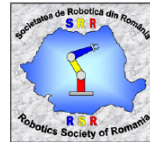


**SYROM
2022**



**ROBOTICS
2022**

SYROM & ROBOTICS 2022

The Joint International Conference of
the 13th IFToMM International Symposium on Science of Mechanisms and Machines (SYROM)
and the XXV International Conference on Robotics (ROBOTICS)
Iasi, Romania, November 17 - 18, 2022

CONFERENCE PROGRAM

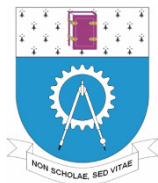


Organized by:

**ROMANIAN ASSOCIATION FOR THE SCIENCE OF MECHANISMS AND MACHINES –
ARoTMM
ROBOTICS SOCIETY OF ROMANIA**

and

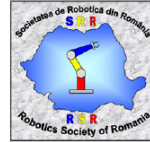
**MECHANICAL ENGINEERING FACULTY
“GHEORGHE ASACHI” TECHNICAL
UNIVERSITY OF IASI**



With the support of:

**INTERNATIONAL FEDERATION FOR THE PROMOTION OF MECHANISM AND MACHINE
SCIENCE – IFToMM
TECHNICAL SCIENCES ACADEMY OF ROMANIA – ASTR**

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CONFERENCE PROGRAM OUTLINE

Wednesday, November 16, 2022

18:00 – 20:00 Get Together (University Restaurant)

Thursday, November 17, 2022

09:00 – 09:30 Participants registration

09:30 – 10:00 Welcome, Opening Addresses

10:00 – 13:00 Plenary Session (University Conference Hall)

- 1. Multimodal Perceptual Cues for Context-aware Human-Robot Interaction**
Karsten BERNES, Germany
- 2. Robot Design in Italy: historical backgrounds, achievements, and challenges**
Marco CECCARELLI, Italy
- 3. Hyper-Redundant Robots**
Mircea IVANESCU, Romania
- 4. Recent Advances in Medical Robotics**
Doina PISLA, Romania

13:30 – 14:30 Lunch Break (University Restaurant)

15:00 – 16:30 Sections Session (for location, see detailed program)
Poster Session (Mechanical Engineering, Mechatronics and Robotics -
IMMR Department, 1st floor)

16:30 – 16:45 Coffee Break

16:45 – 18:00 Sections Session (IMMR Department)

19:00 Conference Gala Dinner
(**Cosmopolitan Restaurant** at Ramada hotel)

Friday, November 18, 2022

09:00 – 09:20 Book presentation: History of Robotics in Romania (M3 Room)

09:20 – 09:30 Conference Closing Ceremony (M3 Room, IMMR Department)

09:30 – 11:30 ARoTMM General Assembly (M3 Room, IMMR Department)

12:30 – 13:30 Lunch Break (University Restaurant)

14:00 – 17:00 Social Program

Conference Chairman

Ioan DOROFTEI (Romania)

Co-Chairmen

Mircea NITULESCU (Romania)

Doina PISLA (Romania)

Erwin-Christian LOVASZ (Romania)

International Scientific Committee

Stelian Alaci (Romania)

Mircea-Viorel Bara (Romania)

Yvan Baudoin (Belgium)

Nicu-George Bizdoaca (Romania)

Karsten Berns (Germany)

Theodor Borangiu (Romania)

Stelian Brad (Romania)

Adrian Burlacu (Romania)

Mehmet Ismet Can Dede (Turkey)

Giuseppe Carbone (Italy)

Marco Ceccarelli (Italy)

Valentin Ciupe (Romania)

Dorian Cojocaru (Romania)

Daniel Condurache (Romania)

Burkhard Corves (Germany)

Jean-Christophe Fauroux (France)

Carlo Ferraresi (Italy)

Alessandro Gasparetto (Italy)

Corina Gruescu (Romania)

Alfonso Hernandez (Spain)

Mathias Hüsing (Germany)

Iulian Iordachita (USA)

Mircea Ivanescu (Romania)

Nicolae Joni (Romania)

Gökhan Kiper (Turkey)

Chin-Hsing Kuo (Australia)

Corneliu Lazar (Romania)

Dirk Lefeber (Belgium)

XinJun Liu (China)

Dan Mandru (Romania)

Elena Mereuta (Romania)

Calin-Octavian Miclosina (Romania)

Niels Modler (Germany)

Andreas Müller (Austria)

Mircea Neagoe (Romania)

Victor Petuya (Spain)

Radu-Emil Precup (Romania)

Ionel Staretu (Romania)

Iulian Tabara (Romania)

Yukio Takeda (Japan)

Daniela Tarnita (Romania)

Hidetsugu Terada (Japan)

Calin Vaida (Romania)

Ion Visa (Romania)

Organizing Committee

Emil BUDESCU (Romania)

Florentin BUIUM (Romania)

Eugen MERTICARU (Romania)

Cristina-Magda CAZACU (Romania)

Robert KRISTOF (Romania)

Session 1: Mechanisms

Thursday, November 17, 2022

Chairmen: *Prof. Ion VISA and Prof. Daniel CONDURACHE*

Paper no.	Title of the papers and authors	Hours	Room
043	Experimental Energy Gain Assessment of a Photovoltaic System Equipped with a Biaxial Solar Tracking Mechanism <i>M. MOLDOVAN, I. VISA and B. BURDUHOS</i>	15.00 - 15.15	M3 IMMR Dep.
007	A study of feasibility of a mechanism for rib-vertebra sternum prosthesis <i>O. RAMIREZ, M. CECCARELLI and C.R. TORRES-SAN-MIGUEL</i>	15.15 - 15.30	
011	Hypercomplex Dual Lie Nilpotent Algebras and Higher-Order Kinematics of Rigid Body <i>D. CONDURACHE, M. COJOCARI and I. POPA</i>	15.30 - 15.45	
034	Type synthesis of the mechanisms with linear actuation useful for orientation modules <i>F. FLORESCU, I.-E. POPESCU, C.E. MOLDOVAN and E.-C. LOVASZ</i>	15.45 - 16.00	
025	A review on mechanisms used for the reconfigurable wheelchairs <i>I.-E. POPESCU, F. FLORESCU, C. STICLARU, D.T. MĂRGINEANU and E.-C. LOVASZ</i>	16.00 - 16.15	
037	Forces Transmission Index of the Structural Group 0/3/3 <i>C.D. DUCA AND F. BUIUM</i>	16.15 - 16.30	

COFFEE BREAK: 16.30 – 16.45

Session 2: Robotics 1

Thursday, November 17, 2022

Chairmen: *Prof. Marco CECCARELLI and Prof. Erwin LOVASZ*

Paper no.	Title of the papers and authors	Hours	Room
005	Design and Performance of LARMbot arm V3 <i>R. COUPRIE, M. CECCARELLI, and M. AMINE LARIBI</i>	16.45 - 17.00	M3 IMMR Dep.
022	Requirements and Characteristics of Finger Motion Assistance <i>K.-E. LOVASZ, A. OLAH and M. CECCARELLI</i>	17.00 - 17.15	
028	A kinematic analysis of the TORVEastro astronaut robot arm <i>M. PAOLONI, G. CUPERTINO and M. CECCARELLI</i>	17.15 - 17.30	
041	Soft robotics modeling and simulation <i>F.-A. BRASOVEANU</i>	17.30 - 17.45	
010	Bi-mobile Mechanisms Modelling for Variable Sequence Robots <i>ADR. COMANESCU, I. DUGAESESCU, D. BOBLEA and A. GHEORGHITA</i>	17.45 - 18.00	

Session 3: Robotics 2

Thursday, November 17, 2022

Chairmen: *Prof. Doina PISLA* and *Prof. Calin VAIDA*

Paper no.	Title of the papers and authors	Hours	Room
033	Development of a force feedback control for robotic assisted liver cancer treatment <i>B. GHERMAN, D. HORVATH, E. MOIS, C. VAIDA, F. GRAUR, A. BURZ, C. POPA, P. TUCAN, N. AL HAJJAR, A. PUSCA and D. PISLA</i>	15.00 - 15.15	M4 IMMR Dep.
039	Inverse dynamic modeling of a parallel robot for lower limb rehabilitation <i>I. NADAS, B. GHERMAN, P.TUCAN, G. CARBONE, A. PISLA, T. ANTAL and D. PISLA</i>	15.15 - 15.30	
027	A State of Art Overview on Wrist Rehabilitation Exoskeletons <i>N. G. CRĂCIUN, E. C. LOVASZ, M. C. MATEAS and C. E. MOLDOVAN</i>	15.30 - 15.45	
030	Kinematic and Dynamic Analysis of an Exoskeleton Robotic System <i>I. GEONEA, D. TARNITA and L. GRIGORIE</i>	15.45 - 16.00	
014	An experimental evaluation of the performance and key factors of intelligent recommendation system <i>G.RUS, M. DERIAZ, C.VAIDA, L. NAE, B. GHERMAN, E. OPREA, A. PISLA, L. STULENS and D. PISLA</i>	16.00 - 16.15	
15	Algorithm and Software for Achromatic Doublet Synthesis <i>S.-L. OPREAN and C.-M. GRUESCU</i>	16.15 - 16.30	

COFFEE BREAK: 16.30 – 16.45

Session 4: Robotics 3

Thursday, November 17, 2022

Chairmen: *Prof. Mircea IVANESCU* and *Prof. Olimpiu TATAR*

Paper no.	Title of the papers and authors	Hours	Room
032	Obstacle crossing strategies for high-speed 4WD small-scale vehicles <i>D. N'CHOT, R. LENAIN, J.-C. FAUROUX, L. AL BASSIT and P. VASLIN</i>	16.45 - 17.00	M4 IMMR Dep.
020	A review on mobile robots with multimodal locomotion <i>F. KADAR, M. O. TĂȚAR</i>	17.00 - 17.15	
038	Kinematics and design of a 12-DOF quadrupedal robot <i>D G BULEANDRĂ, C RUSU, A O BĂNEASĂ and R C DONCA</i>	17.15 - 17.30	
006	Fixed Sequence Agricultural Robot Functional Characteristics <i>ADR. COMANESCU, D. BOBLEA, I. DUGAESESCU and G. SOARE</i>	17.30 - 17.45	

Session 5: Online Session 1

Thursday, November 17, 2022

Chairmen: *Prof. Mircea NITULESCU and Prof. Ioan DOROFTEI*

Paper no.	Title of the papers and authors	Hours	Room
035	Cloud-based digital twin for robot health monitoring and integration in cyber-physical production systems <i>Th. BORANGIU, S. RĂILEANU, F. ANTON and I. LENTOIU</i>	15.00 - 15.15	Online
026	Design and operation of a cable-driven robot for lower-limb rehabilitation <i>G. FERRISE, E. M. CURCIO, F. LAGO and G. CARBONE</i>	15.15 - 15.30	
031	Evaluation by Numerical Simulation of Friction Forces in Spherical Joints of a 6-DOF Parallel Topology Robot <i>C.-O. MICLOSINA, V. COJOCARU and Z.-I. KORKA</i>	15.30 - 15.45	
017	Smart city concepts and urban service robots <i>Y. K. JAWAD and M. NITULESCU</i>	15.45 - 16.00	
029	A novel design of a robotic system for biological fluid aliquoting <i>A. VOLOSHKIN, L. RYBAK, V. CHERKASOV and G. CARBONE</i>	16.00 - 16.15	
024	Design and Performance Analysis of a Compliant Finger Mechanism <i>F. J. ESPINOSA-GARCIA, M. CECCARELLI and M. ARIAS-MONTIEL</i>	16.15 - 16.30	

COFFEE BREAK: 16.30 – 16.45

Session 6: Online Session 2

Thursday, November 17, 2022

Chairmen: *Prof. Daniela TARNITA and Prof. Florentin BUIUM*

Paper no.	Title of the papers and authors	Hours	Room
002	An experimental characterization of LARMBot torso V1 <i>W. GAO and M. CECCARELLI</i>	16.45 - 17.00	Online
003	Requirements and problems for space berthing system <i>A. TITOV and M. CECCARELLI</i>	17.00 - 17.15	
004	Experimental Identification of Singularities in Parallel Manipulators <i>J.-L. PULLOQUINGA, M. CECCARELLI, V. MATA and A. VALERA</i>	17.15 - 17.30	
016	Design of an exoskeleton for rehabilitation ankle joint <i>N. ZHETENBAYEV, M. CECCARELLI and G. BALBAYEV</i>	17.30 - 17.45	
008	Mechanical machines from antiquity, the Middle Ages and the Renaissance at the origin of humanoid robots <i>I. STARETU and S. STARETU</i>	17.45 - 18.00	
013	Comparative analysis of four solutions for command and control applied to anthropomorphic grippers for robots <i>I. STARETU and C. MOLDOVAN</i>		

SYROM & ROBOTICS 2022 Poster Session

Thursday, November 17, 2022

Paper no.	Title of the papers and authors	Hours	Room
012	Optimization of Marker Design in Garment Industry on the Criterion of Utility Coefficient <i>S. HORA, C.-M. GRUESCU, C. BUNGAU AND R. BODEA</i>		
018	Elevating Platforms with Hydraulic/Pneumatic Actuation for Automotive Maintenance <i>O. ANTONESCU, D. VALEANU AND D. ANTONESCU</i>		
019	Mobile Robots on Adapted Wheels for Stair Climbing <i>O. ANTONESCU, D. VALEANU AND P. ANTONESCU</i>		
021	Synthesis of an Automation System for the PCR (Polymerase Chain Reaction) Samples Preparation Process <i>M.-O. SANDU, C.-M. GRUESCU, E.-C. LOVASZ AND V. CIUPE</i>		
023	Model-Free Reaching of a 2-DOF Robotic Arm Using Neural Networks <i>A. I. CALIN, C. A. POPA, C. MOLDOVAN AND A. DAVIDESCU</i>		
036	Considerations on the Proper Selection of Sensors for Vibroacoustic Study of the Vehicles <i>N.A. NITU, J. MACHADO AND C. BUJOREANU</i>		
040	Study of Vibrations of a Cantilever Beam with Uniformly Distributed Mass <i>S. ALACI, F.-C. CIORNEI, I.-C. ROMANU, A.-M. VELNICIUC AND C. BUJOREANU</i>		
047	Perspectives on Originally Designed Eco-Friendly Robotic Cell for PCB Dismantling <i>I. DOROFTEI, S. CAZAN, A. BURLACU AND D. CHIRITA</i>		



1 – University Conference Hall; 2 – IMMR Department; 3 – University Restaurant