
<i>M. Bortole, A. Ama, E. Rocon, J. Moreno, F. Brunetti, J. Pons</i>	
<b>A LIGHTWEIGHT SOFT EXOSUIT FOR GAIT ASSISTANCE</b> .....	3362
<i>M. Wehner, B. Quinlivan, P. Aubin, E. Martinez-Villalpando, M. Baumann, L. Stirling, K. Holt, R. Wood, C. Walsh</i>	
<b>ERGONOMIC DESIGN OF A WRIST EXOSKELETON AND ITS EFFECTS ON NATURAL MOTOR STRATEGIES DURING REDUNDANT TASKS</b> .....	3370
<i>M. Esmaeili, W. Dailey, E. Burdet, D. Campolo</i>	
<b>A FUZZY LOGIC BASED TERRAIN IDENTIFICATION APPROACH TO PROSTHESIS CONTROL USING MULTI-SENSOR FUSION</b> .....	3376
<i>K. Yuan, S. Sun, Z. Wang, Q. Wang, L. Wang</i>	
<b>A MULTI-VIEW CAMERA-PROJECTOR SYSTEM FOR OBJECT DETECTION AND ROBOT-HUMAN FEEDBACK</b> .....	3382
<i>J. Shen, J. Jin, N. Gans</i>	
<b>ADAPTIVE NEURAL OSCILLATORS WITH SYNAPTIC PLASTICITY FOR LOCOMOTION CONTROL OF A SNAKE-LIKE ROBOT WITH SCREW-DRIVE MECHANISM</b> .....	3389
<i>T. Nachstedt, F. Worgotter, P. Manoopong</i>	
<b>BMI-BASED LEARNING SYSTEM FOR APPLIANCE CONTROL AUTOMATION</b> .....	3396
<i>C. Penaloza, Y. Mae, K. Ohara, T. Arai</i>	
<b>THOUGHT-CONTROLLED ROBOTS - SYSTEMS, STUDIES AND FUTURE CHALLENGES</b> .....	3403
<i>A. Finke, N. Hachmeister, H. Riechmann, H. Ritter</i>	
<b>LAPPA: A NEW TYPE OF ROBOT FOR UNDERWATER NON-MAGNETIC AND COMPLEX HULL CLEANING</b> .....	3409
<i>D. Souto, A. Faina, F. Lopez-Pena, R. Duro</i>	
<b>A BALL-SHAPED UNDERWATER ROBOT FOR DIRECT INSPECTION OF NUCLEAR REACTORS AND OTHER WATER-FILLED INFRASTRUCTURE</b> .....	3415
<i>A. Mazumdar, A. Fittery, W. Ubellacker, H. Asada</i>	
<b>DEVELOPING AN UNDERWATER GLIDER FOR EDUCATIONAL PURPOSES</b> .....	3423
<i>B. Mitchell, E. Wilkening, N. Nahmoudian</i>	
<b>MODELING OF THE OSCILLATING-PADDLING GAIT FOR AN EPADDLE LOCOMOTION MECHANISM</b> .....	3429
<i>H. Pu, Y. Sun, Y. Yang, S. Ma, Z. Gong</i>	
<b>AN INVESTIGATION ON THE ACCURACY OF REGIONAL OCEAN MODELS THROUGH FIELD TRIALS</b> .....	3436
<i>R. Smith, J. Kelly, K. Nazarzadeh, G. Sukhatme</i>	
<b>FAULT DETECTION ALGORITHM FOR EXTERNAL THREAD FASTENING BY ROBOTIC MANIPULATOR USING LINEAR SUPPORT VECTOR MACHINE CLASSIFIER</b> .....	3443
<i>T. Matsuno, J. Huang, T. Fukuda</i>	
<b>AUTOMATION OF TYING TASK ON TIE-DYEING OF TRADITIONAL CRAFT BY ROBOTS</b> .....	3451
<i>K. Nishibori</i>	
<b>ROBOTIC MECHANISM FOR SOIL PENETRATION INSPIRED BY PLANT ROOTS</b> .....	3457
<i>A. Sadeghi, A. Tonazzini, L. Popova, B. Mazzolai</i>	

<b>ADAPTIVE SENSING OF TIME SERIES WITH APPLICATION TO REMOTE EXPLORATION .....</b>	<b>3463</b>
<i>D. Thompson, N. Cabrol, M. Furlong, C. Hardgrove, B. Low, J. Moersch, D. Wettergreen</i>	
<b>ON THE USE OF THE USE OF PERCUSSION FOR SPACE MANIPULATORS DURING IMPACTS .....</b>	<b>3469</b>
<i>I. Paraskevas, E. Papadopoulos</i>	
<b>TRAVERSABILITY ESTIMATION FOR A PLANETARY ROVER VIA EXPERIMENTAL KERNEL LEARNING IN A GAUSSIAN PROCESS FRAMEWORK.....</b>	<b>3475</b>
<i>K. Ho, T. Peynot, S. Sukkarieh</i>	
<b>STEERABILITY OF ARTICULATED MULTI-TRACKED VEHICLES BY FLEXED POSTURE MOVING ON SLIPPERY SURFACE .....</b>	<b>3483</b>
<i>T. Kinugasa, K. Yoshida, H. Amano, M. Iribe</i>	
<b>PLANNING WITH PROCESS ALGEBRAIC CONSTRAINTS: APPLICATION TO MULTI-VEHICLE ROUTING PROBLEM.....</b>	<b>3489</b>
<i>N. Trcka, A. Surana</i>	
<b>A GRAPH-BASED APPROACH TO MULTI-ROBOT RENDEZVOUS FOR RECHARGING IN PERSISTENT TASKS .....</b>	<b>3497</b>
<i>N. Mathew, S. Smith, S. Waslander</i>	
<b>THE AUTONOMOUS RECHARGING PROBLEM: FORMULATION AND A MARKET-BASED SOLUTION.....</b>	<b>3503</b>
<i>B. Kannan, V. Marmol, J. Bourne, M. Dias</i>	
<b>DECENTRALIZED CENTROID AND FORMATION CONTROL FOR MULTI-ROBOT SYSTEMS.....</b>	<b>3511</b>
<i>G. Antonelli, F. Arrichiello, F. Caccavale, A. Marino</i>	
<b>MODEL-PREDICTIVE TARGET DEFENSE BY TEAM OF UNMANNED SURFACE VEHICLES OPERATING IN UNCERTAIN ENVIRONMENTS.....</b>	<b>3517</b>
<i>E. Raboin, P. Svec, D. Nau, S. Gupta</i>	
<b>SLIPPING CONTROL THROUGH TACTILE SENSING FEEDBACK .....</b>	<b>3523</b>
<i>G. Maria, C. Natale, S. Pirozzi</i>	
<b>SOFT-MATTER CAPACITIVE SENSOR FOR MEASURING SHEAR AND PRESSURE DEFORMATION .....</b>	<b>3529</b>
<i>P. Roberts, D. Damian, W. Shan, T. Lu, C. Majidi</i>	
<b>EXTERNAL FORCE ESTIMATION DURING COMPLIANT ROBOT MANIPULATION.....</b>	<b>3535</b>
<i>A. Colome, D. Pardo, G. Alenya, C. Torras</i>	
<b>PUSHING THE LIMITS OF THE CYBERGRASP™ FOR HAPTIC RENDERING.....</b>	<b>3541</b>
<i>M. Aiple, A. Schiele</i>	
<b>FUSING VISUAL AND TACTILE SENSING FOR 3-D OBJECT RECONSTRUCTION WHILE GRASPING .....</b>	<b>3547</b>
<i>J. Ilonen, J. Bohg, V. Kyrki</i>	
<b>SCHEDULING OF SINGLE-ARM MULTI-CLUSTER TOOLS TO ACHIEVE THE MINIMUM CYCLE TIME.....</b>	<b>3555</b>
<i>Q. Zhu, N. Wu, Y. Qiao, M. Zhou</i>	
<b>PRELIMINARY STUDY OF ADVANCED FAULT DETECTION SCHEME .....</b>	<b>3561</b>
<i>Y. Shih, Y. Huang, F. Cheng</i>	
<b>OPTIMAL ALLOCATION OF TESTERS TO PRODUCTS WITH A QUEUE TIME RESTRICTION IN SORT TESTING .....</b>	<b>3567</b>
<i>A. Kalir</i>	
<b>A NOVEL METHOD TO SIMPLIFY SUPERVISOR FOR AMS BASED ON PETRI NETS AND INEQUALITY ANALYSIS .....</b>	<b>3573</b>
<i>H. Hu, M. Zhou, Z. Li</i>	
<b>PRODUCTION SCHEDULING IN A STEELMAKING AND CONTINUOUS CASTING PLANT: A CASE STUDY.....</b>	<b>3580</b>
<i>M. Fanti, G. Rotunno, G. Stecco, W. Ukovich</i>	
<b>3D MODELING, DISTANCE AND GRADIENT COMPUTATION FOR MOTION PLANNING: A DIRECT GPGPU APPROACH .....</b>	<b>3586</b>
<i>R. Wagner, U. Frese, B. Bauml</i>	
<b>REAL-TIME COLLISION DETECTION AND DISTANCE COMPUTATION ON POINT CLOUD SENSOR DATA .....</b>	<b>3593</b>
<i>J. Pan, I. Sucan, S. Chitta, D. Manocha</i>	
<b>ROBUST COMMUNICATION CONNECTIVITY FOR MULTI-ROBOT PATH COORDINATION USING MIXED INTEGER NONLINEAR PROGRAMMING: FORMULATION AND FEASIBILITY ANALYSIS.....</b>	<b>3600</b>
<i>P. Abichandani, H. Benson, M. Kam</i>	
<b>EFFICIENT FORMATION PATH PLANNING ON LARGE GRAPHS.....</b>	<b>3606</b>
<i>M. Katsev, J. Yu, S. LaValle</i>	
<b>PLANNING OPTIMAL PATHS FOR MULTIPLE ROBOTS ON GRAPHS .....</b>	<b>3612</b>
<i>J. Yu, S. LaValle</i>	
<b>TELEMANIPULATION WITH HUMANOID ROBOT HAND/ARM BETWEEN USA AND JAPAN .....</b>	<b>3618</b>
<i>K. Mima, M. Honda, T. Miyoshi, T. Imamura, M. Okabe, F. Yazadi, K. Terashima</i>	
<b>ON THE STABILIZATION OF COOPERATIVE BILATERAL TELEOPERATION SYSTEMS WITH TIME DELAYS .....</b>	<b>3625</b>
<i>M. Kristalny, J. Cho</i>	
<b>A PILOT STUDY IN VISION-BASED AUGMENTED TELEMANIPULATION FOR REMOTE ASSEMBLY OVER HIGH-LATENCY NETWORKS.....</b>	<b>3631</b>
<i>J. Bohren, C. Papazov, D. Burschka, K. Krieger, S. Parusel, S. Haddadin, W. Shepherdson, G. Hager, L. Whitcomb</i>	
<b>A DUAL-USER TELEOPERATED SYSTEM WITH VIRTUAL FIXTURES FOR ROBOTIC SURGICAL TRAINING.....</b>	<b>3639</b>
<i>M. Shahbazi, S. Atashzar, R. Patel</i>	

<b>BILATERAL CONTROL OF THE DEGREE OF CONNECTIVITY IN MULTIPLE MOBILE-ROBOT TELEOPERATION</b> .....	3645
<i>C. Secchi, A. Franchi, H. Bulthoff, P. Giordano</i>	
<b>ON TASK-ORIENTED CRITERIA FOR CONFIGURATIONS SELECTION IN ROBOT CALIBRATION</b> .....	3653
<i>H. Carrillo, O. Birbach, H. Taubig, B. Bauml, U. Frese, J. Castellanos</i>	
<b>CALIBRATION OF SINGLE-AXIS NANOPositionING CELL SUBJECTED TO THERMAL DISTURBANCE</b> .....	3660
<i>N. Tan, C. Clevy, N. Chaillet</i>	
<b>GEOMETRIC PARAMETER IDENTIFICATION FOR SPHERICAL ACTUATOR CALIBRATION BASED ON TORQUE FORMULA</b> .....	3666
<i>L. Zhang, W. Chen, J. Liu, X. Wu</i>	
<b>TWO-AXIS SCANNING LIDAR GEOMETRIC CALIBRATION USING INTENSITY IMAGERY AND DISTORTION MAPPING</b> .....	3672
<i>H. Dong, S. Anderson, T. Barfoot</i>	
<b>CROSS-CALIBRATION OF PUSH-BROOM 2D LIDARS AND CAMERAS IN NATURAL SCENES</b> .....	3679
<i>A. Napier, P. Corke, P. Newman</i>	
<b>LINE-BASED EXTRINSIC CALIBRATION OF RANGE AND IMAGE SENSORS</b> .....	3685
<i>P. Moghadam, M. Bosse, R. Zlot</i>	
<b>ONLINE CALIBRATION OF STEREO RIGS FOR LONG-TERM AUTONOMY</b> .....	3692
<i>M. Warren, D. McKinnon, B. Upcroft</i>	
<b>SYSTEM IDENTIFICATION APPLIED TO CONTACT MODELING: AN EXPERIMENTAL INVESTIGATION</b> .....	3699
<i>J. Arevalo, X. Carrillo, M. Cestari, D. Sanz-Merodio, E. Garcia</i>	
<b>IDENTIFICATION OF GEOMETRICAL AND ELASTOSTATIC PARAMETERS OF HEAVY INDUSTRIAL ROBOTS</b> .....	3707
<i>A. Klimchik, Y. Wu, C. Dumas, S. Caro, B. Furet, A. Pashkevich</i>	
<b>OBJECT PLACEMENT AS INVERSE MOTION PLANNING</b> .....	3715
<i>A. Holladay, J. Barry, L. Kaelbling, T. Lozano-Perez</i>	
<b>REPRESENTATION AND MAPPING OF DEXTEROUS MANIPULATION THROUGH TASK PRIMITIVES</b> .....	3722
<i>P. Vinayavekhin, S. Kudoh, J. Takamatsu, Y. Sato, K. Ikeuchi</i>	
<b>JOINT TORQUE OPTIMIZATION FOR QUASI-STATIC GRASPLESS MANIPULATION</b> .....	3730
<i>S. Makita, Y. Maeda</i>	
<b>SQUEEZE GRASPING OF DEFORMABLE PLANAR OBJECTS WITH SEGMENT CONTACTS AND STICK/SLIP TRANSITIONS</b> .....	3736
<i>F. Guo, H. Lin, Y. Jia</i>	
<b>PROBABILISTIC APPROACH FOR OBJECT BIN PICKING APPROXIMATED BY CYLINDERS</b> .....	3742
<i>K. Harada, K. Nagata, T. Tsuji, N. Yamanobe, A. Nakamura, Y. Kawai</i>	
<b>ROBUST ODOMETRY ESTIMATION FOR RGB-D CAMERAS</b> .....	3748
<i>C. Kerl, J. Sturm, D. Cremers</i>	
<b>LONG EXPOSURE LOCALIZATION IN DARKNESS USING CONSUMER CAMERAS</b> .....	3755
<i>M. Milford, I. Turner, P. Corke</i>	
<b>DISTRACTION SUPPRESSION FOR VISION-BASED POSE ESTIMATION AT CITY SCALES</b> .....	3762
<i>C. McManus, W. Churchill, A. Napier, B. Davis, P. Newman</i>	
<b>USING MULTI-CAMERA SYSTEMS IN ROBOTICS: EFFICIENT SOLUTIONS TO THE NPNP PROBLEM</b> .....	3770
<i>L. Kneip, P. Furgale, R. Siegwart</i>	
<b>ON THE IMPORTANCE OF MODELING CAMERA CALIBRATION UNCERTAINTY IN VISUAL SLAM</b> .....	3777
<i>P. Ozog, R. Eustice</i>	
<b>MONOCULAR VISION-BASED GLOBAL LOCALIZATION USING POSITION AND ORIENTATION OF CEILING FEATURES</b> .....	3785
<i>S. Hwang, J. Song</i>	
<b>TOWARDS ILLUMINATION INVARIANCE FOR VISUAL LOCALIZATION</b> .....	3791
<i>A. Ranganathan, S. Matsumoto, D. Ilstrup</i>	
<b>PLACE RECOGNITION USING STRAIGHT LINES FOR VISION-BASED SLAM</b> .....	3799
<i>J. Lee, G. Zhang, J. Lim, I. Suh</i>	
<b>PLANNING SAFE CYCLIC MOTIONS UNDER REPETITIVE TASK CONSTRAINTS</b> .....	3807
<i>M. Cefalo, G. Oriolo, M. Vendittelli</i>	
<b>MOTION ADAPTATION FOR HUMANOID ROBOTS IN CONSTRAINED ENVIRONMENTS</b> .....	3813
<i>E. Ho, H. Shum</i>	
<b>A LOCOMOTIVE STRATEGY FOR A STAIR-CLIMBING MOBILE PLATFORM BASED ON A NEW CONTACT ANGLE ESTIMATION</b> .....	3819
<i>H. Hong, D. Kim, J. Kim, J. Oh, H. Kim</i>	
<b>ENERGY-CONSTRAINED MOTION PLANNING FOR INFORMATION GATHERING WITH AUTONOMOUS AERIAL SOARING</b> .....	3825
<i>J. Nguyen, N. Lawrance, R. Fitch, S. Sukkarieh</i>	
<b>PLANNING WITH MOVABLE OBSTACLES IN CONTINUOUS ENVIRONMENTS WITH UNCERTAIN DYNAMICS</b> .....	3832
<i>M. Levihn, J. Scholz, M. Stilman</i>	
<b>A SINGLE PLANNER FOR A COMPOSITE TASK OF APPROACHING, OPENING AND NAVIGATING THROUGH NON-SPRING AND SPRING-LOADED DOORS</b> .....	3839
<i>S. Gray, S. Chitta, V. Kumar, M. Likhachev</i>	

<b>RECIPROCAL COLLISION AVOIDANCE FOR ROBOTS WITH LINEAR DYNAMICS USING LQR-OBSTACLES</b> .....	3847
<i>D. Bareiss, J. Berg</i>	
<b>ODRM* - OPTIMAL MULTIROBOT PATH PLANNING IN LOW DIMENSIONAL SEARCH SPACES</b> .....	3854
<i>C. Ferner, G. Wagner, H. Choset</i>	
<b>PATIENT-TAILORED ADAPTIVE ROBOTIC SYSTEM FOR UPPER-LIMB REHABILITATION</b> .....	3860
<i>E. Papaleo, L. Zollo, L. Spedaliere, E. Guglielmelli</i>	
<b>ANALYSIS OF CANE-ASSISTED WALKING THROUGH NONLINEAR OPTIMIZATION</b> .....	3866
<i>R. Ady, W. Bachta, P. Bidaud</i>	
<b>REGENERATIVE BRAKE CONTROL OF CYCLING WHEELCHAIR WITH PASSIVE BEHAVIOR</b> .....	3873
<i>Y. Hirata, K. Kawamata, K. Sasaki, A. Kaisumi, K. Kosuge, E. Monacelli</i>	
<b>DYNAMIC ANALYSIS AND STATE ESTIMATION FOR WEARABLE ROBOTIC LIMBS SUBJECT TO HUMAN-INDUCED DISTURBANCES</b> .....	3880
<i>F. Parietti, H. Asada</i>	
<b>EVALUATION OF A COORDINATED CONTROL SYSTEM FOR A PAIR OF POWERED TRANSFEMORAL PROSTHESES</b> .....	3888
<i>B. Lawson, A. Shultz, M. Goldfarb</i>	
<b>EXPERIMENTAL DESIGN VERIFICATION OF A COMPLIANT SHOULDER EXOSKELETON</b> .....	3894
<i>K. Xu, D. Qiu</i>	
<b>A NEW HAND EXOSKELETON DEVICE FOR REHABILITATION USING A THREE-LAYERED SLIDING SPRING MECHANISM</b> .....	3902
<i>J. Arata, K. Ohmoto, R. Gassert, O. Lambercy, H. Fujimoto, I. Wada</i>	
<b>CHARMIN: A ROBOT FOR PEDIATRIC ARM REHABILITATION</b> .....	3908
<i>U. Keller, V. Klamroth, H. Hedel, R. Riener</i>	
<b>ALEX III: A NOVEL ROBOTIC PLATFORM WITH 12 DOFS FOR HUMAN GAIT TRAINING</b> .....	3914
<i>D. Zanotto, P. Stegall, S. Agrawal</i>	
<b>MOVEMENTS STABILITY ANALYSIS OF SEMG-BASED ELBOW POWER ASSISTANCE BY MAXIMUM FINITE TIME LYAPUNOV EXPONENT</b> .....	3920
<i>S. Kwon, Y. Kim, J. Kim</i>	
<b>PATH PLANNING FOR MOTION DEPENDENT STATE ESTIMATION ON MICRO AERIAL VEHICLES</b> .....	3926
<i>M. Achtelik, S. Weiss, M. Chli, R. Siegwart</i>	
<b>PATH PLANNING FOR NON-CIRCULAR MICRO AERIAL VEHICLES IN CONSTRAINED ENVIRONMENTS</b> .....	3933
<i>B. MacAllister, J. Butzke, A. Kushleyev, H. Pandey, M. Likhachev</i>	
<b>REAL-TIME RENDEZVOUS POINT SELECTION FOR A NONHOLONOMIC VEHICLE</b> .....	3941
<i>D. Wilson, M. Soto, A. Goktogan, S. Sukkarieh</i>	
<b>RRT*-AR: SAMPLING-BASED ALTERNATE ROUTES PLANNING WITH APPLICATIONS TO AUTONOMOUS EMERGENCY LANDING OF A HELICOPTER</b> .....	3947
<i>S. Choudhury, S. Scherer, S. Singh</i>	
<b>AUTONOMOUS SEARCH AND COUNTER-TARGETING USING LEVY SEARCH MODELS</b> .....	3953
<i>T. Stevens, T. Chung</i>	
<b>MANEUVER-BASED AUTONOMOUS NAVIGATION OF A SMALL FIXED-WING UAV</b> .....	3961
<i>M. Hwangbo, T. Kanade</i>	
<b>OPTIMAL REDUNDANCY RESOLUTION WITH TASK SCALING UNDER HARD BOUNDS IN THE ROBOT JOINT SPACE</b> .....	3969
<i>F. Flacco, A. Luca</i>	
<b>ON ROLLING CONTACT MOTION BY ROBOTIC FINGERS VIA PRESCRIBED PERFORMANCE CONTROL</b> .....	3976
<i>Z. Doulgeri, L. Droukas</i>	
<b>CONTROL OF ELASTIC SOFT ROBOTS BASED ON REAL-TIME FINITE ELEMENT METHOD</b> .....	3982
<i>C. Duriez</i>	
<b>A REAL TIME ROBUST OBSERVER FOR AN AGONIST ANTAGONIST VARIABLE STIFFNESS ACTUATOR</b> .....	3988
<i>T. Menard, G. Grioli, A. Bicchi</i>	
<b>CHARACTERIZATION OF CONSTRAINTS IN FLEXIBLE UNKNOWN ENVIRONMENTS</b> .....	3994
<i>S. Bhattacharyya, N. Simaan</i>	
<b>HUMAN-ROBOT PHYSICAL INTERACTION AND COLLABORATION USING AN INDUSTRIAL ROBOT WITH A CLOSED CONTROL ARCHITECTURE</b> .....	4000
<i>M. Geravand, F. Flacco, A. Luca</i>	
<b>A CONTINUUM MANIPULATOR MADE OF INTERLOCKING FIBERS</b> .....	4008
<i>M. Moses, M. Kutzer, H. Ma, M. Armand</i>	
<b>PROGRESSIVE GENERATION OF FORCE-CLOSURE GRASPS FOR AN N-SECTION CONTINUUM MANIPULATOR</b> .....	4016
<i>J. Li, J. Xiao</i>	
<b>DESIGN OF A DIRECT-DRIVEN LINEAR ACTUATOR FOR DEVELOPMENT OF A CHEETAROID ROBOT</b> .....	4023
<i>B. Na, H. Choi, K. Kong</i>	
<b>DIRECT DRIVE OF FLAPPING WINGS UNDER RESONANCE WITH INSTANTANEOUS WING TRAJECTORY CONTROL</b> .....	4029
<i>J. Zhang, B. Cheng, J. Roll, X. Deng, B. Yao</i>	

<b>MODELING AND OPTIMIZATION OF AN ELECTROMAGNETIC ACTUATOR FOR FLAPPING WING MICRO AIR VEHICLE</b> .....	4035
<i>B. Cheng, J. Roll, X. Deng</i>	
<b>MULTI-SENSOR FUSION WITH OUT-OF-SEQUENCE MEASUREMENTS FOR VEHICLE ENVIRONMENT PERCEPTION</b> .....	4042
<i>A. Westenberger, S. Waldele, B. Dora, B. Duraisamy, M. Muntzinger, K. Diemayer</i>	
<b>MAXIMAL PERSISTENT SURVEILLANCE UNDER SAFETY CONSTRAINTS</b> .....	4048
<i>E. Arvelo, E. Kim, N. Martins</i>	
<b>CONTROL DESIGN ALONG TRAJECTORIES WITH SUMS OF SQUARES PROGRAMMING</b> .....	4054
<i>A. Majumdar, A. Ahmadi, R. Tedrake</i>	
<b>ON THE COMPLEXITY OF SEARCHING FOR AN EVADER WITH A FASTER PURSUER</b> .....	4062
<i>F. Shkurti, G. Dudek</i>	
<b>MINIMAL SPECIFICATION REVISION FOR WEIGHTED TRANSITION SYSTEMS</b> .....	4068
<i>K. Kim, G. Fainekos</i>	
<b>PROVABLY CORRECT CONTINUOUS CONTROL FOR HIGH-LEVEL ROBOT BEHAVIORS WITH ACTIONS OF ARBITRARY EXECUTION DURATIONS</b> .....	4075
<i>V. Raman, N. Piterman, H. Kress-Gazit</i>	
<b>AUTOMATIC REDUCTION OF COMBINATORIAL FILTERS</b> .....	4082
<i>J. O'Kane, D. Shell</i>	
<b>REAL-TIME OPTIMIZATION-BASED PLANNING IN DYNAMIC ENVIRONMENTS USING GPUS</b> .....	4090
<i>C. Park, J. Pan, D. Manocha</i>	
<b>SPARSIFICATION OF MOTION-PLANNING ROADMAPS BY EDGE CONTRACTION</b> .....	4098
<i>D. Shaharabani, O. Salman, P. Agarwal, D. Halperin</i>	
<b>IMPROVING SPARSE ROADMAP SPANNERS</b> .....	4106
<i>A. Dobson, K. Bekris</i>	
<b>ON THE COMPLETENESS OF ENSEMBLES OF MOTION PLANNERS FOR DECENTRALIZED PLANNING</b> .....	4112
<i>R. Knepper, D. Rus</i>	
<b>ENHANCING THE TRANSITION-BASED RRT TO DEAL WITH COMPLEX COST SPACES</b> .....	4120
<i>D. Devaurs, T. Simeon, J. Cortes</i>	
<b>ASYMPTOTICALLY OPTIMAL INSPECTION PLANNING USING SYSTEMS WITH DIFFERENTIAL CONSTRAINTS</b> .....	4126
<i>G. Papadopoulos, H. Kurniawati, N. Patrikalakis</i>	
<b>PRELIMINARY EXPERIMENTAL EVALUATION OF A DOPPLER-AIDED ATTITUDE ESTIMATOR FOR IMPROVED DOPPLER NAVIGATION OF UNDERWATER VEHICLES</b> .....	4134
<i>G. Troni, L. Whitcomb</i>	
<b>EXPERIMENTAL RESULTS OF COORDINATED SAMPLING/PATROLLING BY AUTONOMOUS UNDERWATER VEHICLES</b> .....	4141
<i>A. Marino, G. Antonelli</i>	
<b>UNDERWATER NAVIGATION BEHAVIORS USING WIDE-FIELD INTEGRATION METHODS</b> .....	4147
<i>B. Ranganathan, K. Dumble, J. Faddy, J. Humbert</i>	
<b>A MULTI-AUV SYSTEM FOR COOPERATIVE TRACKING AND FOLLOWING OF LEOPARD SHARKS</b> .....	4153
<i>D. Shinzaki, C. Gage, S. Tang, M. Moline, B. Wolfe, C. Lowe, C. Clark</i>	
<b>PLANNING COVERAGE PATHS ON BATHYMETRIC MAPS FOR IN-DETAIL INSPECTION OF THE OCEAN FLOOR</b> .....	4159
<i>E. Galceran, M. Carreras</i>	
<b>MULTI-ARMED BANDIT FORMULATION FOR AUTONOMOUS MOBILE ACOUSTIC RELAY ADAPTIVE POSITIONING</b> .....	4165
<i>M. Cheung, J. Leighton, F. Hover</i>	
<b>MOBILITY ANALYSIS OF A SARRUS LINKAGE-LIKE 7-R SINGLE CLOSED LOOP MECHANISM</b> .....	4171
<i>Y. Zhao, T. Li, X. Yu, X. Tang, L. Wang</i>	
<b>EXPONENTIAL SUBMANIFOLDS: A NEW KINEMATIC MODEL FOR MECHANISM ANALYSIS AND SYNTHESIS</b> .....	4177
<i>Y. Wu, G. Liu, H. Lowe, Z. Li</i>	
<b>LOW-COST ROBOT ARM WITH 3-DOF COUNTERBALANCE MECHANISM</b> .....	4183
<i>H. Kim, J. Song</i>	
<b>ON THE DESIGN OF A STATICALLY BALANCED SERIAL ROBOT USING REMOTE COUNTERWEIGHTS</b> .....	4189
<i>M. Lacasse, G. Lachance, J. Boisclair, J. Ouellet, C. Gosselin</i>	
<b>EVOLUTIONARY CO-OPTIMIZATION OF CONTROL AND SYSTEM PARAMETERS FOR A RESONATING ROBOT ARM</b> .....	4195
<i>J. Pen, W. Caarls, M. Wisse, R. Babuska</i>	
<b>INVERSE KINEMATICS SOLUTIONS FOR SERIAL ROBOTS USING SUPPORT VECTOR REGRESSION</b> .....	4203
<i>A. Morell, M. Tarokh, L. Acosta</i>	
<b>SPARSE SURFACE MODELING WITH CURVED PATCHES</b> .....	4209
<i>D. Kanoulas, M. Vona</i>	
<b>HYPOTHESIS TESTING FRAMEWORK FOR ACTIVE OBJECT DETECTION</b> .....	4216
<i>N. Atanasov, B. Sankaran</i>	
<b>WEAKLY SUPERVISED STRATEGIES FOR NATURAL OBJECT RECOGNITION IN ROBOTICS</b> .....	4223
<i>S. Fanello, C. Ciliberto, L. Natale, G. Metta</i>	

<b>MULTI-VIEW OBJECT RECOGNITION USING VIEW-POINT INVARIANT SHAPE RELATIONS AND APPEARANCE INFORMATION</b> .....	4230
<i>W. Mustafa, N. Pugeault, N. Kruger</i>	
<b>MULTI-SCALE SUPERQUADRIC FITTING FOR EFFICIENT SHAPE AND POSE RECOVERY OF UNKNOWN OBJECTS</b> .....	4238
<i>K. Duncan, S. Sarkar, R. Alqasemi, R. Dubey</i>	
<b>PROBABILISTIC OBJECT RECOGNITION AND POSE ESTIMATION BY FUSING MULTIPLE ALGORITHMS</b> .....	4244
<i>M. Lutz, D. Stampfer, C. Schlegel</i>	
<b>MULTI-OBJECT DETECTION AND POSE ESTIMATION IN 3D POINT CLOUDS: A FAST GRID-BASED BAYESIAN FILTER</b> .....	4250
<i>R. Figueiredo, P. Moreno, A. Bernardino, J. Santos-Victor</i>	
<b>ROBOTS WITH LANGUAGE: MULTI-LABEL VISUAL RECOGNITION USING NLP</b> .....	4256
<i>Y. Yang, C. Teo, C. Fermuller, Y. Aloimonos</i>	
<b>CLOUD-BASED ROBOT GRASPING WITH THE GOOGLE OBJECT RECOGNITION ENGINE</b> .....	4263
<i>B. Kehoe, A. Matsukawa, S. Candido, J. Kuffner, K. Goldberg</i>	
<b>A NEW APPROACH TO CLOTHING CLASSIFICATION USING MID-LEVEL LAYERS</b> .....	4271
<i>B. Willimon, I. Walker, S. Birchfield</i>	
<b>A ROBOT FOR CLASSIFYING CHINESE CALLIGRAPHIC TYPES AND STYLES</b> .....	4279
<i>Y. Sun, N. Ding, H. Qian, Y. Xu</i>	
<b>TRAJECTORY GENERATION UNDER THE LEAST ACTION PRINCIPLE FOR PHYSICAL HUMAN-ROBOT COOPERATION</b> .....	4285
<i>M. Lawitzky, M. Kimmel, P. Ritzler, S. Hirche</i>	
<b>HUMAN AWARENESS BASED ROBOT PERFORMANCE LEARNING IN A SOCIAL ENVIRONMENT</b> .....	4291
<i>S. Tseng, J. Hua, S. Ma, L. Fu</i>	
<b>VISUAL RECOVERY OF SALIENCY MAPS FROM HUMAN ATTENTION IN 3D ENVIRONMENTS</b> .....	4297
<i>K. Santer, G. Fritz, L. Paletta, H. Mayer</i>	
<b>LEARNING ENVIRONMENTAL KNOWLEDGE FROM TASK-BASED HUMAN-ROBOT DIALOG</b> .....	4304
<i>T. Kollar, V. Perera, D. Nardi, M. Veloso</i>	
<b>ON THE DESIGN, DEVELOPMENT AND EXPERIMENTATION OF THE ASTRO ASSISTIVE ROBOT INTEGRATED IN SMART ENVIRONMENTS</b> .....	4310
<i>F. Cavallo, M. Aquilano, M. Bonaccorsi, R. Limosani, A. Manzi, M. Carrozza, P. Dario</i>	
<b>ORAL MECHANISM DESIGN ON FACE ROBOT FOR LIP-SYNCHRONIZED SPEECH</b> .....	4316
<i>C. Lin, L. Cheng, L. Shen</i>	
<b>ASSISTED GRAVITY COMPENSATION TO COPE WITH THE COMPLEXITY OF KINESTHETIC TEACHING ON REDUNDANT ROBOTS</b> .....	4322
<i>C. Emmerich, A. Nordmann, A. Swadzba, J. Steil, S. Wrede</i>	
<b>HANDS-FREE HUMAN-ROBOT COMMUNICATION ROBUST TO SPEAKER'S RADIAL POSITION</b> .....	4329
<i>R. Gomez, K. Nakamura, K. Nakadai, U. Kim, H. Okuno, T. Kawahara</i>	
<b>AUTONOMOUS PERSON FOLLOWING FOR TELEPRESENCE ROBOTS</b> .....	4335
<i>A. Cosgun, D. Florencio, H. Christensen</i>	
<b>HUMAN-ROBOT COOPERATIVE OBJECT SWINGING</b> .....	4343
<i>P. Donner, A. Moril, S. Hirche, M. Buss</i>	
<b>ESTIMATING HUMAN INTEREST AND ATTENTION VIA GAZE ANALYSIS</b> .....	4350
<i>H. Knight, R. Simmons</i>	
<b>BRAIN ACTIVITY MEASUREMENT TO EVALUATE HAND-EYE COORDINATION FOR SLAVE AND ENDOSCOPE IN A SURGICAL ROBOT</b> .....	4356
<i>S. Miura, Y. Kobayashi, K. Kawamura, M. Seki, Y. Nakashima, T. Noguchi, Y. Yokoo, M. Fujie</i>	
<b>REAL-TIME BIOPSY NEEDLE TIP ESTIMATION IN 2D ULTRASOUND IMAGES</b> .....	4363
<i>K. Mathiassen, D. Dall'Alba, R. Muradore, P. Fiorini, O. Elle</i>	
<b>THE APPLICATION OF FORCE SENSING TO SKILLS ASSESSMENT IN MINIMALLY INVASIVE SURGERY</b> .....	4370
<i>A. Trejos, R. Patel, M. Naish, R. Malthaner, C. Schlachta</i>	
<b>PROBABILISTIC APPROACH TO RECOGNIZE LOCAL NAVIGATION PLANS BY FUSING PAST DRIVING INFORMATION WITH A PERSONALIZED USER MODEL</b> .....	4376
<i>A. Huntemann, E. Demeester, E. Poorten, H. Brussel, J. Schutter</i>	
<b>AUTONOMOUS ROBOTIC PALPATION: MACHINE LEARNING TECHNIQUES TO IDENTIFY HARD INCLUSIONS IN SOFT TISSUES</b> .....	4384
<i>K. Nichols, A. Okamura</i>	
<b>A FIBEROPTIC FORCE-TORQUE-SENSOR FOR MINIMALLY INVASIVE ROBOTIC SURGERY</b> .....	4390
<i>R. Haslinger, P. Leyendecker, U. Seibold</i>	
<b>SIMULTANEOUS SOFT SENSING OF TISSUE CONTACT ANGLE AND FORCE FOR MILLIMETER-SCALE MEDICAL ROBOTS</b> .....	4396
<i>V. Arabagi, A. Gosline, R. Wood, P. Dupont</i>	
<b>MONOCULAR FEATURE-BASED PERIODIC MOTION ESTIMATION FOR SURGICAL GUIDANCE</b> .....	4403
<i>S. Tully, G. Kantor, H. Choset</i>	
<b>CHARACTERIZATION OF FRICTION AND SPEED EFFECTS AND METHODS FOR DETECTION OF COCHLEAR IMPLANT ELECTRODE TIP FOLD-OVER</b> .....	4409
<i>J. Pile, N. Simaan</i>	



<b>AN OPTICAL CURVATURE SENSOR FOR FLEXIBLE MANIPULATORS</b> .....	4415
<i>T. Searle, K. Althoefer, L. Seneviratne, H. Liu</i>	
<b>SELECTIVE CELL INJECTION OF FLUORESCENCE PARTICLE SENSOR ENCAPSULATED IN FUSOGENIC LIPOSOME USING OPTICAL MANIPULATION AND CONTROL OF SURFACE POTENTIAL USING PHOTOCROMIC CHEMICAL</b> .....	4421
<i>H. Maruyama, T. Masuda, A. Honda, F. Arai</i>	
<b>A PSEUDO-RIGID-BODY 3R MODEL FOR A STEERABLE ABLATION CATHETER</b> .....	4427
<i>M. Khoshnam, R. Patel</i>	
<b>A PERCHING MECHANISM FOR FLYING ROBOTS USING A FIBER-BASED ADHESIVE</b> .....	4433
<i>L. Daler, A. Klaptocz, A. Briod, M. Sitti, D. Floreano</i>	
<b>DEVELOPMENT OF AN AUTONOMOUS FLYING ROBOT AND ITS VERIFICATION VIA FLIGHT CONTROL EXPERIMENT</b> .....	4439
<i>M. Tanaka, H. Kawai, K. Tanaka, H. Wang</i>	
<b>DESIGN AND EXPERIMENTAL VALIDATION OF HYTAQ, A HYBRID TERRESTRIAL AND AERIAL QUADROTOR</b> .....	4445
<i>A. Kalantari, M. Spenko</i>	
<b>EFFICIENT JUMPGLIDING: THEORY AND DESIGN CONSIDERATIONS</b> .....	4451
<i>A. Desbiens, M. Pope, F. Berg, Z. Teoh, J. Lee, M. Cutkosky</i>	
<b>INTEGRATED ELECTRO-AEROMECHANICAL STRUCTURES FOR LOW-COST, SELF-DEPLOYING ENVIRONMENT SENSORS AND DISPOSABLE UAVS</b> .....	4459
<i>P. Pounds, S. Singh</i>	
<b>DIFFERENTIALLY FLAT TRAJECTORY GENERATION FOR A DYNAMICALLY STABLE MOBILE ROBOT</b> .....	4467
<i>M. Shormin, R. Hollis</i>	
<b>A PARTIALLY SATURATED NONLINEAR CONTROLLER FOR OVERHEAD CRANES WITH EXPERIMENTAL IMPLEMENTATION</b> .....	4473
<i>N. Sun, Y. Fang</i>	
<b>MODEL-BASED FORCE CONTROL OF A STEERABLE ABLATION CATHETER WITH A CUSTOM-DESIGNED STRAIN SENSOR</b> .....	4479
<i>M. Khoshnam, A. Yurkewich, R. Patel</i>	
<b>MODEL-FREE ROBOT MANIPULATION OF DOORS AND DRAWERS BY MEANS OF FIXED-GRASPS</b> .....	4485
<i>Y. Karayiannidis, C. Smith, F. Vina, P. Ogren, D. Kragic</i>	
<b>A HYBRID CONTROL APPROACH TO THE NEXT-BEST-VIEW PROBLEM USING STEREO VISION</b> .....	4493
<i>C. Freundlich, P. Mordohai, M. Zavlanos</i>	
<b>HUMAN-LIKE IMPEDANCE AND MINIMUM EFFORT CONTROL FOR NATURAL AND EFFICIENT MANIPULATION</b> .....	4499
<i>A. Ajoudani, M. Gabiccini, N. Tsagarakis, A. Bicchi</i>	
<b>DEVELOPMENT OF A LARGE WORKING RANGE FLEXURE-BASED 3-DOF MICRO-PARALLEL MANIPULATOR DRIVEN BY ELECTROMAGNETIC ACTUATORS</b> .....	4506
<i>S. Xiao, Y. Li</i>	
<b>DESIGN AND DYNAMICS MODEL OF A LIGHTWEIGHT SERIES ELASTIC TENDON-DRIVEN ROBOT ARM</b> .....	4512
<i>T. Lens, O. Stryk</i>	
<b>DESIGN AND ANALYSIS OF A CABLE-DRIVEN MANIPULATOR WITH VARIABLE STIFFNESS</b> .....	4519
<i>W. Lim, S. Yeo, G. Yang, I. Chen</i>	
<b>FLEXURE JOINTS MODELING FOR MICROMETER ACCURACY OF AN ACTIVE 6-PUS SPACE TELESCOPE THROUGH EXPERIMENTAL CALIBRATION</b> .....	4525
<i>T. Gayral, D. Daney, J. Ducarne</i>	
<b>KNOWING WHEN WE DON'T KNOW: INTROSPECTIVE CLASSIFICATION FOR MISSION-CRITICAL DECISION MAKING</b> .....	4531
<i>H. Grimmett, R. Paul, R. Triebel, I. Posner</i>	
<b>LEARNING PROBABILITY DISTRIBUTIONS OVER PARTIALLY-ORDERED HUMAN EVERYDAY ACTIVITIES</b> .....	4539
<i>M. Tenorth, F. Torre, M. Beetz</i>	
<b>MULTI-ARMED RECOMMENDATION BANDITS FOR SELECTING STATE MACHINE POLICIES FOR ROBOTIC SYSTEMS</b> .....	4545
<i>P. Matikainen, P. Furlong, R. Sukthankar, M. Hebert</i>	
<b>A CASE STUDY ON THE TOWER OF HANOI CHALLENGE: REPRESENTATION, REASONING AND EXECUTION</b> .....	4552
<i>G. Havur, K. Haspalamutgil, C. Palaz, E. Erdem, V. Patoglu</i>	
<b>OPTIMIZATION IN THE NOW: DYNAMIC PEEP-HOLE OPTIMIZATION FOR HIERARCHICAL PLANNING</b> .....	4560
<i>D. Hadfield-Menell, L. Kaelbling, T. Lozano-Perez</i>	
<b>STRATEGIC PLANNING UNDER UNCERTAINTIES VIA CONSTRAINED MARKOV DECISION PROCESSES</b> .....	4568
<i>X. Ding, A. Pinto, A. Surana</i>	
<b>GPU-BASED MOTION PLANNING UNDER UNCERTAINTIES USING POMDP</b> .....	4576
<i>T. Lee, Y. Kim</i>	
<b>ROBUST COVERAGE BY A MOBILE ROBOT OF A PLANAR WORKSPACE</b> .....	4582
<i>T. Bretl, S. Hutchinson</i>	

<b>PATCHING TASK-LEVEL ROBOT CONTROLLERS BASED ON A LOCAL \$MU\$-CALCULUS FORMULA .....</b>	<b>4588</b>
<i>S. Livingston, P. Prabhakar, A. Jose, R. Murray</i>	
<b>PATH PLANNING WITH UNCERTAINTY: VORONOI UNCERTAINTY FIELDS .....</b>	<b>4596</b>
<i>K. Ok, S. Ansari, B. Gallagher, W. Sica, F. Dellaert, M. Stilman</i>	
<b>FLOW-AIDED PATH FOLLOWING OF AN UNDERWATER ROBOT .....</b>	<b>4602</b>
<i>D. Jung, P. Pott, T. Salumae, M. Kruusmaa</i>	
<b>SYNTHESIS OF AN ELECTRIC SENSOR BASED CONTROL FOR UNDERWATER MULTI-AGENTS NAVIGATION IN A FILE .....</b>	<b>4608</b>
<i>M. Benachenhou, C. Chevallereau, V. Lebastard, F. Boyer</i>	
<b>COMPARATIVE EXPERIMENTAL EVALUATION OF A NEW ADAPTIVE IDENTIFIER FOR UNDERWATER VEHICLES .....</b>	<b>4614</b>
<i>C. McFarland, L. Whitcomb</i>	
<b>PRELIMINARY EXPERIMENTS IN FULLY ACTUATED MODEL BASED CONTROL WITH SIX DEGREE-OF-FREEDOM COUPLED DYNAMICAL PLANT MODELS FOR UNDERWATER VEHICLES .....</b>	<b>4621</b>
<i>S. Martin, L. Whitcomb</i>	
<b>AUTONOMOUS ROBOTIC VALVE TURNING : A HIERARCHICAL LEARNING APPROACH .....</b>	<b>4629</b>
<i>S. Ahmadzadeh, P. Kormushev, D. Caldwell</i>	
<b>KINEMATIC ANALYSIS OF THE 4-3-1 AND 3-2-1 WIRE-DRIVEN PARALLEL CRANE .....</b>	<b>4635</b>
<i>J. Merlet</i>	
<b>THE CLOSURE CONDITION OF THE DOUBLE BANANA AND ITS APPLICATION TO ROBOT POSITION ANALYSIS .....</b>	<b>4641</b>
<i>N. Rojas, F. Thomas</i>	
<b>DISTURBANCE ATTENUATION OF A HANDHELD PARALLEL ROBOT .....</b>	<b>4647</b>
<i>A. El-Shenawy, A. Wagner, P. Pott, R. Gundling, M. Schwarz, E. Badreddin</i>	
<b>MINIMAL REPRESENTATION FOR THE CONTROL OF GOUGH-STEWART PLATFORMS VIA LEG OBSERVATION CONSIDERING A HIDDEN ROBOT MODEL .....</b>	<b>4653</b>
<i>S. Briot, P. Martinet</i>	
<b>CONTROL OF A LARGE REDUNDANTLY ACTUATED CABLE-SUSPENDED PARALLEL ROBOT .....</b>	<b>4659</b>
<i>J. Lamaury, M. Gouttefarde</i>	
<b>KINEMATIC CALIBRATION METHOD FOR A 5-DOF GANTRY-TAU PARALLEL KINEMATIC MACHINE .....</b>	<b>4665</b>
<i>I. Tyapin, G. Hovland</i>	
<b>STEREO VISION AND IMU BASED REAL-TIME EGO-MOTION AND DEPTH IMAGE COMPUTATION ON A HANDHELD DEVICE .....</b>	<b>4671</b>
<i>K. Schmid, H. Hirschmuller</i>	
<b>ACT-CORNER: ACTIVE CORNER FINDING FOR OPTIC FLOW DETERMINATION .....</b>	<b>4679</b>
<i>G. Croon, S. Nolfi</i>	
<b>FAST AND ADAPTIVE 3D CHANGE DETECTION ALGORITHM FOR AUTONOMOUS ROBOTS BASED ON GAUSSIAN MIXTURE MODELS .....</b>	<b>4685</b>
<i>P. Drews, S. Filho, L. Marcolino, P. Nunez</i>	
<b>ERODE: AN EFFICIENT AND ROBUST OUTLIER DETECTOR AND ITS APPLICATION TO STEREOVISUAL ODOMETRY .....</b>	<b>4691</b>
<i>F. Moreno, J. Blanco, J. Gonzalez-Jimenez</i>	
<b>PARALLEL, REAL-TIME MONOCULAR VISUAL ODOMETRY .....</b>	<b>4698</b>
<i>S. Song, M. Chandraker, C. Guest</i>	
<b>TERRAIN ADAPTIVE ODOMETRY FOR MOBILE SKID-STEER ROBOTS .....</b>	<b>4706</b>
<i>M. Reinstein, V. Kubelka, K. Zimmermann</i>	
<b>REAL-TIME MOTION TRACKING ON A CELLPHONE USING INERTIAL SENSING AND A ROLLING-SHUTTER CAMERA .....</b>	<b>4712</b>
<i>M. Li, B. Kim, A. Mourikis</i>	
<b>ONLINE SELF-SUPERVISED SEGMENTATION OF DYNAMIC OBJECTS .....</b>	<b>4720</b>
<i>V. Guizilini, F. Ramos</i>	
<b>GLOBAL OPTIMAL DATA ASSOCIATION FOR MULTIPLE PEOPLE TRACKING .....</b>	<b>4728</b>
<i>L. Chen, W. Wang, A. Knoll</i>	
<b>EXPLICIT 3D CHANGE DETECTION USING RAY-TRACING IN SPHERICAL COORDINATES .....</b>	<b>4735</b>
<i>J. Underwood, D. Gillsjo, T. Bailey, V. Vlaskine</i>	
<b>MULTI-SENSOR IDENTITY TRACKING WITH EVENT GRAPHS .....</b>	<b>4742</b>
<i>P. Morton, B. Douillard, J. Underwood</i>	
<b>A NEW DESCRIPTOR FOR MULTIPLE 3D MOTION TRAJECTORIES RECOGNITION .....</b>	<b>4749</b>
<i>Z. Shao, Y. Li</i>	
<b>ADAPTIVE VISUAL TRACKING WITH REACQUISITION ABILITY FOR ARBITRARY OBJECTS .....</b>	<b>4755</b>
<i>T. Yang, B. Li, C. Hu, M. Meng</i>	
<b>A PRECISE TRACKING ALGORITHM BASED ON RAW DETECTOR RESPONSES AND A PHYSICAL MOTION MODEL .....</b>	<b>4761</b>
<i>O. Birbach, U. Frese</i>	
<b>MOVING TARGET DETECTION FOR SENSE AND AVOID USING REGIONAL PHASE CORRELATION .....</b>	<b>4767</b>
<i>K. May, N. Krouglicof</i>	
<b>QUALITATIVE VALIDATION OF HUMANOID ROBOT MODELS THROUGH BALANCE RECOVERY SIDE-STEPPING EXPERIMENTS .....</b>	<b>4773</b>
<i>T. Assman, P. Zutven, H. Nijmeijer</i>	

<b>DYNAMIC RECONFIGURATION MANIPULABILITY ANALYSES OF HUMANOID BIPEDAL WALKING</b> .....	4779
<i>Y. Kobayashi, M. Minami, A. Yanou, T. Maeba</i>	
<b>APEX HEIGHT CONTROL OF A TWO-MASS HOPPING ROBOT</b> .....	4785
<i>F. Mathis, R. Mukherjee</i>	
<b>GENERALIZED HUMANOID LEG INVERSE KINEMATICS TO DEAL WITH SINGULARITIES</b> .....	4791
<i>M. Zorjan, V. Hugel</i>	
<b>COOPERATIVE-DUAL-TASK-SPACE-BASED WHOLE-BODY MOTION BALANCING FOR HUMANOID ROBOTS</b> .....	4797
<i>H. Park, C. Lee</i>	
<b>SPEED REGULATION IN 3D ROBOTIC WALKING THROUGH MOTION TRANSITIONS BETWEEN HUMAN-INSPIRED PARTIAL HYBRID ZERO DYNAMICS</b> .....	4803
<i>M. Powell, A. Hereid, A. Ames</i>	
<b>ONLINE LEARNING OF HUMANOID ROBOT KINEMATICS UNDER SWITCHING TOOLS CONTEXTS</b> .....	4811
<i>L. Jamone, B. Damas, J. Santos-Victor, A. Takanishi</i>	
<b>COMPLIANT AND ADAPTIVE CONTROL OF A PLANAR MONOPOD HOPPER IN ROUGH TERRAIN</b> .....	4818
<i>S. Faraji, S. Pouya, R. Moeckel, A. Ijspeert</i>	
<b>DEVELOPMENT OF A HUMAN-LIKE NEUROLOGIC MODEL TO SIMULATE THE INFLUENCES OF DISEASES FOR NEUROLOGIC EXAMINATION TRAINING</b> .....	4826
<i>C. Wang, Y. Noh, M. Tokumoto, C. Terunaga, M. Yusuke, H. Ishii, S. Sessa, M. Zecca, A. Takanishi, K. Hatake, S. Shoji</i>	
<b>A COMPARATIVE STUDY FOR ROBOT ASSISTED VITREORETINAL SURGERY: MICRON VS. THE STEADY-HAND ROBOT</b> .....	4832
<i>B. Gonenc, J. Handa, P. Gehlbach, R. Taylor, I. Iordachita</i>	
<b>PRELIMINARY EVALUATION OF A WALKING CONTROLLER FOR A POWERED ANKLE PROSTHESIS</b> .....	4838
<i>A. Shultz, J. Mitchell, D. Truex, B. Lawson, M. Goldfarb</i>	
<b>IN-VITRO INTRAVASCULAR SIMULATOR WITH QUANTITATIVE EVALUATION FOR SURGICAL TOOLS USED IN CEREBRAL ANEURYSM SURGERY BASED ON STRESS ANALYSIS</b> .....	4844
<i>C. Shi, M. Kojima, C. Tercero, Z. Najdovski, H. Kodama, M. Nakajima, S. Ikeda, T. Fukuda, F. Arai, M. Negoro</i>	
<b>IMAGING BASED METRICS FOR PERFORMANCE ASSESSMENT IN LASER PHONOMICROSURGERY</b> .....	4850
<i>N. Deshpande, L. Mattos, G. Barresi, A. Brogni, G. Dagnino, L. Guastini, G. Peretti, D. Caldwell</i>	
<b>DESIGN AND IN VIVO VALIDATION OF A FORCE-MEASURING MANIPULATOR FOR MIS PROVIDING SYNCHRONIZED VIDEO, MOTION AND FORCE DATA</b> .....	4857
<i>B. Willaert, N. Famaey, P. Verbrugghe, D. Reynaerts, H. Brussel</i>	
<b>REMOTELY OPERATED BRACHYTHERAPY SYSTEM FOR ORAL CANCER</b> .....	4863
<i>Y. Saito, T. Takayama, T. Omata, H. Shibuya, M. Miura, H. Watanabe</i>	
<b>IMPLEMENTATION OF A FORCE-FEEDBACK INTERFACE FOR ROBOTIC ASSISTED INTERVENTIONS WITH REAL-TIME MRI GUIDANCE</b> .....	4869
<i>N. Sternberg, A. Kilcarslan, N. Navkar, Z. Deng, K. Grigoriadis, N. Tsekos</i>	
<b>PRELIMINARY EXPERIMENTAL RESULTS AND MODELING FOR A FOUR DEGREE OF FREEDOM AUTOMATED TRACTION MEASUREMENT PLATFORM FOR QUANTITATIVE EVALUATION OF IN VIVO ROBOTIC CAPSULE COLONOSCOPY MOBILITY EFFECTIVENESS</b> .....	4875
<i>L. Sliker, M. Kern, M. Rentschler</i>	
<b>CAN CONCENTRIC TUBE ROBOTS FOLLOW THE LEADER?</b> .....	4881
<i>H. Gilbert, R. Webster</i>	
<b>TRAJECTORY GENERATION AND CONTROL OF A QUADROTOR WITH A CABLE-SUSPENDED LOAD - A DIFFERENTIALLY-FLAT HYBRID SYSTEM</b> .....	4888
<i>K. Sreenath, N. Michael, V. Kumar</i>	
<b>A REINFORCEMENT LEARNING APPROACH TOWARDS AUTONOMOUS SUSPENDED LOAD MANIPULATION USING AERIAL ROBOTS</b> .....	4896
<i>I. Palunko, A. Faust, P. Cruz, L. Tapia, R. Fierro</i>	
<b>LEARNING SWING-FREE TRAJECTORIES FOR UAVS WITH A SUSPENDED LOAD</b> .....	4902
<i>A. Faust, I. Palunko, P. Cruz, R. Fierro, L. Tapia</i>	
<b>INTERACTION CONTROL OF AN UAV ENDOWED WITH A MANIPULATOR</b> .....	4910
<i>J. Scholten, M. Fumagalli, S. Stramigioli, R. Carloni</i>	
<b>CONTROL OF AN AERIAL ROBOT WITH MULTI-LINK ARM FOR ASSEMBLY TASKS</b> .....	4916
<i>A. Jimenez-Cano, J. Martin, G. Heredia, A. Ollero, R. Cano</i>	
<b>DYNAMIC STABILITY OF A MOBILE MANIPULATING UNMANNED AERIAL VEHICLE</b> .....	4922
<i>C. Korpela, M. Orsag, M. Pekala, P. Oh</i>	
<b>STIFFNESS CONTROL OF VARIABLE STIFFNESS JOINT USING ELECTROMYOGRAPHY SIGNALS</b> .....	4928
<i>S. Kajikawa, T. Ito, H. Hase</i>	
<b>MODAL LIMIT CYCLE CONTROL FOR VARIABLE STIFFNESS ACTUATED ROBOTS</b> .....	4934
<i>D. Lakatos, G. Garofalo, F. Petit, C. Ott, A. Albu-Schaffer</i>	
<b>HUMAN-LIKE ROBOTIC HANDWRITING AND DRAWING</b> .....	4942
<i>B. Li, Y. Zheng, H. Hemami, D. Che</i>	
<b>A TANK-BASED APPROACH TO IMPEDANCE CONTROL WITH VARIABLE STIFFNESS</b> .....	4948
<i>F. Ferraguti, C. Secchi, C. Fantuzzi</i>	
<b>CR-N ALLOY THIN-FILM BASED TORQUE SENSORS AND JOINT TORQUE SERVO SYSTEMS FOR COMPLIANT ROBOT CONTROL</b> .....	4954
<i>Y. Kuroki, Y. Kosaka, T. Takahashi, E. Niwa, H. Kaminaga, Y. Nakamura</i>	
<b>GRAVITY COMPENSATION CONTROL OF COMPLIANT JOINT SYSTEMS WITH MULTIPLE DRIVES</b> .....	4960
<i>E. Spyarakos-Papastavridis, G. Medrano-Cerda</i>	

<b>DEVELOPMENTAL ACTION PERCEPTION FOR MANIPULATIVE INTERACTION</b> .....	4967
<i>R. Saegusa, G. Metta, G. Sandini, L. Natale</i>	
<b>OBJECT SEARCH BY MANIPULATION</b> .....	4973
<i>M. Dogar, M. Koval, A. Tallavajhula, S. Srinivasa</i>	
<b>GROUNDING OBJECT INDIVIDUATION BY A HUMANOID ROBOT</b> .....	4981
<i>J. Sinapov, A. Stoytchev</i>	
<b>DECOUPLING BEHAVIOR, PERCEPTION, AND CONTROL FOR AUTONOMOUS LEARNING OF AFFORDANCES</b> .....	4989
<i>T. Hermans, J. Rehg, A. Bobick</i>	
<b>LANGUAGE FOR LEARNING COMPLEX HUMAN-OBJECT INTERACTIONS</b> .....	4997
<i>M. Patel, C. Ek, N. Kyriazis, A. Argyros, J. Miro, D. Kragic</i>	
<b>INTERACTIVE SEGMENTATION, TRACKING, AND KINEMATIC MODELING OF UNKNOWN 3D ARTICULATED OBJECTS</b> .....	5003
<i>D. Katz, M. Kazemi, J. Bagnell, A. Sientz</i>	
<b>INCREMENTAL SYNTHESIS OF CONTROL POLICIES FOR HETEROGENEOUS MULTI-AGENT SYSTEMS WITH LINEAR TEMPORAL LOGIC SPECIFICATIONS</b> .....	5011
<i>T. Wongpiromsarn, A. Ulusoy, C. Belta, E. Frazzoli, D. Rus</i>	
<b>A RECEDING HORIZON ALGORITHM FOR INFORMATIVE PATH PLANNING WITH TEMPORAL LOGIC CONSTRAINTS</b> .....	5019
<i>A. Jones, M. Schwager, C. Belta</i>	
<b>REVISING MOTION PLANNING UNDER LINEAR TEMPORAL LOGIC SPECIFICATIONS IN PARTIALLY KNOWN WORKSPACES</b> .....	5025
<i>M. Guo, K. Johansson, D. Dimarogonas</i>	
<b>EFFICIENT REACTIVE CONTROLLER SYNTHESIS FOR A FRAGMENT OF LINEAR TEMPORAL LOGIC</b> .....	5033
<i>E. Wolff, U. Topcu, R. Murray</i>	
<b>SAMPLING-BASED OPTIMAL MOTION PLANNING FOR NON-HOLONOMIC DYNAMICAL SYSTEMS</b> .....	5041
<i>S. Karaman, E. Frazzoli</i>	
<b>JUST-IN-TIME SYNTHESIS FOR REACTIVE MOTION PLANNING WITH TEMPORAL LOGIC</b> .....	5048
<i>S. Livingston, R. Murray</i>	
<b>KINODYNAMIC RRT*: ASYMPTOTICALLY OPTIMAL MOTION PLANNING FOR ROBOTS WITH LINEAR DYNAMICS</b> .....	5054
<i>D. Webb, J. Berg</i>	
<b>SIMPLICIAL LABEL CORRECTING ALGORITHMS FOR CONTINUOUS STOCHASTIC SHORTEST PATH PROBLEMS</b> .....	5062
<i>D. Yershov, S. LaValle</i>	
<b>ANYTIME SOLUTION OPTIMIZATION FOR SAMPLING-BASED MOTION PLANNING</b> .....	5068
<i>R. Luna, I. Sucan, M. Moll, L. Kavraki</i>	
<b>AN EFFICIENT ALGORITHM FOR THE GENERALIZED DISTANCE MEASURE</b> .....	5075
<i>Y. Zheng, K. Yamane</i>	
<b>SPEEDING UP COVERAGE QUERIES IN 3D MULTI-GOAL PATH PLANNING</b> .....	5082
<i>P. Janousek, J. Faigl</i>	
<b>SCALABLE DISTRIBUTED RRT FOR MOTION PLANNING</b> .....	5088
<i>S. Jacobs, N. Stradford, C. Rodriguez, S. Thomas, N. Amato</i>	
<b>OPTIMAL JETTING VELOCITY AND NOZZLE CONSIDERATIONS FOR A CEPHALOPOD INSPIRED UNDERWATER THRUSTER</b> .....	5096
<i>M. Krieg, K. Mohseni</i>	
<b>AN ELASTIC PULSED-JET THRUSTER FOR SOFT UNMANNED UNDERWATER VEHICLES</b> .....	5103
<i>F. Serchi, A. Arienti, I. Baldoli, C. Laschi</i>	
<b>ROBUST ESTIMATION OF CAMERA-TILT FOR IFMI BASED PHOTO-MAPPING USING A CALIBRATED MONOCULAR CAMERA</b> .....	5111
<i>K. Pathak, M. Pfingsthorn, H. Bulow, A. Birk</i>	
<b>ROBUST REAL-TIME UNDERWATER DIGITAL VIDEO STREAMING USING OPTICAL COMMUNICATION</b> .....	5117
<i>M. Doniec, A. Xu, D. Rus</i>	
<b>DEVELOPMENT OF UNDERWATER DISTANCE SENSOR USING EM WAVE ATTENUATION</b> .....	5125
<i>D. Park, K. Kwak, W. Chung, J. Kim</i>	
<b>EXPERIMENTS IN DYNAMIC CONTROL OF AUTONOMOUS MARINE VEHICLES USING ACOUSTIC MODEMS</b> .....	5131
<i>E. Gilbertson, B. Reed, J. Leighton, M. Cheung, F. Hover</i>	
<b>GAIT-BASED COMPLIANT CONTROL FOR SNAKE ROBOTS</b> .....	5138
<i>D. Rollinson, H. Choset</i>	
<b>KINEMATICS FOR CONTINUUM ROBOT OF THE ENDOSCOPE</b> .....	5144
<i>W. Cheng, W. Zhang</i>	
<b>DYNAMICAL ANALYSIS OF SIDEWINDING LOCOMOTION BY A SNAKE-LIKE ROBOT</b> .....	5149
<i>R. Ariizumi, F. Matsuno</i>	
<b>OCTOPUS-INSPIRED EIGHT-ARM ROBOTIC SWIMMING BY SCULLING MOVEMENTS</b> .....	5155
<i>M. Sfakiotakis, A. Kazakidi, N. Pateromichelakis, D. Tsakiris</i>	
<b>EXTENDED GAIT EQUATION FOR SIDEWINDING</b> .....	5162
<i>C. Gong, M. Travers, X. Fu, H. Choset</i>	

<b>ESTIMATING MOTION OF SNAKE ROBOTS IN STRAIGHT PIPES</b> .....	5168
<i>F. Enner, D. Rollinson, H. Choset</i>	
<b>SNAKES ON A PLAN: TOWARD COMBINING PLANNING AND CONTROL</b> .....	5174
<i>R. Hatton, R. Knepper, H. Choset, D. Rollinson, C. Gong, E. Galceran</i>	
<b>POINT-PLANE SLAM FOR HAND-HELD 3D SENSORS</b> .....	5182
<i>Y. Taguchi, Y. Jian, S. Ramalingam, C. Feng</i>	
<b>CLOSED-FORM ONLINE POSE-CHAIN SLAM</b> .....	5190
<i>G. Dubbelman, B. Browning</i>	
<b>SWITCHABLE CONSTRAINTS VS. MAX-MIXTURE MODELS VS. RRR - A COMPARISON OF THREE APPROACHES TO ROBUST POSE GRAPH SLAM</b> .....	5198
<i>N. Sunderhauf, P. Protzel</i>	
<b>GAUSSIAN PROCESS GAUSS-NEWTON FOR 3D LASER-BASED VISUAL ODOMETRY</b> .....	5204
<i>C. Tong, T. Barfoot</i>	
<b>RAILSLAM - LOCALIZATION OF RAIL VEHICLES AND MAPPING OF GEOMETRIC RAILWAY TRACKS</b> .....	5212
<i>O. Heirich, P. Robertson, T. Strang</i>	
<b>DDF-SAM 2.0: CONSISTENT DISTRIBUTED SMOOTHING AND MAPPING</b> .....	5220
<i>A. Cunningham, V. Indelman, F. Dellaert</i>	
<b>RFID-BASED HYBRID METRIC-TOPOLOGICAL SLAM FOR GPS-DENIED ENVIRONMENTS</b> .....	5228
<i>C. Forster, D. Sabatta, R. Siegwart, D. Scaramuzza</i>	
<b>DEPLOYING ARTIFICIAL LANDMARKS TO FOSTER DATA ASSOCIATION IN SIMULTANEOUS LOCALIZATION AND MAPPING</b> .....	5235
<i>M. Beinhofer, H. Kretschmar, W. Burgard</i>	
<b>PHOTOMETRIC MOMENTS: NEW PROMISING CANDIDATES FOR VISUAL SERVOING</b> .....	5241
<i>M. Bakthavatchalam, F. Chaumette, E. Marchand</i>	
<b>UNCALIBRATED IMAGE-BASED VISUAL SERVOING</b> .....	5247
<i>A. Santamaria-Navarro, J. Andrade-Cetto</i>	
<b>VISUAL SERVOING FOR THE REEM HUMANOID ROBOT'S UPPER BODY</b> .....	5253
<i>D. Agravante, J. Pages, F. Chaumette</i>	
<b>VISUALLY SERVOED DEFORMATION CONTROL BY ROBOT MANIPULATORS</b> .....	5259
<i>D. Navarro-Alarcon, Y. Liu, J. Romero, P. Li</i>	
<b>VISION-BASED TRACKING CONTROL OF NONHOLONOMIC MOBILE ROBOTS WITHOUT POSITION MEASUREMENT</b> .....	5265
<i>K. Wang, Y. Liu, L. Li</i>	
<b>NEW RESULTS IN IMAGE MOMENTS-BASED VISUAL SERVOING</b> .....	5271
<i>A. Tamsia, O. Tahri, Y. Mezouar, H. Djalo, E. Tonye</i>	
<b>IMAGE-BASED VISUAL NAVIGATION FOR MOBILE ROBOTS</b> .....	5277
<i>L. O'Sullivan, P. Corke, R. Mahony</i>	
<b>MOTION CAPTURE AND REINFORCEMENT LEARNING OF DYNAMICALLY STABLE HUMANOID MOVEMENT PRIMITIVES</b> .....	5284
<i>R. Vuga, M. Ogrinc, A. Gams, T. Petric, N. Sugimoto, A. Ude, J. Morimoto</i>	
<b>A NEURAL NETWORK TO CAPTURE DEMONSTRATED MOTIONS ON A HUMANOID ROBOT TO RAPIDLY CREATE COMPLEX CENTRAL PATTERN GENERATORS AS REUSABLE NEURAL BUILDING BLOCKS</b> .....	5291
<i>C. Rempis</i>	
<b>METHOD TO CALIBRATE THE SKELETON MODEL USING ORIENTATION SENSORS</b> .....	5297
<i>Q. Yuan, I. Chen, A. Sin</i>	
<b>INVERSE KINEMATICS OF A BILATERAL ROBOTIC HUMAN UPPER BODY MODEL BASED ON MOTION ANALYSIS DATA</b> .....	5303
<i>D. Lura, M. Wernke, S. Carey, R. Alqasemi, R. Dubey</i>	
<b>SOFT WEARABLE MOTION SENSING SUIT FOR LOWER LIMB BIOMECHANICS MEASUREMENTS</b> .....	5309
<i>Y. Menguc, Y. Park, E. Martinez-Villalpando, P. Aubin, M. Zisook, L. Stirling, R. Wood, C. Walsh</i>	
<b>ROBUST TRACKING OF BIO-INSPIRED REFERENCES FOR A BIPED ROBOT USING GEOMETRIC ALGEBRA AND SLIDING MODES</b> .....	5317
<i>J. Oviedo-Barriga, O. Carbajal-Espinosa, L. Gonzalez-Jimenez, B. Castillo-Toledo, E. Bayro-Corrochano</i>	
<b>ONLINE IDENTIFICATION AND VISUALIZATION OF THE STATICALLY EQUIVALENT SERIAL CHAIN VIA CONSTRAINED KALMAN FILTER</b> .....	5323
<i>A. Gonzalez, M. Hayashibe, P. Fraise</i>	
<b>HUMANOID ROBOT POSTURE-CONTROL LEARNING IN REAL-TIME BASED ON HUMAN SENSORIMOTOR LEARNING ABILITY</b> .....	5329
<i>L. Peternel, J. Babic</i>	
<b>NAVIGATION OF MINI SWIMMERS IN CHANNEL NETWORKS WITH MAGNETIC FIELDS</b> .....	5335
<i>F. Temel, A. Bezer, S. Yesilyurt</i>	
<b>CONSTRAINED WORKSPACE GENERATION FOR SNAKE-LIKE MANIPULATORS WITH APPLICATIONS TO MINIMALLY INVASIVE SURGERY</b> .....	5341
<i>R. Murphy, M. Moses, M. Kutzer, G. Chirikjian, M. Armand</i>	
<b>LOCALIZATION METHOD FOR A MAGNETIC CAPSULE ENDOSCOPE PROPELLED BY A ROTATING MAGNETIC DIPOLE FIELD</b> .....	5348
<i>K. Popek, A. Mahoney, J. Abbott</i>	

<b>FORCE CALCULATION FOR LOCALIZED MAGNETIC DRIVEN CAPSULE ENDOSCOPES</b> .....	5354
<i>M. Salerno, R. Rizzo, E. Sinibaldi, A. Menciassi</i>	
<b>RETINAL VESSEL MAPPING AND LOCALIZATION FOR INTRAOCULAR SURGERY</b> .....	5360
<i>B. Becker, C. Riviere</i>	
<b>MANAGING THE ATTRACTIVE MAGNETIC FORCE BETWEEN AN UNTETHERED MAGNETICALLY ACTUATED TOOL AND A ROTATING PERMANENT MAGNET</b> .....	5366
<i>A. Mahoney, S. Wright, J. Abbott</i>	
<b>AN EMPIRICAL STUDY OF THE ROLE OF MAGNETIC, GEOMETRIC, AND TISSUE PROPERTIES ON THE TURNING RADIUS OF MAGNETICALLY DRIVEN SCREWS</b> .....	5372
<i>N. Nelson, J. Delacenserie, J. Abbott</i>	
<b>COOPERATIVE IN SITU MICROSCOPIC SCANNING AND SIMULTANEOUS TISSUE SURFACE RECONSTRUCTION USING A COMPLIANT ROBOTIC MANIPULATOR</b> .....	5378
<i>P. Giataganas, V. Vitiello, V. Simaiaki, E. Lopez, G. Yang</i>	
<b>TOWARD LONG-TERM AND ACCURATE AUGMENTED-REALITY DISPLAY FOR MINIMALLY-INVASIVE SURGERY</b> .....	5384
<i>G. Puerto-Souza, G. Mariottini</i>	
<b>IMPLICIT ACTIVE CONSTRAINTS FOR ROBOT-ASSISTED ARTHROSCOPY</b> .....	5390
<i>E. Lopez, K. Kwok, C. Payne, P. Giataganas, G. Yang</i>	
<b>ADAPTIVE CONTROL FOR QUADROTORS</b> .....	5396
<i>Y. Aneho, F. Niel, F. Defay, J. Biannic, C. Berard</i>	
<b>UAV PARAMETER ESTIMATION WITH MULTI-OUTPUT LOCAL AND GLOBAL GAUSSIAN PROCESS APPROXIMATIONS</b> .....	5402
<i>P. Hemakumara, S. Sukkarieh</i>	
<b>RAPID TRANSFER OF CONTROLLERS BETWEEN UAVS USING LEARNING-BASED ADAPTIVE CONTROL</b> .....	5409
<i>G. Chowdhary, T. Wu, M. Cutler, J. How</i>	
<b>HYBRID MODELING AND CONTROL OF A COAXIAL UNMANNED ROTORCRAFT INTERACTING WITH ITS ENVIRONMENT THROUGH CONTACT</b> .....	5417
<i>K. Alexis, C. Huerzeler, R. Siegart</i>	
<b>MODEL PREDICTIVE HOVERING-TRANSLATION CONTROL OF AN UNMANNED TRI-TILTROTOR</b> .....	5425
<i>C. Papachristos, K. Alexis, A. Tzes</i>	
<b>RECURSIVE SYMBOLIC CALCULATION OF THE DYNAMIC MODEL OF FLEXIBLE PARALLEL ROBOTS</b> .....	5433
<i>S. Briot, W. Khalil</i>	
<b>IMPROVING THE CONTINUOUS EXECUTION OF REACTIVE LTL-BASED CONTROLLERS</b> .....	5439
<i>G. Jing, H. Kress-Gazit</i>	
<b>IMPROVING PATIENT COMFORT USING MODEL PREDICTIVE CONTROL IN ROBOT-ASSISTED RADIOTHERAPY</b> .....	5446
<i>C. Herrmann, K. Schilling</i>	
<b>SPINE-KINEMATICS WITH CONTRAINT GUIDANCE FOR ROBOT-SUPPORTED MIS-INSTRUMENTS</b> .....	5453
<i>A. Wimmer, B. Deutschmann, B. Kuebler, C. Rink, G. Hirzinger</i>	
<b>PRE AND POST-GRASPING ROBOT MOTION PLANNING TO CAPTURE AND STABILIZE A TUMBLING/DRIFTING FREE-FLOATER WITH UNCERTAIN DYNAMICS</b> .....	5461
<i>F. Aghili</i>	
<b>USING AN INERTIAL TAIL FOR RAPID TURNS ON A MINIATURE LEGGED ROBOT</b> .....	5469
<i>C. Casarez, I. Penskiy, S. Bergbreiter</i>	
<b>VIBRATION-DRIVEN MOBILE ROBOTS BASED ON SINGLE ACTUATED TENSEGRITY STRUCTURES</b> .....	5475
<i>V. Bohm, K. Zimmermann</i>	
<b>INTERNALLY-ACTUATED ROVERS FOR ALL-ACCESS SURFACE MOBILITY: THEORY AND EXPERIMENTATION</b> .....	5481
<i>R. Allen, M. Pavone, C. McQuin, I. Nenas, J. Castillo-Rogez, T. Nguyen, J. Hoffman</i>	
<b>AN ACTIVE COUPLING MECHANISM WITH THREE MODES OF OPERATION FOR MODULAR MOBILE ROBOTICS</b> .....	5489
<i>P. Moubarak, P. Ben-Tzvi, Z. Ma, E. Alvarez</i>	
<b>DESIGN OF AN INTEGRATED 3DOF INNER POSITION SENSOR AND 2DOF FEEDFORWARD CONTROL FOR A 3DOF PRECISION INCHWORM MECHANISM</b> .....	5495
<i>O. Fuchiwaki, M. Yatsurugi, A. Ogawa</i>	
<b>ASSESSMENT OF PROTEIN BINDING WITH MAGNETIC MICROROBOTS IN FLUID</b> .....	5502
<i>E. Steager, B. Zern, M. Sakar, V. Muzykantov, V. Kumar</i>	
<b>CONTROL OF MAGNETOTACTIC BACTERIUM IN A MICRO-FABRICATED MAZE</b> .....	5508
<i>I. Khalil, M. Pichel, B. Reefman, O. Sukas, L. Abelmann, S. Misra</i>	
<b>A TUMBLING MAGNETIC MICROROBOT WITH FLEXIBLE OPERATING MODES</b> .....	5514
<i>W. Jing, N. Pagano, D. Cappelleri</i>	
<b>SWIMMING PROPERTY CHARACTERIZATIONS OF MAGNETIC POLARIZABLE MICROROBOTS</b> .....	5520
<i>H. Salmon, L. Couraud, G. Hwang</i>	
<b>MICROASSEMBLY USING A CLUSTER OF PARAMAGNETIC MICROPARTICLES</b> .....	5527
<i>I. Khalil, F. Brink, O. Sukas, S. Misra</i>	
<b>FAST MARCHING IN MOTION PLANNING FOR RHOMBIC LIKE VEHICLES OPERATING IN ITER</b> .....	5533
<i>J. Gomez, A. Vale, F. Valente, J. Ferreira, S. Garrido, L. Moreno</i>	

<b>HIERARCHICAL ROUGH TERRAIN MOTION PLANNING USING AN OPTIMAL SAMPLING-BASED METHOD</b> .....	5539
<i>M. Brunner, B. Bruggemann, D. Schulz</i>	
<b>PROBABILISTIC TIME-DEPENDENT MODELS FOR MOBILE ROBOT PATH PLANNING IN CHANGING ENVIRONMENTS</b> .....	5545
<i>S. Loibl, D. Meyer-Delius, P. Pfaff</i>	
<b>CONTINUOUS PLANNING WITH WINDING CONSTRAINTS USING OPTIMAL HEURISTIC-DRIVEN FRONT PROPAGATION</b> .....	5551
<i>D. Yershov, P. Vernaza, S. LaValle</i>	
<b>ONLINE MOTION PLANNING FOR TETHERED ROBOTS IN EXTREME TERRAIN</b> .....	5557
<i>M. Tanner, J. Burdick, I. Nenas</i>	
<b>DYNAMIC MODEL-AIDED LOCALIZATION OF UNDERWATER AUTONOMOUS GLIDERS</b> .....	5565
<i>P. Wang, P. Singh, J. Yi</i>	
<b>HIERARCHICAL PROBABILISTIC REGRESSION FOR AUV-BASED ADAPTIVE SAMPLING OF MARINE PHENOMENA</b> .....	5571
<i>J. Das, J. Harvey, F. Py, H. Vathsangam, R. Graham, K. Rajan, G. Sukhatme</i>	
<b>JOINT ASV/AUV RANGE-BASED FORMATION CONTROL: THEORY AND EXPERIMENTAL RESULTS</b> .....	5579
<i>J. Soares, A. Aguiar, A. Pascoal, A. Martinoli</i>	
<b>ADAPTIVE MISSION PLANNING FOR COOPERATIVE AUTONOMOUS MARITIME VEHICLES</b> .....	5586
<i>G. Ferri, V. Djapic</i>	
<b>LEARNING UNCERTAINTY MODELS FOR RELIABLE OPERATION OF AUTONOMOUS UNDERWATER VEHICLES</b> .....	5593
<i>G. Hollinger, A. Pereira, G. Sukhatme</i>	
<b>DESIGN OF A BIMODAL SELF-BURYING ROBOT</b> .....	5600
<i>C. Darukhanavala, A. Lycas, A. Mittal, A. Suresh</i>	
<b>STUDY OF OMNI-DIRECTIONAL ALL TERRAIN MOBILE ROBOT WITH GLOBULAR METAL SPRING WHEEL</b> .....	5606
<i>T. Aoki, H. Yamato, M. Shimaoka, S. Mitsumori</i>	
<b>DEFORMABLE WHEEL ROBOT BASED ON ORIGAMI STRUCTURE</b> .....	5612
<i>D. Lee, G. Jung, M. Sin, S. Ahn, K. Cho</i>	
<b>DEVELOPMENT OF INVERTED PENDULUM ROBOT CAPABLE OF CLIMBING STAIRS USING PLANETARY WHEEL MECHANISM</b> .....	5618
<i>T. Takaki, T. Aoyama, I. Ishii</i>	
<b>WHEEL TRANSFORMER: A MINIATURIZED TERRAIN ADAPTIVE ROBOT WITH PASSIVELY TRANSFORMED WHEELS</b> .....	5625
<i>Y. Kim, G. Jung, H. Kim, K. Cho, C. Chu</i>	
<b>EFFICIENCY AND EFFECTIVENESS ANALYSIS OF A NEW DIRECT DRIVE MINIATURE QUADRUPED ROBOT</b> .....	5631
<i>C. Brown, D. Vogtmann, S. Bergbreiter</i>	
<b>CONTRIBUTION OF ACTUATED HEAD AND TRUNK TO PASSIVE WALKERS STABILIZATION</b> .....	5638
<i>M. Benallegue, J. Laumond, A. Berthoz</i>	
<b>CONTROL STRATEGY FOR ENERGY-EFFICIENT BIPEDAL WALKING WITH VARIABLE LEG STIFFNESS</b> .....	5644
<i>L. Visser, S. Stramigioli, R. Carloni</i>	
<b>CONTROLLER DESIGN FOR A BIPEDAL WALKING ROBOT USING VARIABLE STIFFNESS ACTUATORS</b> .....	5650
<i>J. Ketelaar, L. Visser, S. Stramigioli, R. Carloni</i>	
<b>TWO-ELEMENT CONTROL FOR THE ACTIVE SLIP MODEL</b> .....	5656
<i>G. Piovan, K. Byl</i>	
<b>UNDERACTUATED BIPEDAL WALKING WITH KNEES THAT GENERATES MEASURABLE PERIOD OF DOUBLE-LIMB SUPPORT</b> .....	5663
<i>M. Ohshima, F. Asano</i>	
<b>ROLE OF DECELERATION EFFECT IN EFFICIENT AND FAST CONVERGENT GAIT GENERATION</b> .....	5669
<i>F. Asano, X. Xiao</i>	
<b>STABILITY AND GAIT TRANSITION OF THE FIVE-LINK BIPED ON STOCHASTICALLY ROUGH TERRAIN USING A DISCRETE SET OF SLIDING MODE CONTROLLERS</b> .....	5675
<i>C. Saglam, K. Byl</i>	
<b>BALANCING OF LEGGED MECHANISM WITH MULTIPLE SEGMENTS</b> .....	5683
<i>C. Joo, J. Kim</i>	
<b>GAIT GENERATION VIA THE FOOT PLACEMENT ESTIMATOR FOR 3D BIPEDAL ROBOTS</b> .....	5689
<i>S. Choudhury, D. Kulic</i>	
<b>COOPERATIVE ROBOT LOCALIZATION AND TARGET TRACKING BASED ON LEAST SQUARES MINIMIZATION</b> .....	5696
<i>A. Ahmad, G. Tipaldi, P. Lima, W. Burgard</i>	
<b>COLLABORATIVE MULTI-VEHICLE SLAM WITH MOVING OBJECT TRACKING</b> .....	5702
<i>D. Moratuwage, B. Vo, D. Wang</i>	
<b>3-D MOTION ESTIMATION AND ONLINE TEMPORAL CALIBRATION FOR CAMERA-IMU SYSTEMS</b> .....	5709
<i>M. Li, A. Mourikis</i>	
<b>SUPER-RESOLUTION 3D TRACKING AND MAPPING</b> .....	5717
<i>M. Meilland, A. Comport</i>	

<b>ROBUST REAL-TIME VISUAL ODOMETRY FOR DENSE RGB-D MAPPING</b> .....	5724
<i>T. Whelan, H. Johannsson, M. Kaess, J. Leonard, J. McDonald</i>	
<b>MULTIBODY VSLAM WITH RELATIVE SCALE SOLUTION FOR CURVILINEAR MOTION RECONSTRUCTION</b> .....	5732
<i>R. Namdev, K. Krishna, C. Jawahar</i>	
<b>VSLAM POSE INITIALIZATION VIA LIE GROUPS AND LIE ALGEBRAS OPTIMIZATION</b> .....	5740
<i>G. Ros, J. Guerrero, A. Sappa, D. Ponsa, A. Lopez</i>	
<b>GENERIC FACTOR-BASED NODE MARGINALIZATION AND EDGE SPARSIFICATION FOR POSE-GRAPH SLAM</b> .....	5748
<i>N. Carlevaris-Bianco, R. Eustice</i>	
<b>TOWARDS AUTONOMOUS AIR-TO-AIR REFUELLING FOR UAVS USING VISUAL INFORMATION</b> .....	5756
<i>C. Martinez, T. Richardson, P. Campoy</i>	
<b>KEEPING A GROUND POINT IN THE CAMERA FIELD OF VIEW OF A LANDING UAV</b> .....	5763
<i>L. Burlion, H. Plimval</i>	
<b>IMAGE BASED VISUAL SERVO CONTROL FOR FIXED WING UAVS TRACKING LINEAR INFRASTRUCTURE IN WIND</b> .....	5769
<i>S. Mills, N. Aouf, L. Mejias</i>	
<b>AUTOMATIC BIRD SPECIES DETECTION USING PERIODICITY OF SALIENT EXTREMITIES</b> .....	5775
<i>W. Li, D. Song</i>	
<b>ERROR GROWTH DUE TO NOISE DURING OCCLUSIONS IN INERTIALLY-AIDED TRACKING SYSTEMS</b> .....	5781
<i>G. Claasen, P. Martin, K. Graichen</i>	
<b>LEARNING APPEARANCE MANIFOLDS WITH STRUCTURED SPARSE REPRESENTATION FOR ROBUST VISUAL TRACKING</b> .....	5788
<i>T. Bai, Y. Li, Z. Shao</i>	
<b>AUTOMATED POINTING OF CARDIAC IMAGING CATHETERS</b> .....	5794
<i>P. Loschak, L. Brattain, R. Howe</i>	
<b>ASYMMETRIC FORCE FEEDBACK CONTROL FRAMEWORK FOR TELEOPERATED ROBOT-ASSISTED SURGERY</b> .....	5800
<i>O. Mohareri, S. Salcudean, C. Nguan</i>	
<b>TASK CONTROL WITH REMOTE CENTER OF MOTION CONSTRAINT FOR MINIMALLY INVASIVE ROBOTIC SURGERY</b> .....	5807
<i>N. Aghakhani, M. Geravand, N. Shahriari, M. Vendittelli, G. Oriolo</i>	
<b>POSITION CONTROL OF CONCENTRIC-TUBE CONTINUUM ROBOTS USING A MODIFIED JACOBIAN-BASED APPROACH</b> .....	5813
<i>R. Xu, A. Asadian, A. Naidu, R. Patel</i>	
<b>SHARED CONTROL FOR MOTION COMPENSATION IN ROBOTIC BEATING HEART SURGERY</b> .....	5819
<i>G. Moustiris, A. Mantelos, C. Tzafestas</i>	
<b>SMITH PREDICTOR BASED CONTROL IN TELEOPERATED IMAGE-GUIDED BEATING-HEART SURGERY</b> .....	5825
<i>M. Bowthorpe, M. Tavakoli, H. Becher, R. Howe</i>	
<b>CLOSED-LOOP 3D MOTION MODELING AND CONTROL OF A STEERABLE NEEDLE FOR SOFT TISSUE SURGERY</b> .....	5831
<i>R. Secoli, F. Baena</i>	
<b>CONSTRAINED MOTION CONTROL OF MULTISEGMENT CONTINUUM ROBOTS FOR TRANSURETHRAL BLADDER RESECTION AND SURVEILLANCE</b> .....	5837
<i>A. Bajo, R. Pickens, S. Herrell, N. Simaan</i>	
<b>3D FLEXIBLE NEEDLE STEERING IN SOFT-TISSUE PHANTOMS USING FIBER BRAGG GRATING SENSORS</b> .....	5843
<i>M. Abayazid, M. Kemp, S. Misra</i>	
<b>AN INEXPENSIVE MONOCULAR VISION SYSTEM FOR TRACKING HUMANS IN INDUSTRIAL ENVIRONMENTS</b> .....	5850
<i>R. Mosberger, H. Andreasson</i>	
<b>OPTIMAL PLACEMENT OF SPOTS IN DISTRIBUTED PROXIMITY SENSORS FOR SAFE HUMAN-ROBOT INTERACTION</b> .....	5858
<i>N. Ceriani, G. Avanzini, A. Zanchettin, L. Bascetta, P. Rocco</i>	
<b>Author Index</b>	