




INTELLIGENT RECONFIGURABLE SYSTEMS LABORATORY

Contact details

Name	Intelligent Reconfigurable Systems Research Laboratory	
Acronym	SIR	
Logo		
Site	http://mdm.utcluj.ro/Cercetare/Lab_SIR/index.html	
Address	103-105, Muncii Blv., 400641, Cluj-Napoca, Romania	
Faculty Department	Faculty of Mechanical Engineering Mechatronics and Machine Dynamics Department	
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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. Eng. Cornel Brisan, Prof. Dr. Eng. Mircea Bara, Prof. Dr. Eng. Mihai Olimpiu, Assist. Prof. Dr. Eng. Calin Rusu

Representative projects

“Mathematical Modeling and Experimental Research on Anthropomorphic Parallel Robots”, Alexander von Humboldt Foundation, (2004-2008)
“Research concerning theoretical development and experimental validation of Reconfigurable Haptic Interfaces for Virtual Reality”, Alexander von Humboldt Foundation (2012-2015)
“Research concerning development 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)
“Interfețe haptice reconfigurabile utilizate în reproducerea contactului dinamic. Dezvoltări teoretice și experimentale”, Grant ANCS, (2011-2015)
“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)

Significant results

The most representative publications of the past 5 years:

1. V. Chiroiu, C. Brisan, M. Popescu, I. Girip, L. Munteanu, “On the sonic composites without/with defects”, in *J. Apply Phys.*, vol. 114, 2013
2. C. Brisan, A. Csiszar, “Computation and analysis of the workspace of a reconfigurable parallel robotic system”, in *Mechanism and Machine Theory*, vol. 46, 2011
3. R. Pacurari, C. Brisan, “Optimal Actuation Mechanisms for a Low-Cost Road Simulator”, in *Advanced Science Letters*, vol. 14, no. 1, 2012, pp. 90-95
4. C. Brișan, R.V. Vasiiu, 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
5. L. Munteanu, C. Brisan, St. Donescu, V. Chiroiu, “On the compression viewed as a geometric transformation”, in *CMC: Computers, Materials & Continua*, vol. 20, nr. 1, 2012, pp.1-20
6. A. Aluței, M. O. Tătar, C. Cirebea, “Model and test of a modular inspection robotic system”, in *Mechanika*, Nr. 4 (84), 2010, pp. 58-61

The offer addressed to the economic environment

Research & development	Modeling 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