WIRELESS SENSOR APPLICATIONS

Contact details

Name	Wireless Sensor Applications				Sub-1 GHz USB Stick	Wi210 Registersent	CO, Sens
Acronym	WS-App	Accelerometer Node V1 - vier convent as the attention to the convent to the acceleration to the accelerat	Accelerometer Nocio V2 Marinto Na Artina Sinance anno della 1991 Maria III songe Tito Policia della programa	Therescouple Node V2 - mechanical disks strappores - of the suprement of the com-	Tributor of the field of the community o	2.4 GHz USB Stick 2.4 GHz USB Stick 2.4 GHz USB Stick 2.5 GHz USB Stick 2.5 GHz USB Stick 2.6 GHz USB Stick	B seasof - register of the 20 served temporal per description seasons gain of the period of the 2 period of the temporal feetal from feetal from
Logo	WS-App	When the desired the state of t	Wing States VI. Wing States VI. Can be seen to be see	With a force V2 of the state of	VagAS Serior Si to the product of the serior	No. 1 Table 1817 A. C.	BLE ASSOCIATION OF THE PROPERTY OF THE PROPERT
Site	http://users.utcluj.ro/~sfolea/ https://eeris.eu/ERIF-2000-000W-0867						
Address	Observator St., No. 2, 3 rd Floor, Room 301, 400489	CAG Effective V CRU LIBOUTER STORY GETTERANCE ON HIS DIMMARK FOR THE STORY CHARLES ON HIS DIMMARK FOR THE STORY FOR THE STORY FOR THE STORY FOR THE STORY S	E 1 WD OPC. OPC. OPC. OPC. OPC. OPC.	OAO Ethernat V2 COUNTY TOUR 1849/ OFF PRODUCT SHAPE OFF PRODUCT SHAPE FRONT STOP FRONT		E III	La T
Faculty Department	Faculty of Automation and Computer Science Department of Automation					USA AND COST (I SE AND COST AN	ACI
Telephone	+40 264 401819	Wireless DAQ V1 . Chi Xilur gi eccenir, PAASIR 32 us levid sel first fam 42 Live Profil ent Levidon 41.	O 6 2 Example of Financial Control of Financial Con	DAQ OTT.	LabVEW Stamp	Compact Flash DAG 2000	
Fax	+40 264 599893	Author de Salvande Singer		To a second report	on appropriate USCUSELLON or of Line State Authorities the State State	The second secon	Windless DAQ VI -OTS STARE & ADDRESS PARK RE ROMANN THE NAME AND ASSESSED LICY WIND TO SEE ASSESSED THE Address Interpretate Figs.
Director	Prof. Dr. Eng. Silviu Folea		1491		Cubic Wodular S	esten esta de esta	
e-mail	silviu.folea@aut.utcluj.ro		Total Fischer Finger Fischer		Ratro Watch Derro DUMNO et la No. LCCOM. Ber of person (Ser. According to the Control of the Con		Willrefe's Sience. Willre

Areas of expertise

Embedded systems design: The design and development of embedded systems based on microcontrollers, having sensor measurement and wireless transmission capabilities (Wi-Fi, BLE or LoRa).

Power harvesting: The evaluation of energy harvesting mechanisms which provide energy autonomy for prolonged periods of time and offer the advantage of miniaturization.

IoT applications implementation: The development of IoT software applications for environment monitoring (i.e., air quality) and power consumption evaluation.

Process monitoring and testing: The development of monitoring and testing systems on industrial real-time platforms including FPGA chips based on LabVIEWTM graphical programming.

Team

Prof. Dr. Eng. Silviu Folea, Asoc. Prof. Dr. Eng. George Moiş, Assist. Prof. Dr. Eng. Teodora Sanislav, PhD Student Eng. Ionuţ Dobra, PhD Student Eng. Vlăduţ Dobra, PhD Student Eng. Muscan Andreea.

Representative projects

- "Thermal printer, Bluetooth low energy and microSD data logger", Contract no. 65Cl/2017, PN III (2017).
- "Evaluation of Power Harvesting Elements in Wireless Sensors", Contract no. 1998/12.07.2017, TUCN internal grant. "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, no. 609491/2016.
- "Power Harvesting Ambient Beacon for the IoT", Accenture Industrial Software Solutions (AISS), Grant Industrial Internet of Things (IIoT), no. 8678/2016.
- **"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) no. AO7169, (2015-2016).

Significant results

The most representative publications of the past 5 years:

- T. V. Sântejudean, G. Dan Mois, T. Sanislav and S. C. Folea, "Edge Computing in Wireless Sensing Applications," 2022 11th Mediterranean Conference on Embedded Computing (MECO), 2022, pp. 1-4, doi: 10.1109/MECO55406.2022.9797161.
- G. D. Mois, T. Sanislav and S. Folea, "An Internet of Things-Enabled Sound Level Meter Using Off-the-Shelf Components," 2022 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2022, pp. 1-4, doi: 10.1109/AQTR55203.2022.9802013.
- 3. I. Muntean; G.D. Mois; S.C. Folea, "Development and Analysis of a Low-Cost IoT Sensor for Urban Environmental Monitoring", *International Journal of Computers, Communications & Control*, Oct2021, Vol. 16 Issue 5, p1-14. 14p.

- T. Sanislav, G. D. Mois, S. Zeadally and S. C. Folea, "Energy Harvesting Techniques for Internet of Things (IoT)," in IEEE Access, vol. 9, pp. 39530-39549, 2021, doi: 10.1109/ACCESS.2021.3064066.
- 5. G. Moiş, H. Hedeşiu, S. Folea (2020), "Digital Design Laboratory using LabVIEW", Mediamira, Cluj-Napoca, ISBN 978-973-713-353-3.
- T. Santejudean, S. Folea and G. Mois, "Analysis of Low-Power Operation for an Environmental Monitoring Beacon," 2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2020, pp. 1-5, doi: 10.1109/AQTR49680.2020.9129917.
- R. Miron, M. Hulea and S. Folea, "Food Allergens Monitoring System Backed-up by Blockchain Technology," 2020
 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2020, pp. 1-4, doi: 10.1109/AQTR49680.2020.9130006.
- 8. S.C. Folea, G.D. Mois, "Lessons Learned from the Development of Wireless Environmental Sensors," in *IEEE Transactions on Instrumentation and Measurement*, vol., pp. 1-1, DOI: 10.1109/TIM.2019.2938137, 28 Aug 2019.
- T. Sanislav, S. Zeadally, G.D. Mois, S.C. Folea, "Wireless energy harvesting: Empirical results and practical considerations for Internet of Things," in *Journal of Network and Computer Applications*, vol. 121, pp. 149-158, ISSN 1084-8045, https://doi.org/10.1016/j.jnca.2018.08.002, 2018.
- G.D. Mois, T. Sanislav, S.C. Folea, S. Zeadally, "Performance Evaluation of Energy-Autonomous Sensors Using Power-Harvesting Beacons for Environmental Monitoring in Internet of Things (IoT)," Sensors, Vol. 18, Issue: 6, Article Number: 1709, doi:10.3390/s18061709, http://www.mdpi.com/1424-8220/18/6/1709.
- 11. G. Mois, S. C. Folea and T. Sanislav, "Analysis of Three IoT-Based Wireless Sensors for Environmental Monitoring," in *IEEE Transactions on Instrumentation and Measurement*, vol. 66, Issue: 8, Pages: 2056-2064, Aug 2017.

Significant solutions:

IoT devices with energy harvesting capabilities for environment monitoring.
Wireless sensors based on Wi-Fi Low Power, BLE (Bluetooth Low Energy) or LoRA.

Products and technologies:

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













Patents:

- 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.
- M. Ghercioiu, H. Hedesiu, S. Folea, G. Crisan, C. Ceteras, I. Monoses, "Compact modular embedded device", United States Patent 7860582B2, 12/28/2010
- 3. M. Ghercioiu, H. Hedesiu, 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 acquisitio and communication. The testing of hardware equipment and of software products developed for data acquisition, wireles communication, and power harvesting. The development and testing of measurement systems and their implementation on industrial equipmer for the evaluation of operating conditions and power consumption.	
Consulting	Consulting activities for the development of IoT solutions.	
Training	LabVIEW TM courses and introduction to digital design using LabVIEW TM , Multisim, and VHDL. Electron equipment design. Firmware development. IoT software applications implementation. Embedde systems testing and evaluation.	