
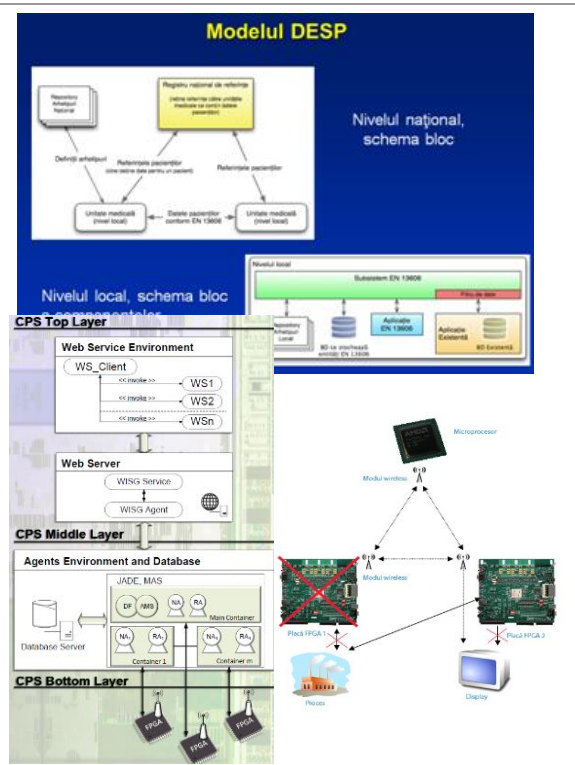


DEPENDABLE SYSTEMS

Contact details

Name	Dependable Systems
Acronym	DeSy
Logo	
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Areas of expertise

Dependability. Security.

- Development of intelligent techniques for dependability (availability, reliability, safety, integrity and maintainability), security (confidentially) and testing of information systems;
- Analysis, design, implementation and testing of information systems with dependability properties used in various fields (e.g. critical infrastructure - energy, water, environment, transport; medicine).

Cyber – Physical Systems (CPSs).

- Development of **ABSTRACTIONS**, architectures and tools to allow implementation of reliable CPSs made from unsafe components and resistant CPSs at cyber or physical attacks;
- Development of the semantic basics for heterogeneous models composition and for modelling languages that describe various physical processes of a CPS and their associated logic.

Intelligent Systems.

- Analyse, design, implementation and testing of intelligent real-time control and monitoring systems using artificial intelligence techniques (intelligent agents, fuzzy logic, data mining, etc.).

Team

Prof. Dr. Eng. Liviu Miclea, Prof. Dr. Eng. Honoriu Vălean, Assoc. Prof. Dr. Eng. Enyedi Szilard, Assist. Prof. Eng. Ovidiu Stan, Assist. Prof. Dr. Eng. Teodora Sanislav, Assist. Prof. Dr. Eng. Laura Vegh,
PhD students: Assist. Prof. Eng. Iulia Ștefan, Andrei Scurtu, Eng. Alexandru Popescu, Eng. Rareș Coste, Tudor Pop, Cosmin Pojar, Eng. Bianca Zaharie, Eng. Andrei Petrut

Representative projects

ROBIN – “Robots and Society: Cognitive Systems for Personal Robots and Autonomous Vehicles”, PCDDI2018 (2018-2020)
F2S, “SCADA Federation, Collaborative Instrument for Water Management – Somes River Pilot Application”, National PN2- Partnerships project, <http://193.226.5.107/f2s/pagina/>, (2014-2017)
“Use of commercial drones for autonomous maintenance services in railways”, cooperation with Siemens company, (2013-2016)
“Cluj-Napoca: Next Generation Brained City - Software design for service monitoring at the level of the medical network, through innovative solution integration”, Sectoral Operational Programme “Increase of Economic Competitiveness” (POSCCE) project, http://clujit.ro/ro/#Next_Generation_Brained_City, (2014-2015)
ProSEco, “Collaborative environment for design of Aml enhanced product-services integrating highly personalised innovative functions with minimal ecological footprint along life cycle and of their production processes based on collaborative environments”, European FP7 project, http://cordis.europa.eu/projects/rcn/109191_en.html, (2013-2017)

CyCloSe, “**Designing Cloud-based Self-healing Cyber-Physical Systems**”, Romania–Italy Bilateral Cooperation with Politecnico di Torino, (2013-2014)
DESP, “**Electronic Healthcare Record**”, National PN2- Partnerships project, <http://www.desp.ro/wiki/index.php/English>, (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. Stefan, Iulina; Enyedi, Szilard; Scurtu, Andrei; et al., Using the WaterML Standard Information Model, in a SCADA Federation Web Service CONTROL ENGINEERING AND APPLIED INFORMATICS Volume: 20 Issue: 1 Pages: 119-127 Published: MAR 2018
2. Contan, Andrei; Dehelean, Catalin; Miclea, Liviu, Applying Coding Systems in the Process of Testing Software Applications 2017 14TH INTERNATIONAL CONFERENCE ON ENGINEERING OF MODERN ELECTRIC SYSTEMS (EMES) Pages: 127-131 Published: 2017
3. S. C. Folea, G. Mois, C. I. Muresan, L. Miclea, R. De Keyser, and M. N. Cirstea, "A Portable Implementation on Industrial Devices of a Predictive Controller Using Graphical Programming", *Ieee Transactions on Industrial Informatics*, vol. 12, pp. 736-744, Apr 2016.
4. T. Sanislav, G. Mois, and L. Miclea, "An approach to model dependability of cyber-physical systems", *Microprocessors and Microsystems*, vol. 41, pp. 67-76, Mar 2016.
5. L. Vegh, L. Miclea, "A Simple Scheme for Security and Access Control in Cyber-Physical Systems", *Proceedings of the IEEE 20th International Conference on Control Systems and Computer Science CSCS 2015*, May 27-29, 2015, Bucharest, Romania, pp. 294-299.
6. T. Sanislav, G. Mois, L. Miclea, "A New Approach towards Increasing Cyber-Physical Systems Dependability", *Proceedings of the IEEE 16th International Carpathian Control Conference (ICCC)*, May, 27-30, 2015, Szilvásvárad, Hungary, pp. 443-447.
7. T. Sanislav, G. Mois, L. Miclea, "An Approach to Model Dependability of Cyber-Physical Systems", *Microprocessors and Microsystems*, 2015, published online
8. M. Neagu, L. Miclea, S. Manich, "Improving security in cache memory by power efficient scrambling technique", *IET Computers & Digital Techniques*, Vol. 9, Issue 6, 2015, pp. 283-292
9. O. Stan, L. Miclea, A. Centea, "Eye-Gaze Tracking Method Driven by Raspberry PI Applicable in Automotive Traffic Safety", *Proceedings of the 2014 IEEE Second International Conference on Artificial Intelligence Modelling and Simulation*, November, 18-20, 2014, Madrid, Spain, pp. 126-130

Patents:

1. L. Miclea, D. Goța, H. Lund, D. Connolly, "Method for generation of the necessary energy distributions of hourly thermal plants based on the outside temperature", no. A/10019/2012 / July 17, 2012
2. J. Figueras, L. Miclea, G. Moiş, "Method for the dynamic voltage scaling in an arithmetic-logic unit based on on-line error detection", no. OSIM: A/10028/2011 / July 11, 2011
3. L. Miclea, D. Sauciuc, O. Stan, I. Păun, C. Dehelean, S. Enyedi, I. Ștefan, "National electronic healthcare record and its creation method", no. A/10033/2010 / November 26, 2010

The offer addressed to the economic environment

Research & development	ABSTRACT ions definition, architectures design and tools implementation to achieve the development of highly dependable and secure CPSs; Expansion of artificial intelligence techniques in order to implement some modelling and control applications. Analysis, design, implementation and validation of dependable CPSs used in water resources management, electrical power generation and transport; Analysis, design, implementation and validation of information systems applied in various fields; Application of artificial intelligence techniques in energy production, medicine, food quality control.
Consulting	Consulting, research, design, development of dependable information systems and intelligent systems for industrial and scientific environment.
Applied engineering services	Computer testing services; Programming and software and hardware consultancy services; Intelligent systems design and implementation services.
Training	Dependable basics: availability, reliability, safety, integrity and maintainability; CPS basics: hardware and software architecture, physical devices development and programming, decision support, historical databases design and management, historical data pre- and post-processing; Software testing techniques: functional testing, structural testing, use of software testing frameworks; Artificial intelligence techniques: intelligent agents, multi-agent systems, data mining.