

2019 IEEE International Symposium on Measurement and Control in Robotics (ISMCR)

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The International Symposium on Measurement, Control, and Robotics (ISMCR 2019)

“ROBOTICS FOR THE BENEFIT OF HUMANITY”

19-21 September 2019

The University of Houston-Clear Lake

2700 Bay Area Blvd, Houston, Texas 77058

Thursday, 19 September 2019	
4:00 – 5:30 pm	Registration STEM Building Lobby
5:30 – 6:30 pm	Reception (Light Refreshments and Drinks) STEM Building Lobby
6:30 – 8:00 pm	<p>Welcome by General Chair ISMCR 2019: Dr. Zafar Taqvi, Chair IMEKO TC-17 UHCL STEM Building, STEM Conference Room 1203</p> <p>Welcome by Conference Host: Dr. Ira K. Blake, President, University of Houston-Clear Lake</p> <p>Special Invited Presentation: Global Space Exploration: Our Adventure into the Unknown by Dr. Kam Lulla, Director, University Research and Partnership Office, NASA Johnson Space Center</p>
Friday, 20 September 2019 University of Houston-Clear Lake, Bayou Building	
7:00 – 8:00 am Bayou Building Forest Room	Continental Breakfast and Late Registration
8:30 – 9:30 am Bayou Building Forest Room	<p>Keynote 1: “Telexistence - Virtual Human Teleportation and Empowered Existence “ Speaker: Professor Susumu Tachi, Professor Emeritus, <i>The University of Tokyo</i></p>

<p>10:00 –12:30 pm Bayou Building Room 1435</p>	<p>SESSION A1: Title - Robotics for Human Performance and Rehabilitation and Medical Applications I Chair/Co-Chair: Dr Yasuyuki Inoue/ Dr. Zafar Taqvi</p> <p>Paper A1-1: Master-Slave Robot Hand Control Method based on Congruence of Vectors for Telexistence Hand Manipulation - Yasuyuki Inoue, Fumihiko Kato and Susumu Tachi, <i>The University of Tokyo, Japan</i></p> <p>Paper A1-2: High-Level Parametric Gait Modeling for Assistive Robotics - Rodrigo Ramon and Ou Bai, <i>Florida International University, Miami, USA</i></p> <p>Paper A1-3: Hotcell Worker Assistive Robotic Exoskeleton Design and Control - Rodrigo Ramon, Chris Nataros, Tong Yi, Leonel Lagos, Aparna Aravelli and Ou Bai, <i>Florida International University, Miami, USA</i></p> <p>Paper A1-4: Deep learning approach to control of prosthetic hands with electromyography signal - Mohsen Jafarzadeh, Daniel Curtiss Hussey and Yonas Tadesse, <i>The University of Texas at Dallas, USA</i></p> <p>Paper A1-5: A robotic laparoscope holder operated by jaw movements and triaxial head rotations - Masato Arai, Takato Ohmori, Shunji Moromugi, <i>Chuo University, Tokyo</i>; Tomohiko Adachi, Taiichiro Kosaka, Shinichiro Ono and Susumu Eguchi, <i>Nagasaki University, Japan</i></p>
<p>10:00 - 12:30 pm Bayou Building Room 1437</p>	<p>SESSION A2: Title - Methods of Artificial Intelligence, Augmented Intelligence and VR in Robotics Chair/Co-Chair: Prof. Simone Keller Fuchter/ Dr. Thomas Harman</p> <p>Paper A2-1: Applications of Deep Learning to Road Sign Detection in DVR Images - Yong-Lin Kuo and Shih-Hsun Lin, <i>National Taiwan University of Science and Technology, Taiwan</i></p> <p>Paper A2-2: Autonomous Navigation via a Q Network with One Hot Image Encoding - Will Anderson, Kevin Carey, Eric Sturzinger and Christopher Lowrance, <i>US Military Academy, West Point, NY, USA</i></p> <p>Paper A2-3: Low Cost Autonomous Amphibious Bird Chasing Robot - Hoo Kim, Emily McCloy, Garrett Williamson and Tommy Vandermolen, <i>Letourneau University, Texas, USA</i></p> <p>Paper A2-4: Innovative Applications of VR: Flash-flood control and monitoring - Victor Luis Padilha, Francisco Henrique De Oliveira, David Proverbs, <i>Birmingham City University, England</i>; and Simone Keller Fuchter, <i>State University of Santa Catarina, Brazil</i></p> <p>Paper A2-5: Pain Mitigation Through Virtual Reality Applications - Miles Mcfarland, Nathan Zelaya, Dr. Gahangir Hossain, Dr. David Hicks, and Dr. Lifford McLauchlan, <i>Texas A&M University, Kingsville, USA</i></p>

<p>10:00 - 12:30 pm Bayou Building Room 1439</p>	<p>SESSION A3: Title - Mobile Robots and Applications I Chair/Co-Chair: Prof. Bálint Kiss/Dr. James Dabney</p> <p>Paper A3-1: Structure of Wall Climbing Robot Control System - Valery Gradetsky, Maxim Knyazkov, Evgeniy Semenov and Artem Sukhanov, <i>Ishlinsky Institute for Problems in Mechanics of the RAS, Moscow, RF</i></p> <p>Paper A3-2: Optimized distributed scheduling for a fleet of heterogeneous unmanned maritime systems - Geert De Cubber and Rob Haelterman, <i>Belgian Royal Military Academy, Brussels, Belgium</i></p> <p>Paper A3-3: Cellular Automata based Decentralized Cooperative Collision Avoidance Control for Multiple Mobile Robots - Erick Rodriguez-Seda and Catalina Rico, <i>United States Naval Academy, Annapolis, USA</i></p> <p>Paper A3-4: Path Following of Autonomous Mobile Robot with Distance Measurement using RFID Tags - Suvankar Barai, Manash Kumar Kundu, and Buddhadeb Sau, <i>Jadavpur University, Kolkata, India</i></p> <p>Paper A3-5: Vehicle-Terrain Parameter Estimation for Small-Scale Unmanned Tracked Vehicles - Albert Espinoza, Jorge Torres-Filomeno, Karla Montañez-Sanchez and Angel Ortiz-Andujar, <i>Universidad Ana G. Mendez, Turabo, Puerto Rico, USA</i></p>
<p>12:30 - 1:30 pm Bayou Building Forest Room</p>	<p>LUNCH Special Presentation: "Aquanaut: The Innovation in Deepwater Robotics" Invited Guest Speaker: Dr. Reg Berka, COO Houston Mechatronics</p>
<p>1:30 – 3:00 pm Bayou Building B1435</p>	<p>SESSION B1: Title - Flying and Swarm Robots Chair/Co-Chair: Dr. Luong Nguyen/ Prof. Masahiko Inami</p> <p>Paper B1-1: Acoustic Flame Suppression in Various Gravitational Forces - Joshua Rodriguez, Osvaldo Salinas, Riki Barron, Justin Tarwater, and Juan Giraldo , <i>San Jacinto College, Houston, USA</i></p> <p>Paper B1-2: Collaborative UAV Surveillance – Winston Smith and Henry Hexmoor, <i>Southern Illinois University, Carbondale, USA</i></p> <p>Paper B1-3: Swarmathon: A Swarm Robotics Experiment for Future Space Exploration - Luong Nguyen, Thomas Harman and Carol Fairchild, <i>The University of Houston-Clear Lake</i></p>
<p>1:30 – 3:00 pm Bayou Building Room 1437</p>	<p>SESSION B2: Session Title - Mobile Robots and Applications II Chair/Co-Chair: Dr. Ishaq Unwala/ Prof. Simone Keller Fuchter</p> <p>Paper B2-1: Super Twisting Sliding Mode Control of Spherical Robot - Sansar Bastola and Hassan Zargarzadeh, <i>Lamar University, Beaumont, Texas, USA</i></p> <p>Paper B2-2: Rescue Boat Path Planning in Flooded Urban Environments - Mehmet Ozkan, Texas Tech University, Luis Rodolfo Garcia Carrillo and Scott A. King, <i>Texas A&M University, Corpus Christi, Texas, USA</i></p> <p>Paper B2-3: Tracking of Targets in Mobile Robots Based on Camshift algorithm - Xin Zhang, Jiang Lu, <i>UHCL</i>; Xingang Fu, <i>Texas A&M Kingsville</i>; Xiaokun Yang, Ishaq Unwala, <i>UHCL</i>; and Ting Zhang, <i>UH-Downtown</i></p>

<p>1:30 – 3:00 pm Bayou Building Room B1439</p>	<p>SESSION B3: Title - Control and Sensors for Robots Chair/Co-Chair: Dr. Mohammad Safeer Khan/George Salazar</p> <p>Paper B3-1: Development Considerations for Implementing a Voice-Controlled Spacecraft System - George Salazar, <i>NASA Johnson Space Center, Houston, Texas, USA</i></p> <p>Paper B3-2: Bobble-Bot: An educational platform for real-time control with ROS - Mike Moore, Josh Sooknanan, and James Holley, <i>S.O. Engineering, Houston, Texas, USA</i></p> <p>Paper B3-3: Robotics and Deep Learning Framework for Structural Health Monitoring of Utility Pipes – Muhammad Safeer Khan, Kaimen Zeng, Nansong Wu, <i>Arkansas Tech University, Arkansas</i>; and Ishaq Unwala, <i>UHCL, Houston, Texas, USA</i></p>
<p>3:00 – 3:30 pm</p>	<p>BREAK</p>
<p>3:30 – 5:00 pm Bayou Building Room 1435</p>	<p>SESSION C1: Title - Inspection and Industrial Applications Chair/Co-Chair: Dr. Irfan Khan/ Prof. Bálint Kiss</p> <p>Paper C1-1: Eliminating residual sway of crane loads based on laser slot sensor information - Bálint Kiss and Gábor Vámos, <i>Budapest University of Technology and Economics Budapest, Hungary</i></p> <p>Paper C1-2: Fault Detection and Harmonics Mitigation in Diesel Electric Ships Using IIOT Edge Devices - Kotesh Rao, <i>ADAK Digital, Houston</i>; Irfan Khan, <i>TAMU, Galveston</i>, and Vidyasagar Asalapuram, <i>KALYPSO, Houston, USA</i></p> <p>Paper C1-3: A Novel Architecture for Condition Based Machinery Health Monitoring on Marine Vessels Using Deep Learning and Edge Computing - Vidyasagar Asalapuram, <i>KALYPSO, Houston</i>; Irfan Khan, <i>TAMU, Galveston</i>; and Kotesh Rao, <i>ADAK Digital, Houston, USA</i></p>
<p>3:30 – 5:00 pm Bayou Building Room 1437</p>	<p>SESSION C2: Session Title: Navigation, Path Planning, and Communication for Robots Chair/Co-Chair: Dr. James Dabney/ Michal Adamik</p> <p>Paper C2-1: Finger Motion Measurement System for Telexistence Hand Manipulation - Yasuyuki Inoue, Fumihiro Kato and Susumu Tachi, <i>The University of Tokyo, Japan</i></p> <p>Paper C2-2: In-Tank Sensor Error Prediction and Modeling - James Dabney, <i>The University of Houston-Clear Lake</i>; and Fathi Ghorbel, <i>Rice University, Houston, Texas, USA</i></p> <p>Paper C2-3: Tool Path Generator for Artistic Drawing with Industrial Robot - Michal Adamík, Andrej Babinec and Ľuboš Chovanec, <i>Slovak University of Technology in Bratislava, Slovakia</i></p>
<p>3:30 – 5:00 pm Bayou Building Room 1439</p>	<p>SESSION C3: Title - Advances in Human-Robot Collaboration Chair/Co-Chair: Dr. Thomas Harman / Prof. Masahiko Inami</p> <p>Paper C3-1: Lessons Learned from the Development of an Affordable Open-Source Based Humanoid Socially Assistive Robot - Pablo Rangel, Kimberly Brotherton, Erika Anderson, Adam Hennad, Aaron Vega and Matthew Plotkin, <i>TAMU, Corpus Christi, Texas, USA</i></p> <p>Paper C3-2: Progress in Human-Robot Collaboration for Object Handover - Daniel Leal and Yimesker Yihun, <i>Wichita State University, Wichita, USA</i></p> <p>Paper C3-3: Identifying Variables that Improve Communication with Bots - Schenita Floyd, <i>College of Information, University of North Texas, Denton, TX, USA</i></p>
<p>6:30 – 9:00 pm</p>	<p>Friday EVENING Dinner – at Gilruth Center, NASA Johnson Space Center Special Presentation: “Robonaut 2: Technology for Earth and Space” Invited Guest Speaker: Kenneth J. Ruta, NASA/JSC</p>

Saturday 21, September-2019		University of Houston-Clear Lake, Bayou Building	
7:00 – 8:30 am Bayou Building Forest Room	Continental Breakfast		
8:30 – 9:30 am Bayou Building Forest Room	Keynote 2: “Robotic Assistance to Prevent, Detect, Measure , Protect Manage CBRNE Risks “ Speaker: Prof. Yvan Baudoin, <i>EM Royal Military Academy, Belgium</i>		
9:30 – 12:00 am Bayou Building Room 1435	SESSION D1: Title - Training and Education applied to Robotics Chair/Co-Chair: Prof. Michal Tölgyessy/ Michelle Patrick-Krueger Paper D1-1: Free response evaluation via neural network for an IMathAS system - Nathaniel Wiggins and Milton Smith, <i>Texas Tech University, USA</i> Paper D1-2: An Open Real-Time Audio Processing Platform on Zync FPGA - Kevin Vaca, Mitchell Jefferies and Xiaokun Yang, <i>The University of Houston-Clear Lake</i> Paper D1-3: EDF Scheduling of Industrial Robotic Manufacturing Tasks - Pallovi Romero and Albert M. K. Cheng, <i>The University of Houston Central Campus, Houston, USA</i> Paper D1-4: Interactive Screen for Educational Purposes In Robotics - Michal Tölgyessy, Martin Dekan and Peter Hubinsky, <i>Slovak University of Technology, Bratislava, Slovakia</i>		
9:30 – 12:00 pm Bayou Building Room 1437	SESSION D2: Title - Robotics for Human Performance and Rehabilitation and Medical Applications II Chair/Co-Chair: Prof. Yvan Baudoin/ Prof. Fumihiko Kato Paper D2-1: Analysis of Magnetolectric Robot for Biological Cell Poration - Shadeeb Hossain, Brandon Young, Amar Bhalla and Ruyan Guo, <i>University of Texas at San Antonio, USA</i> Paper D2-2: Haptic Display Glove Capable of Force/Vibration/Temperature - Fumihiko Kato, Yasuyuki Inoue and Susumu Tachi, <i>The University of Tokyo, Tokyo, Japan</i> Paper D2-3: Towards a modular and dexterous transhumeral prosthesis based on bio-signals and active vision - Duy Nguyen Phuong and Thanh Pham Chi, <i>RMIT University, Ho Chi Minh City, Vietnam</i> Paper D2-4: Human-Centered Deep Learning Neural Network Trained Myoelectric Controller for a Powered Wheelchair - Ashley Stroh and Jaydip Desai, <i>Wichita State University, Wichita, Kansas, USA</i> Paper D2-5: Force Myography Controlled Intelligent Assistive Wheelchair-Mounted Robotic Exoskeleton for Arm Movements - Jaydip Desai, Bridget Schabron and Yimesker Yihun, <i>Wichita State University, Wichita, Kansas, USA</i>		

<p>9:30 – 12:00 pm Bayou Building Room 1439</p>	<p>SESSION D3: Title - Robots and Various Topics Chair/Co-Chair: Prof. Yvan Baudoin/ Prof. Masahiko Inami</p> <p>Paper D3-1: Circadian Rhythm Light Watch - Richard Castaneda, <i>San Jacinto College, Houston, USA</i></p> <p>Paper D3-2: A Deep Learning Technique for Modeling Fluid Moments of Swimming Robots - Rozie Zangeneh, and Sarhan M. Musa, <i>Prairie View A&M University, Prairie View, Texas, USA</i></p> <p>Paper D3-3: MFCC-based Houston Toad Call Detection using LSTM - Abdullah Al Bashit and Damian Valles, <i>Texas State University, San Marcos, Texas, USA</i></p> <p>Paper D3-4: Autonomous Color Based Object Tracking of a Hexapod with Efficient Intuitive Characteristics - Shahriar Ahmad, Saeed Moazami and Hassan Zargarzadeh, <i>Lamar University, Beaumont, Texas, USA</i></p>
<p>12:00 – 1:30 pm Bayou Building Forest Room</p>	<p>ISMCR Concluding Remarks - Dr. Zafar Taqvi/Prof. Yvan Baudoin/Prof. Masahiko Inami/Prof. Susumu Tachi</p> <p>Boxed Lunch</p>
<p>1:30 – 2:30 pm</p>	<p>UHCL Robotic Lab Visit</p>