


RESEARCH STRUCTURE PROMOTION TEMPLATE

Contact details

Name	<i>Information Technology in Electronics Research and Development Center</i>
Acronym	ITEC
Logo	
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Director	Prof. Dr. Ing. Dan Pitică
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Areas of expertise

<p>Embedded systems</p> <ul style="list-style-type: none">▪ development of software, hardware and testware for embedded systems used in automotive applications, as well as for medical electronic equipment and for white goods electronics▪ <p>Power systems</p> <ul style="list-style-type: none">▪ design, simulation and testing of power supplies with power factor correction▪ PLC (Power Line Communication) for energy measurements equipment▪ inductive heating technologies <p>SCADA systems</p> <ul style="list-style-type: none">▪ control for automotive systems▪ heating/oven control▪ control systems for electrical motors▪ data loggers for power grid equipment, power dam constructions – UccALL, medical apps

Team and key skills

<p>ITEC director prof. eng. Dan Pitica, PhD – Research and teaching interests include passive electronic components, EMC and SI and automated testing practices</p> <p>Power Electronics BU coordinator lect. eng. Ovidiu Pop, PhD – Research interests include power electronic systems, induction heating applications and computer aided design</p> <p>UccAll Lab coordinator prof. eng. Ciascai Ioan, PhD – Research interests expand to sensors and actuators, the remote monitoring of dams and power stations and microcontrollers</p> <p>Embedded Systems BU coordinator lect. eng. Gabriel Chindriș, PhD – Research interests include software and hardware design for embedded systems, test environment design for embedded systems for automotive applications as well as electronic systems for medical applications</p> <p>assoc. prof. eng. Liviu Viman, PhD – specialized in schematics and layout design for embedded hardware, development of data acquisition systems, embedded device programming and development of test environments for embedded software</p> <p>assoc. prof. eng. Septimiu Pop, PhD – specialized in data acquisition systems and actuators, remote monitoring of dam constructions and microcontroller programming</p> <p>assist. eng. Marius Mureșan, PhD – specialized in hardware in the loop testing of embedded systems and other automated testing techniques and embedded system programming in assembly, C/C++ or using real-time operating</p>

systems

assist. eng. Vlad Bande, PhD – specialized in data acquisition systems mainly used in monitoring of dam constructions and other SCADA based applications

assist. eng. Mihai Dărăban, PhD – specialized in PCB design, signal integrity (SI), crosstalk avoidance codes and testing of automotive software applications

assist. eng. Raul Fizeșan, PhD – specialized in PCB design, computer aided design, passive components, power integrity and testing of automotive software applications

assist. eng. Rajmond Jánó, PhD – specialized in failure and reliability predictions and algorithms, embedded systems lifetime prediction, passive components, automated test procedures and equipment, real-time embedded hardware and software applications and testing of automotive software applications

assist. eng. Adrian Tăut, PhD – specialized in power electronics with a focus on DC-DC converters and testing of automotive software applications

assist. eng. Monica Zolog, PhD student – specialized in signal integrity (SI), passive components, microcontroller and DSP programming and testing of automotive software applications

eng. Ionel Baci, PhD student – specialized in testing of automotive software applications, hardware in the loop (HIL) test environments and power electronics with a focus on DC-DC converters

eng. Alexandra Fodor, MsC student – specialized in testing of automotive software applications, hardware in the loop (HIL) test environments

mat. Mihail Avram – specialized in advanced mathematics for dam monitoring applications

mat. Delia Ghiran – specialized in advanced mathematics for dam monitoring applications

eng. Aurelia Haragus – specialized in data acquisition systems for dam monitoring applications

eng. Ioan Săplăcan – specialized in data acquisition systems for dam monitoring applications

Infrastructure

Measurements and control equipment:

- digital oscilloscopes, function generators, RLC-meters, spectrum analyzers, DMMs, etc.

Power supplies;

Electronics experimental setups;

Microscopes;

PCB manufacturing equipment:

- SMD/SMT reflow oven;
- SMD/SMT pick-and place and rework unit;
- LPKF PCB fast-prototyping unit ;

PC network;

Development boards for microcontrollers, DSP, PLC and emulators;

Sensors and transducers for physics and electronics;

Real-time measurement equipment:

- National Instruments PXI, CompactRIO, sbRIO;

Protocol analyzers:

- CAN, FlexRAY, LIN;

Software

- Cadence – OrCAD;
- Mentor Graphics – PADS ;
- MATLAB;
- LabVIEW;
- Multiple IDEs for software development involving microcontrollers, DSPs, FPGAs, etc

Development strategy

Promoting key competencies of the R&D team among the industry and gathering new partners, contracts and HR for the ITEC development in the following areas:

- HR development through academic and research activities;
- Promoting innovation and research of new solutions/technologies;
- Promoting ethical and creative values of academy through industry involvement;
- Development of resources, equipment and competencies of ITEC;

The development strategy is also focused on the dissemination and validation of the obtained results during the research activities by the scientific community through yearly publications at renown international conferences or journals.

Representative projects

1. *Service and maintenance of the UCCHALL program in the UCC operative network and in the automated data acquisition and analysis stations equipped on the “Crisul Repede” river* – director prof. eng. Dan Pitica, PhD
2. *Test environment development for ECU software for Continental AG, Germany* – director lect. eng. Gabriel

Chindriș, PhD

3. *Development and maintenance of a SIL/HIL testing model for automotive ECU* for Continental AG, Germany – director lect. eng. Gabriel Chindriș, PhD
4. *Ind_Cook Project*, research project no. 3/5.03.2008, Diehl-AKO Stiftung&Co.Kg Germany – director lect. eng Ovidiu Pop, PhD
5. *The analysis and implementation of dynamic limits for AMCs within the UCCHALL application* -director prof. eng. Ioan Ciascai, PhD

Significant results

1. Dan Pitica, *Modelling of Switched Mode Fly-back Supply for Engineering Education*, Advances in Electrical and Computer Engineering, ISBN 1582-7445, vol. 10, no. 1, 2010 (ISI)
2. M.Dabacan, *The Impact of Providing Unlimited Access to Programmable Boards in Digital Design Education*, IEEE T EDUC, ISSN 0018-9359, vol. 54, no. 2, pg. 174-183 (ISI)
3. Ioan Ciascai, et al, *Acquire images with a sensor and a Microcontroller*, EDN Design Ideas, USA, ISSN 0012-7515, no. 18 (ISI)
4. Monica Zolog, Dan Pitica, *Controlling the Signal Integrity through the Geometry of the Microstrip on the Digital PCBs*, ESTC 2010, The Electronics System Integration Technology Conference, Berlin, Germany, 13-16 September 2010 (ISI Proceedings)
5. Bande Vlad, Ioan Ciascai, *Charging time indicates capacitor value*, EDN, USA, vol. 56, issue 15, p.45, 2011 (ISI)
6. Raul Fizesan, Pitica Dan, *Efficient Strategies to Optimize a Power Distribution Network*, Acta Technica Napocensis-Electronics And Telecommunications, ISSN 1221-6542, vol. 52, no. 1, pg. 40-46, 2011 (B+)
7. Rajmond Jano, Dan Pitica, *Investigating Capacitor Lifetimes under Thermal Stress*, ESTC 2012, The Electronics System Integration Technology Conference, Amsterdam, Holland, 17-20 September 2012 (ISI Proceedings)
8. Pop Septimiu, *Identifying and Removing Systematic Error due to Resistance Tolerance from Measurement System of Inclinator*, Journal of Electrical and Electronics Engineering, ISBN 14844-6035, vol. 5, no. 1, pg. 199-202, 2012 (B+)
9. Mihai Daraban, Dan Pitica, *Coding Technique for Information Sent Through a PCB Parallel Data Bus for Avoiding Crosstalk*, Acta Technica Napocensis-Electronics And Telecommunications, ISSN 1221-6542, vol. 53, no. 2, pg. 17-22, 2012 (B+)
10. Rajmond Jano, Dan Pitica, *Accelerated Ageing Tests of Aluminum Electrolytic Capacitors for Evaluating Lifetime Prediction Models*, Acta Technica Napocensis-Electronics And Telecommunications, ISSN 1221-6542, vol. 53, no. 2, pg. 36-41, 2012 (B+)
11. Adrian Taut, *A PSpice Study Regarding the Design of the Equivalent Electric Circuit Used in Functional Magnetic Stimulation*, ACTA ELECTROTEHNICA, ISSN 1841-3323, vol. 53, no. 4, pg. 333-336, 2012 (B+)

The offer addressed to the economic environment

Research & development in core areas	<ol style="list-style-type: none"> 1. Calculus, design, simulation and analysis of power electronics circuits; 2. Numerical methods of analysis; 3. Control algorithms; 4. Transducers physics; 5. Electronic materials;
Research & development in applied fields	<ol style="list-style-type: none"> 1. Software, hardware and testware for embedded systems; 2. Real-time measurements; 3. Power electronics; 4. Power dam SCADA systems; 5. Applied electronics for white-goods;
Consulting	<ol style="list-style-type: none"> 1. Electronics circuits and devices modeling and simulation; 2. IP and patent analysis; 3. Test equipment proof-of-concept; 4. Design for technological transfer (DFx); 5. EMI/EMC in PCB;
Applied engineering services	<ol style="list-style-type: none"> 1. PCB/PWB design; 2. Software for embedded; 3. Measurement, analysis and simulation for electronics; 4. Real-time systems calibration; 5. Design of electronics systems;
Training	<ol style="list-style-type: none"> 1. LabVIEW training; 2. Training for modeling and simulation; 3. Training for embedded and real-time systems; 4. Training for PCB design; 5. Training for measurements, analysis and testing;



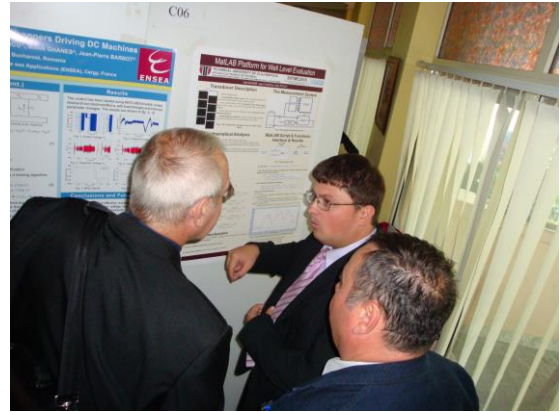
assist. eng. Mihai Daraban, PhD, receiving the prize for "Best oral presentation" at the SIITME 2012 Conference



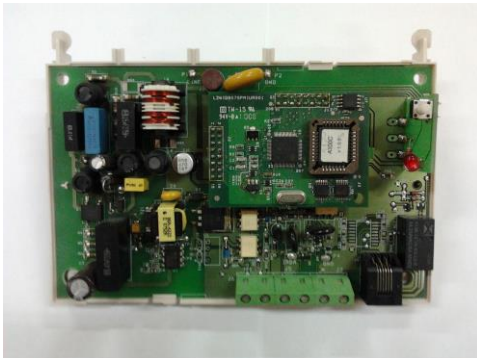
assist. eng. Rajmond Jano, PhD, receiving the prize for "Excellent oral presentation" at the SIITME 2011 Conference



assist. eng. Adrian Taut at the SIITME 2011 Conference



assist. eng. Vlad Bande at the SIITME 2011 Conference



Embedded test system for software development



Power line communications system



DAQ system for dam data collecting applications



Installing the DAQ system inside the dam