2010 IEEE International Conference on Robotics and Automation

(ICRA 2010)

Anchorage, Alaska, USA
3-8 May 2010
TuA1  
**Aerial Robotics: Communication, Perception and Control** (Regular Sessions)  
Egan Center Street Level Room Arteaga

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<td>TuA1.1</td>
<td>Efficient Planning under Uncertainty for a Target-Tracking Micro-Aerial Vehicle, pp. 1-8.</td>
<td>He, Ruijie (Massachusetts Inst. of Tech.), Bachrach, Abraham (Massachusetts Inst. of Tech.), Roy, Nicholas (Massachusetts Inst. of Tech.)</td>
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<td>08:45-09:00</td>
<td>TuA1.2</td>
<td>Homography-Based Visual Servoing of an Aircraft for Automatic Approach and Landing, pp. 9-14.</td>
<td>Goncalves, Tiago (IST/TULisbon), Azinheira, Jose Raul (IST, T.U.Lisbon), Rives, Patrick (INRIA)</td>
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<td>Communication-Based Leashing of Real Flying Robots, pp. 15-20.</td>
<td>Hauert, Sabine (EPFL), Leven, Severin (Ec. Pol. Federale de Lausanne), Zufferey, Jean-Christophe (EPFL), Floreano, Dario (Ec. Pol. Federal, Lausanne)</td>
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<td>Vision Based MAV Navigation in Unknown and Unstructured Environments, pp. 21-28.</td>
<td>Blösch, Michael (ETH Zurich), Weiss, Stephan (ETH Zurich), Scaramuzza, Davide (ETH Zurich), Siegwart, Roland (ETH Zurich)</td>
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<td>Moore, Richard James Donald (Univ. of Queensland), Thurrowgood, Saul (Univ. of Queensland), Bland, Daniel Peter (Univ. of Queensland), Soccol, Dean (Univ. of Queensland), Srinivasan, Mandyam (The Univ. of Queensland)</td>
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<td>TuA1.6</td>
<td>3D Pose Estimation Based on Planar Object Tracking for UAVs Control, pp. 35-41. Attachment</td>
<td>Mondragón, Iván Fernando (Computer Vision Group. Univ. Pol. de Madrid), Campoy, Pascual (Computer Vision Group. Univ. Pol. de Madrid), Martinez, Carol (UPM), Olivares, Miguel (Univ. Pol. Madrid)</td>
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TuA2  
**Novel Designs and Architectures** (Invited Sessions)  
Egan Center Lower Level Room 6

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<td>Mechanism Design and Air Pressure Control System Improvements of the Waseda Saxophonist Robot, pp. 42-47. Attachment</td>
<td>Solis, Jorge (Waseda Univ.), Petersen, Klaus (Waseda Univ.), Yamamoto, Tetsuro (Waseda Univ.), Takeuchi, Masaki (Waseda Univ.), Ishikawa, Shimpel (Waseda Univ.), Takani, Atsu (Waseda Univ.), Hashimoto, Kunimatsu (Toyota Motor Corp.)</td>
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<td>TuA2.2</td>
<td>“Architectural Robotics”: An Interdisciplinary Course Rethinking the Machines We Live In, pp. 48-53.</td>
<td>Kapadia, Apoorva (Clemson Univ.), Walker, Ian (Clemson Univ.), Green, Keith Evan (Clemson Univ.), Manganelli, Joseph Charles (Clemson Univ.), Houayek, Henrique (Clemson Univ.), James, Adam (Clemson Univ.), Kanuri, Venkata Krishna Teja (Clemson Univ.), Mokhtar, Tarek (Clemson Univ.), Siles, Ivan (Clemson Univ.), Yanik, Paul (Clemson Univ.)</td>
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<td>A Hovering Control Strategy for a Tail-Sitter VTOL UAV That Increases Stability against Large Disturbance, pp. 54-59. Attachment</td>
<td>Matsumoto, Takaaki (Tohoku Univ.), Kita, Koichi (Fuji Heavy Industries Ltd.), Suzuki, Ren (Tohoku Univ.), Oosedo, Atsushi (Tohoku Univ.), Go, Kenta (Tohoku Univ.), Hoshino, Yuta (Tohoku Univ.), Konno, Atsushi (Tohoku Univ.), Uchiyama, Masaru (Tohoku Univ.)</td>
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<td>Design of Imobot, an Intelligent Reconfigurable Mobile Robot with Novel Locomotion, pp. 60-65. Attachment</td>
<td>Ryland, Graham (Univ. of Californial, Davis), Cheng, Harry (Univ. of California, Davis)</td>
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<td>Sambot: A Self-Assembly Modular Robot for Swarm Robot, pp. 66-71. Attachment</td>
<td>Wei, Hongxing (Beihang Univ.), Cai, Yingpeng (Beihang Univ.), Li, Haiyan (Beihang Univ.), Li, Dezhong (Beihang Univ.), Wang, Tianmiao (Beihang Univ.)</td>
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<td>Hybrid Aerial and Scansorial Robotics, pp. 72-77. Attachment</td>
<td>Lussier Desbiens, Alexis (Stanford Univ.), Asbeck, Alan (Stanford Univ.), Cutkosky, Mark (Stanford Univ.)</td>
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TuA3  
**Biologically Inspired Swimming Robots** (Regular Sessions)  
Egan Center Second Level Room Boardroom

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<td>Myometry-Driven Compliant-Body Design for Underwater Propulsion, pp. 84-89.</td>
<td>Akanyeti, Otar (Univ. of Verona), Ernits, Andres (Tallinn Univ. of Tech.), Fiazza, Maria-Camilla (Univ. of Verona), Toming, Gert (Tallinn Univ. of Tech.), Kunlikovskis, Guntis (Riga Tech. Univ.), Listak, Madis (Tallinn Univ. of Tech.), Raag, Rasmus (Tallinn Univ. of Tech.), Salurnae, Taavi (Tallinn Univ. of Tech.), Fiorini, Paolo (Univ. of Verona), Kruusmaa, Maarja (Tallinn Univ. of Tech.)</td>
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Performance Study of a Fish Robot Propelled by a Flexible Caudal Fin, pp. 90-95.

09:15-09:30 TuA3.4
Non-Ideal Swimming of Artificial Bacterial Flagella Near a Surface, pp. 96-101.
Peyer, Kathrin Eva (ETH Zurich), Zhang, Li (ETH Zurich), Kratochvil, Bradley (ETH Zurich), Nelson, Bradley J. (ETH Zurich)

09:30-09:45 TuA3.5
Analytical Modeling and Experimental Studies of Robotic Fish Turning, pp. 102-108.
Tan, Xiaobo (Michigan State Univ.), Carpenter, Michael (Michigan State Univ.), Thon, John (Michigan State Univ.), Alequin-Ramos, Freddie (Michigan State Univ.)

09:45-10:00 TuA3.6
Omegabot: Crawling Robot Inspired by Ascothis Selenaria, pp. 109-114. Attachment
Koh, Je-Sung (Seoul National Univ.), Cho, Kyu-Jin (Seoul National Univ.)

TuA4
Range Sensing (Regular Sessions)

Chair: Durrant-Whyte, Hugh The Univ. of Sydney
Co-Chair: Xi, Ning Michigan State Univ.

08:30-08:45 TuA4.1
Inferring Motion Uncertainty from Shape-Matching, pp. 115-120.
Sun, Zuolei (Shanghai Jiao Tong Univ.), van de Ven, Joop (Univ. of Sydney), Ramos, Fabio (Univ. of Sydney), Mao, Xuchu (Shanghai Jiao Tong Univ.), Durrant-Whyte, Hugh (The Univ. of Sydney)

08:45-09:00 TuA4.2
Real-Time 3D Shape Measurement System Based on Single Structure Light Pattern, pp. 121-126.
Xu, Jing (Michigan State Univ.), Xi, Ning (Michigan State Univ.), Zhang, Chi (Michigan State Univ.), Shi, Quan (Michigan State Univ.)

09:00-09:15 TuA4.3
Scene Understanding in a Large Dynamic Environment through a Laser-Based Sensing, pp. 127-133.
Zhao, Huijing (Peking Univ.), Liu, Yiming (Peking Univ.), Zhu, Xiaolong (Peking Univ.), Zhao, Yipu (Peking Univ.), Zha, Hongbin (Peking Univ.)

09:15-09:30 TuA4.4
Dynamic 3D Scene Analysis for Acquiring Articulated Scene Models, pp. 134-141. Attachment
Swadzba, Agnes (Bielefeld Univ.), Beuter, Niklas (Bielefeld Univ.), Wachsmuth, Sven (Bielefeld Univ.), Kummert, Franz (Univ. of Bielefeld)

09:30-09:45 TuA4.5
Motion Estimation from Range Images in Dynamic Outdoor Scenes, pp. 142-147.
Moosmann, Frank (Univ. of Karlsruhe), Fraichard, Thierry (Inria)

09:45-10:00 TuA4.6
Konolige, Kurt (Willow Garage)

TuA5
Human Robot Interaction (Regular Sessions)

Chair: Campbell, Mark Cornell Univ.
Co-Chair: Burschka, Darius Tech. Univ. München

08:30-08:45 TuA5.1
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Raducanu, Bogdan (Computer Vision Center), Dornaika, Fadi (Univ. of the Basque Country)

08:45-09:00 TuA5.2
Jäkel, Rainer (Univ. of Karlsruhe), Schmidt-Rohr, Sven R. (Univ. of Karlsruhe), Lösch, Martin (Univ. Karlsruhe (TH)), Dillmann, Rüdiger (Univ. of Karlsruhe)

09:00-09:15 TuA5.3
Park, Hae Won (Georgia Inst. of Tech.), Howard, Ayanna (Georgia Inst. of Tech.)

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Meiners, Eric M. (Johns Hopkins Univ.), Das, Sanmay (RPI), Isler, Volkan (Univ. of Minnesota), Trinkle, Jeff (Rensselaer Pol. Inst.), Sabanovic, Selma (Indiana Univ.), Caporael, Linnda (Rensselaer Pol. Inst.)

09:30-09:45 TuA5.5
Variational Bayesian Data Fusion of Multi-Class Discrete Observations with Applications to Cooperative Human-Robot Estimation, pp. 186-191.
Ahmed, Nisar (Cornell Univ.), Campbell, Mark (Cornell Univ.)

09:45-10:00 TuA5.6
Petsch, Susanne (Tech. Univ. München), Burschka, Darius (Tech. Univ. München)

TuA6
Human Robot Interaction for Assistive Technology (Invited Sessions)

Chair: Campbell, Mark Cornell Univ.
Co-Chair: Burschka, Darius Tech. Univ. München
Chair: Behal, Aman  
Co-Chair: Howard, Ayanna  
Organizer: Behal, Aman  
Organizer: Kim, Dae-Jin  

08:30-08:45 TuA6.1  
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Urdiales, Cristina (Univ. de Málaga), Fernandez-Carmona, Manuel (Univ. de Málaga), Peula Palacios, Jose Manuel (Univ. of Málaga), Annichiarico, Roberta (IRCCS Fondazione Santa Lucia), Sandoval, Francisco (Univ. Málaga), Callagirone, Carlo (IRCCS Fondazione Santa Lucia - Univ. Tor Vergata Roma)  

08:45-09:00 TuA6.2  
Park, Wonil (Korea Adv. Inst. of Science & Tech.), Kwon, Suncheol (KAIST), Kim, Jung (KAIST)  

09:00-09:15 TuA6.3  
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Ward, Jeffrey (Arizona State Univ.), Sugar, Thomas (Arizona State Univ.), Standeven, John (Washington Univ.), Engsberg, Jack (Washington Univ.)  

09:15-09:30 TuA6.4  
Kim, Dae-Jin (Univ. of Central Florida), Hazeltt, Rebekah (Univ. of Central Florida), Godfrey, Heather (Orlando Health), Rucks, Greta (Orlando Health), Portee, David (Orlando Health), John, Bricout (Univ. of Central Florida), Cunningham, Tara (Orlando Health), Behal, Aman (Univ. of Central Florida)  

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Vertechy, Rocco (Scuola Superiore Sant’Anna), Frisoli, Antonio (Scuola Superiore Sant’Anna), Solazzi, Massimiliano (Scuola Superiore Sant’Anna), Dettori, Andrea (Scuola Superiore Sant’Anna), Bergamasco, Massimo (Scuola Superiore S.Anna)  

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Park, Chung Hyuk (Georgia Inst. of Tech.), Yoo, Jae Wook (Georgia Inst. of Tech.), Howard, Ayanna (Georgia Inst. of Tech.)  

TuA7  
Algorithms and Representations for SLAM (Regular Sessions)  
Egan Center Lower Level Room 11/12  
Chair: Munich, Mario  
Co-Chair: Chung, Wan Kyun  

08:30-08:45 TuA7.1  
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Gutmann, Jens-Steffen (Evolution Robotics Inc.), Brisson, Gabriel (unaffiliated), Eade, Ethan (Evolution Robotics), Fong, Philip (Evolution Robotics), Munich, Mario (Evolution Robotics)  

08:45-09:00 TuA7.2  
Rao-Blackwellized Particle Filters Multi Robot SLAM with Unknown Initial Correspondences and Limited Communication, pp. 243-249.  
Carlone, Luca (Pol. di Torino), Kaouk Ng, Miguel Efrain (Pol. di Torino), Du, Jingjing (Pol. di torino), Bona, Basilio (Pol. di Torino), Indri, Marina (Pol. di Torino)  

09:00-09:15 TuA7.3  
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Lee, Jung-Suk (POSTECH), Kim, Chanki (POSTECH), Chung, Wan Kyun (POSTECH)  

09:15-09:30 TuA7.4  
Bibby, Charles (Univ. of Oxford), Reid, Ian (Univ. of Oxford)  

09:30-09:45 TuA7.5  
AntiSLAM: Global Map Optimization Using Swarm Intelligence, pp. 265-272.  
Iser, Rene (Tech. Univ. of Braunschweig), Wahl, Friedrich M. (Tech. Univ. of Braunschweig)  

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Grisetti, Giorgio (Universität Freiburg), Kuemmerle, Rainer (Univ. of Freiburg), Stachniss, Cyrill (Univ. of Freiburg), Frese, Udo (Univ. Bremen), Hertzberg, Christoph (Univ. Bremen)  

TuA8  
Autonomous Navigation (Regular Sessions)  
Egan Center Street Level Room Cook Hall  
Chair: Spletzer, John  
Co-Chair: Sadler, Brian  

08:30-08:45 TuA8.1  
On-Line Calibration of Multiple LIDARS on a Mobile Vehicle Platform, pp. 279-284.  
Gao, Chao (Lehigh Univ.), Spletzer, John (Lehigh Univ.)  

08:45-09:00 TuA8.2  
Sibley, Gabe (Univ. of Oxford), Mei, Christopher (Univ. of Oxford), Reid, Ian (Univ. of Oxford), Newman, Paul (Oxford Univ.)  

09:00-09:15 TuA8.3  
Repeated AUV Surveying of Urchin Barrens in North Eastern Tasmania, pp. 293-299.
Williams, Stefan Bernard (Univ. of Sydney), Pizarro, Oscar (Australian Centre for Field Robotics), Jakuba, Michael (Univ. of Sydney), Mahon, Ian (Univ. of Sydney), Ling, Scott (Univ. of Tasmania), Johnson, Craig (Univ. of Tasmania)

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The Office Marathon: Robust Navigation in an Indoor Office Environment, pp. 300-307. Attachment
Marder-Eppstein, Eitan (Willow Garage), Berger, Eric (Willow Garage), Foote, Tully (Willow Garage Inc.), Gerkey, Brian (Willow Garage), Konolige, Kurt (Willow Garage)

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Toward Autonomous Scientific Exploration of Ice-Covered Lakes - Field Experiments with the ENDURANCE AUV in an Antarctic Dry Valley, pp. 308-315.
Gulati, Shilpa (Univ. of Texas at Austin), Richmond, Kristof (Stone Aerospace), Flesher, Christopher (Stone Aerospace), Hogan, Bart (Stone Aerospace), Murarka, Aniket (The Univ. of Texas at Austin), Kuhlmann, Gregory (The Univ. of Texas at Austin), Sridharan, Mohan (Texas Tech. Univ.), Stone, William (Stone Aerospace), Doran, Peter (Univ. of Illinois at Chicago)

09:45-10:00 TuA8.6
Furukawa, Tomonari (Virginia Pol. Inst. and State Univ.), Lavis, Benjamin (Univ. of California, Berkeley), Durrant-Whyte, Hugh (The Univ. of Sydney)

TuA9
Path Planning and Coordination for Multiple Robots (Regular Sessions) Egan Center Lower Level Room 3
Chair: Reveliotis, Spiridon Georgia Inst. of Tech.
Co-Chair: Kaminka, Gal A Bar Ilan Univ.
08:30-08:45 TuA9.1
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Roszkowska, Elzbieta (Wroclaw Univ. of Tech.), Reveliotis, Spiridon (Georgia Inst. of Tech.)
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Kaminka, Gal A (Bar Ilan Univ.), Ersalimchik, Dan (Bar-Ilan Univ.), Kraus, Sarit (Bar-Ilan Univ.)
09:00-09:15 TuA9.3
Ferrari, Silvia (Duke Univ.), Foderaro, Greg (Duke Univ.)
09:15-09:30 TuA9.4
Controllability for Pairs of Vehicles Maintaining Constant Distance, pp. 342-349.
Wang, Huifang (Univ. of Pisa), Pallottino, Lucia (Univ. di Pisa), Bicchi, Antonio (Univ. of Pisa)
09:30-09:45 TuA9.5
Rodriguez, Samuel (Texas A&M Univ.), Amato, Nancy (Texas A&M Univ.)
09:45-10:00 TuA9.6
Karnad, Nikhil (Univ. of Minnesota, Twin-Cities), Isler, Volkan (Univ. of Minnesota)

TuA10
AI Reasoning Methods (Regular Sessions) Egan Center Lower Level Room 9/10
Chair: Konolige, Kurt Willow Garage
Co-Chair: Schermerhorn, Paul Indiana Univ.
08:30-08:45 TuA10.1
Vision-Based Detection for Learning Articulation Models of Cabinet Doors and Drawers in Household Environments, pp. 362-368. Attachment
Schmerhorn, Paul (Indiana Univ.), Atrash, Amin (McGill Univ.), Pineau, Joelle (McGill Univ.)
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Kaplow, Robert (McGill Univ.), Aksoy, Erer Erdal (Univ. of Goettingen), Abramov, Alexey (Univ. of Goettingen), Woergoetter, Florentin (Univ. of Goettingen, Inst. of Physics III), Dellen, Babette (Max Planck Inst. for Dynamics and Self-Organization)
09:15-09:30 TuA10.3
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Guez, Arthur (McGill Univ.), Pineau, Joelle (McGill Univ.)
09:30-09:45 TuA10.4
Categorizing Object-Action Relations from Semantic Scene Graphs, pp. 385-392.
Aksoy, Eren Erdal (Univ. of Goettingen), Abramov, Alexey (Univ. of Goettingen), Woergoetter, Florentin (Univ. of Goettingen, Inst. of Physics III), Dellen, Babette (Max Planck Inst. for Dynamics and Self-Organization)
09:45-10:00 TuA10.5
Using Logic to Handle Conflicts between System, Component, and Infrastructure Goals in Complex Robotic Architectures, pp. 393-398.
Schermerhorn, Paul (Indiana Univ.), Scheutz, Matthias (Indiana Univ. Bloomington)
09:45-10:00 TuA10.6
Toussaint, Marc (TU Berlin), Nils, Plath (TU Berlin), Lang, Tobias (TU Berlin), Jetchev, Nikolay (TU Berlin)

TuA11
Egan Center Lower Level Room 5
**Detection and Surveillance (Regular Sessions)**

**Chair:** Papanikolopoulos, Nikos  
**Co-Chair:** Young, Stuart  
**Univ. of Minnesota**  
**Army Res. Lab.**

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*Attachment*

- Song, Xuan (Peking Univ.), Zhao, Huijing (Peking Univ.), Cui, Jinshi (Peking Univ.), Shao, Xiaowei (Univ. of Tokyo), Shibasaki, Ryosuke (Univ. of Tokyo), Zha, Hongbin (Peking Univ.)

**TuA12**  
**Egan Center Lower Level Room 4**

**Human Detection, Tracking and Listening (Regular Sessions)**

**Chair:** Kyriakopoulos, Kostas  
**Co-Chair:** Okuno, Hiroshi G.  
**Univ. of Athens**  
**Kyoto Univ.**

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**A Multiple Hypothesis People Tracker for Teams of Mobile Robots**, pp. 446-451.  
Tsokas, Nicolas (National Tech. Univ. of Athens), Kyriakopoulos, Kostas (National Tech. Univ. of Athens)

Chang, SangHyun (California Inst. of Tech.), Wolf, Michael (Jet Propulsion Lab.), Burdick, Joel (California Inst. of Tech.)

*Attachment*  
Romero, Javier (KTH), Kjellstrom, Hedvig (KTH), Kragic, Danica (KTH)

**TuA13**  
**Egan Center Lower Level Room 7/8**

**Micro and Nano Scale Automation (Regular Sessions)**

**Chair:** Arai, Fumihiro  
**Co-Chair:** Martel, Sylvain  
**Tohoku Univ.**  
**Ec. Pol. de Montreal (EPM)**

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Maruyama, Hisataka (Tohoku Univ.), Iitsuka, Ryo (Tohoku Univ.), Onda, Kauzuhira (Tohoku Univ.), Arai, Fumihiro (Tohoku Univ.)

**Millimeter Scale Microrobots for the Nanoassembly Applications**, pp. 488-493.  
Murthy, Rakesh (Univ. of Texas at Arlington), Popa, Dan (The Univ. of Texas at Arlington)

**Using a Swarm of Self-Propelled Natural Microrobots in the Form of Flagellated Bacteria to Perform Complex Micro-Assembly Tasks**, pp. 500-505.  
Lu, Zhe (Univ. of Toronto), Moraes, Christopher (Univ. of Toronto), Zhao, Yan (Univ. of Toronto), You, LiDan (Univ. of Toronto), Simmons, Craig A. (Univ. of Toronto), Sun, Yu (Univ. of Toronto)
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<td>Closed Loop Performance of Polypyrrole Linear Contractile Actuators, pp. 506-511.</td>
<td>Martel, Sylvain (Ec. Pol. de Montreal (EPM)), Mohammadi, Mahmood (Ec. Pol. de Montreal (EPM))</td>
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<td>Compensation of Rate-Dependent Hysteresis Nonlinearities in a Piezo Micro-Positioning Stage, pp. 512-517.</td>
<td>Al Janaideh, Mohammad (Concordia Univ.), Su, Chun-Yi (Concordia Univ.)</td>
<td>Dena'ina Center Tikahtnu A</td>
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<td>10:25-11:00</td>
<td>TuB1.1</td>
<td>50 Years of Robotics and Automation: Field Robotics (I)*.</td>
<td>Hirose, Shigeo (Tokyo Inst. of Tech.)</td>
<td>Dena'ina Center Tikahtnu B</td>
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<tr>
<td>10:25-11:00</td>
<td>TuB1.2</td>
<td>Coping with Imbalanced Training Data for Improved Terrain Prediction in Autonomous Outdoor Robot Navigation, pp. 518-525.</td>
<td>Procopio, Michael (Sandia National Lab.), Mulligan, Jane (Univ. of Colorado at Boulder), Grudic, Greg (Univ. of Colorado at Boulder)</td>
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<td>10:25-11:00</td>
<td>TuB1.3</td>
<td>A Voice-Commandable Robotic Forklift Working Alongside Humans in Minimally-Prepared Outdoor Environments, pp. 526-533.</td>
<td>Teller, Seth (MIT), Walter, Matthew (MIT), Antone, Matthew (BAE Systems), Correa, Andrew (A), Davis, Randall (MIT), Fletcher, Luke (MIT), Frazzoli, Emilio (Massachusetts Inst. of Tech.), Glass, Jim (MIT), How, Jonathan (Massachusetts Inst. of Tech.), Huang, Albert S. (Massachusetts Inst. of Tech.), Jeon, Jeong Hwan (Massachusetts Inst. of Tech.), Karaman, Sertac (Massachusetts Inst. of Tech.), Luders, Brandon (MIT), Roy, Nicholas (Massachusetts Inst. of Tech.), Sainath, Tara (IBM)</td>
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<td>10:25-11:00</td>
<td>TuB1.4</td>
<td>Visual Path Following on a Manifold in Unstructred Three-Dimensional Terrain, pp. 534-539.</td>
<td>Furgale, Paul Timothy (Univ. of Toronto), Barfoot, Timothy (Univ. of Toronto)</td>
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<td>10:25-11:00</td>
<td>TuB2.1</td>
<td>Automation and Robotics (I)*.</td>
<td>Mason, Matthew T. (Carnegie Mellon Univ.)</td>
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<td>10:25-11:00</td>
<td>TuB2.2</td>
<td>Toward the Set of Frictional Velocity Fields Generable by 6-Degree-Of-Freedom Oscillatory Motion of a Rigid Plate, pp. 540-547.</td>
<td>Vose, Thomas (Northwestern Univ.), Umbanhowar, Paul (Northwestern Univ.), Lynch, Kevin (Northwestern Univ.)</td>
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<td>10:25-11:00</td>
<td>TuB2.4</td>
<td>Unified Impedance and Admittance Control, pp. 554-561.</td>
<td>Ott, Christian (German Aerospace Center (DLR)), Mukherjee, Ranjan (Michigan State Univ.), Nakamura, Yoshihiko (Univ. of Tokyo)</td>
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<td>10:25-11:00</td>
<td>TuB3.1</td>
<td>50 Years of Robotics: Medical and Life Sciences (Regular Sessions)</td>
<td>Hager, Gregory (Johns Hopkins Univ.), Fujie, Masakatsu G. (Waseda Univ.)</td>
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<td>10:25-11:00</td>
<td>TuB3.2</td>
<td>Real-Time Position Control of Concentric Tube Robots, pp. 562-568.</td>
<td>Dupont, Pierre (Boston Univ.), Lock, Jesse (Boston Univ.), Itkowitz; Brandon (Boston Univ.)</td>
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<td>10:25-11:00</td>
<td>TuB3.3</td>
<td>Robotically Generated Force Fields for Stroke Patient Pelvic Obliquity Gait Rehabilitation, pp. 569-575.</td>
<td>Pietrusinski, Maciej (Northeastern Univ.), Cajigas, Iahn (MIT), Goldsmith, Mary (Department of Biomedical Engineering, Boston Univ.), Bonato, Paolo (Harvard Medical School), Mavroidis, Constantinos (Northeastern Univ.)</td>
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<td>10:25-11:00</td>
<td>TuB3.4</td>
<td>Wireless Control of Magnetic Helical Microrobots Using a Rotating-Permanent-Magnet Manipulator, pp. 576-581.</td>
<td>Fountain, Thomas (Univ. of Utah), Kailat, Prem (Univ. of Utah), Abbott, Jake (Univ. of Utah)</td>
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<td>10:25-11:00</td>
<td>TuB4.1</td>
<td>50 Years of Robotics: Energy, Environment and Society (Regular Sessions)</td>
<td>Teller, Seth (MIT), Walter, Matthew (MIT), Antone, Matthew (BAE Systems), Correa, Andrew (A), Davis, Randall (MIT), Fletcher, Luke (MIT), Frazzoli, Emilio (Massachusetts Inst. of Tech.), Glass, Jim (MIT), How, Jonathan (Massachusetts Inst. of Tech.), Huang, Albert S. (Massachusetts Inst. of Tech.), Jeon, Jeong Hwan (Massachusetts Inst. of Tech.), Karaman, Sertac (Massachusetts Inst. of Tech.), Luders, Brandon (MIT), Roy, Nicholas (Massachusetts Inst. of Tech.), Sainath, Tara (IBM)</td>
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<td>10:25-11:00</td>
<td>TuB4.1</td>
<td>Robots for Energy and Environment: Evolution and Revolution (I)*.</td>
<td>Yoerger, Dana (Woods Hole Oceanographic Inst.)</td>
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<td>11:00-11:15</td>
<td>TuB4.2</td>
<td>Gesture-Based Human-Robot Jazz Improvisation, pp. 582-587. Attachment</td>
<td>Hoffman, Guy (Georgia Tech.), Weinberg, Gil (Georgia Inst. of Tech.)</td>
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<td>11:15-11:30</td>
<td>TuB4.3</td>
<td>Statistical Mobility Prediction for Planetary Surface Exploration Rovers in Uncertain Terrain, pp. 588-593.</td>
<td>Ishigami, Genya (Massachusetts Inst. of Tech.), Kewlani, Gaurav (Massachusetts Inst. of Tech.), Iagnemma, Karl (MIT)</td>
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<td>13:15-14:10</td>
<td>TuPL.1</td>
<td>Plenary: Robotics from Anthropomorphism (Plenary Sessions)</td>
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<td>14:20-14:35</td>
<td>TuD1.1</td>
<td>The Distributed Flight Array, pp. 601-607. Attachment</td>
<td>Oung, Raymond (ETH Zurich), Bourgault, Frederic (ETH Zürich), Donovan, Matthew (ETH Zurich), D'Andrea, Raffaello (ETHZ)</td>
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<td>14:35-14:50</td>
<td>TuD1.2</td>
<td>A New Method of Modeling the Actuation Dynamics of a Miniature Hingeless Helicopter Using Gyroscopic Moments, pp. 608-613.</td>
<td>Lau, Tak Kit (The Chinese Univ. of Hong Kong), Liu, Yunhui (Chinese Univ. of Hong Kong), Lin, Kai Wun (The Chinese Univ. of Hong Kong)</td>
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<td>14:50-15:05</td>
<td>TuD1.3</td>
<td>Angular Elevation Control of Robotic Kite Systems, pp. 614-619.</td>
<td>Christoforou, Eftychios (Univ. of Cyprus)</td>
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<td>15:05-15:20</td>
<td>TuD1.4</td>
<td>Flight Formation of Multiple Mini Rotorcraft Via Coordination Control, pp. 620-625.</td>
<td>Guerrero Mata, Jose Alfredo (Univ. of Tech. of Compiègne), Fantoni, Isabelle (Univ. of Tech. of Compiègne), Salazar, Sergio (Université de Compiègne), Lozano, Rogelio (Univ. de Tech. de Compiègne)</td>
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<td>15:20-15:35</td>
<td>TuD1.5</td>
<td>Experimental Investigation of Effects of Flapping Wing Aspect Ratio and Flexibility on Aerodynamic Performance, pp. 626-631.</td>
<td>Zhang, Chengkun (Univ. of Delaware), Khan, Zaeem (Univ. of Delaware), Agrawal, Sunil (Univ. of Delaware)</td>
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<td>15:35-15:50</td>
<td>TuD1.6</td>
<td>Design of an Improved Land/Air Miniature Robot, pp. 632-637.</td>
<td>Kossett, Alex (Univ. of Minnesota), D'Sa, Ruben (Univ. of Minnesota), Purvey, Jesse (Univ. of Minnesota), Papanikolopoulos, Nikos (Univ. of Minnesota)</td>
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<td>14:20-14:35</td>
<td>TuD2.1</td>
<td>Vector-Based Dynamic Modeling and Control of the Quattro Parallel Robot by Means of Leg Orientations, pp. 638-643.</td>
<td>Ozgur, Erol (Blaise Pascal Univ.), Andreff, Nicolas (Univ. de Franche Comté), Martinet, Philippe (Blaise Pascal Univ.)</td>
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<td>14:35-14:50</td>
<td>TuD2.2</td>
<td>Efficient High-Speed Vision-Based Computed Torque Control of the Orthoglide Parallel Robot, pp. 644-649.</td>
<td>Dahmouchche, Redwan (Univ. Blaise Pascal), Andreff, Nicolas (Univ. de Franche Comté), Mezouar, Youcef (Blaise Pascal Univ.), Martinet, Philippe (Blaise Pascal Univ.)</td>
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<td>15:05-15:20</td>
<td>TuD2.4</td>
<td>Control of Parallel Robots (Regular Sessions)</td>
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<td>15:20-15:35</td>
<td>TuD2.5</td>
<td>Experimental Investigation of Effects of Flapping Wing Aspect Ratio and Flexibility on Aerodynamic Performance, pp. 644-649.</td>
<td>Zhang, Chengkun (Univ. of Delaware), Khan, Zaeem (Univ. of Delaware), Agrawal, Sunil (Univ. of Delaware)</td>
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<td>TuD2.6</td>
<td>Design of an Improved Land/Air Miniature Robot, pp. 632-637.</td>
<td>Kossett, Alex (Univ. of Minnesota), D'Sa, Ruben (Univ. of Minnesota), Purvey, Jesse (Univ. of Minnesota), Papanikolopoulos, Nikos (Univ. of Minnesota)</td>
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Optimization Strategies for Additional Actuators of Kinematically Redundant Parallel Kinematic Machines, pp. 656-661.

Kotlarski, Jens (Leibniz Univ. Hannover), Do Thanh, Trung (Hannover), Heimann, Bodo (Leibniz Univ. Hannover), Ortmaier, Tobias (Leibniz Univ. Hanover)

15:20-15:35

Implementation of a 4-DOF Parallel Mechanism As a Needle Insertion Device, pp. 662-668. Attachment

Chung, Jaeheon (Kyushu Univ.), Cha, Hyo Jung (Hanyang Univ.), Yi, Byung-Ju (Hanayang Univ.), Kim, Whee Kuk (Korea Univ.)

15:35-15:50


Yu, Kun (Univ. at Buffalo), Lee, Leng-Feng (Univ. at Buffalo), Tang, Chinpeii (The Univ. of Texas at Dallas), Krovi, Venkat (Univ. at Buffalo (SUNY))

TuD3

Snake Robot Locomotion (Regular Sessions)

Chair: Gravdahl, Jan Tommy
Co-Chair: Matsuno, Fumitoshi

Egan Center Second Level Room Boardroom

14:20-14:35


Liljebäck, Pål (SINTEF IKT), Pettersen, Kristin Y. (Norwegian Univ. of Science and Tech.), Stavdahl, Øyvind (Norwegian Univ. of Science and Tech. (NTNU)), Gravdahl, Jan Tommy (Norwegian Univ. of Science and Tech.)

14:35-14:50


Liljebäck, Pål (SINTEF IKT), Pettersen, Kristin Y. (Norwegian Univ. of Science and Tech.), Stavdahl, Øyvind (Norwegian Univ. of Science and Tech. (NTNU))

14:50-15:05

Sidewinding on Slopes, pp. 691-696.

Hatton, Ross (Carnegie Mellon Univ.), Choset, Howie (Carnegie Mellon Univ.)

15:05-15:20

Optimal Shape of a Snake Robot for Jumping, pp. 697-702.

Hoshino, Keiichi (The Univ. of Electro-Communications), Tanaka, Motoyasu (The Univ. of Electro-Communications), Matsuno, Fumitoshi (Kyoto Univ.)

15:20-15:35

Approximations to Continuous Curves of Active Cord Mechanism Made of Arc-Shaped Joints or Double Joints, pp. 703-708. Attachment

Yamada, Hiroya (Tokyo Inst. of Tech.), Hirose, Shigeo (Tokyo Inst. of Tech.)

15:35-15:50

An Adaptive Decentralized Control of a Serpentine Robot Based on the Discrepancy between Body, Brain and Environment, pp. 709-714. Attachment

Sato, Takahide (Tohoku Univ.), Watanabe, Wataru (Tohoku Univ.), Ishiguro, Akio (Tohoku Univ.)

TuD4

Personal and Service Robots (Regular Sessions)

Chair: Burgard, Wolfram
Co-Chair: Bradski, Gary

Egan Center Lower Level Room 1

14:20-14:35

Robot, Feed Thyself: Plugging in to Unmodified Electrical Outlets by Sensing Emitted AC Electric Fields, pp. 715-722. Attachment

Mayton, Brian (Univ. of Washington), LeGrand, Louis (Intel Res.), Smith, Joshua R. (Intel)

14:35-14:50

Searching for Objects: Combining Multiple Cues to Object Locations Using a Maximum Entropy Model, pp. 723-728. Attachment

Joho, Dominik (Univ. of Freiburg), Burgard, Wolfram (Univ. of Freiburg)

14:50-15:05

Autonomous Door Opening and Plugging in with a Personal Robot, pp. 729-736. Attachment

Meeussen, Wim (Willow Garage Inc.), Wise, Melonee (Willow Garage), Glaser, Stuart (Washington Univ. in St. Louis), Chitta, Sachin (Willow Garage Inc.), McGann, Conor (Willow Garage), Mihelich, Patrick (Willow Garage), Marder-Eppstein, Eitan (Willow Garage), Muja, Marius Constantin (Univ. of British Columbia), Eruhimov, Victor (Itseez Corp.), Foote, Tully (Willow Garage Inc.), Hsu, John (Willow Garage), Rusu, Radu Bogdan (Willow Garage, Inc), Marthi, Bhaskara (Willow Garage), Bradski, Gary (Stanford Univ. and Willow Garage), Konolige, Kurt (Willow Garage), Gerkey, Brian (Willow Garage), Berger, Eric (Willow Garage)

15:05-15:20

Intelligent Ambience That Can Lead Robot’s Actions -System Design Concept and Experimental Evaluation of Intelligent Ambience, pp. 737-744. Attachment

Sakaguchi, Takeshi (AIST), Yokoi, Kazuhiro (National Inst. of AIST), Wada, Kazuyoshi (Tokyo Metropolitan Univ.)

15:20-15:35


Attamimi, Muhammad (The Univ. of Electro-Communications), Mizutani, Akira (The Univ. of Electro-Communications), Nakamura, Tonomaru, Sugiura, Komei (National Inst. of Information and Communications Tech.), Nagai, Takayuki (Univ. of Electro-Communications), Iwahashi, Naoto (National Inst. of Information and Communications Technology), Okada, Hiroyuki (Tamagawa Univ.), Omori, Takashi (Tamagawa Univ.)

15:35-15:50


Klingbeil, Ellen (Stanford Univ.), Carpenter, Blake (Stanford Univ.), Russakovsky, Oiga (Stanford Univ.), Ng, Andrew (Stanford Univ.)

15:50-16:05


Klingbeil, Ellen (Stanford Univ.), Carpenter, Blake (Stanford Univ.), Russakovsky, Oiga (Stanford Univ.), Ng, Andrew (Stanford Univ.)
TuD5
Grasping Mechanisms (Regular Sessions)

Chair: Desai, Jaydev P.
Co-Chair: Melchiorri, Claudio

14:20-14:35
Berselli, Giovanni (Univ. di Bologna), Vassura, Gabriele (Univ. of Bologna), Piccinini, Marco (Univ. of Bologna)

14:35-14:50
Kessens, Chad C. (Univ. of Maryland), Desai, Jaydev P. (Univ. of Maryland)

14:50-15:05
Port-Hamiltonian Analysis of a Novel Robotic Finger Concept for Minimal Actuation Variable Impedance Grasping, pp. 771-776.
Wassink, Martin (Univ. of Twente), Carloni, Raffaella (Univ. of Twente), Stramigioli, Stefano (Univ. of Twente)

15:05-15:20
Development of Intelligent Robot Hand Using Proximity, Contact and Slip Sensing, pp. 777-784.
Hasegawa, Hiroaki (the Univ. of Electro-Communications), Mizoguchi, Yoshitomo (Univ. of Electro-Communications), Takaduma, Kenjiro (Massachusetts Inst. of Tech.), Ming, Aiguo (The Univ. of Electro-Communications), Ishikawa, Masatosh (Univ. of Tokyo), Shimojo, Makoto (Univ. of Electro-Communications)

TuD6
Compliant Control and Robot Safety (Regular Sessions)

Chair: Kawamura, Sadao
Co-Chair: Hirche, Sandra

14:20-14:35
Analysis of Torque Capacities in Hybrid Actuation for Human-Friendly Robot Design, pp. 799-804.
Shin, Dongjun (Stanford Univ.), Seitz, Fabian (ETH Zürich), Khatib, Oussama (Stanford Univ.), Cutkosky, Mark (Stanford Univ.)

14:35-14:50
Design of Redundant Drive Joints with Double Actuation Using Springs in the Second Actuator to Avoid Excessive Active Torques, pp. 805-812.
Nagai, Kiyoshi (Ritsumeikan Univ.), Dake, Yuichi (Ritsumeikan Univ.), Shiigi, Yasuto (Ritsumeikan Univ.), Loureiro, Rui C. V. (The Univ. of Reading), Harwin, William (Univ. of Reading)

15:05-15:20
Park, Jung-Jun (Korea Univ.), Song, Jae-Bok (Korea Univ.)

TuD7
Behavior Learning (Regular Sessions)

Chair: Peters, Jan
Co-Chair: Lee, Daniel D.

14:20-14:35
A Probabilistic Approach to Mixed Open-Loop and Closed-Loop Control, with Application to Extreme Autonomous Driving, pp. 839-845.
Koller, J. Zico (Stanford Univ.), Plagemann, Christian (Stanford Univ.), Jackson, David T. (Stanford), Ng, Andrew (Stanford Univ.), Thrun, Sebastian (Stanford Univ.)

14:35-14:50
Learning and Planning High-Dimensional Trajectories Via Structured Lagrangians, pp. 846-852.
Vernaza, Paul (Univ. of Pennsylvania), Yi, Seung Joon (Univ. OF PENNSYLVANIA), Lee, Daniel D. (Univ. of Pennsylvania)

14:50-15:05
Movement Templates for Learning of Hitting and Batting, pp. 853-858.
TuD8  Sensing and Perception for Autonomous Navigation (Regular Sessions)  Egan Center Street Level Room Cook Hall

Chair: Danailidis, Kostas  Co-Chair: Mulligan, Jane  Univ. of Pennsylvania  Univ. of Colorado at Boulder

14:20-14:35  
Global Rover Localization by Matching Lidar and Orbital 3D Maps, pp. 881-886.
Carle, Patrick (Univ. of Toronto), Barfoot, Timothy (Univ. of Toronto)

TuD8.1  
14:35-14:50  
van de Ven, Joop (Univ. of Sydney), Ramos, Fabio (Univ. of Sydney), Tipaldi, Gian Diego (Univ. of Freiburg)

TuD8.2  
14:50-15:05  
Ghosh, Soumya (Brown Univ.), Mulligan, Jane (Univ. of Colorado at Boulder)

TuD8.3  
15:05-15:20  
A Real-Time Pedestrian Detection System Based on Structure and Appearance Classification, pp. 903-909.
Bansal, Mayank (Sarnoff Corp.), Jung, Sang-Hack (Sarnoff Corp.), Matei, Bogdan (Sarnoff Corp.), Eledath, Jayan (Sarnoff Corp.), Sawhney, Harpreet (Sarnoff Corp.)

TuD8.4  
15:20-15:35  
Homography-Based Ground Plane Detection for Mobile Robot Navigation Using a Modified EM Algorithm, pp. 910-915.
Conrad, Daniel (Univ. of Missouri, Columbia), DeSouza, Guilherme (Univ. of Missouri-Columbia)

TuD8.5  
15:35-15:50  
A Mobile Robotic Platform Exploiting the Navigational Capabilities of the Carassius Auratus Using a Natural Interface, pp. 916-921.
Accoto, Dino (Univ. Campus Bio-Medico), Lucibello, Luca (Univ. Campus Bio-medico di Roma), Campolo, Domenico (Nanyang Tech. Univ.), Guglielmelli, Eugenio (Univ. Campus Bio-Medico)

TuD9  Path Planning for Multi-Agent Systems (Regular Sessions)  Egan Center Lower Level Room 3

Chair: Vaughan, Richard  Co-Chair: Jadbabaie, Ali  Simon Fraser Univ.  Univ. of Pennsylvania

14:20-14:35  
Constraint-Based Multi-Robot Path Planning, pp. 922-928.
Ryan, Malcolm (Univ. of New South Wales)

TuD9.1  
14:35-14:50  

TuD9.2  
14:50-15:05  
A Duality Approach to Path Planning for Multiple Robots, pp. 935-940.
mote, Nader (Caltech), Jadbabaie, Ali (Univ. of Pennsylvania), Pappas, George J. (Univ. of Pennsylvania)

TuD9.3  
15:05-15:20  
Solving the Continuous Time Multiagent Patrol Problem, pp. 941-946.
Marier, Jean-Samuel (Laval Univ.), Besse, Camille (Univ. Laval), Chaib-draa, Brahim (Laval Univ.)

TuD9.4  
15:20-15:35  
Sadat, Abbas (Simon Fraser Univ.), Vaughan, Richard (Simon Fraser Univ.)

TuD9.5  
15:35-15:50  
Multi-Agent Path Planning with Multiple Tasks and Distance Constraints, pp. 953-959.
Bhattacharya, Subhraajit (Univ. of Pennsylvania), Likhachev, Maxim (Univ. of Pennsylvania), Kumar, Vijay (Univ. of Pennsylvania)

TuD10  Motion Planning in Dynamic Environments (Regular Sessions)  Egan Center Lower Level Room 9/10

Chair: Fox, Dieter  Co-Chair: Stilwell, Daniel  Univ. of Washington  Virginia Tech.

14:20-14:35  

Control and Planning for Vehicles with Uncertainty in Dynamics, pp. 960-965. Attachment
Mellinger, Daniel (Univ. of Pennsylvania), Kumar, Vijay (Univ. of Pennsylvania)
14:35-14:50 TuD10.2

Robotic Motion Planning in Dynamic, Cluttered, Uncertain Environments, pp. 966-973.
Du Toit, Noel E. (Caltech), Burdick, Joel (California Inst. of Tech.)
14:50-15:05 TuD10.3

A Receding Horizon Controller for Motion Planning in the Presence of Moving Obstacles, pp. 974-980.
Stillwell, Daniel (Virginia Tech.), Xu, Bin (Virginia Tech.), Kurdila, Andrew (Virginia Tech.)
15:05-15:20 TuD10.4

Learning to Navigate through Crowded Environments, pp. 981-986. Attachment
Henry, Peter (Univ. of Washington), Vollmer, Christian (IImenau Univ. of Tech.), Ferris, Brian (Univ. of Washington), Fox, Dieter (Univ. of Washington)
15:20-15:35 TuD10.5

Optimal Trajectory Generation for Dynamic Street Scenarios in a Frenét Frame, pp. 987-993.
Werling, Moritz (Karlsruhe Inst. of Tech.), Ziegler, Julius (Univ. of Karlsruhe), Kammel, Sören (Bosch LLC), Thrun, Sebastian (Stanford Univ.)
15:35-15:50 TuD10.6

A Dynamic Subgoal Path Planner for Unpredictable Environments, pp. 994-1001.
Liu, Hong (Peking Univ.), Wan, Weiwei (Peking Univ.), Zha, Hongbin (Peking Univ.)

TuD11
Image Matching and Registration (Regular Sessions)
Egan Center Lower Level Room 5
Chair: Lee, Sukhan
Co-Chair: Scaramuzza, Davide

14:20-14:35 TuD11.1
Kaiser, Moritz (Tech. Univ. München), Kwolec, Bogdan (Rzeszow Univ. of Tech.), Staub, Christoph (TUM), Rigoll, Gerhard (Tech. Univ. München)
14:35-14:50 TuD11.2
Improved Appearance-Based Matching in Similar and Dynamic Environments Using a Vocabulary Tree, pp. 1008-1013.
Sabatta, Deon George (CSIR), Scaramuzza, Davide (ETH Zurich), Siegwart, Roland (ETH Zurich)
14:50-15:05 TuD11.3
A Novel Line Matching Method Based on Intersection Context, pp. 1014-1021.
Kim, Hyunwoo (Korean German Inst. of Tech.), Lee, Sukhan (Sungkyunkwan Univ.)
15:05-15:20 TuD11.4
Gumpp, Thomas (FZI Forschungszentrum Informatik), Nienhüser, Dennis (FZI Forschungszentrum Informatik), Zöllner, Johann Marius (FZI Forschungszentrum Informatik)
15:20-15:35 TuD11.5
Lourenço, Miguel (Univ. of Coimbra), Barreto, João P. (Univ. of Coimbra), Malti, Abed (Inst. of Systems and Robotics-Univ. of Coimbra)
15:35-15:50 TuD11.6
Liu, Zhibin (Tsinghua Univ.), Shi, Zongying (Tsinghua Univ.), Xu, Wenli (Tsinghua Univ.)

TuD12
Surgical Robot Design (Regular Sessions)
Egan Center Lower Level Room 4
Chair: Dupont, Pierre
Co-Chair: Webster II, Robert James

14:20-14:35 TuD12.1
Outer Shell Type 2 DOF Bending Manipulator Using Spring-Link Mechanism for Medical Applications, pp. 1041-1046. Attachment
Arata, Jumpei (Nagoya Institute of Tech.), Salto, Yoshitaka (Nagoya Inst. of Tech.), Fujimoto, Hideo (Nagoya Inst. of Tech.)
14:35-14:50 TuD12.2
A Model for Concentric Tube Continuum Robots under Applied Wrenches, pp. 1047-1052.
Rucker, Caleb (Vanderbilt Univ.), Jones, Bryan (Mississippi State Univ.), Webster III, Robert James (Vanderbilt Univ.)
14:50-15:05 TuD12.3
Ding, Jienan (Columbia Univ.), Xu, Kai (Shanghai Jiao Tong Univ.), Goldman, Roger E. (Columbia Univ.), Allen, Peter (Columbia Univ.), Fowler, Dennis (Columbia Univ.), Simaan, Nabil (Columbia Univ.)
15:05-15:20 TuD12.4
Design and Control of Motion Compensation Cardiac Catheters, pp. 1059-1065.
Kesner, Samuel B. (Harvard Univ.), Howe, Robert D. (Harvard Univ.)
15:20-15:35 TuD12.5
Krieger, Axel (JHU), Iordachita, Iulian (Johns Hopkins Univ.), Song, Sang-Eun (The Johns Hopkins Univ.), Cho, Nathan Bongjoon (Johns Hopkins Univ.), Guion, Peter (National Inst. of Health), Fichtinger, Gabor (Queen's Univ.), Whitcomb, Louis (The Johns Hopkins
Control of Cable Actuated Devices Using Smooth Backlash Inverse, pp. 1074-1079.
Agrawal, Varun (Purdue Univ.), Peine, William (Purdue Univ.), Yao, Bin (Purdue Univ.), Choi, SeungWook (REBO)
Letier, Pierre (ULB), Motard, Elvina (Space Applications Services), Verschueren, Jean-Philippe (Micromega Dynamics)

15:30-15:35 TuD13.15
Novel Locomotion of Imobot, an Intelligent Reconfigurable Mobile Robot, pp. 1108-1109. Attachment
Ryland, Graham (Univ. of California, Davis), Cheng, Harry (Univ. of California, Davis)

15:35-15:40 TuD13.16
Science on the Fly: Enabling Science Autonomy During Robotic Traverse, pp. 1110-1111. Attachment
Wettersgreen, David (Carnegie Mellon Univ.), Thompson, David (Jet Propulsion Lab. California Inst. of Tech.)

15:40-15:45 TuD13.17
MagMites - Microrobots for Wireless Microhandling in Dry and Wet Environments, pp. 1112-1113. Attachment
Frutiger, Dominic R. (ETH Zurich), Kratochvil, Bradley (ETH Zurich), Nelson, Bradley J. (ETH Zurich)

15:45-15:50 TuD13.18
Hybrid Aerial and Scansorial Robotics, pp. 1114-1115. Attachment
Lussier Desbiens, Alexis (Stanford Univ.), Asbeck, Alan (Stanford Univ.), Dastoor, Sanjay (Stanford Univ.), Cutkosky, Mark (Stanford Univ.)

TuE1
Aerial Vehicles: Planning and Control (Regular Sessions) Egan Center Street Level Room Arteaga
Chair: Michael, Nathan
Co-Chair: Abbeel, Pieter
Univ. of Pennsylvania Stanford Univ.
16:10-16:25 TuE1.1
A Robust State Estimation Method against GNSS Outage for Unmanned Miniature Helicopters, pp. 1116-1122.
Lau, Tak Kit (The Chinese Univ. of Hong Kong), Liu, Yunhui (Chinese Univ. of Hong Kong), Lin, Kai Wun (The Chinese Univ. of Hong Kong)

16:25-16:40 TuE1.2
Wolf, Michael (Jet Propulsion Lab.), Blackmore, Lars (Jet Propulsion Lab. California Inst. of), Kuwata, Yoshiaki (Jet Propulsion Lab.), Fathpour, Nanaz (Jet Propulsion Lab.), Newman, Claire (California Inst. of Tech.), Elfes, Alberto (Jet Propulsion Lab.)

16:40-16:55 TuE1.3
Carlson, Daniel (Brigham Young Univ.), Colton, Mark (Brigham Young Univ.)

16:55-17:10 TuE1.4
Gonçalves, Vinicius Mariano (UFMG), Pashkevich, Anatol (Ec. des Mines de Nantes), Chablat, Damien (IRCCyN)

17:10-17:25 TuE1.5
Tang, Jie (Univ. of California, Berkeley), Singh, Arjun (Univ. of California, Berkeley), Goehausen, Nimbus (Univ. of California, Berkeley), Abbeel, Pieter (Stanford Univ.)

17:25-17:40 TuE1.6
Hovering Control of Vectored Thrust Aerial Vehicles, pp. 1149-1154.
Kumon, Makoto (Graduate School of Science and Tech. Kumamoto), Cover, Hugh (The Univ. of New South Wales), Katupitiya, Janyatha (The Univ. of New South Wales)

TuE2
Mechanism Design for Manipulators (Regular Sessions) Egan Center Lower Level Room 6
Chair: Arsenault, Marc
Co-Chair: Krovit, Venkat
Univ. at Buffalo (SUNY) Royal Military Coll. of Canada
16:10-16:25 TuE2.1
Optimal Technology-Oriented Design of Parallel Robots for High-Speed Machining Applications, pp. 1155-1161.
Briot, Sébastien (IRCCyN), Pashtkevich, Anatol (Ec. des Mines de Nantes), Chablat, Damien (IRCCyN)

16:25-16:40 TuE2.2
Mori, Mayuko (Okayama Univ.), Suzumori, Koichi (Okayama Univ.), Wakimoto, Shuichi (Okayama Univ.), Kanda, Takefumi (Okayama Univ.), Masayuki, Takahashi (Company), Takashi, Hosoya (Company), Takematu Emi, Takematsu Emi (ShinMaywa Industries, Ltd.)

16:40-16:55 TuE2.3
Flexible Space Robotic Manipulator with Passively Switching Free Joint to Drive Joint, pp. 1169-1174.
Otsuki, Masatsugu (Inst. of Space and Astronautical Science, JAXA)

16:55-17:10 TuE2.4
Torque and Stiffness Workspace Analysis for Flexible Tendon Driven Mechanisms, pp. 1175-1181.
Chalon, Maxime (German Aerospace Center (DLR)), Wimboeck, Thomas (German Aerospace Center (DLR)), Hirschinger, Gerd (German Aerospace Center (DLR))

17:10-17:25 TuE2.5
Optimization of the Prestress Stable Wrench Closure Workspace of Planar Parallel Three-Degree-Of-Freedom Cable-Driven Mechanisms with Four Cables, pp. 1182-1187.
Arsenault, Marc (Royal Military Coll. of Canada)

17:25-17:40 TuE2.6
A Formal Methodology for Avoiding Hyperstaticity When Connecting an Exoskeleton to a Human Member, pp. 1188-1195.
TuE3

**Biomimetic Robots** (Regular Sessions)

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**Grasping: Algorithms** (Regular Sessions)

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Rimon, Elon (Tech.), van der Stappen, Frank (Utrecht Univ.)
16:55-17:10 TuE5.4

Data-Driven Optimization for Underactuated Robotic Hands, pp. 1292-1299.
Ciocarlie, Matei (Columbia Univ.), Allen, Peter (Columbia Univ.)
17:10-17:25 TuE5.5

Zheng, Yu (Univ. of North Carolina at Chapel Hill), Lin, Ming C. (Univ. of North Carolina), Manocha, Dinesh (UNC at Chapel Hill)
17:25-17:40 TuE5.6

Object Modeling Using a ToF Camera under an Uncertainty Reduction Approach, pp. 1306-1312.
Foix, Sergi (CSIC-UPC), Alenyà, Guillem (CSIC-UPC), Andrade-Cetto, Juan (CSIC-UPC), Torras, Carme (CSIC - UPC)

TuE6  Egan Center Lower Level Room 2
Haptic Controls (Regular Sessions)
Chair: Kuchenbecker, Katherine J.  Univ. of Pennsylvania
Co-Chair: Cavusoglu, M. Cenk  Case Western Res. Univ.
16:10-16:25 TuE6.1
Hertkorn, Katharina (German Aerospace Center (DLR)), Hulin, Thomas (German Aerospace Center (DLR)), Kremer, Philipp (German Aerospace Center (DLR)), Preusche, Carsten (DLR), Hirzinger, Gerd (German Aerospace Center (DLR))
16:25-16:40 TuE6.2
Franken, Michel (Univ. of Twente), Reilink, Rob (Univ. of Twente), Misra, Sarthak (Univ. of Twente), Stramigioli, Stefano (Univ. of Twente)
16:40-16:55 TuE6.3
Lim, Yo-An (Gwangju Inst. of Science and Tech.), Ryu, Jeha (Gwangju Inst. Science & Tech.)
16:55-17:10 TuE6.4
Lee, Dongjun (Univ. of Tennessee-Knoxville), Huang, Ke (Univ. of Tennessee)
17:10-17:25 TuE6.5
Three-Dimensional Human Arm and Hand Dynamics and Variability Model for a Stylus-Based Haptic Interface, pp. 1339-1346.
Fu, Michael J. (Case Western Res. Univ.), Cavusoglu, M. Cenk (Case Western Res. Univ.)
17:25-17:40 TuE6.6
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Winfree, Kyle (Univ. of Delaware), Romano, Joseph M. (Univ. of Pennsylvania), Gewirtz, Jamie (Univ. of Pennsylvania), Kuchenbecker, Katherine J. (Univ. of Pennsylvania)

TuE7  Egan Center Lower Level Room 11/12
Feature Matching for SLAM (Regular Sessions)
Chair: Holz, Dirk  Univ. of Bonn
Co-Chair: Park, Sung-Kee  Korea Inst. of Science and Tech.
16:10-16:25 TuE7.1
High Quality Pose Estimation by Aligning Multiple Scans to a Latent Map, pp. 1353-1360.
Huang, Qi-Xing (Stanford Univ.), Anguelov, Dragomir (Google)
16:25-16:40 TuE7.2
Spectral Scan Matching and Its Application to Global Localization for Mobile Robots, pp. 1361-1366.
Park, Soonyong (Korea Inst. of Science and Tech.), Ryu, Jeha (Gwangju Inst. Science & Tech.)
16:40-16:55 TuE7.3
A Generalization of the Metric-Based Iterative Closest Point Technique for 3D Scan Matching, pp. 1367-1372.
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16:55-17:10 TuE7.4
Linearization of Rotations for Globally Consistent N-Scan Matching, pp. 1373-1379.
Nuechter, Andreas (Jacobs Univ. Bremen gGmbH), Elseberg, Jan (Jacobs Univ. Bremen), Schneider, Peter (Univ. of Koblenz-Landau), Paulus, Dietrich (Univ. Koblenz-Landau)
17:10-17:25 TuE7.5
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Holz, Dirk (Univ. of Bonn), Behnke, Sven (Univ. of Bonn)
17:25-17:40 TuE7.6
Extracting General-Purpose Features from LIDAR Data, pp. 1388-1393.
Li, Yangming (Univ. of Michigan), Olson, Edwin (Univ. of Michigan)

TuE8  Egan Center Street Level Room Cook Hall
Place Recognition and Localization (Regular Sessions)
Chair: Burgard, Wolfram  Univ. of Freiburg
Co-Chair: Lyons, Damian  Fordham Univ.
16:10-16:25 TuE8.1
Frintrop, Simone (Univ. of Bonn), Cremers, Armin (Univ. of Bonn)  
16:25-16:40  
Robust Place Recognition for 3D Range Data Based on Point Features, pp. 1400-1405.  
Steder, Bastian (Univ. of Freiburg), Grisetti, Giorgio (Universität Freiburg), Burgard, Wolfram (Univ. of Freiburg)  

16:40-16:55  
Indoor Scene Recognition through Object Detection, pp. 1406-1413.  
Espinace, Pablo (Pontificia Univ. Catolica de Chile), Kollar, Thomas (MIT), Soto, Alvaro (Pontificia Univ. Catolica de Chile), Roy, Nicholas (Massachusetts Inst. of Tech.)  

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Lyons, Damian (Fordham Univ.)

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Geo-Referencing for UAV Navigation Using Environmental Classification, pp. 1420-1425.  
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TuE9  
Task Allocation, Coordination and Control in Distributed Robot Systems (Regular Sessions)  
Egan Center Lower Level Room 3  
Chair: Martinoli, Alcherio  
Co-Chair: Parker, Lynne  
EPFL  
Univ. of Tennessee  
16:10-16:25  
Wawerla, Jens (Simon Fraser Univ.), Vaughan, Richard (Simon Fraser Univ.)

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Evans, William C. (E. Pol. Fédérale de Lausanne), Mermoud, Gregory (EPFL), Martinoli, Alcherio (EPFL)

16:40-16:55  
Multirobot Coordination by Auctioning POMDPs, pp. 1446-1451.  

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A General Information Quality Based Approach for Satisfying Sensor Constraints in Multirobot Tasks, pp. 1452-1459.  
Zhang, Yu (Tony) (Univ. of Tennessee), Parker, Lynne (Univ. of Tennessee)

17:10-17:25  
Dynamic Vehicle Routing with Stochastic Time Constraints, pp. 1460-1467.  
Pavone, Marco (Massachusetts Inst. of Tech.), Frazzoli, Emilio (Massachusetts Inst. of Tech.)

17:25-17:40  
Cooperative Control Synthesis for Moving-Target-Enclosing with Changing Topologies, pp. 1468-1473.  
Guo, Jing (Zhejiang Univ.), Yan, Gangfeng (Zhejiang Univ.), Lin, Zhiyun (Zhejiang Univ.)

TuE10  
Motion Planning, Scheduling and Coordination (Regular Sessions)  
Egan Center Lower Level Room 9/10  
Chair: Zhang, Jianwei  
Co-Chair: Beetz, Michael  
Univ. of Hamburg  
Tech. Univ. München  
16:10-16:25  
On the Transparency of Automata As Discrete-Event Control Specifications, pp. 1474-1479.  

16:25-16:40  
Ahmad, Saleh (Ryerson Univ.), Liu, Guangjun (Ryerson Univ.)

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Tenorth, Moritz (TU München), Nyga, Daniel (Tech. Univ. München), Beetz, Michael (Tech. Univ. München)

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17:10-17:25  
Priming Transformational Planning with Observations of Human Activities, pp. 1499-1504.  
Tenorth, Moritz (TU München), Beetz, Michael (Tech. Univ. München)

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HTN Robot Planning in Partially Observable Dynamic Environments, pp. 1505-1510.  
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TuE11
Image Processing, Estimation and Calibration (Regular Sessions) Egan Center Lower Level Room 5

Chair: Chaumette, Francois
Co-Chair: Tsuji, Toshiaki
INRIA Rennes-Bretagne Atlantique
Saitama Univ.
16:10-16:25
Motion Estimation Using Physical Simulation, pp. 1511-1517.
Duff, Damien Jade (Univ. of Birmingham), Wyatt, Jeremy (Univ. of Birmingham), Stolkin, Rustam (Univ. of Birmingham)

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Lu, Huimin (National Univ. of Defense Tech.), Zhang, Hui (National Univ. of Defense Tech.), Yang, Shaowu (National Univ. of Defense Tech.), Zheng, Zhiqiang (National Univ. of Defense Tech.)

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Kermorgant, Olivier (IRISA/INRIA Rennes Bretagne Atlantique), Folio, David (IRISA), Chaumette, Francois (INRIA Rennes-Bretagne Atlantique)

16:55-17:10
Stacked Integral Image, pp. 1530-1535.
Bhatia, Amit (North Carolina State Univ.), Snyder, Wesley (North Carolina State Univ.), Bilbro, Griff (NC State Univ.)

17:10-17:25
2000 Fps Real-Time Vision System with High-Frame-Rate Video Recording, pp. 1536-1541. Attachment
Ishii, Idaku (Hiroshima Univ.), Tatebe, Tetsuro (Hiroshima Univ.), Gu, Qingyi (Hiroshima Univ.), Morie, Yuta (Hiroshima Univ.), Takaki, Takeshi (Hiroshima Univ.), Tajima, Kenji (Photron Limited)

TuE12
Medical Robot Systems I (Regular Sessions) Egan Center Lower Level Room 4

Chair: Woern, Heinz
Co-Chair: Reed, Kyle Brandon
Univ. Karlsruhe
Univ. of South Florida
16:10-16:25
Preoperative Planning of Robotics-Assisted Minimally Invasive Coronary Artery Bypass Grafting, pp. 1548-1553.
Azimian, Hamidreza (The Univ. of Western Ontario), Breetzke, Jeremy (The Univ. of Western Ontario), Trejos, Ana Luisa (The Univ. of Western Ontario), Patel, Rajni (The Univ. of Western Ontario), Naish, Michael David (Univ. of Western Ontario), Peters, Terry M. (Robarts Res. Inst.), Moore, John T. (Robarts Res. Inst.), Wedlake, Chris (Robarts Res. Inst.), Kiaii, Bob (Lawson Health Res. Inst.)

16:25-16:40
Joung, Sanghyun (the Univ. of Tokyo), Liao, Hongen (The Univ. of Tokyo), Kobayashi, Etsuko (The Univ. of Tokyo), Mitsuishi, Mamoru (The Univ. of Tokyo), Nakajima, Yoshikazu (The Univ. of Tokyo), Sugano, Nobuhiko (Osaka Univ.), Sakuma, Ichiro (The Univ. of Tokyo)

16:40-16:55
Kinematic Path-Following Control of a Mobile Robot on Arbitrary Surface, pp. 1562-1567.
Kane, Gavin John (Univ. of Karlsruhe), Boesecke, Robert (Medical Univ. of Heidelberg), Raczkowsky, Joerg (Univ. of Karlsruhe (TH)), Woern, Heinz (Univ. Karlsruhe)

16:55-17:10
A New Micromanipulator System for Middle Ear Surgery, pp. 1568-1573.
Maier, Thomas (Tech. Univ. München), Strauß, Gero (Univ. Leipzig), Hofer, Mathias (Univ. Hospital Leipzig), Kraus, Tobias (TU München), Runge, Annette (Univ. Hospital Leipzig), Stenzel, Roland (Tech. Univ. München), Gumprecht, Jan David Jerome (Tech. Univ. München), Berger, Thomas (Department of ENT, Univ. Hospital Leipzig), Dietz, Andreas (Univ. Hospital Leipzig), Lueth, Tim C. (Tech. Univ. München)

17:10-17:25
Analysis of Earthworm Like Robotic Locomotion on Compliant Surface, pp. 1574-1579.
Zarrouk, David (Tech.), Sharf, Inna (McGill Univ.), Shoham, Moshe (Tech. Israel Inst. of Tech.)

TuE13
Microscale Actuation and Manipulation (Regular Sessions) Egan Center Lower Level Room 7/8

Chair: Menciassi, Arianna
Co-Chair: Kummer, Michael
Scuola Superiore Sant'Anna - SSSA
ETH Zurich
16:10-16:25
Principle, Characterization and Control of a New Hybrid Thermo-Piezoelectric Microactuator, pp. 1580-1585.
Rakotondrabe, Micky (FEMTO-st Inst.), Ivan, Ioan Alexandru (AS2M department, FEMTO-st Inst. 24, rue Alain Savary Besançon)

16:25-16:40
Rotary Nanomotors Based on Head-To-Head Nanotube Shuttles, pp. 1586-1591.
Hamdi, Mustapha (Ec. Nationale des Ponts et Chaussees), Subramanian, Arunkumar (Swiss Federal Inst. of Tech. (ETH), Zurich), Dong, Lixin (Michigan State Univ.), Ferreira, Antoine (Univ. of Orléans), Nelson, Bradley J. (ETH Zurich)

16:40-16:55
Design of an Autonomous Swimming Miniature Robot Based on a Novel Concept of Magnetic Actuation, pp. 1592-1597. Attachment
Tortora, Giuseppe (Scuola Superiore Sant'Anna), Caccavaro, Sebastiano (Scuola Superiore Sant'Anna), Valdasti, Pietro (Scuola Superiore Sant'Anna), Menciassi, Arianna (Scuola Superiore Sant'Anna - SSSA), Dario, Paolo (Scuola Superiore Sant'Anna)

16:55-17:10 TuE13.4
Nagy, Zoltan (ETH Zurich), Frutiger, Dominic R. (ETH Zurich), Leine, Remco I. (ETH Zurich), Glocker, Christoph (ETH Zurich), Nelson, Bradley J. (ETH Zurich)

17:10-17:25 TuE13.5
Magnetic Nanosheets Manipulation: Modeling, Development and Validation, pp. 1604-1609.
Mattoli, Virgilio (Istituto Italiano di Tecnologia, IIT), Sinibaldi, Edoardo (Istituto Italiano di Tecnologia, IIT), Pensabene, Virginia (Univ. di Genova, IIT), Taccola, Silvia (Scuola Superiore Sant'Anna), Menciassi, Arianna (Scuola Superiore Sant'Anna - SSSA), Dario, Paolo (Scuola Superiore Sant'Anna)

17:25-17:40 TuE13.6
OctoMag: An Electromagnetic System for 5-DOF Wireless Micromanipulation, pp. 1610-1616. Attachment
Kummer, Michael (ETH Zurich), Abbott, Jake (Univ. of Utah), Kratochvil, Bradley (ETH Zurich), Borer, Ruedi (ETH Zurich), Sengul, Ali (Ec. Pol. Federale de Lausanne (EPFL)), Nelson, Bradley J. (ETH Zurich)

TuF1
Quadrotor Control (Regular Sessions)
Chair: Tzes, Anthony
Co-Chair: Michael, Nathan
Univ. of Patras
Univ. of Pennsylvania

17:45-18:00 TuF1.1
Mini-Quadrotor Attitude Control Based on Hybrid Backstepping & Frenet-Serret Theory, pp. 1617-1622. Attachment
Colorado, Julian (Pol. Univ. of Madrid), Barrientos, Antonio (UPM), Martinez, Alexander (UPM), Benjamin Lafaverges, Benjamin (INSA Lyon Inst. in France), Valente, Joao (Tech. Univ. of Madrid)

18:00-18:15 TuF1.2
The True Role of Accelerometer Feedback in Quadrotor Control, pp. 1623-1629.
Martin, Philippe (MINES ParisTech), Salaün, Erwan (Georgia Inst. of Tech.)

18:15-18:30 TuF1.3
Robust Take-Off and Landing for a Quadrotor Vehicle, pp. 1630-1635.
Cabecinhas, David (Inst. Superior Tecnico), Naldi, Roberto (CASY - D.E.I.S - Univ. di Bologna), Marconi, Lorenzo (Univ. of Bologna), Silvestre, Carlos (Inst. Superior Tecnico), Cunha, Rita (Inst. Superior Tecnico)

18:30-18:45 TuF1.4
Design and Experimental Verification of a Constrained Finite Time Optimal Control Scheme for the Attitude Control of a Quadrotor Helicopter Subject to Wind Gusts, pp. 1636-1641.
Alexis, Kostas (Univ. of Patras), Nikolakopoulos, George (Univ. of Patras), Tzes, Anthony (Univ. of Patras)

18:45-19:00 TuF1.5
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Lupashin, Sergei (ETH Zurich), Schöllig, Angela (ETH Zürich), Sherback, Michael (ETH Zurich), D'Andrea, Raffaello (ETHZ)

19:00-19:15 TuF1.6
Gillula, Jeremy (Stanford Univ.), Huang, Haomiao (Stanford Univ.), Vitus, Michael (Stanford Univ.), Tomlin, Claire (UC Berkeley)

TuF2
Compliance in Actuation and Design (Regular Sessions)
Chair: Asada, Harry
Co-Chair: Song, Jae-Bok
Korea Univ.

17:45-18:00 TuF2.1
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Kim, Byeong-Sang (Korea Univ.), Song, Jae-Bok (Korea Univ.)

18:00-18:15 TuF2.2
Phased-Array Piezoelectric Actuators Using a Buckling Mechanism Having Large Displacement Amplification and Nonlinear Stiffness, pp. 1661-1667.
Neal, Devin (MIT), Asada, Harry (MIT)

18:15-18:30 TuF2.3
A Variable Physical Damping Actuator (VPDA) for Compliant Robotic Joints, pp. 1668-1674. Attachment
Lafranchi, Matteo (Italian Inst. of Tech.), Tsagarakis, Nikolaos (Italian Inst. of Tech. (IIT)), Caldwell, Darwin G. (Italian Inst. of Tech.)

18:30-18:45 TuF2.4
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Odhner, Lael (Yale Univ.), Asada, Harry (MIT)

18:45-19:00 TuF2.5
Telleria, Maria (Massachusetts Insitute of Tech.), Hansen, Malik (Boston Dynamics), Campbell, Donald (Boston Dynamics), Culpepper, Martin (MIT), Servi, Amelia (Massachusetts Inst. of Tech.)

19:00-19:15 TuF2.6
On Joint Design with Intrinsic Variable Compliance: Derivation of the DLR QA-Joint, pp. 1687-1694. Attachment
Eiberger, Oliver (DLR - German Aerospace Center), Haddadin, Sami (German Aerospace Center (DLR)), Weis, Michael (German Aerospace Center), Albu-Schäffer, Alin (DLR - German Aerospace Center), Hirzinger, Gerd (German Aerospace Center (DLR))
### TuF3

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<td>Simulation and Experimental Studies on Passive-Dynamic Walker That Consists of Two Identical Crossed Frames, pp. 1703-1708. Attachment</td>
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<td>Larsson, Johan (Örebro Univ.), Broxvall, Mathias (Örebro Univ.), Saffiotti, Alessandro (Orebro Univ.)</td>
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<td>Yamauchi, Takahiro (Tohoku Univ.), Okamoto, Shogo (Tohoku Univ.), Konyo, Masashi (Tohoku Univ.), Hidaka, Yusuke (Keio Univ.), Maeno, Takashi (Keio Univ.), Tadokoro, Satoshi (Tohoku Univ.)</td>
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### TuF5

#### Mobile Manipulation (Regular Sessions)

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<td>Chopra, Nikhil (Univ. of Maryland, Coll. Park)</td>
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Interaction Analysis and Posture Optimization for a Reconfigurable Tracked Mobile Modular Manipulator Negotiating Slopes, pp. 1780-1785.

Liu, Yugang (Ryerson Univ.), Liu, Guangjun (Ryerson Univ.)

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Optimized Dual-Trajectory Tracking Control of a 9-DoF WMRA System for ADL Tasks, pp. 1786-1791.

Farelo, Fabian (Univ. of South Florida), Alqasemi, Redwan (Univ. of South Florida), Dubey, Rajiv (Univ. of South Florida)

18:30-18:45

TuF5.4

Kinematic Control of Nonholonomic Mobile Manipulators in the Presence of Steering Wheels, pp. 1792-1798. Attachment

De Luca, Alessandro (Univ. di Roma "La Sapienza"), Oriolo, Giuseppe (Univ. di Roma "La Sapienza"), Robuffo Giordano, Paolo (Max Planck Inst. for Biological Cybernetics)

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TuF5.5

Planning for Autonomous Door Opening with a Mobile Manipulator, pp. 1799-1806. Attachment

Chitta, Sachin (Willow Garage Inc.), Cohen, Benjamin (Univ. of Pennsylvania), Likhachev, Maxim (Univ. of Pennsylvania)

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TuF5.6

Pulling Open Doors and Drawers: Coordinating an Omni-Directional Base and a Compliant Arm with Equilibrium Point Control, pp. 1807-1814. Attachment

Jain, Advait (Georgia Inst. of Tech.), Kemp, Charlie (Georgia Inst. of Tech.)

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TuF6

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Haptic Interfaces (Regular Sessions)

Chair: Kuchenbecker, Katherine J. Co-Chair: Motard, Elvina

Univ. of Pennsylvania Space Applications Services

17:45-18:00

TuF6.1

Automatic Filter Design for Synthesis of Haptic Textures from Recorded Acceleration Data, pp. 1815-1821.

Romano, Joseph M. (Univ. of Pennsylvania), Yoshioka, Takashi (Johns Hopkins Univ.), Kuchenbecker, Katherine J. (Univ. of Pennsylvania)

18:00-18:15

TuF6.2

Development of a 2-DOF Softness Feeling Display for Tactile Tele-Presentation of Deformable Surfaces, pp. 1822-1827.

Kimura, Fuminobu (Univ. of Tokyo), Yamamoto, Akio (Univ. of Tokyo), Higuchi, Toshiro (The Univ. of Tokyo)

18:15-18:30

TuF6.3


Paredes-Madrid, Leonel (Inst. of Industrial Automation-CSIC), Torruella Naranjo, Pedro Manuel (Inst. of Industrial Automation - CSIC), Solaeche Estrada, Paul (Inst. of Industrial Automation - CSIC), Galiana, Ignacio (Univ. Pol. de Madrid), Gonzalez de Santos, Pablo (Industrial Automation Inst. - CSIC)

18:30-18:45

TuF6.4


18:45-19:00

TuF6.5

EXOSTATION : Haptic Exoskeleton Based Control Station, pp. 1840-1845.

Letier, Pierre (ULB), Motard, Elvina (Space Applications Services), Verschueren, Jean-Philippe (Micromega Dynamics)

19:00-19:15

TuF6.6


Unluhisarcikli, Ozer (Northeastern Univ.), Weinberg, Brian (Northeastern Univ.), Sivak, Mark (Northeastern Univ.), Mirelman, Anat (Tel-Aviv Sourasky Medical Center, Israel), Bonato, Paolo (Harvard Medical School), Mavroidis, Constantinos (Northeastern Univ.)

19:15-19:30

TuF7

Egan Center Lower Level Room 11/12

Learning and Adaptation for Sensing (Regular Sessions)

Chair: Siskind, Jeffrey Mark Co-Chair: Papanikolopoulos, Nikos

Purdue Univ. Univ. of Minnesota

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TuF7.1

How to Separate Containers from Non-Containers? a Behavior-Grounded Approach to Acoustic Object Categorization, pp. 1852-1859.

Griffith, Shane (Iowa State Univ.), Sinapov, Jivko (Iowa State Univ.), Sukhoy, Vlad (Iowa State Univ.), Stoytchev, Alexander (Iowa State Univ.)

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TuF7.2

Body Schema Acquisition through Active Learning, pp. 1860-1866.

Martinez-Cantin, Ruben (Inst. Superior Tecnico), Lopes, Manuel (Univ. of Plymouth), Montesano, Luis (Univ. de Zaragoza)

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TuF7.3

Fully Autonomous Trajectory Estimation with Long-Range Passive RFID, pp. 1867-1872.

Vorst, Philipp (Univ. of Tübingen), Zell, Andreas (Univ. of Tübingen)

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TuF7.4

Multi-Class Batch-Mode Active Learning for Image Classification, pp. 1873-1878.

Joshi, Ajay (Univ. of Minnesota), Ponnli, Faith (Mitsubishi Electric Res. Lab.), Papanikolopoulos, Nikos (Univ. of Minnesota)

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TuF7.5


Barbu, Andrei (Purdue Univ.), Narayanashwamy, Siddharth (Purdue Univ.), Siskind, Jeffrey Mark (Purdue Univ.)

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TuF7.6

Inferring the Semantics of Direction Signs in Public Places, pp. 1887-1892.
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Visual Odometry (Regular Sessions)

Chair: Kim, Jinwook
Co-Chair: Vasseur, Pascal

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VICP: Velocity Updating Iterative Closest Point Algorithm, pp. 1893-1898.
Hong, Seungpyo (Korea Inst. of Science and Tech.), Ko, Heedong (KIST), Kim, Jinwook (Korea Inst. of Science and Tech.)

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TuF8.2
Liu, Ming (ETH Zurich), Pradalier, Cedric (ETH Zurich), Chen, Qijun (Tongji Univ.), Siegwart, Roland (ETH Zurich)

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TuF8.3
RANSAC Matching: Simultaneous Registration and Segmentation, pp. 1905-1912.
Yang, Shao-Wen (National Taiwan Univ.), Wang, Chieh-Chih (National Taiwan Univ.), Chang, Chun-Hua (National Taiwan Univ.)

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TuF8.4
Rio, Piot (Linköping Univ.), Wzorek, Mariusz (Linkoping Univ.), Doherty, Patrick (AIICS - Univ. of Linköpings)

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TuF8.5
Kim, Jungho (KAIST), Kweon, In So (KAIST)

19:00-19:15

TuF8.6
Ly, Sang (Univ. de Picardie Jules Verne), Demonceaux, Cédric (Univ. of Picardie - Jules Verne), Vasseur, Pascal (Univ. of Picardie - Jules Verne)

TuF9

Communication and Motion Planning in Robot Networks (Invited Sessions)

Chair: Fierro, Rafael
Co-Chair: Mostofi, Yasamin
Organizer: Mostofi, Yasamin
Organizer: Fierro, Rafael

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TuF9.1
Lindhéd, Magnus (Royal Inst. of Tech.), Johansson, Karl H. (Royal Inst. of Tech.)

18:00-18:15

TuF9.2
Fink, Jonathan (Univ. of Pennsylvania), Kumar, Vijay (Univ. of Pennsylvania)

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TuF9.3
Mostofi, Yasamin (Univ. of New Mexico), Malmirchegini, Mehrzad (Univ. of New Mexico), Ghaffarkhah, Ali reza (Univ. of New Mexico)

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TuF9.4
Maintaining Connectivity in Environments with Obstacles, pp. 1952-1957.
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TuF9.5
Chapman, Airlie (Univ. of Washington), Schoof, Eric (Univ. of Washington), Mesbahi, Mehran (Univ. of Washington)

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TuF9.6
Gil, Stephanie (MIT), Schwager, Mac (Massachusetts Inst. of Tech.), Julian, Brian (MIT), Rus, Daniela (MIT), Gil, Stephanie (MIT)

TuF10

Motion and Path Planning (Regular Sessions)

Chair: Geraerts, Roland
Co-Chair: Knepper, Ross A

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TuF10.1
L’Afflitto, Andrea (Virginia Pol. Inst. and State Univ.), Sultan, Cornel (Virginia Tech.)

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TuF10.2
Gingras, David (Canadian Space Agency), Dupuis, Erick (Canadian Space Agency), Payre, Guy (Univ. of Sherbrooke), De Lafontaine, Jean (Univ. of Sherbrooke)

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TuF10.4
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18:45-19:00 TuF10.5
Geraerts, Roland (Utrecht Univ.)
19:00-19:15 TuF10.6
Sucan, Ioan Alexandru (Rice Univ.), Kavraki, Lydia (Rice Univ.)

TuF11 Egan Center Lower Level Room 5
Multi-View Recognition and Pose Estimation (Regular Sessions)
Chair: Dillmann, Rüdiger
Co-Chair: Daniilidis, Kostas
Univ. of Karlsruhe
Univ. of Pennsylvania
17:45-18:00 TuF11.1
Welke, Kai (Univ. of Karlsruhe), Issac, Jan (Univ. of Karlsruhe), Schiebener, David (Univ. of Karlsruhe), Asfour, Tamim (Univ. of Karlsruhe), Dillmann, Rüdiger (Univ. of Karlsruhe)
18:00-18:15 TuF11.2
Simultaneous Object Class and Pose Estimation for Mobile Robotic Applications with Minimalistic Recognition, pp. 2020-2027.
Aydemir, Alper (Royal Inst. of Tech. (KTH)), Bishop, Adrian (Royal Inst. of Tech. (KTH)), Jensfelt, Patric (Royal Inst. of Tech.)
18:15-18:30 TuF11.3
Pose Estimation in Heavy Clutter Using a Multi-Flash Camera, pp. 2028-2035. Attachment
Liu, Ming-Yu (Univ. of Maryland Coll. Park), Tuzel, Oncel (MERL), Veeraraghavan, Ashok (Mitsubishi Electric Res. Lab.), Chellappa, Rama (Univ. of Maryland, Coll. Park), Agrawal, Amit (Mitsubishi Electric Res. Lab.), Okuda, Haruhsa (Mitsubishi Electric Corp.)
18:30-18:45 TuF11.4
Ma, Jeremy (California Inst. of Tech.), Burdick, Joel (California Inst. of Tech.)
18:45-19:00 TuF11.5
19:00-19:15 TuF11.6
Efficient Multi-View Object Recognition and Full Pose Estimation, pp. 2050-2055. Attachment
Collet, Alvaro (Carnegie Mellon Univ.), Srinivasa, Siddhartha (Intel Lab. Pittsburgh)

TuF12 Egan Center Lower Level Room 4
Medical Robot Systems II (Regular Sessions)
Chair: Taylor, Russell H.
Co-Chair: Alterovitz, Ron
The Johns Hopkins Univ.
Univ. of North Carolina at Chapel Hill
17:45-18:00 TuF12.1
Matinfar, Mohammad (Johns Hopkins Univ.), Iordachita, Iulian (Johns Hopkins Univ.), Wong, John (Johns Hopkins Univ.), Kazanzides, Peter (Johns Hopkins Univ.)
18:00-18:15 TuF12.2
Needle Path Planning for Digital Breast Tomosynthesis Biopsy, pp. 2062-2067.
Vancamberg, Laurence (General Electric Healthcare and ISIR-Institut des systèmesintelligents), Sahbani, Anis (Univ. Pierre et Marie Curie - Paris 6, ISIR, CNRS-UMR 7222), Muller, Serge (GE Healthcare), Morel, Guillaume (Univ. Pierre et Marie Curie - Paris 6)
18:15-18:30 TuF12.3
Evaluation of Robotic Needle Steering in Ex Vivo Tissue, pp. 2068-2073.
Majewicz, Ann (Johns Hopkins Univ.), Wedlick, Thomas (Johns Hopkins Univ.), Reed, Kyle Brandon (Univ. of South Florida), Okamura, Alison M. (Johns Hopkins Univ.)
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Lyons, Lisa (Univ. of North Carolina at Chapel Hill), Webster Ill, Robert James (Vanderbilt Univ.), Alterovitz, Ron (Univ. of North Carolina at Chapel Hill)
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Patil, Sachin (UNC Chapel Hill), Alterovitz, Ron (Univ. of North Carolina at Chapel Hill)

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Chair: Li, Jingshan
Co-Chair: Kiguchi, Kazuo
Univ. of Kentucky
Saga Univ.
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Kang, Yeong-Geun (Hanyang Univ.), Lee, Sang-Beum (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.)
18:15-18:30 TuF13.2
Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.)
18:30-18:45 TuF13.3
Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.)
18:45-19:00 TuF13.4
Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.)
19:00-19:15 TuF13.5
Toward Development of a Flexible Assembly System for Electrical Vehicle Manufacturing, pp. 2111-2114.
Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.)
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Flexible Assembly System for Smart Home Robot Manufacturing, pp. 2115-2118.
Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.)
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Lee, Sung-Won (Hanyang Univ.), Kim, Jung-Ho (Hanyang Univ.), Kim, Seong-Hee (Hanyang Univ.), Kim, Byung Hwan (Hanyang Univ.)
17:45-18:00 Desktop Orthogonal-Type Robot with Abilities of Compliant Motion and Stick-Slip Motion for Lapping of LED Lens Molds, pp. 2095-2100.
Nagata, Fusaomi (Tokyo Univ. of Science, Yamaguchi), Mizobuchi, Takanori (Tokyo Univ. of Science, Yamaguchi), Tani, Shintaro (Tokyo Univ. of Science, Yamaguchi), Hase, Tetsuo (Meiho Co. Ltd.), Haga, Zenku (Meiho Co. Ltd.), Watanabe, Keigo (Saga Univ.), Habib, Maki Khalil (Saga Univ.), Kiguchi, Kazuo (Saga Univ.)

18:00-18:15 Autonomous Cruise Control of Circulating Multi-Robot for Congestion, pp. 2101-2106.
Hoshino, Satoshi (Tokyo Inst. of Tech.), Seki, Hiroya (Tokyo Inst. of Tech.), Naka, Yuji (Tokyo Inst. of Tech.), Ota, Jun (The Univ. of Tokyo)

18:15-18:30 Developing a Dual-Stage Indirect Virtual Metrology Architecture, pp. 2107-2112.

18:30-18:45 Embodiment Independent Manipulation through Action Abstraction, pp. 2113-2118. Attachment
Laaksonen, Janne (Lappeenranta Univ. of Tech.), Felip, Javier (Univ. Jaume I), Morales, Antonio (Univ. Jaume I), Kyrki, Ville (Lappeenranta Univ. of Tech.)

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Liu, Yang (Univ. of Kentucky), Li, Jingshan (Univ. of Kentucky), Chiang, Shu-Yin (Ming Chuan Univ.)

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Lan, Chao-Chieh (National Cheng Kung Univ.), Wang, Jhe-Hong (National Cheng Kung Univ.), Chen, Yi-Ho (National Cheng Kung Univ.)

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Albu-Schäffer, Alin (DLR - German Aerospace Center), Wolf, Sebastian (DLR - German Aerospace Center), Eiberger, Oliver (DLR - German Aerospace Center), Haddadin, Sami (German Aerospace Center (DLR)), Pettr, Florian (Inst. of Robotics and Mechatronics, German Aerospace Center), Chalon, Maxime (German Aerospace Center (DLR))

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Lange, Friedrich (German Aerospace Center (DLR)), Scharrer, Johannes (Inst. für Werkzeugmaschinen und Betriebswissenschaften TU Münc), Hitzinger, Gerd (German Aerospace Center (DLR))

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Second, Thomas (MIT), Mazumdar, Anirban (Massachusetts Inst. of Tech.), Asada, Harry (MIT)

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Krut, Sebastien (LIRMM (CNRS & Univ. Montpellier 2)), Benoit, Michel (LIRMM), Dombre, Etienne (Univ. Montpellier II & CNRS), Pierrot, Francois (CNRS - LIRMM)

Rekleitis, Georgios (National Tech. Univ. of Athens), Papadopoulos, Evangelos (National Tech. Univ. of Athens)

Valette, Florent (CNRS/ Univ. de la méditerranée), Ruffier, Franck (CNRS / Univ. de la Méditerranée), Viollet, Stephane (Univ. Méditerranée/CNRS), Seidt, Tobias (ESA-European Space Agency)

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Machner, Timo (Karlsruhe Inst. of Tech. (KIT)), Slogical, Alexej (Karlsruhe Inst. of Tech. (KIT)), Kuehn, Benjamin (Karlsruhe Inst. of Tech. (KIT)), Kroschel, Kristian (Fraunhofer Inst. of Optronics, System Tech. and Image)

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# WeA8

**Visual Tracking and Navigation (Regular Sessions)**

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<td>A Hybrid Estimation Approach for Autonomous Dirt Road Following Using Multiple Clothoid Segments, pp. 2410-2415.</td>
<td>Takano, Wataru (Tokyo Univ.), Nakamura, Yoshihiko (Univ. of Tokyo)</td>
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<td>Manz, Michael (Univ. of the Bundeswehr Munich), von Hundelshausen, Felix (UniBW), Wuensche, Hans J (UniBw Munich)</td>
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<td>3D Reconstruction of Fish Schooling Kinematics from Underwater Video, pp. 2438-2443.</td>
<td>Butail, Sachit (Univ. of Maryland), Paley, Derek (Univ. of Maryland)</td>
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<td>Aranda, Miguel (Univ. of Zaragoza), Lopez-Nicolas, Gonzalo (Univ. de Zaragoza), Sagues, Carlos (Univ. of Zaragoza)</td>
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# WeA9

**Stochastic Multi-Robot and Modular Robot Systems (Invited Sessions)**

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Co-Chair: Albu-Schäffer, Alin (DLR - German Aerospace Center)
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Ganesh, Gowrishankar (ATR International), Albu-Schäffer, Alin (DLR - German Aerospace Center), Haruno, Masahiko (ATR International), Kawato, Mitsuo (Press), Burdet, Etienne (imperial Coll. london)

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WePL Plenary: Automation to Understand and Ultimately Improve Health and the Environment for the Future (Plenary Sessions)
Dena'ina Center Tiktuhtnu A/B/C
Chair: Kumar, Vijay (Univ. of Pennsylvania)
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Organizer: Selig, J.M. (London South Bank Univ.)
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WeD2 Cellular and Modular Robots (Regular Sessions)
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Co-Chair: Nagpal, Radhika (Harvard Univ.)
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Co-Chair: Zhang, Jianwei

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Co-Chair: Richards, Arthur
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15:05-15:20
Robust Adaptive Formation Control of Fully Actuated Marine Vessels Using Local Potential Functions, pp. 3001-3007.
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Chair: Fierro, Rafael
Co-Chair: Michael, Nathan
14:20-14:35
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Chair: Gupta, Kamal
Co-Chair: Claassens, Jonathan
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Claassens, Jonathan (CSIR)

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Helmer, Scott (Univ. of British Columbia), Lowe, David (UBC)

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Kanazaki, Asako (Grad. School of Information Science and Tech. Univ. Toky), Nakayama, Hideki (Grad. School of Information Science and Tech. Univ. of Tok), Harada, Tatsuya (The Univ. of Tokyo), Kuniyoshi, Yasuo (The Univ. of Tokyo)

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Chair: Kress-Gazit, Hadas
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Kress-Gazit, Hadas (Cornell Univ.), Pappas, George J. (Univ. of Pennsylvania)
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Weir, Michael Kenneth (Univ. of St Andrews), Bott, Matthew Paul (Univ. of St Andrews)
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Lahijanian, Morteza (Boston Univ.), Wasniewski, Joseph (Boston Univ.), Andersson, Sean (Boston Univ.), Belta, Calin (Boston Univ.)
09:15-09:30 Dynamic Sensor Planning with Stereo for Model Identification on a Mobile Platform, pp. 3233-3239.
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Li, Yanbo (Univ. of Nevada at Reno), Bekris, Kostas E. (Univ. of Nevada, Reno)

Flexible Actuators (Regular Sessions)
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Okayama Univ. Fraunhofer-Gesellschaft
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Chair: Goswami, Ambarish  
Co-Chair: Ruiz-del-Solar, Javier

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Nakamura, Keusuke (Tokyo Inst. of Tech.), Nakaura, Shigeki (Sasebo National Coll. of Tech.), Sampei, Mitsuji (Tokyo Inst. of Tech.)

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Goswami, Ambarish (Honda Res. Inst.), Nagarajan, Umashankar (Carnegie Mellon Univ.)

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Ruiz-del-Solar, Javier (Univ. de Chile), Moya, Javier (Univ. de Chile), Parra-Tsunekawa, Isao (Univ. de Chile)

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Chair: Floreano, Dario  
Co-Chair: Mahony, Robert

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Zufferey, Jean-Christophe (EPFL), Beyeler, Antoine (EPFL), Floreano, Dario (Ec. Pol. Federal, Lausanne)

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Chair: Mukherjee, Ranjan  
Co-Chair: Orin, David

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Bin Hammam, Ghassan (The Ohio State Univ.), Orin, David (The Ohio State Univ.), Dariush, Behzad (Honda Res. Inst. USA)
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Flynn, Louis (Michigan State Univ.), Jafari, Rouhollah (Michigan State Univ.), Mukherjee, Ranjan (Michigan State Univ.)
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<td>Consistency of the Monocular EKF-SLAM Algorithm for Three Different Landmark Parametrizations</td>
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<td>Palomeras, Narcis (Univ. de Girona - VAT-ESQ6750002E), Ridao, Pere (Univ. de Girona), Silvestre, Carlos (Inst. Superior Tecnico), El-Fakdi, Andres (Univ. of Girona)</td>
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<td>Blackmore, Lars (Jet Propulsion Lab. California Inst. of), Kuwata, Yoshiaki (Jet Propulsion Lab.), Wolf, Michael (Jet Propulsion Lab.), Assad, Chris (Jet Propulsion Lab.), Fathpour, Nanaz (Jet Propulsion Lab.), Newman, Claire (California Inst. of Tech.), Elfes, Alberto (Jet Propulsion Lab.)</td>
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<td>09:30-09:45</td>
<td>ThA10.5</td>
<td>Exploiting Domain Knowledge in Planning for Uncertain Robot Systems Modeled As POMDPs, pp. 3596-3603.</td>
<td>Candido, Salvatore (Univ. of Illinois), Davidson, James (Univ. of Illinois), Hutchinson, Seth (Univ. of Illinois)</td>
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<td>09:45-10:00</td>
<td>ThA10.6</td>
<td>A Hierarchical Decoupled Approach for Multi Robot Motion Planning on Trees, pp. 3604-3609.</td>
<td>Masehian, Ellips (Tarbiat Modares Univ.), Hassan Nejad, Azadeh (Tarbiat Modares Univ.)</td>
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**ThA11**

### Sensing and Recognition (Regular Sessions)

**Chair:** Campos, Mario F. Montenegro  
**Co-Chair:** Yamauchi, Brian

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<td>All-Weather Perception for Man-Portable Robots Using Ultra-Wideband Radar, pp. 3610-3615.</td>
<td>Yamauchi, Brian (iRobot Corp.)</td>
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<td>08:45-09:00</td>
<td>FLIRT - Interest Regions for 2D Range Data, pp. 3616-3622. Attachment</td>
<td>Tipaldi, Gian Dieg (Univ. of Freiburg), Arras, Kai Oliver (Univ. of Freiburg)</td>
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**ThA12**

### Force and Contact Sensing in Medicine (Regular Sessions)

**Chair:** Simaan, Nabil  
**Co-Chair:** Ishii, Idaku

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<td>Force Visualization Mechanism Using a Moire Fringe Applied to Endoscopic Surgical Instruments, pp. 3648-3653. Attachment</td>
<td>Takaki, Takeshi (Hiroshima Univ.), Omasa, Youhei (Hiroshima Univ.), Ishii, Idaku (Hiroshima Univ.), Kawahara, Tomohiro (Hiroshima Univ.), Okajima, Masazumi (Hiroshima Univ.)</td>
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<td>Miniaturized Force-Indentation Depth Sensor for Tissue Abnormality Identification During Laparoscopic Surgery, pp. 3654-3659.</td>
<td>Liu, Hongbin (King's Coll. London), Li, Jichun (King's Coll. London,Univ. of London), Poon, Qi-ian (King's Coll. London), Seneviratne, Lakmal (King's Coll. London), Althoefer, Kaspar (Kings Coll. London)</td>
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<td>Force/Position-Based Modular System for Minimally Invasive Surgery, pp. 3660-3665.</td>
<td>Trejos, Ana Luisa (The Univ. of Western Ontario), Lyle, Andrew (Lawson Health Res. Inst.), Escoto, Abelardo (Lawson Health Res. Inst.), Naish, Michael David (Univ. of Western Ontario), Patel, Rajni (The Univ. of Western Ontario)</td>
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<td>09:15-09:30</td>
<td>Finding Lost Wrenches: Using Continuum Robots for Contact Detection and Estimation of Contact Location, pp. 3666-3673.</td>
<td>Simaan, Nabil (Columbia Univ.), Bajo, Andrea (Columbia Univ.)</td>
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<td>A Force Sensing Automated Insertion Tool for Cochlear Electrode Implantation, pp. 3674-3679.</td>
<td>Schurzig, Daniel (Vanderbilt Univ. Medical Center), Labadie, Robert F (Vanderbilt Univ.), Webster III, Robert James (Vanderbilt Univ.), Hussong, Andreas (Leibinz Univ. Hannover), Rau, Thomas (Hannover Medical School)</td>
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<td>Photoelastic Stress Analysis Error Quantification in Vasculature Models for Robot Feedback Control, pp. 3680-3685.</td>
<td>Tercero Villagran, Carlos Rafael (Nagoya Univ.), Ikeda, Seichi (Nagoya Univ.), Matsushima, Motoki (Nagoya Univ.), Fukuda, Toshio</td>
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Calibration and System Identification (Regular Sessions)

Chair: Robertsson, Anders
Co-Chair: Chirikjian, Gregory

08:30-08:45
Zhang, Chi (Michigan State Univ.), Xl, Ning (Michigan State Univ.), Xu, Jing (Michigan State Univ.), Shi, Quan (Michigan State Univ.)

08:45-09:00
Thermal Calibration of a 3 DOF Ultra High-Precision Robot Operating in Industrial Environment, pp. 3692-3697.
Lubrano, Emanuele (EPFL), Clavel, Reymond (Ec. Pol. Fédérale de Lausanne (EPFL))

09:00-09:15

09:15-09:30
Estimation of Model Parameters for Steerable Needles, pp. 3703-3708.
Park, Wooram (Johns Hopkins Univ.), Reed, Kyle Brandon (Univ. of South Florida), Okamura, Allison M. (Johns Hopkins Univ.), Chirikjian, Gregory (Johns Hopkins Univ.)

Kinematically Redundant Systems (Regular Sessions)

Chair: Papadopoulos, Evangelos
Co-Chair: Chaumette, Francois

10:20-10:35
General Parameterization of Holonomic Kinematic Inversion Algorithms for Redundant Manipulators, pp. 3721-3726. Attachment
Rocco, Paolo (Pol. di Milano), Zanchettin, Andrea Maria (Pol. di Milano)

10:35-10:50
Marey, Mohammed (INRIA Rennes-Bretagne Atlantique (IRISA)), Chaumette, Francois (INRIA Rennes-Bretagne Atlantique)

10:50-11:05
Fast Resolution of Hierarchized Inverse Kinematics with Inequality Constraints, pp. 3733-3738.
Escande, Adrien (CEA), Mansard, Nicolas (CNRS), Wieber, Pierre-Brice (INRIA Rhône-Alpes)

11:05-11:20
Control Design and Allocation of an Over-Actuated Triangular Floating Platform, pp. 3739-3744.
Vlachos, Costas (National Tech. Univ. of Athens), Papadopoulos, Evangelos (NTUA)

11:20-11:35
Dynamic Pushing Strategies for Dynamically Stable Mobile Manipulators, pp. 3745-3750.
Kolhe, Pushkar (Georgia Inst. of Tech.), Dantam, Neil (Georgia Inst. of Tech.), Stillman, Mike (Georgia Tech.)

Mechanism Design of Mobile Robots (Regular Sessions)

Chair: Nakamura, Taro
Co-Chair: Wyeth, Gordon

10:20-10:35
Design and Evaluation of a Fin-Based Underwater Propulsion System, pp. 3751-3756. Attachment
Peter, Benjamin Matthias (ETH Zurich), Ratnaweera, Roman (ETH Zürich), Pradalier, Cedric (ETH Zurich), Fischer, Wolfgang (ETH Zürich), Siegwart, Roland (ETH Zürich)

10:35-10:50
Self Locomotion of a Spherical Rolling Robot Using a Novel Deformable Pneumatic Method, pp. 3757-3762. Attachment
Wait, Keith (Vanderbilt Univ.), Jackson, Phil (Disney), Smoot, Lanny (Walt Disney Imagineering R&D)

10:50-11:05
Ueno, Yuki (Toyohashi Univ. of Tech.), Ohno, Takashi (Toyohashi Univ. of Tech.), Terashima, Kazuhiro (Toyohashi Univ. of Tech.), Kitagawa, Hideo (Gifu National Coll. of Tech.), Funato, Kazuhiro (KER CO., LTD), Kakihara, Kyoaki (KER CO., LTD)

11:05-11:20
Locomotion Strategies for an Omni-Directional Mobile Robot Using Traveling Waves Propagation, pp. 3769-3774.
Nakamura, Taro (Chuo Univ.)

11:20-11:35
A Practical Implementation of a Continuous Isotropic Spherical Omnidirectional Drive, pp. 3775-3780.
ThB3
Robot Designs Inspired by Bacteria, Mold and Insects (Regular Sessions)  Egan Center Lower Level Room 13/14

Chair: Sitti, Metin  Carnegie Mellon Univ.
Co-Chair: Kim, Sangbae  Massachusetts Inst. of Tech.

10:20-10:35  
Bacteria Controller Implementation on a Physical Platform for Pollution Monitoring, pp. 3781-3786.
Oyekan, John Oluwagbemiga (Univ. of Essex), Huosheng (Univ. of Essex)  ThB3.1

10:35-10:50  
Taming Large Degrees of Freedom –A Case Study with an Amoeboid Robot–, pp. 3787-3792. Attachment
Umedachi, Takuya (Tohoku Univ.), Takeda, Koichi (Tohoku Univ.), Nakagaki, Toshiyuki (Hokkaido Univ.), Kobayashi, Ryo (Hiroshima Univ.), Ishiguro, Akio (Tohoku Univ.)  ThB3.2

10:50-11:05  
Demir, Alican (Johns Hopkins Univ.), Samson, Edward (Johns Hopkins Univ.), Cowan, Noah J. (Johns Hopkins Univ.)  ThB3.3

11:05-11:20  

ThB4
Robotics in Agriculture, Construction and Forestry (Regular Sessions)  Egan Center Lower Level Room 2

Chair: Sugano, Shigeki  Waseda Univ.

10:20-10:35  
A New Device Dedicated to Autonomous Mobile Robot Dynamic Stability: Application to an Off-Road Mobile Robot, pp. 3813-3818.
Bouton, Nicolas (Cemagref), Lenain, Roland (Cemagref), Thuilot, Benoit (Clermont-Ferrand Univ.), Martinet, Philippe (Blaise Pascal Univ.)  ThB4.1

10:35-10:50  
Autonomous Maneuver of a Farm Vehicle with a Trailed Implement: Motion Planner and Lateral-Longitudinal Controllers, pp. 3819-3824.
Cariou, Christophe (Cemagref), Lenain, Roland (Cemagref), Thuilot, Benoit (Clermont-Ferrand Univ.), Martinet, Philippe (Blaise Pascal Univ.)  ThB4.2

10:50-11:05  
Robust Robotic Assembly through Contingencies, Plan Repair and Re-Planning, pp. 3825-3830.

11:05-11:20  
Ground Plane Identification Using LIDAR in Forested Environments, pp. 3831-3836.
McDaniel, Matt (MIT), Nishihata, Takayuki (Massachusetts Inst. of Tech.), Brooks, Christopher (Massachusetts Inst. of Tech.), Iagnemma, Karl (MIT)  ThB4.4

11:20-11:35  
Bhadauria, Deepak (Univ. of Minnesota), Isler, Volkan (Univ. of Minnesota), Studenski, Andrew (Univ. of Minnesota), Tokekar, Pratap (Univ. of Minnesota)  ThB4.5

ThB5
Industrial Robots (Regular Sessions)  Egan Center Lower Level Room 11/12

Chair: Hirose, Shigeo  Tokyo Inst. of Tech.
Co-Chair: Newman, Wyatt  Case Western Res. Univ.

10:20-10:35  
A Passive Weight Compensation Mechanism with a Non-Circular Pulley and a Spring, pp. 3843-3848. Attachment
Endo, Gen (Tokyo Inst. of Tech.), Yamada, Hiroya (Tokyo Inst. of Tech.), Yajima, Akira (Canon Inc.), Ogata, Masaru (CANON INC.), Hirose, Shigeo (Tokyo Inst. of Tech.)  ThB5.1

10:35-10:50  
Intrinsic Repeatability: A New Index for Repeatability Characterisation, pp. 3849-3854.
Brethe, Jean-François (LE HAVRE Univ.)  ThB5.2

10:50-11:05  
The Adaptive Selection Matrix - a Key Component for Sensor-Based Control of Robotic Manipulators, pp. 3855-3862.
Finkemeyer, Bernd (KUKA Roboter GmbH), Kroeger, Torsten (Tech. Univ. Braunschweig), Wahl, Friedrich M. (Tech. Univ. of Braunschweig)  ThB5.3

11:05-11:20  
Assembling Wheels to Continuously Conveyed Car Bodies Using a Standard Industrial Robot, pp. 3863-3869. Attachment
Lange, Friedrich (German Aerospace Center (DLR)), Werner, Jochen (Tech. Univ. München), Scharrer, Johannes (Inst. für Werkzeugmaschinen und BetriebswissenschaftenTU Mün), Hirzinger, Gerd (German Aerospace Center (DLR))  ThB5.4
**ThB5.5**  
Hudson, Richard (CWRU), Newman, Wyatt (Case Western Res. Univ.)

**ThB6**  
Egan Center Street Level Room Cook Hall  
**Force Sensing, Teleoperation and Virtual Reality** (Regular Sessions)  
Chair: Melchiorri, Claudio  
Co-Chair: Buelthoff, Heinrich H.  
Max Planck Inst. for Biol. Cybernetics

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<td>ThB6.1</td>
<td>A Novel Framework for Closed-Loop Robotic Motion Simulation - Part I: Inverse Kinematics Design</td>
<td>Robuffo Giordano, Paolo (Max Planck Inst. for Biological Cybernetics), Masone, Carlo (Univ. di Roma &quot;la Sapienza&quot;), Tesch, Joachim (Max Planck Inst. for Biological Cybernetics), Breidt, Martin (Max Planck Inst. for Biological Cybernetics), Pollini, Lorenzo (Univ. of Pisa), Buelthoff, Heinrich H. (Max Planck Inst. for Biol. Cybernetics)</td>
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<td>ThB6.2</td>
<td>Motion Tracking in Robotic Manipulators in Presence of Sensor Delay</td>
<td>Bahrami, Somayeh (Sharif Univ. of Tech.), Namvar, Mehrzad (Sharif Univ. of Tech.)</td>
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<td>ThB6.3</td>
<td>Friction and Visco-Elasticity Effects in Tendon-Based Transmission Systems</td>
<td>Palli, Gianluca (Univ. of Bologna), Borghesan, Gianni (Univ. of Bologna), Melchiorri, Claudio (Univ. of Bologna)</td>
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**ThB7**  
Egan Center Lower Level Room 3  
**Sensor Fusion and Mapping** (Regular Sessions)  
Chair: Dillmann, Rüdiger  
Co-Chair: Lakaemper, Rolf  
Univ. of Karlsruhe  
Temple Univ.

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<td>Flacco, Fabrizio (Univ. di Roma &quot;La Sapienza&quot;), De Luca, Alessandro (Univ. di Roma &quot;La Sapienza&quot;)</td>
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<td>A Line Segment Based System for 2D Global Mapping, pp. 3924-3931.</td>
<td>Elseberg, Jan (Jacobs Univ. Bremen), Creed, Ross (Saint Joseph's Univ.), Lakaemper, Rolf (Temple Univ.)</td>
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<td>ThB7.4</td>
<td>Recursive Importance Sampling for Efficient Grid-Based Occupancy Filtering in Dynamic Environments, pp. 3932-3938.</td>
<td>Brechtel, Sebastian (Karlsruhe Inst. of Tech.), Gindele, Tobias (Karlsruhe Inst. of Tech.), Dillmann, Rüdiger (Univ. of Karlsruhe)</td>
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**ThB8**  
Egan Center Lower Level Room 9/10  
**Intelligent Transportation Systems** (Regular Sessions)  
Chair: Belta, Calin  
Co-Chair: Li, Shigang  
Boston Univ.  
Tottori Univ.

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<td>Robust and Accurate Road Map Inference, pp. 3946-3953.</td>
<td>Agamennoni, Gabriel (The Univ. of Sydney), Nieto, Juan (Univ. of Sydney, Australian Centre for Field Robotics), Nebot, Eduardo (University of Sydney)</td>
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<td>ThB8.2</td>
<td>Estimating Camera Pose from H-Pattern of Parking Lot, pp. 3954-3959.</td>
<td>Li, Shigang (Tottori Univ.), Hai, Ying (Tottori Univ.)</td>
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<td>ThB8.3</td>
<td>Recognition of Situation Classes at Road Intersections, pp. 3960-3965.</td>
<td>Kaefer, Eugen (Daimler AG), Hermes, Christoph (Bielefeld Univ.), Woehler, Christian (Daimler AG), Ritter, Helge Joachim (Bielefeld Univ.), Kummert, Franz (Univ. of Bielefeld)</td>
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<td>ThB8.4</td>
<td>An Online Algorithm for Constrained POMDPs, pp. 3966-3973.</td>
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Nudging Multiple Simple-Airplanes in 3D Workspace, pp. 3974-3980. Snape, Jamie (Univ. of North Carolina at Chapel Hill), Manocha, Dinesh (UNC at Chapel Hill)

**ThB9**

**Control of Grasping and Manipulation** (Regular Sessions)

Chair: Guarino Lo Bianco, Corrado
Co-Chair: Schumacher, Walter
Univ. of Parma
TU Braunschweig

10:20-10:35
Frequency Criteria for the Grasping Control of a Hyper-Redundant Robot, pp. 3981-3988.
Ivanescu, Mircea (Univ. of Craiova), Bizdoaca, Nicu George (Univ. of CRAIOVA), Florescu, Mihaela Cecilia (Univ. of Craiova), Popescu, Nirvana (Univ. Pol. BUCURESTI), Popescu, Decebal (Univ. Pol. BUCURESTI)

10:35-10:50
A Discrete-Time Filter for the On-Line Generation of Trajectories with Bounded Velocity, Acceleration, and Jerk, pp. 3989-3994.
Gerelli, Oscar (Univ. of Parma), Guarino Lo Bianco, Corrado (Univ. of Parma)

10:50-11:05
Continuous Collision Detection for Intrinsic Safety of Multi-Fingered SDH-2, pp. 3995-4000.
Haase, Thomas (Karlsruhe Inst. of Tech. (KIT)), Woern, Heinz (Univ. Karlsruhe)

11:05-11:20
Wobbe, Frank (TU Braunschweig), Nguyen, Dang Hung (TU Braunschweig), Schumacher, Walter (TU Braunschweig)

11:20-11:35
Stabilizing Hybrid Switched Motion Control Systems with an On-Line Trajectory Generator, pp. 4009-4015.
Kroeger, Torsten (Tech. Univ. Braunschweig), Wahl, Friedrich M. (Tech. Univ. of Braunschweig)

**ThB10**

**Collision Avoidance** (Regular Sessions)

Chair: Xiao, Jing
Co-Chair: Bernabeu, Enrique J
UNC-Charlotte
Univ. Pol. de Valencia

10:20-10:35
Continuous Collision Detection for Non-Rigid Contact Computations Using Local Advancement, pp. 4016-4021.
Tang, Min (Ewha Womans Univ.), Kim, Young J. (Ewha Womans Univ.), Manocha, Dinesh (UNC at Chapel Hill)

10:35-10:50
Inevitable Collision States: A Probabilistic Perspective, pp. 4022-4027.
Bautin, Antoine (INRIA-LORIA Henri Poincaré Univ.), Martinez-Gomez, Luis (INRIA), Fraichard, Thierry (INRIA)

10:50-11:05
Continuous Distance Computation for Planar Non-Holonomic Motions with Constant Accelerations, pp. 4028-4034.
Bernabeu, Enrique J (Univ. Pol. de Valencia)

11:05-11:20
Droeschel, David (Rheinische Friedrich-Wilhelms-Univ. Bonn), Holz, Dirk (Univ. of Bonn), Stückler, Jörg (Univ. of Bonn), Behnke, Sven (Univ. of Bonn)

11:20-11:35
Vatcha, Rayomand (Univ. of North Carolina - Charlotte), Xiao, Jing (UNC-Charlotte)

**ThB11**

**Visual Tracking I** (Regular Sessions)

Chair: Pradalier, Cedric
Co-Chair: Chung, Myung Jin
ETH Zurich
KAIST

10:20-10:35
Real-Time 3D Model-Based Tracking Using Edge and Keypoint Features for Robotic Manipulation, pp. 4048-4055.
Choi, Changhyun (Georgia Inst. of Tech.), Christensen, Henrik Iskov (Georgia Inst. of Tech.)

10:35-10:50
Robust Unified Stereo-Based 3D Head Tracking and Its Application to Face Recognition, pp. 4056-4061.
An, Kwang Ho (KAIST), Chung, Myung Jin (KAIST)

10:50-11:05
Fraundorfer, Friedrich (ETH Zurich), Scaramuzza, Davide (ETH Zurich), Pollefeys, Marc (ETH Zurich)

11:05-11:20
Dubus, Gregory (CEA List), David, Olivier (CEA List), Measson, Yvan (CEA LIST)

11:20-11:35
Probabilistic Target Detection by Camera-Equipped UAVs, pp. 4076-4081.
Symington, Andrew Colquhoun (Oxford Univ.), Waharte, Sonia (Univ. of Oxford), Julier, Simon Justin (Univ. Coll. London), Trigoni, Niki (Univ. of Oxford)
**ThB12: Micro-Nano Robotics (Invited Sessions)**

Chair: Nakajima, Masahiro  
Co-Chair: Arai, Fumihito  
Organizer: Nakajima, Masahiro  
Organizer: Sitti, Metin  
Organizer: Fukuda, Toshio  

**10:20-10:35**  
*Manipulation of Flagellar Driving Force by Local Environmental Control System with Multiple Nanoprobes*, pp. 4082-4087.  
Nogawa, Kousuke (Nagoya Univ.), Kojima, Masaru (Nagoya Univ.), Nakajima, Masahiro (Nagoya Univ.), Homma, Michio (Nagoya Univ.), Fukuda, Toshio (Nagoya Univ.)

**10:35-10:50**  
*Combined Nanorobotic AFM/SEM System As Novel Toolbox for Automated Hybrid Analysis and Manipulation of Nanoscale Objects (I)*, pp. 4088-4093.  
Mick, Uwe (Univ. of Oldenburg), Eichhorn, Volkmar (Univ. of Oldenburg), Wortmann, Tim (Univ. of Oldenburg), Diederichs, Claas (Department of Computing Science, Univ. of Oldenburg), Fatikow, Sergej (Univ. of Oldenburg)

**10:50-11:05**  
*On-Demand and Size-Controlled Production of Emulsion Droplets by Magnetically Driven Microtool (I)*, pp. 4094-4099.  
Yamanishi, Yoko (Tohoku Univ.), Feng, Lin (Tohoku Univ.), Arai, Fumihito (Tohoku Univ.)

**11:05-11:20**  
Eichhorn, Volkmar (Univ. of Oldenburg), Fatikow, Sergej (Univ. of Oldenburg), Sardan, Ozlem (Tech. Univ. of Denmark), Hansen, Torben Mikael (Tech. Univ. of Denmark), B'rggild, Peter (Tech. Univ. of Denmark), Occhipinti, Luigi G. (STMicroelectronics)

**11:20-11:35**  
*Automated Microassembly Using Precision Based Hybrid Control (I)*, pp. 4106-4112.  
Das, Aditya (Univ. of Texas at Arlington), Popa, Dan (The Univ. of Texas at Arlington), Stephanou, Harry (Univ. of Texas at Arlington)

**ThB13: Micro and Nano Robotics for Biological Applications (Regular Sessions)**

Chair: Chaillat, Nicolas  
Co-Chair: Sun, Dong  

**10:20-10:35**  
*A New Stiffness Evaluation Toward High Speed Cell Sorter*, pp. 4113-4118.  
Hirose, Yuki (Osaka Univ.), Tadakuma, Kenjiro (Massachusetts Inst. of Tech.), Higashimori, Mitsuru (Osaka Univ.), Arai, Tatsuo (Osaka Univ.), Kaneko, Makoto (Osaka Univ.), Itsuka, Ryo (Tohoku Univ.), Yamanishi, Yoko (Tohoku Univ.), Arai, Fumihito (Tohoku Univ.)

**10:35-10:50**  
Wu, Yanhua (City Univ. of Hong Kong), Tan, Youhua (City Univ. of Hong Kong), Sun, Dong (City Univ. of Hong Kong), Huang, Wenhao (Univ. of Science and Tech. of China)

**10:50-11:05**  
*Modeling the Trajectory of a Micro Particle in a Dielectrophoresis Device for Dynamic Control*, pp. 4125-4130.  
Kharboutly, Mohamed (FEMTO-ST Inst. CNRS UFC/ENSMM/UTBM), Gauthier, Michael (FEMTO-ST Inst.), Chaillat, Nicolas (Univ. of Franche-Comté / FEMTO-ST Inst.)

**11:05-11:20**  
Azzizian, Mahdi (Univ. of Western Ontario), Patel, Rajni (The Univ. of Western Ontario), Gavriloivici, Cezar (Univ. of Western Ontario, Robarts Res. Inst.), Poulier, Michael (Univ. of Western Ontario, Robarts Res. Inst.)

**ThPL: Plenary: Towards a 10, 000 Mobile Robot Smart Warehouse (Plenary Sessions)**

Chair: Kumar, Vijay  
Co-Chair: De Luca, Alessandro  

13:15-14:10  
*Towards a 10, 000 Mobile Robot Smart Warehouse*.  
D'Andrea, Raffaello (ETHZ)

**ThD1: Motion Control of Manipulators I (Regular Sessions)**

Chair: Dougeri, Zoe  
Co-Chair: Neubert, Jeremiah  

14:20-14:35  
*PID Type Robot Joint Position Regulation with Prescribed Performance Guaranties*, pp. 4137-4142.  
Dougeri, Zoe (Aristotle Univ. of Thessaloniki), Karayiannidis, Yiannis (Aristotle Univ. of Thessaloniki), Takamitsu (NAIST/ATR), Vijayakumar, Sethu (Univ. of Edinburgh)

14:35-14:50  
*Optimal Feedback Control for Anthropomorphic Manipulators*, pp. 4143-4150.  
Mitrovic, Djordje (School of Informatics, Univ. of Edinburgh), Nagashima, Sho (NAIST), Klanke, Stefan (Univ. of Edinburgh), Matsubara, Takamitsu (NAIST/ATR), Vijayakumar, Sethu (Univ. of Edinburgh)
14:50-15:05
Redundant Control of a Humanoid Robot Head with Foveated Vision for Object Tracking, pp. 4151-4156. Attachment
Omrcen, Damir (Jozef Stefan Inst.), Ude, Ales (Jozef Stefan Inst.)

15:05-15:20
Motion Generation through Biologically-Inspired Torque Pulses, pp. 4157-4162. Attachment
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15:20-15:35
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Vuong, Ngoc Dung (National Univ. of Singapore), Ang Jr, Marcelo H (National Univ. of Singapore), Lim, Tao Ming (SIMTech), Lim, Ser Yong (Singapore Inst. of Manufacturing Tech.)

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Fagioli, Adriano (Univ. of Pisa), Belo, Felipe (Univ. of Pisa), Catalano, Manuel (Faculty of Engineering - Univ. of Pisa), Bonomo, Fabio (Faculty of Engineering - Univ. of Pisa), Alicino, Simone (Faculty of Engineering - Univ. of Pisa), Bicchi, Antonio (Univ. of Pisa)

14:20-14:35
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Sensinger, Jonathon (Northwestern Univ.)

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Focchi, Michele (Italian Inst. of Tech.), Guglielmino, Emanuele (Fondazione Istituto Italiano di Tecnologia), Semini, Claudio (Italian Inst. of Tech. and Univ. of Genoa), Boaventura Cunha, Thiago (Italian Inst. of Tech.), Yang, Yousheng (Italian Inst. of Tech.), Caldwell, Darwin G. (Italian Inst. of Tech.)

14:50-15:05
Peitl, Florian (Inst. of Robotics and Mechatronics, German Aerospace Center), Chalon, Maxime (German Aerospace Center (DLR)), Friedl, Werner (Inst. of Robotics and Mechatronics, German Aerospace Center), Grebenstein, Markus (German Aerospace Center (DLR)), Albu-Schäffer, Alin (DLR - German Aerospace Center), Hirzinger, Gerd (German Aerospace Center (DLR))

15:05-15:20
A Novel Compact and Lightweight Actuator for Wearable Robots, pp. 4197-4203.
Bergamasco, Massimo (Scuola Superiore S.Anna), Salsedo, Fabio (PERCRO - Scuola Superiore S.Anna), Marcheschi, Simone (PERCRO - Scuola Superiore S.Anna), Lucchesi, Nicola (Scuola Superiore Sant' Anna), Fontana, Marco (PERCRO - Scuola Superiore Sant'Anna)

15:20-15:35
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Kaminaga, Hiroshi (The Univ. of Tokyo), Amari, Tomoya (The Univ. of Tokyo), Katayama, Yukihiro (The Univ. of Tokyo), Ono, Junya (The Univ. of Tokyo), Shimoyama, Yuto (Univ. of Tokyo), Nakamura, Yoshihiko (Univ. of Tokyo)

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Eulerian ZMP Resolution Based Bipedal Walking: Discussions on the Intrinsic Angular Momentum Rate Change about Center of Mass, pp. 4218-4223.
Ugurlu, Barkan (Italian Inst. of Tech.), Kawamura, Atsuo (Yokohama National Univ.)

14:35-14:50
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Sugihara, Tomomichi (Kyushu Univ.)

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Nishiwaki, Koichi (National Inst. of AIST), Kagami, Satoshi (National Inst. of AIST)

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Trajectory Generation with Natural ZMP References for the Biped Walking Robot SURALP, pp. 4237-4242. Attachment
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Approximation of Feasibility Tests for Reactive Walk on HRP-2, pp. 4243-4248. Attachment
Perrin, Nicolas (Univ. de Toulouse ; UPS, INSA, INP, ISAE ; LAAS), Stasse, Olivier (CNRS/AIST), Lamiraux, Florent (CNRS), Yoshida, Eichi (National Inst. of AIST)
Analysis on a Friction Based "Twirl" for Biped Robots, pp. 4249-4255.
Miura, Kanako (National Inst. of Advanced Industrial Science and Technology), Nakaoka, Shin'ichiro (AIST), Morisawa, Mitsuharu (National Inst. of AIST), Kanehiro, Fumio (National Inst. of AIST), Harada, Kansuke (National Inst. of AIST), Kajita, Shuji (National Inst. of AIST)

ThD4
Marine Robotics: Localization, Control and Navigation (Invited Sessions)
Chair: Antonelli, Gianluca
Co-Chair: Kondo, Hayato
Organizer: Antonelli, Gianluca
Organizer: Kondo, Hayato
Organizer: Marani, Giacomo
Organizer: Stack, Jason
Organizer: Wettergren, Thomas

14:20-14:35 ThD4.1
Fallon, Maurice (MIT), Papadopoulos, Georgios (NTUA), Leonard, John (MIT)

14:35-14:50 ThD4.2

14:50-15:05 ThD4.3
Designing Behaviors to Improve Observability for Relative Localization of AUVs (I), pp. 4270-4275.
Antonelli, Gianluca (Univ. degli Studi di Cassino), Calti, Andrea (Univ. of Pisa), Calabro', Vincenzo (Univ. degli studi di Pisa), Chiaverini, Stefano (Univ. di Cassino)

15:05-15:20 ThD4.4
Observeability Analysis of Relative Localization for AUVs Based on Ranging and Depth Measurements, pp. 4276-4281.
Antonelli, Gianluca (Univ. degli Studi di Cassino), Arrichiello, Filippo (Univ. di Cassino), Chiaverini, Stefano (Univ. di Cassino), Sukhatme, Gaurav (Univ. of Southern California)

15:20-15:35 ThD4.5
Maximum Likelihood Mapping with Spectral Image Registration, pp. 4282-4287. Attachment
Pfingsthorn, Max (Jacobs Univ.), Birk, Andreas (Jacobs Univ.), Schwertfeger, Sören (Jacobs Univ.), Buelow, Heiko (Jacobs Univ.), Pahak, Kaustubh (Jacobs Univ. Bremen)

15:35-15:50 ThD4.6
Yang, Huizhen (Northwestern Pol. Univ.), Zhang, Fumin (Georgia Inst. of Tech.)

ThD5
Dynamic Manipulation (Regular Sessions)
Chair: Platt, Robert
Co-Chair: Sudsang, Attawith

14:20-14:35 ThD5.1
Two-Phased Controller for a Pair of 2-DOF Soft Fingertips Based on the Qualitative Relationship between Joint Angles and Object Location, pp. 4294-4301.
Yamazaki, Yujiro (Ritsumeikan Univ.), Inoue, Takahiro (Okayama Prefectural Univ.), Hirai, Shinichi (Ritsumeikan Univ.)

14:35-15:00 ThD5.2
Corcoran, Craig (Rice Univ.), Platt, Robert (MIT)

14:50-15:05 ThD5.3
External Sensorless Dynamic Object Manipulation by a Dual Soft-Fingered Robotic Hand with Torsional Fingertip Motion, pp. 4309-4314. Attachment
Tahara, Kenji (Kyushu Univ.), Maruta, Keigo (Kyushu Univ.), Yamamoto, Motoji (Kyushu Univ.)

15:05-15:20 ThD5.4
Two-Dimensional Dynamic Modeling of a Sliding Motion of a Soft Fingertip Focusing on Stick-To-Slip Transition, pp. 4315-4321. Attachment
Ho, Van (Ritsumeikan Univ.), Hirai, Shinichi (Ritsumeikan Univ.)

15:20-15:35 ThD5.5
Dynamic Object Manipulation Using a Virtual Frame by a Triple Soft-Fingered Robotic Hand, pp. 4322-4327. Attachment
Tahara, Kenji (Kyushu Univ.), Arimoto, Suguru (Ritsumeikan Univ.), Yoshida, Morio (RIKEN)

15:35-15:50 ThD5.6
Regasp Planning of Three-Fingered Hand for a Polygonal Object, pp. 4328-4333.
Phoka, Thanathorn (Chulalongkorn Univ.), Sudsang, Attawith (Chulalongkorn Univ.)

ThD6
Rehabilitation Robotics and Human-Robot Interaction (Regular Sessions)
Chair: Agrawal, Sunil
Co-Chair: Munih, Marko

Egan Center Lower Level Room 11/12
Dynamic Manipulation (Regular Sessions)
Chair: Platt, Robert
Co-Chair: Sudsang, Attawith

14:20-14:35 ThD5.1
Two-Phased Controller for a Pair of 2-DOF Soft Fingertips Based on the Qualitative Relationship between Joint Angles and Object Location, pp. 4294-4301.
Yamazaki, Yujiro (Ritsumeikan Univ.), Inoue, Takahiro (Okayama Prefectural Univ.), Hirai, Shinichi (Ritsumeikan Univ.)

14:35-15:00 ThD5.2
Corcoran, Craig (Rice Univ.), Platt, Robert (MIT)

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External Sensorless Dynamic Object Manipulation by a Dual Soft-Fingered Robotic Hand with Torsional Fingertip Motion, pp. 4309-4314. Attachment
Tahara, Kenji (Kyushu Univ.), Maruta, Keigo (Kyushu Univ.), Yamamoto, Motoji (Kyushu Univ.)

15:05-15:20 ThD5.4
Two-Dimensional Dynamic Modeling of a Sliding Motion of a Soft Fingertip Focusing on Stick-To-Slip Transition, pp. 4315-4321. Attachment
Ho, Van (Ritsumeikan Univ.), Hirai, Shinichi (Ritsumeikan Univ.)

15:20-15:35 ThD5.5
Dynamic Object Manipulation Using a Virtual Frame by a Triple Soft-Fingered Robotic Hand, pp. 4322-4327. Attachment
Tahara, Kenji (Kyushu Univ.), Arimoto, Suguru (Ritsumeikan Univ.), Yoshida, Morio (RIKEN)

15:35-15:50 ThD5.6
Regasp Planning of Three-Fingered Hand for a Polygonal Object, pp. 4328-4333.
Phoka, Thanathorn (Chulalongkorn Univ.), Sudsang, Attawith (Chulalongkorn Univ.)

Egan Center Street Level Room Cook Hall
Rehabilitation Robotics and Human-Robot Interaction (Regular Sessions)
Chair: Agrawal, Sunil
Co-Chair: Munih, Marko

15:35-15:50 ThD3.6
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Miura, Kanako (National Inst. of Advanced Industrial Science and Technology), Nakaoka, Shin'ichiro (AIST), Morisawa, Mitsuharu (National Inst. of AIST), Kanehiro, Fumio (National Inst. of AIST), Harada, Kansuke (National Inst. of AIST), Kajita, Shuji (National Inst. of AIST)
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<td>Mao, Ying (Univ. of Delaware), Agrawal, Sunil (Univ. of Delaware)</td>
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<td>Ruffaldi, Emanuele (Scuola Superiore S.Anna), Sani, Elisabetta (Scuola Superiore S.Anna), Bergamasco, Massimo (Scuola Superiore S.Anna)</td>
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<td>A Robot Companion for Inclusive Games: A User-Centred Design Perspective</td>
<td>Marti, Patrizia (Univ. of Siena), Giusti, Leonardo (Univ. of Siena)</td>
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<td>Ricks, Daniel (Brigham Young Univ. Provo, UT), Coltton, Mark (Brigham Young Univ.)</td>
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<td>Localization for Mobile Robots I (Regular Sessions)</td>
<td>Chair: Stump, Ethan</td>
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<td>Co-Chair: Kleiner, Alexander</td>
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<td>Co-Chair: Ramos, Fabio</td>
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<td>Coyle, Eric Joe (Florida State Univ. Florida A&amp;M Univ.), Collins, Emmanuel (FAMU-FSU Coll. of Engineering), Lu, Liang (FAMU-FSU Coll. of Engineering)</td>
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Broten, Gregory, S (DRDC), Mackay, David (Defence Res. and Development Canada)
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Automated Rock Recognition with Wavelet Feature Space Projection and Gaussian Process Classification, pp. 4444-4450.
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Chair: Goodwine, Bill
Co-Chair: Egerstedt, Magnus
14:20-14:35
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Kloezer, Marius (Tech. Univ. of Iasi), Itani, Sara (Massachusetts Inst. of Tech.), Birch, Sam (Boston Univ. Acad.), Belta, Calin (Boston Univ.)
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Hollinger, Geoffrey (Carnegie Mellon Univ.), Singh, Sanjiv (Carnegie Mellon Univ.)
14:50-15:05
Decentralized Grid-Based Algorithms for Formation Reconfiguration and Synchronization, pp. 4463-4468.
Miklic, Damjan (Univ. of Zagreb), Bogdan, Stjepan (Univ. of Zagreb), Fierro, Rafael (Univ. of New Mexico)
15:05-15:20
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Rahmani, Amir (Georgia Inst. of Tech.), Ding, Xu Chu (Georgia Inst. of Tech.), Egerstedt, Magnus (Georgia Inst. of Tech.)
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15:35-15:50
Gasparri, Andrea (Univ. degli Studi Roma Tre), Franceschelli, Mauro (Univ. of Cagliari, Italy)

ThD10
Motion Planning and Trajectory Control (Regular Sessions)
Chair: Tanner, Herbert G.
Co-Chair: Stillman, Mike
14:20-14:35
Gerrits, Dirk (Tech. Univ. Eindhoven), de Berg, Mark (TU Eindhoven)
14:35-14:50
Optimizing Coordinate Choice for Locomoting Systems, pp. 4493-4498.
Hatton, Ross (Carnegie Mellon Univ.), Choset, Howie (Carnegie Mellon Univ.)
14:50-15:05
Panagou, Dimitra (National Tech. Univ. of Athens), Tanner, Herbert G. (Univ. of Delaware), Kyriakopoulos, Kostas (National Tech. Univ. of Athens)
15:05-15:20
From Motion Planning to Trajectory Control with Bounded Jerk for Service Manipulator Robots, pp. 4505-4510.
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15:20-15:35
Application of Caging Manipulation and Compliant Mechanism for a Container Case Hand-Over Task, pp. 4511-4518.
Fukui, Rui (The Univ. of Tokyo), Mori, Taketoshi (The Univ. of Tokyo), Sato, Tomomasa (The Univ. of Tokyo)
15:35-15:50
Robot Limbo: Optimized Planning and Control for Dynamically Stable Robots under Vertical Obstacles, pp. 4519-4524. Attachment
Teeyapan, Kasemsit (Georgia Inst. of Tech.), Wang, Jiguang (Georgia Inst. of Tech.), Kunz, Tobias (Georgia Tech.), Stillman, Mike (Georgia Tech.)

ThD11
Visual Tracking II (Regular Sessions)
Chair: Yagi, Yasushi
Co-Chair: Kweon, In So
14:20-14:35
Object Tracking with Measurements from Single or Multiple Cameras, pp. 4525-4530. Attachment
Linderooth, Magnus (Lund Univ.), Johansson, Rolf (LTH, Lund Univ.), Robertsson, Anders (LTH, Lund Univ.), Låström, Karl (LTH, Lund Univ.)
14:35-14:50
General Object Tracking with a Component-Based Target Descriptor, pp. 4531-4536. Attachment
Frintrop, Simone (Univ. of Bonn)
14:50-15:05
Kim, Jungho (KAIST), Park, Chaehoon (KAIST), Kweon, In So (KAIST)
15:05-15:20 ThD11.4

A Salient Feature and Scene Semantics Based Attention Model for Human Tracking on Mobile Robot, pp. 4545-4552. Attachment
Liu, Hong (Peking Univ.), He, Huijun (Peking Univ.)
15:20-15:35 ThD11.5

Consecutive Visual Tracking and Segmentation Using Appearance and Spatial Information of Patches, pp. 4553-4558.
Wang, Junqiu (OSAKA Univ.), Yagi, Yasushi (Osaka Univ.)
15:35-15:50 ThD11.6

Using Multiple Hypothesis in Model-Based Tracking, pp. 4559-4565. Attachment
Teulière, Céline (CEA-LIST), Marchand, Eric (Univ. de Rennes 1), Eck, Laurent (CEA)

ThD12 Vision and Motion Compensation for Medical Robots (Regular Sessions)
Egan Center Street Level Room Arteaga

Chair: Webster III, Robert James Vanderbilt Univ.
Co-Chair: Desai, Jaydev P. Univ. of Maryland
14:20-14:35 ThD12.1

Towards Accurate Motion Compensation in Surgical Robotics, pp. 4566-4572. Attachment
Toergtge, Andreas (German Aerospace Centre), Fröhlich, Florian Alexander (DLR (German Aerospace Center)), Pomarlian, Mihai (German Aerospace Centre), Hirzinger, Gerd (German Aerospace Center (DLR))
14:35-15:00 ThD12.2

Breathing Motion Compensation for Robot Assisted Laser Osteotomy, pp. 4573-4578.
Busack, Martin (Univ. Pierre et Marie Curie, Paris 6), Morel, Guillaume (Univ. Pierre et Marie Curie - Paris 6), Bellot, Delphine (Univ. Pierre et Marie Curie - Paris 6)
14:50-15:05 ThD12.3

Beating Heart Motion Prediction for Robust Visual Tracking, pp. 4579-4584. Attachment
Richa, Rogerio (Univ. Montpellier 2), Bó, Antônio Padilha Lanari (LIRMM UMR 5506 CNRS UM2), Poignet, Philippe (LIRMM UMR 5506 CNRS UM2)
15:05-15:20 ThD12.4

Staub, Christoph (TU Munich), Osa, Takayuki (The Univ. of Tokyo), Knoll, Alois (TU Munich), Bauernschmitt, Robert (German Heart Center Munich)
15:20-15:35 ThD12.5

Visual Sensing of Continuum Robot Shape Using Self-Organizing Maps, pp. 4591-4596.
Croom, Jordan (Vanderbilt Univ.), Rucker, Caleb (Vanderbilt Univ.), Romano, Joseph M. (Univ. of Pennsylvania), Webster III, Robert James (Vanderbilt Univ.)
15:35-15:50 ThD12.6

ThD13 Software Tools for Robotics (Regular Sessions)
Egan Center Lower Level Room 6

Chair: Biggs, Geoffrey National Inst. of Advanced Industrial Science and Tech. (AIST)
Co-Chair: Morbidi, Fabio Univ. of Siena
14:20-14:35 ThD13.1

KOT: A MATLAB Toolbox for Motion Control of KUKA Robot Manipulators, pp. 4603-4608.
Chinello, Francesco (Univ. of Siena), Scheggi, Stefano (Univ. of Siena), Morbidi, Fabio (Univ. of Siena), Prattichizzo, Domenico (Univ. of Siena)
14:35-15:00 ThD13.2

Graphical State-Space Programmability As a Natural Interface for Robotic Control, pp. 4609-4614.
Sattar, Junaed (McGill Univ.), Xu, Anqi (McGill Univ.), Dudek, Gregory (McGill Univ.), Charette, Gabriel (McGill Univ.)
14:50-15:05 ThD13.3

Biggs, Geoffrey (National Inst. of Advanced Industrial Science and Tech.)
15:05-15:20 ThD13.4

Applying Regression Testing to Software for Robot Hardware Interaction, pp. 4621-4626.
Biggs, Geoffrey (National Inst. of Advanced Industrial Science and Tech.)
15:20-15:35 ThD13.5

Mallet, Anthony (LAAS/CNRS), Pasteur, Cédric (Ec. Pol.), Herrb, Matthieu (LAAS/CNRS), Lemaignan, Séverin (LAAS/CNRS), Ingrand, Francois Felix (LAAS/CNRS)
15:35-15:50 ThD13.6

The CBC: A LINUX-Based Low-Cost Mobile Robot Controller, pp. 4633-4638.
Miller, David (Univ. of Oklahoma), Oelke, Matthew (KiPR), Roman, Matthew (Univ. of Oklahoma), Villatoro, Jorge (KiPR), Winton, Charles (Univ. of North Florida)

ThE1
### Motion Control of Manipulators II (Regular Sessions)

Chair: Poignet, Philippe  
Co-Chair: Zhu, Wen-Hong  
LIRMM UMR 5506 CNRS UM2  
Canadian Space Agency  

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<td>Salimi, Yahya (Sharif Univ. of Tech.), Namvar, Mehrzad (Sharif Univ. of Tech.)</td>
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<td>Loffi, Nina (Sharif Univ. of Tech.), Namvar, Mehrzad (Sharif Univ. of Tech.)</td>
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<td>A Simple Nonlinear PID Control for Global Finite-Time Regulation of Robot Manipulators without Velocity Measurements, pp. 4651-4656.</td>
<td>Su, Yuxin (Xidian Univ.), Zheng, Chunhong (Xidian Univ.)</td>
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<td>Liu, Chao (LIRMM UR5506), CNRS, France, Poignet, Philippe (LIRMM UMR 5506 CNRS UM2)</td>
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### Kinematics of Parallel Robots (Regular Sessions)

Chair: Torras, Carme  
Co-Chair: Merlet, Jean-Pierre  
CSIC - UPC  
INRIA  

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Chair: Clark, Jonathan  
Co-Chair: Buehler, Martin  
Florida State Univ.  
iRobot  

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**Marine Robotics: Motion and Path Planning** (Invited Sessions)

Chair: Stack, Jason Office of Naval Res.
Co-Chair: Wettergren, Thomas Naval Undersea Warfare Center
Organizer: Antonelli, Gianluca Univ. degli Studi di Cassino
Organizer: Kondo, Stefano Tokyo Univ. of Marine Science and Tech.
Organizer: Marani, Giacomo Univ. of Hawaii
Organizer: Stack, Jason Naval Undersea Warfare Center

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**Cooperative Caging Using Autonomous Aquatic Surface Vehicles (I)**, pp. 4763-4769. Attachment

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Chair: Choi, Jongskuk Korea Inst. of Sci. and Tech.
Co-Chair: Tacchella, Armando Univ. di Genova

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Co-Chair: Hirai, Shinichi

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Co-Chair: Behnke, Sven

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Co-Chair: Xi, Ning

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Chair: Morellas, Vassilios U. of Minnesota
Co-Chair: Gassert, Roger ETH Zurich

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Chair: Kaneko, Makoto Osaka Univ.

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Chair: Liu, Guangjun
Co-Chair: Fraisse, Philippe
Ryerson Univ.
LiRMM
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Chair: Bobrow, James
Co-Chair: Pouliakakis, Ioannis
Univ. of California, Irvine
Princeton Univ.
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18:30-18:45
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Cheng, Nadia (Massachusetts Inst. of Tech.), Ishigami, Genya (Massachusetts Inst. of Tech.), Hawthorne, Stephan (Massachusetts Inst. of Tech.), Chen, Hao (Univ. of California, Berkeley), Hansen, Malik (Boston Dynamics), Telleria, Maria (Massachusetts Insitute of Tech.), Playter, Robert (Boston Dynamics), Iagnemma, Karl (MIT)

18:45-19:00
The Effect of Dynamic Singularities on Robotic Control and Design, pp. 5213-5218.
Goodwine, Bill (Univ. of Notre Dame), Nightingale, Jason (Univ. of Notre Dame)

19:00-19:15
Spring Loaded Inverted Pendulum Embedding: Extensions Toward the Control of Compliant Running Robots, pp. 5219-5224. Attachment
Pouliakakis, Ioannis (Princeton Univ.)

ThF3
Walking Robots (Regular Sessions)

Chair: Goswami, Ambarish
Co-Chair: Kimura, Hiroshi
Honda Res. Inst.
Kyoto Inst. of Tech.
17:45-18:00
Stable Dynamic Walking of a Quadruped Robot "Kotetsu" Using Phase Modulations Based on Leg Loading/Unloading, pp. 5225-5230. Attachment
Maufoy, Christophe (Univ. of Electro-Communications), Nishikawa, Tomohiro (Kyoto Inst. of Tech.), Kimura, Hiroshi (Kyoto Inst. of Tech.)

18:00-18:15
Two-Dimensional Passive Dynamic Running Biped with Knees, pp. 5237-5242. Attachment
Owaki, Dai (Tohoku Univ.), Koyama, Masatoshi (Tohoku Univ.), Yamaguchi, Shin'ichi (Tohoku Univ.), Kubo, Shotaro (Tohoku Univ.), Ishiguro, Akio (Tohoku Univ.)

Constrained Convergent Gait Regulation for a Climbing Robot, pp. 5243-5249.
Trujillo, Salomon (Stanford Univ.), Heyneman, Barrett (Stanford Univ.), Cutkosky, Mark (Stanford Univ.)

Stable and Robust Walking with Compliant Legs, pp. 5250-5255.
Rummel, Juergen (Univ. of Jena), Blum, Yvonne (Univ. of Jena), Maus, Horst Moritz (Univ. of Jena), Rode, Christian (Univ. of Jena), Seyfarth, Andre (Univ. of Jena)

Map-Based Adaptive Foothold Planning for Unstructured Terrain Walking, pp. 5256-5261.
Belter, Dominik (Poznan Univ. of Tech.), Labecki, Przemyslaw (Poznan Univ. of Tech.), Skrzypczynski, Piotr (Poznan Univ. of Tech.)

Karras, George (National Tech. Univ. of Athens), Loizou, Savvas (Frederick Univ.), Kyriakopoulos, Kostas (National Tech. Univ. of Athens)

Dunbabin, Matthew David (CSIRO ICT Centre), Grinham, Alistair (Univ. of Queensland)

Control-Oriented Modelling of a Hybrid AUV, pp. 5275-5280.
Calabro', Vincenzo (Univ. degli studi di Pisa), Calti, Andrea (Univ. of Pisa)

On the Influence of Ship Motion Prediction Accuracy on Motion Planning and Control of Robotic Manipulators on Seaborne Platforms, pp. 5281-5288.
From, Pij Johan (Norwegian Univ. of Science and Tech.), Gravdahl, Jan Tommy (Norwegian Univ. of Science and Tech.), Abbeel, Pieter (UC Berkeley)

Foley, David (Univ. de Sherbrooke), Plante, Jean-Sebastien (Univ. de Sherbrooke)

Complete SE(3) Underwater Robot Control with Arbitrary Thruster Configurations, pp. 5295-5301. Attachment
Doniec, Marek (MIT), Vasilescu, Iuliu (MIT), Detweiler, Carrick (MIT), Rus, Daniela (MIT)

Stefanov, Nikolay (Tech. Univ. München), Peer, Angelika (Tech. Univ. München), Buss, Martin (Tech. Univ. München)

**ThF6**

**Teleoperation with Haptics (Regular Sessions)**

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<td>Psychophysical Evaluation of Control Scheme Designed for Optimal Kinesthetic Perception in Scaled Teleoperation, pp. 5346-5351.</td>
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**ThF7**

**SLAM Solutions for Indoor Environments (Regular Sessions)**

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**Location of Optical Mouse Sensors on Mobile Robots for Odometry**, pp. 5429-5434.  
Cimino, Mauro (Oklahoma State Univ.), Pagilla, Prabhakar (Oklahoma State Univ.)

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**ThF8.4**

**Instantaneous Centre of Rotation Estimation of an Omnidirectional Mobile Robot**, pp. 5435-5440.  
Clavien, Lionel (Univ. de Sherbrooke), Lauria, Michel (Univ. of Applied Sciences Western Switzerland (HES-SO)), Michaud, Francois (Univ. de Sherbrooke)

18:45-19:00  
**ThF8.5**

Hofbaur, Michael (Private Univ. UMIT), Brandstötter, Mathias (Private Univ. UMIT), Schoerghuber, Christoph (Graz Univ. of Tech.), Steinbauer, Gerald (Graz Univ. of Tech.)

19:00-19:15  
**ThF8.6**

Foong, Shaohui (Georgia Inst. of Tech.), Lee, Kok-Meng (Georgia Inst. of Tech.), Bai, Kun (Georgia Inst. of Tech.)

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Co-Chair: Derenick, Jason  
Carnegie Mellon Univ.  
Univ. of Pennsylvania |
| 17:45-18:00| **ThF9.1** Towards Optimally Efficient Field Estimation with Threshold-Based Pruning in Real Robotic Sensor Networks, pp. 5453-5459.  
Prorok, Amanda (EPFL), Martinoli, Alcherio (EPFL), Cianci, Christopher M. (EPFL) |
| 18:00-18:15| **ThF9.2** Coordinated Multi-Robot Real-Time Exploration with Connectivity and Bandwidth Awareness, pp. 5460-5465.  
Pei, Yuan (Michigan State Univ.), Mutka, Matt (Michigan State University), Xi, Ning (Michigan State Univ.) |
| 18:15-18:30| **ThF9.3** RSS-Based Relative Localization and Tethering for Moving Robots in Unknown Environments, pp. 5466-5471.  
Zickler, Stefan (Carnegie Mellon Univ.), Veloso, Manuela (Carnegie Mellon Univ.) |
| 18:30-18:45| **ThF9.4** Towards Simplicial Coverage Repair for Mobile Robot Teams, pp. 5472-5477.  
Derenick, Jason (Univ. of Pennsylvania), Kumar, Vijay (Univ. of Pennsylvania), Jadabaie, Ali (Univ. of Pennsylvania) |
| 18:45-19:00| **ThF9.5** Multi-Robot Flooding Algorithm for the Exploration of Unknown Indoor Environments, pp. 5478-5483.  
Cabrera-Mora, Flavio (The Graduate Center of the City Univ. of New York), Xiao, Jizhong (City Coll. of New York), Bras, Peter (City Coll. New York) |
Chakraborty, Nilanjan (Carnegie Mellon Univ.), Sycara, Katia (Carnegie Mellon Univ.) |

**Surveillance and Spatio-Temporal Coverage** (Regular Sessions) Chair: Tedrake, Russ  
Co-Chair: Rekleitis, Ioannis  
Massachusetts Inst. of Tech.  
McGill Univ.

17:45-18:00  
Singh, Amarjeet (Univ. of California, Los Angeles), Ramos, Fabio (Univ. of Sydney), Durrant-Whyte, Hugh (The Univ. of Sydney), Kaiser, William (UCLA) |
| 18:00-18:15| **ThF10.2** An Iterative Mixed Integer Linear Programming Approach to Pursuit Evasion Problems in Polygonal Environments, pp. 5498-5503.  
Thunberg, Johan (Royal Inst. of Tech. (KTH)), Ogren, Petter (Swedish Defence Res. Agency) |
| 18:15-18:30| **ThF10.3** Simulation-Based LQR-Trees with Input and State Constraints, pp. 5504-5510.  
Attachment  
Reist, Philipp (Swiss Federal Inst. of Tech.), Tedrake, Russ (Massachusetts Inst. of Tech.) |
| 18:30-18:45| **ThF10.4** Evader Surveillance under Incomplete Information, pp. 5511-5518.  
Becerra, Israel (Centro de Investigacion en Matematicas), Murrieta-Cid, Rafael (Center for Mathematical Res.), Monroy, Raúl (Tecnológico de Monterrey, Campus Estado de México) |
| 18:45-19:00| **ThF10.5** Guaranteed Navigation with an Unreliable Blind Robot, pp. 5519-5524.  
Lewis, Jeremy (Univ. of South Carolina), O’Kane, Jason (Univ. of South Carolina) |
| 19:00-19:15| **ThF10.6** Optimal Coverage of a Known Arbitrary Environment, pp. 5525-5530.  
Attachment  
Rekleitis, Ioannis (McGill Univ.), Mannadiar, Raphael (McGill Univ.) |

**Visual Servoing** (Regular Sessions) Chair: Marchand, Eric  
Co-Chair: Jagersand, Martin  
Univ. de Rennes 1, IRISA, INRIA Rennes  
Univ. of Alberta

17:45-18:00  
**ThF11.1**
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**Human Augmentation and Medical Applications (Regular Sessions)**

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<td>Okodi, Samuel M. (Tohoku Univ.), Jiang, Xin (Tohoku Univ.), Abiko, Satoko (Tohoku Univ.), Konno, Atsushi (Tohoku Univ.), Uchiyama, Masaru (Tohoku Univ.)</td>
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<td>Ikuta, Koji (Nagoya Univ.), Matsuda, Yoshikatsu (Nagoya Univ.), Yajima, Daisuke (Nagoya Univ.), Ota, Yusuke (Chiba Inst. of Tech.)</td>
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### ThF13

**Human Augmentation and Medical Applications (Regular Sessions)**

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<td>van West, Ewoud Frank (The Univ. of Tokyo), Yamamoto, Akio (Univ. of Tokyo), Higuchi, Toshiro (The Univ. of Tokyo)</td>
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<td>Precise Robot Motions Using Dual Motor Control, pp. 5613-5620.</td>
<td>Robertz, Sven (Lund Univ.), Halt, Lorenz (Lund Univ.), Kelkar, Sameer (Gudel AG), Nilsson, Klas (Lund Univ.), Robertsson, Anders (LTH, Lund Univ.), Schäfer, Dominique (Gudel AG), Schiffer, Johannes (TU Berlin)</td>
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<td>Sensorless Linear Induction Motor Control Using Fuzzy Observers for Speed Tracking, pp. 5621-5626.</td>
<td>Liu, Peter (Tamkang Univ.), Hung, Cheng-Yao (Wistron), Chiu, Chian-Song (Chung-Yuan Christian Univ.), Lian, Kuang-Yow (National Taipei Univ. of Tech.)</td>
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