



Program

The International Symposium on Measurement, Control, and Robotics (ISMCR 2022)

Theme: Robotics and Virtual Tools for a New Era

28-30 September 2022

On-Line Virtual Video Event

Organized by

IMEKO Technical Committee on Robotics (TC17)

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IEEE Galveston Bay Section



WEDNESDAY, 28 SEPTEMBER 2022

<p>WEDNESDAY, 28 SEPTEMBER 2022</p>	<p>Times shown are US-Central. CHECK corresponding time for your zone</p>
<p>8:00 AM US-Central</p>	<p>Welcome: Dr. Zafar Taqvi, IMEKO TC17 Chair, Executive Chair ISMCR2022 Welcome: Dr. Simone Keller Füchter, Chair ISMCR2022</p>
<p>8:10 – 9:00 AM US-Central</p>	<p>Keynote1: From VR to Telexistence Speaker: Susumu Tachi, Ph.D., Professor Emeritus of The University of Tokyo. Chair: Dr. Zafar Taqvi, USA</p>
<p>9:10-10:10 AM US-Central</p>	<p>SESSION A1: Title - Robotics for Human Performance and Rehabilitation and Medical Applications I Chair/Co-Chair: Prof Andrzej Masłowski- Poland / Prof Giovanni Muscato – Italy</p> <p>Paper A1-1: Palpation Robot System - Reproduction Method by Deep Neural Network of Skin Palpation Judgment Focusing on Softness Classification Authors: Fumihiko Kato, Takumi Handa, Kaito Kamishima and Hiroyasu Iwata / Waseda University; Takeya Adachi /Keio University – Japan</p> <p>Paper A1-2: Study on Attention Distribution for Supernumerary Limbs in Dual-task –Effectiveness of Vibration Feedback for Limb Posture Authors: Kaito Kamishima, Fumihiko Kato, Yukiko Iwasaki, Nonoka Nishida and Hiroyasu Iwata / Waseda University - Japan</p> <p>Paper A1-3: Applying NASA’s Human Systems Integration Methodology in Implementing Voice-Control of Future Spacecraft Systems Authors: George Salazar /NASA – USA</p>
<p>10:20- 11:20 AM US-Central</p>	<p>SESSION A2: Title – Methods of Artificial Intelligence, Augmented Intelligence and VR in Robotics, Robots and Various Topics Chair/Co-Chair: Prof. Simone Keller Füchter- Brazil /Prof. Goekcen Bas - Austria</p> <p>Paper A2-1: Machine Learning (ML) Applied to Microbiome Genetic Mapping Authors: Kátia Marques / Colegio Logosófico unidade Florianópolis; Lia Back / Laboratório de Biogenética -Brazil; Thaís Guerra Braga / Department of Production Engineering -Federal University of Santa Catarina - Brazil; Fernanda Luiza Ferrari / Department of Biological Sciences - Federal University of Santa Catarina, Brazil</p> <p>Paper A2- 2: Metaverse: Virtual and Augmented Reality Presence Authors: Mário Sérgio Schlichting, Márcio Sérgio Schlichting, Simone Keller Füchter /University of Estácio de Santa Catarina – Brazil and Karen Alexander XrconnectED – USA</p> <p>Paper A2-3: Robot Localization and Uncertainty Control with Intermittent Range-only Measurements Authors: Farhad Shamsfakhr, Luigi Palopoli, and Daniele Fontanelli / University of Trento – Italy</p>

THURSDAY, 29 SEPTEMBER 2022

<p>THURSDAY, 29 SEPTEMBER, 2022</p> <p>8:00 AM-8:50 AM</p>	<p>Keynote 2: Safety analysis of Brazilian suborbital launch operations based on system-theoretic approach</p> <p>Speaker: Cap. Antonio Vinicius Diniz Merladet. Coordinator of Aerospace Systems Processes at Industrial Fostering and Coordination Institute (IFI). Brazilian Air Force.</p> <p><i>Chair: Dr. Simone Keller Füchter, Brazil</i></p>
<p>9:00 AM 10:00AM</p> <p>US-Central</p>	<p>SESSION B1: Title - Flying and Swarm Robots</p> <p>Chair/Co-Chair: Dr. A. Vimala Juliet – India /Prof Jaromir Volf – Czech Republic</p> <p>Paper B1-1: Visual Drone Detection and Tracking for Autonomous Operation from Maritime Vessel Authors: Timothy Halleux, Tien-Thanh Nguyen, Charles Hamesse, Geert De Cubber and Bart Janssens / Royal Military Academy – Belgium</p> <p>Paper B1-2: Visual SLAM for Autonomous Drone Landing on a Maritime Platform Authors: Thomas Dutrannois, Tien-Thanh Nguyen, Charles Hamesse, Geert De Cubber and Bart Janssens / Royal Military Academy - Belgium</p> <p>Paper B1-3: Control of a differentially flat 2D overhead crane using the ADRC philosophy Authors: Barnabás Finta and Bálint Kiss/ Budapest University of Technology and Economics – Hungary</p>
<p>10:10 -11:10 AM</p> <p>US-Central</p>	<p>SESSION B2: Title - Control and Sensors for Robots</p> <p>Chair/Co-Chair: Prof. Jagdish Shukla- India / Prof. Trung Pham -USA</p> <p>Paper B2-1: Novel Transmission Mechanism “Shaft-following Gear Mechanism” Application to a Puncture Robot for Three Dimensional Punctures Authors: Takuma Ogawa, Ryohei Saito, and Hiroyasu Iwata / Graduate School of Creative Science and Engineering - Waseda University - Japan</p> <p>Paper B2-2: Power-Based Gravity Compensation for Flexible Joint Manipulators Authors: Austin Greisman, Arjun Ivimey, Laura Connolly, and Keyvan Hashtrudi-Zaad / Queen's University, Kingston – Canada</p> <p>Paper B2-3: Using Swarm Intelligence to Coordinate a Fleet of Drones in a Search and Rescue Mission Authors: Trung Pham /United States Air Force Academy; Larry Marine / Department of the Air Force and Kumar Krishen University of Houston - USA</p>
<p>11:20 – 12:20 PM</p> <p>US-Central</p>	<p>SESSION B3: Title – Mobile Robots and Applications and Computer Vision</p> <p>Chair/Co-Chair: Prof. Dr. Geert De Cubber- Belgium / Prof Geraldo Gurgel-Brazil</p> <p>Paper B3-1: Development of an environment mapping robot, using polygonal map representation Authors: András Izsó and István Harmati / Budapest University of Engineering and Economics – Hungary</p>

	<p>Paper B3-2: Path Planning for Data Collection Multiagent System in a Sensing Field with Obstacles Authors: Sára Olasz-Szabó and István Harmati / Dept. of Control Engineering and Information Technology Budapest University – Hungary</p> <p>Paper B3-3: Self-Supervised Occlusion Detection and Avoidance using Differentiable Rendering Authors: Mátyás Szántó and Márton Szemenyei / Budapest University of Technology and Economics – Hungary</p>
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FRIDAY, 30 SEPTEMBER 2022

<p>FRIDAY, 30 SEPTEMBER, 2022</p> <p>8:00 AM-8:50 AM US-Central</p>	<p>Tutorial: Intelligent Analysis of Data with Robotic Application in Perception of the Workspace</p> <p>Speaker: Dr. Trung T. Pham Chief Scientist, Federal Aviation Administration</p> <p>Chair: Prof. Kiss Balint, Hungary</p>
<p>9:00-10:00 AM US-Central</p>	<p>SESSION C1: Session Title: Navigation, Path Planning, Communication for Robots, and Neural Network Chair/Co-Chair: Prof. Yvan Baudoin- Belgium / Dr. Goekcen Bas - Austria</p> <p>Paper C1-1: Business network lifecycle model: construct validity using structural equation model Authors: Thais Braga, Anny Key Mendonça and Nelson Casarotto Filho / Universidade Federal de Santa Catarina and Douglas Wegner /Fundação Dom Cabral – Brazil</p> <p>Paper C1-2: Efficient Neural Network Pruning Using Model-Based Reinforcement Learning Authors: Blanka Bencsik and Márton Szemenyei /Budapest University of Technology and Economics – Hungary</p> <p>Paper C1-3: Successful Development of Problem-Solving and Computing Programming Competences in Children Using Arduino Authors: Cristian Vidal-Silva, Claudia De la Fuente and Pablo Rojas-Valdés / Universidad de Talca - Chile</p>
<p>10:10– 10:40 AM US-Central</p>	<p>SESSION C2: Title - Robotics for Human Performance and Rehabilitation and Medical Applications II Chair/Co-Chair: Prof. Andrzej Maslowski-Poland/ Prof. Jeromir Volf- Czech Republic</p> <p>Paper C2-1: Proposal for a Multi-Objective Optimization Information System for Referral of Patients from the Emergency Unit Authors: Leopoldo Lopez / Universidad de Talca; Lorena Bearzotti / Pontificia Universidad Católica de Valparaiso and Raymundo Forradellas / Universidad Nacional de Cuyo – Chile/ Argentina</p>

	<p>Paper C2-2: The Importance Of Using Simulators In The Dosimetry Of Radiation Protection Authors: Monaliza Almeida, Carlos Henrique Sousa and José Guilherme Peixoto /IRD – Brazil</p>
<p>10:50- 11:50 AM US-Central</p>	<p>SESSION C3: Title - FPGA Chair/Co-Chair: Prof. Marcia Alves – Brazil / Prof. Andrej Babinec- Slovakia</p> <p>Paper C3-1: Case Studies of Configurable Binary Design Library on FPGA Authors: Mario Vega, Mukesh Chowdary Madineni, Xiaokun Yang / University of Houston Clear Lake and Hailu Xu / California State University, Long Beach – USA</p> <p>Paper C3-2: Evaluating FPGA Acceleration on Binarized Neural Networks and Quantized Neural Networks Authors: Sarala K Surapally, Xiaokun Yang, Thomas L Harman and Liwen Shih / University of Houston Clear Lake - USA</p> <p>Paper C3-3: A proposal for a FPGA-based graphical pipeline for virtual depth image generation Authors: Dániel Szabó and Emese Gincsiné Szádeczky-Kardoss / Budapest University of Technology and Economics - Hungary</p>
<p>12:00-12:10 PM US-Central</p>	<p>ISMCR2022 Summary- Dr. Kiss Balint, Cochair ISMCR2022 ISMCR Concluding Remarks - Dr. Zafar Taqvi- TC17 Chair</p>
<p>12:10 PM- 12:30 PM US-Central</p>	<p>Virtual Tour YDUQS/Estácio. Attendees will be treated with a 15 minute tour of Estacio showing how technology tools are supporting the educational transformation. It will be interesting to observe the implementation of some of the Data Analysis and Virtual Strategies.</p>