

**2014 IEEE International Conference on
Automation, Quality and Testing, Robotics**

THETA 19th edition

22th -24th May 2014, Cluj-Napoca, Romania

TECHNICAL PROGRAM



**Institute of Electrical and
Electronics Engineers**



**IEEE Computer Society
Test Technology
Technical Council**



**Technical University
of Cluj-Napoca,
Romania
Department of
Automation**



**IPA - R&D Institute for
Automation
Center for Technology
Transfer
Cluj-Napoca branch,
Romania**

FOREWORD

Welcome to the 2014 edition of the biennale AQTR Conference.

The conference, in its customary full name **2014 IEEE International Conference on Automation, Quality and Testing, Robotics - THETA 19th edition**, follows the tradition of the 18 automation and testing related scientific events, held in Cluj-Napoca since 1982 under the name THETA - Technologies and Automation Testing. The previous editions of the AQTR conference have enjoyed great success, demonstrating the importance of automation, quality, testing and robotics domains as part of continuously advancing technologies. A large variety of papers were presented, providing good opportunities for the participants to exchange ideas and share new advancements registered in the specific fields covered by the conference topics.

This 19th edition of the conference, organized under IEEE Computer Society – TTTC (Test Technology Technical Council) aegis, reflects the faithful and effective cooperation between the Technical University of Cluj-Napoca represented by the Department of Automation and the R&D institute – IPA in their scientific activities.

AQTR, as an international forum for the R&D exchanges in various fields of research - automation, quality, testing and robotics -, gathers together researchers and end-users to discuss the current trends and future directions of control and testing technologies and their industrial and social applications in the private and public sectors.

The 2014 edition of the conference would not have been possible without the hard work of the Technical Program Committee members - selecting 90 papers for presentation or poster out of the 150 submissions. For that, we thank all the reviewers who provided us with such valuable feedback on the submitted works.

The AQTR conference covers a wide range of topics, bringing together a large group of scientists, engineers, academics and researchers. We have more than 100 registered participants, coming from different countries, outstanding personalities well recognised in their fields of activity.

We hope you will enjoy our conference, which will offer access to new concepts and ideas in the emerging “knowledge-based society”.

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Ioan Stoian

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- Technical University of Cluj-Napoca, Romania
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- SRAIT - Romanian Society of Automatic Control and Technical Informatics

CORPORATE SPONSORS



TIMETABLE

Thursday, May 22 Technical University of Cluj-Napoca

08:30-09:00	Registration	
09:00-09:30	Conference opening.	Aula Domşa
09:30-10:00	Plenary session	Aula Domşa
10:00-10:30	Coffee break	
10:30-12:30	Parallel sessions 1	
	Regular session Q1	Room 40
	Regular session C1	Aula Domşa
	Special session SS2	Room D21
12:30-15:00	Lunch	
15:00-16:30	Parallel sessions 2	
	Regular session Q2	Room 40
	Regular session A1	Aula Domşa
	Special session SS3	Room D21
16:30-17:00	Coffee break	
17:00-18:30	Vendor session	Aula Domşa
17:00-18:30	Panel session	Room 467
19:00-21:00	Welcome reception	

Friday, May 23 Technical University of Cluj-Napoca

08:30-10:30	Parallel sessions 3	
	Regular session Q3	Room 40
	Regular session R1	Aula Domşa
	Special session SS4	Room D21
10:30-11:00	Coffee break	
11:00-12:30	Parallel sessions 4	
	Regular session Q4	Room 40
	Regular session A2	Aula Domşa
	Special session SS1	Room D21
12:30-14:00	Lunch	
14:00-21:00	Social program	

Saturday, May 24
Technical University of Cluj-Napoca

08:30-10:30	Parallel sessions 5	
	Regular session C2	Room D21
	Special session SS5	Room D22
08:30-10:30	Student forum	Room 356
10:00-11:00	Poster session 1	
10:30-11:30	Coffee break	
11:00-12:00	Poster session 2	
11:30-13:30	Parallel sessions 6	
	Regular session Q5	Room D21
	Regular session A3	Room D22
11:30-13:30	Student forum	

DETAILED PROGRAM

Thursday, May 22

Technical University of Cluj-Napoca, 15 C.Daicoviciu Str./26-28 Baritiu Str.

Thu, May 22
8:30 – 9:00

Registration

Thu, May 22
9:00 – 10:00

Conference opening. Plenary Session

Aula Domsa

Chairs: Liviu Miclea, Ioan Stoian

A short history of fuzzy control. Did it bring clearness?

Thierry-Marie GUERRA (*Université de Valenciennes et du Hainaut-Cambrésis, France*)

Thu, May 22
10:00–10:30

Coffee break

Parallel sessions 1

Thu, May 22
10:30 – 12:30

Regular session Q1

Room 40

Chairs: Nasser Jazdi, Mădalin Neagu

14 **Spam Host Classification using PSO-SVM**, Adriana Cristina ENACHE
(*University Polytechnica of Bucharest*), Valentin SGARCIU (*University Polytechnica of Bucharest*)

30 **Cyber Physical Systems in the Context of Industry 4.0**, Nasser JAZDI
(*University of Stuttgart*)

57 **Data Scrambling in Memories: A Security Measure**, Madalin NEAGU
(*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)

78 **Advanced Human-Computer Interaction in External Resource Annotation**, Roxana MOLDOVAN (*Technical University of Cluj-Napoca*), Bogdan ORZA (*Technical University of Cluj-Napoca*), Aurel VLAICU (*Technical University of Cluj-Napoca*), Cosmin PORUMB (*HyperMedia SRL*)

92 **A White-Box Tool to Set Performance Targets in Software Engineering Management using the ISBSG Repository**, Vasile STROIAN (*École de Technologie Supérieure, Université du Québec (Canada)*), Pierre BOURQUE (*École de Technologie Supérieure, Université du Québec (Canada)*), Alain ABRAN (*École de Technologie Supérieure, Université du Québec (Canada)*)

97 **The Implementation of Process Capability: A Case Study in a Wood Industry Company**, Cristina ILE (*Technical University of Cluj-Napoca*)

Thu, May 22
10:30 – 12:30

Regular session C1

Aula Domșă

Chairs: Lucian Bușoniu, Ionuț Muntean

- 21 **An LMI approach for observer design for Takagi-Sugeno descriptor models**, Victor ESTRADA-MANZO (*University of Valenciennes and Hainaut-Cambrésis*), Thierry Marie GUERRA (*University of Valenciennes and Hainaut-Cambrésis*), Zsofia LENDEK (*Technical University of Cluj-Napoca*)
- 22 **Fault-Tolerant Predictive Control for Markov Linear Systems**, Manuel Alejandro HERNANDEZ MEJIAS (*Universitat Politècnica de Valencia*), Antonio SALA PIQUERAS (*Universitat Politècnica de Valencia*), Carlos ARINO (*Universitat Jaume I*), Andres QUEROL (*Universitat Jaume I*)
- 71 **Optimistic Planning with Long Sequences of Identical Actions for Near-Optimal Nonlinear Control**, Antal Koppany MATHE (*Technical University of Cluj-Napoca*), Lucian BUSONIU (*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)
- 95 **Linear Quadratic Optimal Control of an Inverted Pendulum Using the Artificial Bee Colony Algorithm**, Baris ATA (*Cukurova University*), Ramazan COBAN (*Cukurova University*)
- 102 **Fuzzy-based Gain Scheduling of Exact FeedForward Linearization Control and Sliding Mode Control for Magnetic Ball Levitation System: A Comparative Study**, Manar Lashin (*Egypt-Japan University of Science and Technology*), Abdullah T.Elgammal (*Egypt-Japan University of Science and Technology*), Ahmed Ramadan (*Tanta University, Egypt*), A.A.Abouelsoud (*Cairo University, Egypt*), Samy F.M.Assal (*Tanta University, Egypt*), A.Abo-Ismael (*Egypt-Japan University of Science and Technology*)
- 100 **Digitization of continuous interval transfer functions: a revisited method and its application on a case study**, Ionut MUNTEAN (*Technical University of Cluj Napoca*), Iulia CLITAN (*Technical University of Cluj-Napoca*)

Thu, May 22
10:30 – 12:30

Special session SS2

Room D21

Chairs: Cristina Mureșan, Eva Dulf

- 17 **Preliminary results on peculiar patterns in fractional coupled oscillators**, Carla PINTO (*School of Engineering, Polytechnic of Porto*)
- 24 **Active Disturbance Rejection Controller for a Separation Column**, Eva DULF (*Technical University of Cluj-Napoca*), Roxana BOTH (*Technical University of Cluj-Napoca*), Cristina MURESAN (*Technical University of Cluj-Napoca*)
- 34 **Vibration Suppression in Smart Structures using Fractional Order PD controllers**, Cristina MURESAN (*Technical University of Cluj-Napoca*), Ovidiu PRODAN (*Technical University of Cluj-Napoca*)

- 37 **Power law and fractional derivative models can measure analgesia**, Clara IONESCU (*Technical University of Cluj-Napoca*), Florina Dana IONESCU (*Technical University of Construction, Bucharest*)
- 38 **Fractional-order feedback control of a poorly damped system**, Amélie CHEVALIER (*Ghent University*), Cosmin COPOT (*Ghent University*), Dana COPOT (*Ghent University*), Clara IONESCU (*Technical University of Cluj-Napoca*), Robin DE KEYSER (*Ghent University*)
- 46 **Fractional Dynamics in Tornadoes Time series**, Antonio LOPES (*University of Porto*), Jose TENREIRO MACHADO (*Institute of Engineering, Polytechnic of Porto*)

Thu, May 22
 12:30–15:00

Lunch

Parallel sessions 2

Thu, May 22
 15:00 – 16:30

Regular session Q2

Room 40

Chairs: Adrian Colesa, Arpad Incze

- 8 **Experimental Testing of BAPAMAN 1 with a High Speed Motion Analysis System**, Giuseppe CARBONE (*University of Cassino*), Cristian COPILUSI (*University of Craiova*)
- 48 **WaterfallTree - External Indexing Data Structure**, Iliya TRONKOV (*STS Soft*)
- 83 **Cryptographic key issues and solutions for the bit sieve/pixel-sieve method**, Arpad INCZE (*1 Decembrie 1918 University of Alba Iulia*)
- 84 **Fast Creation of Short-Living Virtual Machines Using Copy-on-Write RAM-Disks**, Adrian COLESA (*Technical University of Cluj-Napoca*), Tudor BURA (*Bitdefender*), Adrian POP (*Bitdefender*), Sandor LUKACS (*Technical University of Cluj-Napoca, Bitdefender*)
- 133 **Speeding-up Polynomial Multiplication on Virtex FPGAs: Finding the Best Addition Method**, Vlad MICLEA (*ENS Lyon*)

Thu, May 22
 15:00 – 16:30

Regular session A1

Aula Domşa

Chairs: Gheorghe Sebestyen, Alexandru Mitrea

- 26 **eHealth Solutions in the Context of Internet of Things**, Gheorghe SEBESTYEN (*Technical University of Cluj-Napoca*), Anca HANGAN (*Technical University of Cluj-Napoca*), Stefan ONIGA (*University of Debrecen*), Zoltan GAL (*University of Debrecen*)

- 52 **Exploiting Word Meaning for Negation Identification in Electronic Health Records**, Ioana BARBANTAN (*Technical University of Cluj-Napoca*), Rodica POTOLEA (*Technical University of Cluj-Napoca*)
- 91 **Diseased Tissue Area Detection and Delimitation, by Fusion between Finite Difference Methods and Textural Analysis**, Alexandru MITREA (*Technical University Cluj-Napoca*), Sergiu NEDEVSCHI (*Technical University Cluj-Napoca*), Delia MITREA (*Technical University Cluj-Napoca*), Paulina MITREA (*Technical University Cluj-Napoca*), Radu BADEA (*University of Medicine and Pharmacy I. Hatieganu*)
- 115 **Tibio-Tarsal Joint Biomechanics Analisis through Finite Element Modeling**, Gheorghe TOMOAIA (*"Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca*), Doru-Alexandru TOFAN (*County Hospital Cluj-Napoca*)
- 132 **3D Printing Bone Models Extracted From Medical Imaging Data**, Alexandru POPESCU (*Technical University of Cluj-Napoca*), Ovidiu STAN (*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)

Thu, May 22
 15:00 – 16:30

Special session SS3

Room D21

Chairs: Sergiu Stelian Iliescu, Ioana Făgărășan

- 59 **Sizing photovoltaic-wind smart microgrid with battery storage and grid connection**, Toma PATARAU (*Technical University of Cluj-Napoca*), Dorin PETREUS (*Technical University of Cluj-Napoca*), Radu ETZ (*Technical University of Cluj-Napoca*), Daniel MOGA (*Technical University of Cluj-Napoca*)
- 60 **NN based support system for renewable energy forecasting**, Otilia Elena DRAGOMIR (*University Politehnica of Bucharest*), Florin DRAGOMIR (*University "Valahia" of Targoviste*)
- 153 **Adaptive voltage control, integrated function of a numerical transformer protection system**, Iulia CONSTANTIN (*University Politehnica of Bucharest*), Costel CONSTANTIN (*University Politehnica of Bucharest*), Ionela DRAGOMIR (*University Politehnica of Bucharest*), Sergiu Stelian ILIESCU (*University Politehnica of Bucharest*)

16:30– 17:00 **Coffee break**

Thu, May 22
 17:00 – 18:30

Vendor session

Aula Domsa

Chairs: Daniel Moga, Istvan Kovacs

- V1 **Exploratory testing from Altom**, Alexandra CASAPU (*Altom*)

- V2 **E-learning and Video Collaboration Services**, Cosmin PORUMB
(*HyperTalk*)
- V3 **Controlled Quenching and Heat Recovery from Thin Walled, Complex,
High Performance, Hardened Al Alloy Extrusions**, Istvan TEMPFLI
(*Technosam*)

Thu, May 22
17:00 – 18:30

Panel session: R&D results in industry

Room 467

Moderators: Ovidiu Ghiran, Alexandra Csavdari

Panelists: Ioan Stoian, Liviu Miclea, Mihail Abrudean, Sergiu Stelian Iliescu,
Ioana Făgărășan

19:00 – 21:00 **Welcome reception**

Friday, May 23

Technical University of Cluj-Napoca, 15 C.Daicoviciu Str./26-28 Baritiu Str.

Parallel sessions 3

Fri, May 23
8:30 – 10:30

Regular session Q3

Room 40

Chairs: Mihaela Radu, Radu Arsinte

- 3 **A New Text Clustering Method based on Huffman Encoding Algorithm**,
Maria MUNTEAN (*1 Decembrie 1918 University of Alba Iulia*), Honoriu
VALEAN (*Technical University of Cluj Napoca*), Lucia CABULEA (*1 Decembrie
1918 University of Alba Iulia*)
- 28 **Multi-Agent System with Hierarchical Private Key**, Stelian FLONTA
(*Technical University of Cluj-Napoca*), Laura VEGH (*Technical University of
Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*), Iulia
STEFAN (*Technical University of Cluj-Napoca*), Szilard ENYEDI (*Technical
University of Cluj-Napoca*)
- 31 **Grouping Strategy using Enneagram Typologies**, Mircea VAIDA (*Technical
University of Cluj-Napoca*), Petre POP (*Technical University of Cluj-Napoca*)
- 47 **Enhancing Security in Cyber-Physical Systems through Cryptographic
and Steganographic Techniques**, Laura VEGH (*Technical University of Cluj-
Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)
- 76 **Analysis of Architectures for Audio-Video Services Distribution in
Hybrid IPTV/DVB-C Networks**, Radu ARSINTE (*Technical University of Cluj-
Napoca*), Eugen LUPU (*Technical University of Cluj-Napoca*)

- 88 **Testing Digital Circuits Using a Mixed-Signal Automatic Test Equipment**, Mihaela RADU (*Farmingdale State College -a campus of The State University of New York*)

Fri, May 23
8:30 – 10:30

Regular session R1

Aula Domşa

Chairs: Cornel Brişan, Mihai Tătar

- 54 **Genetic Nonlinear Controller of a Skid Steering Mobile Robot with Slip Conditions**, Osama ELSHAZLY (*Egypt-Japan University for Science and Technology (E-JUST)*), Zakarya ZYADA (*Egypt-Japan University for Science and Technology (E-JUST)*), Ahmed ABO-ISMAIL (*Egypt-Japan University for Science and Technology (E-JUST)*)

- 55 **Design and Development of an Autonomous Omni-Directional Mobile Robot with Mecanum Wheels**, Mihai TATAR (*Technical University of Cluj-Napoca*), Catalin POPOVICI (*Technical University of Cluj-Napoca*), Dan MANDRU (*Technical University of Cluj-Napoca*), Ioan ARDELEAN (*Technical University of Cluj-Napoca*), Alin PLESA (*Technical University of Cluj-Napoca*)

- 72 **Railway Track Following with the AR.Drone Using Vanishing Point Detection**, Elod PALL (*Technical University of Cluj-Napoca*), Antal Koppány MATHE (*Technical University of Cluj-Napoca*), Levente TAMAS (*Technical University of Cluj-Napoca*), Lucian BUSONIU (*Technical University of Cluj-Napoca*)

- 110 **Presentation of the Mixt Control Unit for PARMIS Parallel Robotic System**, Bela-Zoltan GYURKA (*SC IPA SA*), Istvan KOVACS (*SC IPA SA*), Doina PISLA (*Technical University of Cluj-Napoca*)

- 141 **Aspects concerning development of reconfigurable driving simulators**, Cornel BRISAN (*Technical University of Cluj-Napoca*), Ciprian LAPUSAN (*Technical University of Cluj-Napoca*), Veturia CHIROIU (*Institute of Solid Mechanics, Romanian Academy*), Ligia MUNTEANU (*Institute of Solid Mechanics, Romanian Academy*), Dan DUMITRIU (*Institute of Solid Mechanics, Romanian Academy*)

- 146 **Design and control system of a parallel robot for brachytherapy**, Bogdan GALDAU (*Technical University of Cluj-Napoca*), Nicolae PLITEA (*Technical University of Cluj-Napoca*), Calin VAIDA (*Technical University of Cluj-Napoca*), Florin COVACIU (*Technical University of Cluj-Napoca*), Doina PISLA (*Technical University of Cluj-Napoca*)

Fri, May 23
8:30 – 10:30

Special session SS4

Room D21

Chairs: Paul Serban Agachi, Ioan Stoian

- GIS Data Modeling in Water Management Decision Support Systems**,
 109 Marius RATA (*DUK TECH*), Tudor Viorel BLIDARU (*ABA Prut - Barlad*), Paul Serban AGACHI (*Babes-Bolyai University*)
- Security and Intrusion Detection on Critical SCADA Systems for Water Management**,
 112 Ioan STOIAN (*SC IPA SA*), Sorin IGNAT (*SC IPA SA*), Dorina CAPATANA (*SC IPA SA*), Ovidiu GHIRAN (*SC IPA SA*)
- SCADA and Modeling in Water Management**,
 113 Ioan STOIAN (*SC IPA SA*), Dorina CAPATANA (*SC IPA SA*), Sorin IGNAT (*SC IPA SA*), Ovidiu GHIRAN (*SC IPA SA*)
- Simplified approach for floods estimation and propagation**,
 136 Radu DROBOT, Cristian DINU, Aurelian DRAGHIA (*Technical University of Civil Engineering Bucharest*), Mary Jeanne ADLER, Ciprian CORBUS, Marius MATREATA (*National Institute of Hydrology and Water Management Bucharest*)
- DSS for operation of the lateral reservoirs during flood periods**,
 140 Radu DROBOT (*Technical University of Civil Engineering Bucharest*), Aurelian DRAGHIA (*Technical University of Civil Engineering Bucharest*)

Fri, May 23
 10:30 – 11:00

Coffee break

Parallel sessions 4

Fri, May 23
 11:00 – 12:30

Regular session Q4

Room 40

Chairs: Ovidiu Stan, Mircea Risteiu

- 15 **Monitoring and controlling of smart equipments using Android compatible devices towards IoT applications and services in manufacturing industry**, Mircea MURAR (*Technical University of Cluj - Napoca*), Stelian BRAD (*Technical University of Cluj - Napoca*)
- 62 **A redundant solution for collective residences inflammable gas leaking monitoring using ultra-low power transmission system and automatic control**, Risteiu MIRCEA (*"1 Decembrie 1918" University of Alba Iulia*), Ileana IOAN (*"1 Decembrie 1918" University of Alba Iulia*), Marc GHEORGHE (*"1 Decembrie 1918" University of Alba Iulia*), Muntean MARIA (*"1 Decembrie 1918" University of Alba Iulia*)
- 70 **Model Based Fault Detection for Electrical Drives with BLDC motor**, Petru DOBRA (*Technical University of Cluj Napoca*), Mirela DOBRA (*Technical University of Cluj Napoca*), Daniel MOGA (*Technical University of Cluj Napoca*), Valentin SITA (*Technical University of Cluj Napoca*), Radu Adrian MUNTEANU (*Technical University of Cluj Napoca*)

- 111 **Assisted Test Case Design using Contextual Information by DOM Exploration**, Iulia STEFAN (*Technical University of Cluj-Napoca*), Ioan IVAN (*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)
- 126 **Road Traffic Safety Solution**, Ovidiu STAN (*University of Cluj Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)

Fri, May 23
11:00 – 12:30

Regular session A2

Aula Domșă

Chairs: Camelia Avram, Silviu Folea

- 27 **Data Logger for Humidity and Temperature Measurement Based on a Programmable SoC**, Silviu FOLEA (*Technical University of Cluj-Napoca*), Dan MOIS (*Technical University of Cluj-Napoca*), Mihai HULEA (*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*), Vio BISCU (*SYNCHRO COMP*)
- 45 **Hardware Virtualization Based Security Solution for Embedded Systems**, Sandor LUKACS (*Technical University of Cluj-Napoca, Bitdefender*), Andrei LUTAS (*Bitdefender & Technical University of Cluj-Napoca*), Dan LUTAS (*Bitdefender & Technical University of Cluj-Napoca*), Gheorghe SEBESTYEN (*Technical University of Cluj-Napoca*)
- 90 **Environmental Parameters Control in Datacenter**, Mihail TRUSCA (*I.N.C.D.T.I.M.*), Stefan ALBERT (*INCDTIM Cluj-Napoca*), Maria Loredana SORAN (*INCDTIM Cluj-Napoca*), Mihail ABRUDEAN (*Technical University of Cluj-Napoca*)
- 122 **Development of an avatar for a vehicle with independent suspensions**, Ciprian LAPUSAN (*Technical University of Cluj-Napoca*), Veturia CHIROIU (*Institute of Solid Mechanics, Romanian Academy*), Ligia MUNTEANU (*Institute of Solid Mechanics, Romanian Academy*), Lavinia BARA (*Technical University of Cluj-Napoca*), Cornel BRISAN (*Technical University of Cluj-Napoca*)
- 131 **Fluid Stochastic Petri Nets based Modeling and Simulation of Micro Hydro Power Stations Behaviour**, Camelia AVRAM (*Technical University of Cluj Napoca*), Dan MIRCESCU (*S.C. Hidroserv S.A. Cluj*), Ovidiu GHIRAN (*S.C. IPA S.A. Cluj*), Adina ASTILEAN (*Technical University of Cluj Napoca*)

Fri, May 23
11:00 – 12:30

Special session SS1

Room D21

Chairs: Theodor Borangiu, Doru Pănescu

- 149 **Multi-agent System for Heterarchical Product-driven Manufacturing**, Octavian MORARIU (*University Politehnica Bucharest*), Silviu RAILEANU (*University Politehnica Bucharest*), Cristina MORARIU (*Cloudtroopers Intl.*), Theodor BORANGIU (*University Politehnica Bucharest*)

- 150 **ILOG-based Mixed Planning and Scheduling System for Job-Shop Manufacturing**, Silviu RAILEANU (*University Politehnica Bucharest*), Theodor BORANGIU (*University Politehnica Bucharest*), Octavian MORARIU (*University Politehnica Bucharest*), Octavian STOCKLOSA (*EastElectric*)
- 151 **Intelligent Open Architecture Solutions for Holonic Manufacturing Execution Systems Domain Key Technologies perspective**, Gabriela VARVARA (*Technical University "Gheorghe Asachi" Iasi*)
- 152 **A Petri Net Model for Constraint Satisfaction Application in Holonic Systems**, Carlos PASCAL (*Gheorghe Asachi Technical University of Iasi*), Doru PANESCU (*Gheorghe Asachi Technical University of Iasi, Romania*)
- 154 **Optimal multi-agent planning solution for a sample gathering problem**, Adrian BURLACU (*Gheorghe Asachi Technical Univeristy of Iasi*), Marius KLOETZER (*Gheorghe Asachi Technical Univeristy of Iasi*), Florin OSTAFI (*Gheorghe Asachi Technical Univeristy of Iasi*)

12:30– 14:00 **Lunch**

14:00 – 21:00 **Social event**

Saturday, May 24

Technical University of Cluj-Napoca, 26-28 Baritiu Str.

Parallel sessions 5

Sat, May 24
8:30 – 10:30

Regular session C2

Room D21

Chairs: Ioan Naşcu, Mihai Hulea

- 40 **Synthesis of Train Traffic Control System with Evolutionary Computing**, Attila Ors KILYEN (*Technical University of Cluj-Napoca*), Mihai HULEA (*Technical University of Cluj-Napoca*), Tiberiu LETIA (*Technical University of Cluj-Napoca*)
- 80 **Internal Model Control for a Hydraulically Driven Robotic Arm**, Iulia CLITAN (*Technical University of Cluj-Napoca*), Ionut MUNTEAN (*Technical University of Cluj Napoca*)
- 114 **Adaptive Fuzzy Iterative Learning Controller for X-Y Table Position Control**, Osama ELSHAZLY, Mohammad EL-BARDINI, Nabila M. EL-RABAIE (*Menoufiya University, Egypt*)
- 104 **EPSAC Versus PID Control of Neuromuscular Blockade**, Ramona HODREA (*Technical University of Cluj-Napoca*), Ioana NASCU (*Technical University of Cluj-Napoca*), Ioan NASCU (*Technical University of Cluj-Napoca*), Robin DE KEYSER (*Ghent University*), Horatiu VASIAN (*University of Medicine and*

Pharmacy "Iuliu Hatieganu"

- 134 **Process modeling and simulation of distributed parameter using Mpdx method with approximating solutions**, Diana SAS (*Technical University of Cluj-Napoca*), Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca*), Tiberiu COLOSI (*Technical University of Cluj-Napoca*), Mihai SECARA (*Technical University of Cluj-Napoca*)

- 137 **E-Health Decision Support System for Differential Diagnosis**, Roxana CUCU (*Katholieke Universiteit Leuven - Campus Brussels*), Ionut FARCAS (*Technische Universitat Munchen*), Jose MACHADO (*University of Minho*), Camelia AVRAM (*Technical University of Cluj Napoca*), Adina ASTILEAN (*Technical University of Cluj Napoca*)

- 148 **From Product Specification to Manufacturing Control**, Liana MIC (*Technical University of Cluj-Napoca*), Raluca FAT (*Technical University of Cluj-Napoca*), Maria Magdalena SANTA (*Technical University of Cluj-Napoca*), Tiberiu LETIA (*Technical University of Cluj-Napoca*)

Sat, May 24
8:30 – 10:30

Special session SS5

Room D22

Chairs: Mihail Abrudean, Clement Festila

- 119 **Analogical Modeling and Numerical Simulation Variant for Distributed Parameter Processes, with Applications in Isotope Separations, Chemistry and Thermo-energetics**, Tiberiu COLOSI (*Technical University of Cluj-Napoca*), Mihail ABRUDEAN (*Technical University of Cluj-Napoca*), Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca*), Vlad MURESAN (*Technical University of Cluj-Napoca*)

- 120 **Numerical simulation of distributed parameter processes using Cartesian, spherical, cylindrical and spiral coordinates**, Tiberiu COLOSI (*Technical University of Cluj-Napoca*), Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca*), Vlad MURESAN (*Technical University of Cluj-Napoca*)

- 108 **The Experimental Identification of the Separation Cascade of (180) in the NO, NO₂ – H₂O, HNO₃ System**, Mihai SECARA (*Technical University of Cluj-Napoca*), Mihail ABRUDEAN (*Technical University of Cluj-Napoca*), Maria BOCA (*"1 Decembrie 1918" University of Alba Iulia*), Bogdan CROITORU (*"1 Decembrie 1918" University of Alba Iulia*)

- 123 **Advanced models for cryogenic distillation columns**, Adrian CIOLOCA (*Technical University of Cluj-Napoca*), Roxana BOTH (*Technical University of Cluj-Napoca*), Rodica FESTILA (*Technical University of Cluj-Napoca*)

- 117 **Control System for a Distributed Parameter Process, with Applications in Isotope Separation Domain**, Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca*), Vlad MURESAN (*Technical University of Cluj-Napoca*), Tiberiu COLOSI (*Technical University of Cluj-Napoca*)

96 **Modelling versions and simulations of the cryogenic air distillation column**, Adrian CIOLOCA (*Technical University of Cluj-Napoca*), Roxana BOTH (*Technical University of Cluj-Napoca*)

142 **Application for some Parameters Monitoring in Installation for Isotopes Separation**, Mihail TRUSCA (*I.N.C.D.T.I.M.*), Stefan ALBERT (*INCDTIM Cluj-Napoca*), Maria Loredana SORAN (*INCDTIM Cluj-Napoca*), Codruta VARODI (*INCDTIM Cluj-Napoca*), Felix FARCAS (*INCDTIM Cluj-Napoca*), Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca*)

Sat, May 24
10:30 – 11:30

Coffee break

Sat, May 24
10:00 – 11:00

Poster session 1

Chairs: Maria Santa, Sorin Ignat

10 **Addressing Identity Management in Cloud Computing Architectures**, Georgiana MATEESCU (*University Polytechnica of Bucharest*), Marius VLADESCU (*University Polytechnica of Bucharest*), Valentin SGARCIU (*University Polytechnica of Bucharest*)

12 **Signal Generators for Frequency Response Experiments**, Marius GRETINGER (*Technical University of Cluj-Napoca*), Mihai SECARA (*Technical University of Cluj-Napoca*), Clement FESTILA (*Technical University of Cluj-Napoca*), Roxana BOTH (*Technical University of Cluj-Napoca*)

32 **Optimization and Simulation of a Distributed Generation Environment**, Lucian Ioan DULAU (*Technical University of Cluj-Napoca*), Cristian BONDICI (*Technical University of Cluj-Napoca*)

35 **Basic Concepts Regarding Modeling and Control of a Biped Robot**, Negrea DAN (*Technical University of Cluj-Napoca*), Popa MARCEL (*Technical University of Cluj-Napoca*)

64 **A Service Oriented Architecture for Remanufacturing Processes**, Ionut Marian DOBRA (*Technical University of Cluj Napoca*), Ionut MUNTEAN (*Technical University of Cluj Napoca*), Sergiu-Dan STAN (*Technical University of Cluj Napoca*)

66 **Improving Quality using Statistical Process Control: A Case Study**, Cristina ILE (*Technical University of Cluj-Napoca*)

67 **Independent source of continuous current with permanent magnet synchronous generator**, Marius TICALA (*Technical University of Cluj-Napoca*)

73 **Feedforward strategy applied to the induction motor speed control**, Sandor RICHTER (*Technical University of Cluj-Napoca*), Roxana BOTH (*Technical University of Cluj-Napoca*), Rodica FESTILA (*Technical University of*

Cluj-Napoca)

- 77 **Knee Biomechanics and Computer-Assisted Total Knee Arthroplasty – State of the Art**, Ciprian BARDAS (*Orthopaedics and Traumatology Clinic Cluj-Napoca*), Horea BENEĂ (*Orthopaedics and Traumatology Clinic Cluj-Napoca*), Alexandru BARDAS (*Politehnica University of Bucharest*), Iulian RAUS (*Emergency Millitary Hospital Cluj-Napoca*), Gheorghe TOMOĂIA (*University of Medicine and Pharmacy Iuliu Hatieganu of Cluj-Napoca*)
- 81 **Power Quality Event Monitoring using Data Mining Techniques**, Gheorghe MARC (*"1 Decembrie 1918" University of Alba Iulia*), maria MUNTEAN (*"1 Decembrie 1918" University of Alba Iulia*), Mircea RISTEIU (*"1 Decembrie 1918" University of Alba Iulia*), Ioan ILEANA (*"1 Decembrie 1918" University of Alba Iulia*)

Sat, May 24
11:00 – 12:00

Poster session 2

Chairs: Mihaela Ungureșan, Bela Gyurka

- 86 **Security Threats for Embedded Systems: Issues and Solutions**, Ciprian OPRISA (*Bitdefender*), George CABAU (*Bitdefender*), Gheorghe SEBESTYEN (*Technical University of Cluj-Napoca*)
- 99 **The integration of CAD/CAM within the manufacturing process of the verification molds for vulcanized parts on CNC machines**, Erika WAGNER (*Technical University of Cluj-Napoca*)
- 105 **Automatic control of a pipe testing line**, Octavian GIURGIOIU (*Evopro System Engineering*), Ioan NASCU (*Technical University of Cluj-Napoca*), Razvan BUTUZA (*S.C. Electroglobal S.R.L.*)
- 107 **Boiler Heating Control for the (13C) Cryogenic Separation Column**, Mihai SECARA (*Technical University of Cluj-Napoca*), Clement FESTILA (*Technical University of Cluj-Napoca*), Radu Adrian MUNTEANU (*Technical University of Cluj-Napoca*), Rodica FESTILA (*Technical College of Transport „Transylvania”*)
- 127 **Lightweight 3D Learning Environment, under Gnu/Linux, for Instructing Students In Microcontroller Programming**, Catalin-Gabriel MURESAN (*S.C. IPA S.A., Cluj Subsidiary*)
- 129 **Determining the Homopolar Impedance, Z₀, from an Industrial Middle Voltage Network with Compensated Null**, Romeo ORMENISAN (*Technical University of Cluj-Napoca*), Vlad MURESAN (*Technical University of Cluj-Napoca*)
- 135 **In need of Automation Testing**, Rares COSTE (*Technical University of Cluj-Napoca*), Liviu MICLEA (*Technical University of Cluj-Napoca*)
- 138 **Romanian Anti-Hail Rocket Trajectory Correction and Mitigation of the Dead Time Effect**, Ioan PORUMB (*Technical University of Cluj-Napoca*),

Adrian MESAROSIU (*Technical University of Cluj-Napoca*)

Flood Control in Jijia Catchment. A Model Predictive Control Approach,
 Liviu-Mihai MOGOS-KIRNER (*Faculty of Chemistry and Chemical Engineering,*
Babes-Bolyai University), Vasile Mircea CRISTEA (*Faculty of Chemistry and*

143 *Chemical Engineering, Babes-Bolyai University*), Alexandra CSAVDARI
 (*Faculty of Chemistry and Chemical Engineering, Babes-Bolyai University*),
 Paul Serban AGACHI (*Babes-Bolyai University*)

Parallel sessions 6

Sat, May 24
 11:30 – 13:30

Regular session Q5

Room D21

Chairs: Vlad Mureşan, Ruben Crişan

75 **Current-mode log-domain Programmable Gain Amplifier,** Robert GROZA
 (*Technical University of Cluj-Napoca*), Mihaela CARLUGEA (*Technical*
University of Cluj-Napoca)

89 **Function Oriented Concept Development of a Mobile Platform for**
Motion Studies, Mihai STEOPAN (*Technical University of Cluj-Napoca*), Virgil
 ISPAS (*Technical University of Cluj-Napoca*), Sergiu NEGREAN (*S.C. INOTECH*
S.R.L.)

103 **Automation System based on Simatic S7 300 PLC for a Hydro Power**
Plant, Razvan BUTUZA (*S.C. Electroglobal S.R.L.*), Ioan NASCU (*Technical*
University of Cluj-Napoca), Octavian GIURGIOIU (*Evopro System Engineering*),
 Ruben CRISAN (*Technical University of Cluj-Napoca*)

106 **“Chirp” signal generators for frequency response experiments,** Marius
 GRETINGER (*Technical University of Cluj-Napoca*), Mihai SECARA (*Technical*
University of Cluj-Napoca), Clement FESTILA (*Technical University of Cluj-*
Napoca), Eva DULF (*Technical University of Cluj-Napoca*)

125 **Criteria for the Localization of the Monophase Fault in Medium Voltage**
Industrial Networks with an Isolated Neutral, Romeo ORMENISAN
 (*Technical University of Cluj-Napoca*)

128 **The Characteristic Sizes of the Monophase Fault from the Industrial**
Networks of Medium Voltage, in a Stabilized Regime, Romeo ORMENISAN
 (*Technical University of Cluj-Napoca*)

Sat, May 24
 11:00 – 13:00

Regular session A3

Room D22

Chairs: Adrian Tulbure, Kovacs Istvan

39 **Industrial application of micro geometrical cutting edge optimization**
for solid carbide boring tools, Gabriel TOFANA (*Guehring*), Marcel POPA
 (*Technical University of Cluj-Napoca*), Stefan SATTEL (*Guehring*), Marius
 BOGZA (*Guehring*)

- 68 **Hierarchical Railway Traffic Model for Information Systems**, Gheorghe Iulian DAIAN (*SC Informatica Feroviara SA*), Maria Magdalena SANTA (*Technical University of Cluj-Napoca*), Tiberiu LETIA (*Technical University of Cluj-Napoca*)
- 79 **Identifying Patterns for Human Activities of Daily Living in Smart Homes**, Radu PRODAN (*Technical University of Cluj-Napoca*), Ioan NASCU (*Technical University of Cluj-Napoca*)
- 94 **Analog to Digital Front-End Board ADVW, for Vibrating Wire Sensor Nodes, Used in Hydrotechnical Structures Monitoring Sensor Networksets**, Istvan KOVACS (*SC IPA SA*), Mircea MARIA (*SC IPA SA*), Bela-Zoltan GYURKA (*SC IPA SA*)
- 118 **Remote Data and Video Acquisition using Lego Mindstorms NXT and Linux based USB enabled router**, Vasile TOMPA (*Technical University of Cluj-Napoca*), Dan HURGOIU (*Technical University of Cluj-Napoca*)
- 144 **Microcontroller-based multiple-platform PWM signal generation procedures for industrial use**, Bogdan CROITORU (*"1 Decembrie 1918" University of Alba Iulia*), Adrian TULBURE (*"1 Decembrie 1918" University of Alba Iulia*), Mihail ABRUDEAN (*Technical University of Cluj-Napoca*)

