
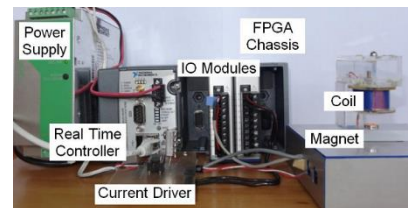
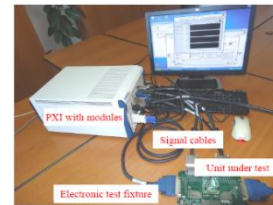


WIRELESS SENSOR - APPLICATIONS

Contact details

Name	Wireless Sensor - Applications
Acronym	WS-App
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Systems%20Engineering/5_Folea.pdf
Address	2, Observator Street, 400489, 3 rd Floor, Room 301
Faculty Department	Faculty of Automation and Computer Science Department of Automation
Telephone	+40 264 401819
Fax	+40 264 599893
Director	Assoc. Prof. Dr. Eng. Silviu Folea
e-mail	silviu.folea@aut.utcluj.ro



Areas of expertise

Embedded system design

- The design and development of embedded systems based on microcontrollers, having sensor measuring and transmission capabilities; power harvesting.

Tracking system

- Location determination systems based on GPS, on RSSI and Wi-Fi or on GSM.

Advanced process control

- The development of advanced control systems on industrial real-time platforms which include FPGA chips; graphical programming.

Team

Assoc. Prof. Dr. Eng. Silviu Folea, Assist. Prof. Dr. Eng. George Moiş, Assist. Prof. Dr. Eng. Mihai Hulea, MSc. student Eng. Izabela Bîrs; MSc student Eng. Mircea Căprioru.

Representative projects

“**Sub 1 GHz ISA100 technology for low cost and low power consumption embedded systems**”, TETRACOM – 3rd Call for TTP Proposals (FP7), Partial Funding for Academia-Industry Technology Transfer Projects in Computing Systems, Technology Transfer in Computing Systems, 50k EUR, 1.01-30.06.2016,

<http://es.iet.unipi.it/tetracom/content/index.php/funded-projects>

“**Power Harvesting Ambient Beacon for the IoT**”, Accenture Industrial Software Solutions (AISS), Grant - Industrial Internet of Things (IIoT), 1.02-31.07.2016, <http://research.utcluj.ro/index.php/lansare-competitii-firme.html>

“**WAIST: Wireless Applications for Satellite Assembly Integration and Testing Applications**”, nr. 4000108133, Control Data Systems SRL (CDS) and Thales Alenia Space France (TAS-F), contract with European Space Agency (ESA) nr. AO7169, (2015-2016), <http://www.cds.ro/#portfolioModal1>

“**Wi-Sensors CO₂ for temperature, humidity and CO₂ measurement**”, project with Synchro Comp SRL, Craiova, Romania, (2013-2014),

http://www.synchro.ro/en-us/Shop/ProdID/1716/CatID/319/LCD_WiSensor_with_T_RH_and_CO2_Internal_Probes

Significant results

The most representative publications of the past 3 years:

1. Fanca, Alexandra; Puscasiu, Adela; Valean, Honoriu; et al., A Survey on Smartphone-Based Accident Reporting and Guidance Systems INTERNATIONAL JOURNAL OF ADVANCED COMPUTER SCIENCE AND APPLICATIONS Volume: 9 Issue: 9 Pages: 409-414 Published: SEP 2018
2. Muresan, Cristina I.; Folea, Silviu; Birs, Isabela R.; et al., A novel fractional-order model and controller for vibration suppression in flexible smart beam NONLINEAR DYNAMICS Volume: 93 Issue: 2 Pages: 525-541 Published: JUL 2018
3. Mois, George Dan; Sanislav, Teodora; Folea, Silviu Corneliu; et al., Performance Evaluation of Energy-Autonomous Sensors Using Power-Harvesting Beacons for Environmental Monitoring in Internet of Things (IoT) SENSORS Volume: 18 Issue: 6 Article Number: 1709 Published: JUN 2018

4. Birs, Isabela R.; Muresan, Cristina I.; Prodan, Ovidiu; et al., Structural vibration attenuation using a fractional order PD controller designed for a fractional order process Conference: 3rd IFAC Conference on Advances in Proportional-Integral-Derivative Control (PID) Location: Ghent Univ, Ghent, BELGIUM Date: MAY 09-11, 2018 Volume: 51 Issue: 4 Pages: 533-538 Published: 2018
5. 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.
6. G. Mois, T. Sanislav, and S. C. Folea, "A Cyber-Physical System for Environmental Monitoring", *IEEE Transactions on Instrumentation and Measurement*, vol. 65, pp. 1463-1471, Jun 2016.
7. Folea, S.; Enyedi, S., Miclea, L., Hedeşiu, H., "Reconfigurable Test Platform for Modular Embedded Systems in Manufacturing Processes", in *International Design and Test Symposium 2015*, IDT2015, Jordan
8. Folea, S.; Mois, G.; Muresan, C.I.; Miclea, L.; De Keyser, R.; Cirstea, M., "Implementation of an extended prediction self-adaptive controller using LabVIEW™", in *Industrial Informatics (INDIN), 2015 IEEE 13th International Conference on Industrial Informatics*, pp.883-888, 22-24 July 2015, doi: 10.1109/INDIN.2015.7281852
9. T. Sanislav, G. Moiş, S. Folea, L. Miclea, „*Integrating Wireless Sensor Networks and Cyber Physical Systems: Challenges and Opportunities*”, Book title „Cyber-Physical System Design with Sensor Networking Technologies”, Serali Zeadally, Nafaa Jabeur, 2015, publisher The Institution of Engineering and Technology.
10. Folea, S.; Muresan, C.I.; De Keyser, R.; Ionescu, C.M., "Theoretical Analysis and Experimental Validation of a Simplified Fractional Order Controller for a Magnetic Levitation System", *Control Systems Technology, IEEE Transactions on*, no.99, pp.1, 1 2015, doi: 10.1109/TCST.2015.2446496, ISI Journal, 2.474.
11. Folea, S.C.; Mois, G., "A Low-Power Wireless Sensor for Online Ambient Monitoring", *Sensors Journal, IEEE*, vol.15, no.2, pp.742, 749, Feb. 2015, doi: 10.1109/JSEN.2014. 2351420, ISI Journal, 1.852.
12. C. I. Muresan, C. Ionescu, S. Folea, R. DeKeyser, „Fractional Order Control of Unstable Processes: The Magnetic Levitation Study Case”, *Nonlinear Dynamics*, special issue entitled "Fractional Dynamics and Its Applications" NODY-D-14-00037R1, March 2014, ISI Journal, 2.419.
13. C. I. Muresan, S. Folea, G. Mois, E. H. Dulf, "Development and Implementation of an FPGA Based Fractional Order Controller for a DC Motor", *Elsevier, Mechatronics*, Volume 23, Issue 7, October 2013, pg. 798–804, ISI Journal, 1.823.
14. B. Muresan, S. Folea, I. Nascu, C. Ionescu, R. DeKeyser, "System identification and modelling of a miniature coaxial helicopter", in *Simulation: Transactions of the Society for Modeling and Simulation International*, vol. 89, no. 12, 2013, pg. 1490-1504
15. S. Folea, M. Hulea, G. Mois, V. Cosma, "Wi-Fi Portable Detector Solution for Distributed Radon Measurements", in *Romanian Journal of Physics*, vol. 58, S126, 2013
16. S. Folea, C. Marcu, D. Bordenca, H. Valean, "Indoor Localization Using Wi-Fi Low Power Devices", *36th International Conference on Telecommunications and Signal Processing (TSP2013)*, July 2-4, 2013, Rome, Italy

Significant solutions:

Wireless sensors based on Wi-Fi low power, BLE (Bluetooth Low Energy) or ISA100.11a.

Development and implementation of advanced control methods on dedicated industrial systems.

Products and technologies:

Electronic equipment design, dedicated solutions. Hardware and software implementation.

International Patents:

1. A. Aştilean, T. Leţia, S. Folea, C. Avram, M. Hulea, R. Miron, E. Ciupan, „*Secured System and Method of Communication Between Fixed and Mobile Devices*”, Brevet RO 127706 A2, nr. UTC-N 1000003415.
2. M. Ghercioiu, H. Hedeşiu, S. Folea, G. Crisan, C. Ceteras, I. Monoses, "Compact modular embedded device", United States Patent 7860582B2, 12/28/2010
3. M. Ghercioiu, H. Hedeşiu, S. Folea, G. Crisan, C. Ceteras, I. Monoses, "Deployment and execution of a graphical program on an embedded device from a PDA", United States Patent 7647562B2, 01/12/2010

The offer addressed to the economic environment

Research & development	The development of hardware equipment and of software products for new structures of data acquisition and communication. The design of dedicated measurement and wireless communication equipment and of location tracking equipment in open air using GPS or GSM or in industrial halls and office buildings using other technologies. The development, the simulation and the testing of advanced control methods, their implementation on industrial control systems.
Consulting	Consulting activities for the development of distributed monitoring and control applications utilizing wireless communication.
Training	LabVIEW™ courses and introduction to digital design using LabVIEW™ and VHDL; Java object oriented programming courses with applicability to distributed control systems; Electronic equipment design; Firmware development; Advanced control of industrial processes.