INTELLIGENT RECONFIGURABLE SYSTEMS LABORATORY

Contact details

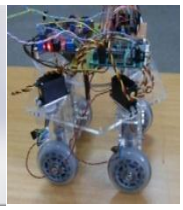
Name	**Intelligent Reconfigurable Systems Research Laboratory**
Acronym	**SIR**
Logo	SIR
Site	http://mdm.utcluj.ro/Cercetare/Lab_SIR/index.html
Address	103-105, Muncii Blv., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automotive, Mechatronics and Mechanical Engineering - Technical University of Cluj-Napoca** **Department of Mechatronics and Machine Dynamics**
Telephone	+40 751393410
Fax	+40 264 594491
Director	Prof. Dr.-Ing. Cornel Brisan Prof.dr.ing. Mihai Olimpiu Tatar
e-mail	cornel.brisan@mdm.utcluj.ro olimpiu.tatar@mdm.utcluj.ro











Areas of expertise

Advanced Technologies for Industrial Process Control
Identifying and modeling highly complex processes
New paradigms of manufacturing systems
Technologies and High Precision Mechanical Products and Mechatronic Systems
Applied mechatronics, Intelligent mechatronic products and systems
Techniques, metrologies and precise and highly precise measuring instruments
Conventional and unconventional automatic drive systems and equipment, with accurate and highly accurate linear or angular positioning
Robotics and high precision microrobotics with or without autonomous motions
High accuracy conventional and unconventional production techniques
Assembly technologies, microassembly, rapid assembly and high accuracy automatic disassembly
Innovative Products and Technologies for Transport and Automotive Industry
Products and technologies for automotive industry
Development of New Types of Mechanical Transmissions
Cylindrical and frontal ball transmissions
Processional variable speed
Diagnosis and maintenance of Industrial Equipment
Technologies for vibration reduction in dynamic systems
Predictive maintenance systems

Team

Prof. Dr.-Ing. Cornel Brisan, Prof. Dr. Eng. Mircea Bara, Prof. Dr. Eng. Mihai Olimpiu, Assoc. Prof. Dr. Eng. Calin Rusu, Assoc. Prof. dr.ing. Olimpiu Hancu, Assoc. Prof. dr.ing. Ciprian Lapusan, Lecturer.dr.ing. Rad Ciprian

Representative projects

SIRAMAD – "Autonomous robotic systems for waste management in the context of the intelligent city", PNIII-P1-1.2 PCCDI 2018, (2018-2020)
"Research concerning theoretical development and experimental validation of Reconfigurable Haptic Interfaces

for Virtual Reality", Alexander von Humboldt Foundation (2012-2015)
"Reconfigurable haptic interfaces used in dynamic contact reproduction - Theory Developments ethical and experimental", PNII-PT-PCCA-2011-3.1-0190, (2012-2016)
"Research concerning develpment of machine tools with reconfigurable topology", Grant ANCS Idei (2007-2010)
"Research and development of the high accuracy positioning robotic systems with extended mobility", Grant ANCS, (2007-2010)
"Modeling, simulation and realization of mobile minirobots with adaptable structure", Grant type A CNCSIS, (2006-2007)
"Modelling, simulation and development of robotic system families used for inspection and exploration", Grant PN-II-Idei, (2007-2010)
"Mathematical Modeling and Experimental Research on Anthropomorphic Parallel Robots", Alexander von Humboldt Foundation, (2004-2008)

Significant results

The most representative publications of the past 5 years:

1. A.C. Simerean, M.O. Tătar - Tetrahedral Mobile Robots: A Systematic Literature Review. *Applied Sciences*, *15*(18), 9979, 2025.
2. M. Mărieş, M. O. Tătar - OT Control and Integration of Mobile Robotic Networks, *Electronics,* Vol. 14, no. 13: 2531, 2025.
3. M. Mărieş, M. O. Tătar **-** Design and Simulation of Mobile Robots Operating Within Networked Architectures Tailored for Emergency Situations. *Applied Sciences,* Vol.*15*, No.11, 6287, 2025.
4. A.C. Simerean, M.O. Tătar **-** Contributions to the Development of Tetrahedral Mobile Robots with Omnidirectional Locomotion Units. *Machines* 2024, Vol. *12*, No. 12, pp. 852, 2024.
5. C. Rusu, M. O. Tătar - Adapting Mechanisms for In-Pipe Inspection Robots: A Review. *Applied Sciences*, Vol.*12*, No.12, 6191, 2022.
6. C. Brisan - Introduction in optimisation of Industrial Robotics. Theory and Applications. Ed Academiei Romanne, 2019.
7. C. Lapusan, M. Lapusan, C. Brisan, V, Chiroiu , Aspects relating to development of modular design in mass customization production, PROCEEDINGS OF THE ROMANIAN ACADEMYOF THE ROMANIAN ACADEMY , Series A, Volume 20, Number 4/2, 2019, pp. 377–382.
8. C. Boanta, C. Brisan - Optimization of a Robot Used for a Solid Waste Selection System, International Journal of Modeling and Optimization 9 (6), 2019.
9. M.O. Tătar, R. Pecie - Modular omnidirectional mobile robot with four driving and steering wheels, IOP Conference Series: Materials Science and Engineering, vol. 514, 2019, p 012019.
10. M. Gyarmati, M.O., Tătar - Locomotion systems for search and rescue robots, Revista Robotica & Management, ISSN 1453-2069, Vol. 24, nr. 1, 2019, pp. 8-13.
11. V. Chiroiu, C. Brisan, D. Dumitriu, et al., - A sonification algorithm for developing the off-roads models for driving simulators MECHANICAL SYSTEMS AND SIGNAL PROCESSING Volume: 98 Pages: 310-323 Published: JAN 1 2018.
12. L. Munteanu, C. Brisan, V. Chiroiu, et al., - Strain amplitude dependent internal friction and the Young's modulus defect in damaged solids, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 60 Issue: 4 Pages: 485-490 Published: NOV 2017.
13. V. Chiroiu, L. Munteanu, D. Dumitriu, et al., - On the sonic films with defects, PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE Volume: 18 Issue: 4 Pages: 378-385 Published: OCT-DEC 2017.
14. F. Fodor, C. Brisan, V. Chiroiu, - The Development of a Pneumatically Actuated Driving Simulator
IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR) Location: Cluj Napoca, ROMANIA Date: MAY 19-21, 2016 Book Series: IEEE International Conference on Automation Quality and Testing Robotics Pages: 185-190 Published: 2016.
15. L. Munteanu, V. Chiroiu, C. Brisan, D. Dumitriu, T. Sireteanu, and S. Petre, - On the 3D normal tire/off-road vibro-contact problem with friction, *Mechanical Systems and Signal Processing*, vol. 54-55, pp. 377-393, Mar 2015.
16. L. Munteanu, C. Brisan, V. Chiroiu, D. Dumitriu, and R. Ioan, - Chaos-hyperchaos transition in a class of models governed by Sommerfeld effect, *Nonlinear Dynamics*, vol. 78, pp. 1877-1889, Nov 2014.
17. L. Munteanu, V. Chiroiu, S. Donescu, and C. Brisan, -A new class of sonic composites, *Journal of Applied Physics*, vol. 115, Mar 2014.
18. V. Chiroiu, C. Brisan, M. Popescu, I. Girip, L. Munteanu, -On the sonic composites without/with defects, in *J. Apply Phys.*, vol. 114, 2013.
19. C. Brişan, R.V. Vasiu, L. Munteanu, -A Road Auto-Generating Algorithm for Developing the Road Virtual Models Usable in Driving Simulators, in *Transportation Research Part C: Emerging Technologies*, vol. 26, 2013, pp.160-179.

The offer addressed to the economic environment

Research & development	Modelling complex intelligent systems. Developing robotic systems for manufacturing Development robotic inspection systems Development omnidirectional mobile robots Developing virtual models

Consulting	For automated manufacturing systems For precision mechanical systems Pipe inspection
Training	Computer aided design and development of mechatronic systems Development of manufacturing technologies Vibratory systems analysis Control algorithms for robots

Last updated: July 2026