

Thursday, May 24	<b>Conference opening. Plenary 1</b>	<b>Casino Urban Culture Center</b>
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Chairs:  
Liviu MICLEA (*Technical University of Cluj-Napoca*)  
Ioan STOIAN (*IPA SA, Cluj-Napoca*)

9:30 – 9:45 **Conference opening**

9:45 – 10:15 **Testing 4.0 - Agility as solution?**  
Dennis Raabe (*Bosch Engineering Center Cluj*)

10:15 – 11:00 *Coffee break*

10:15 – 11:00 **IoT Contest Demos**

Thursday, May 24 10:15 – 11:00	<b>Poster session</b>	<b>Casino Urban Culture Center</b>
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Chairs:  
Alexandru CODREAN (*Technical University of Cluj-Napoca*)  
Mirela DOBRA (*Technical University of Cluj-Napoca*)

5 **Optimization of the Equipment’s Calibration in Order to Increase Product Quality**  
Marcela MAN DIETRICH (*Helix Gesellschaft für Software und Engineering mbH, Germany*)  
Marcel Sabin POPA (*Technical University of Cluj-Napoca, Romania*)

46 **Modeling growth curves of children with type 1 diabetes**  
Tamas FERENCI (*Obuda University, Hungary*)  
Andrea PALMAY (*Semmelweis University, Hungary*)  
Levente KOVACS (*Obuda University, Hungary*)  
Anna KORNER (*Semmelweis University, Hungary*)

61 **Using EMG-based Armband to Control Different Robotic Systems**  
Ana NEACSU (*University Politehnica of Bucharest, Romania*)  
Cristina IONESCU (*University Politehnica of Bucharest, Romania*)  
Bianca BANICA (*University Politehnica of Bucharest, Romania*)  
Marian BANICA (*University Politehnica of Bucharest, Romania*)  
Horia CUCU (*University Politehnica of Bucharest, Romania*)

91 **Automatic detection of psychedelic amphetamines and cannabinoids based on genetic algorithms and ATR-FTIR spectroscopy**  
Catalin NEGOITA (*Dunarea de Jos University of Galati, Romania*)  
Mirela PRAISLER (*Dunarea de Jos University of Galati, Romania*)

Thursday, May 24	<b>Plenary 2</b>	<b>Casino Urban Culture Center</b>
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Chairs:  
Liviu MICLEA (*Technical University of Cluj-Napoca*)  
Ioan STOIAN (*IPA SA, Cluj-Napoca*)

11:00 – 12:00 **Next Generation of Cybersecurity: A full disruptive approach**  
Antonio VARRIALE (*Blu5 Labs Ltd, Malta*)

12:00 – 13:00 **IoT Contest**

13:00 – 15:00 *Lunch*

## Parallel sessions 1

Thursday, May 24 15:00 – 16:30	<b>Regular session C1</b>	<b>Room D21</b>
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Chairs:

Stelian Emilian OLTEAN (*Petru Maior University of Tirgu Mures, Romania*)

Petru DOBRA (*Technical University of Cluj-Napoca, Romania*)

14 **Temperature Distribution Simulation in Electron Beam Processing**

Mircea DULAU (*Petru Maior University of Tirgu Mures, Romania*)

Stelian Emilian OLTEAN (*Petru Maior University of Tirgu Mures, Romania*)

57 **Time Series Forecasting for Dynamic Scheduling of Manufacturing Processes**

Cristina MORARIU (*University Politehnica of Bucharest, Romania*)

Theodor BORANGIU (*University Politehnica of Bucharest, Romania*)

65 **General-Purpose Model of a Three-Phase Asynchronous Machine for Simulation**

Mircea SUSCA (*Technical University of Cluj-Napoca, Romania*)

Petru DOBRA (*Technical University of Cluj-Napoca, Romania*)

Clement FESTILA (*Technical University of Cluj-Napoca, Romania*)

Florin SIMONCA (*Technical University of Cluj-Napoca, Romania*)

82 **Air-fuel Ratio Fuzzy Controller Handling Delay: Comparison with a PI/Smith**

Thomas LAURAIN (*University Valenciennes, France*)

Jimmy LAUBER (*University Valenciennes, France*)

Zsofia LENDEK (*Technical University of Cluj-Napoca, Romania*)

Reinaldo PALHARES (*Federal University of Minas Gerais, Brazil*)

115 **Dynamic Programming for Energy Management of Hybrid Energy Supply System of Electric Vehicles**

Ioan Alex ALEXA (*Gheorghe Asachi Technical University of Iasi, Romania*)

Stefan Daniel PUSCASU (*Gheorghe Asachi Technical University of Iasi, Romania*)

Alexandru ONEA (*Gheorghe Asachi Technical University of Iasi, Romania*)

Thursday, May 24 15:00 – 16:30	<b>Regular session QT1</b>	<b>Room D22</b>
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Chairs:

Philipp MARKS (*University of Stuttgart, Germany*)

Ovidiu GHIRAN (*IPA Cluj-Napoca, Romania*)

9 **Blind Source Separation: A Preprocessing Tool for Monitoring of Structures**

Theodor D. POPESCU (*National Institute for R&D in Informatics, Romania*)

Adriana ALEXANDRU (*National Institute for R&D in Informatics, Romania*)

13 **Agent-based Assistance System for the Dynamic Reliability Calculation of Cyber-Physical Systems**

Nasser JAZDI (*University of Stuttgart, Germany*)

Philipp MARKS (*University of Stuttgart, Germany*)

- 45 **Combined Psuedo-Exhuastive and Deterministic Testing of Array Multipliers**  
 Adeboye Stephen OYENIRAN (*Tallinn University of Technology, Estonia*)  
 Siavoosh Payandeh AZAD (*Tallinn University of Technology, Estonia*)  
 Raimund UBAR (*Tallinn University of Technology, Estonia*)
- 92 **Multisensorial Data Fusion and Correlation for Dams Structural Health Monitoring (Multi Scale, Uncertainty-Sensitive Heterogeneous Data Integration)**  
 Ioan STOIAN (*SC IPA SA Cluj Subsidiary, Romania*)  
 Istvan KOVACS (*SC IPA SA Cluj Subsidiary, Romania*)  
 Sorin IGNAT (*SC IPA SA Cluj Subsidiary, Romania*)  
 Ovidiu GHIRAN (*SC IPA SA Cluj Subsidiary, Romania*)  
 Gabriel OLTEAN (*Technical University of Cluj-Napoca, Romania*)  
 Mihaela GORDAN (*Technical University of Cluj-Napoca, Romania*)
- 104 **Low Power Current-Mode Analog Front-end for Biomedical Applications**  
 Robert GROZA (*Technical University of Cluj-Napoca, Romania*)  
 Paul FARAGO (*Technical University of Cluj-Napoca, Romania*)

Thursday, May 24 15:00 – 16:30	<b>Special session SS1</b>	<b>Room 356</b>
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Chairs:  
 Levente KOVÁCS (*Óbuda University, Hungary*)  
 Eva DULF (*Technical University of Cluj-Napoca, Romania*)

- 38 **A Hybrid Cellular Automaton Model of Tumor-Induced Angiogenesis**  
 Tamas GONCZY (*Obuda University, Hungary*)  
 David CSERCSIK (*Obuda University, Hungary*)  
 Levente KOVACS (*Obuda University, Hungary*)
- 40 **Control of Tumor Growth by Modern Control Methodologies**  
 Gyorgy EIGNER (*Obuda University, Hungary*)  
 Levente KOVACS (*Obuda University, Hungary*)
- 50 **Anesthesia Regulation: Towards Completing the Picture**  
 Clara M. IONESCU (*Ghent University, Belgium*)  
 Dana COPOT (*Ghent University, Belgium*)  
 Martine NECKEBROEK (*Ghent University Hospital*)  
 Cristina I. MURESAN (*Technical University of Cluj-Napoca, Romania*)
- 87 **Fractional Order Control of the Cyber-Physical Cryogenic Isotope Separation Columns Cascade System**  
 Eva H. DULF (*Technical University of Cluj-Napoca, Romania*)  
 Levente KOVACS (*Obuda University, Hungary*)

Thursday, May 24 15:00 – 16:30	<b>Special session on IoT Security and Trust</b>	<b>Aula Domşa</b>
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Chairs:  
 Giorgio DI NATALE (*LIRMM, France*)  
 Paolo PRINETTO (*Politecnico di Torino, Italy*)

**IoT Security and Trust Challenges**

Paolo PRINETTO (*Politecnico di Torino, Italy*)

**Hardware Authentication and Trust**

Giorgio DI NATALE (*LIRMM, France*)

**Emerging Memories for Security Primitives**

Ioana VATAJELU (*Grenoble Institute of Technology, France*)

16:30 – 17:00 *Coffee break*

Parallel sessions 2

Thursday, May 24 17:00 – 18:30	<b>Regular session QT2</b>	<b>Room D21</b>
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Chairs:

Dan-Sorin NECSULESCU (*University of Ottawa, Canada*)

Camelia AVRAM (*Technical University of Cluj-Napoca, Romania*)

**2 Remote Measurement of Body Temperature for an Indoor Moving Crowd**

Hamidreza FALLAH HAGHMOHAMMADI (*University of Ottawa, Canada*)

Dan-Sorin NECSULESCU (*University of Ottawa, Canada*)

Mehrnoosh VAHIDI (*University of Ottawa, Canada*)

**22 Low Cost Platform for Monitoring Honey Production and Bees Health**

George Calin SERITAN (*University Politehnica of Bucharest, Romania*)

Bogdan Adrian ENACHE (*University Politehnica of Bucharest, Romania*)

Florin Ciprian ARGATAU (*University Politehnica of Bucharest, Romania*)

Felix Constantin ADOCHIEI (*University Politehnica of Bucharest, Romania*)

Stefan TOADER (*University Politehnica of Bucharest, Romania*)

**34 Experimental Verification for Closed Loop Control of Thin Plate Surface Temperature**

Dan-Sorin NECSULESCU (*University of Ottawa, Canada*)

Bilal JARRAH (*University of Ottawa, Canada*)

Jurek SASIADEK (*University of Carleton, Canada*)

**73 IoT-Based eHealth Data Acquisition System**

Iuliu Alexandru PAP (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Stefan ONIGA (*Technical University of Cluj-Napoca, North University Center of Baia Mare*)

Ioan ORHA (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Alexandru ALEXAN (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

**74 Assisted Living Personal Tracker Framework**

Alexandru ALEXAN (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Anca ALEXAN (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Stefan ONIGA (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Iuliu Alexandru PAP (*Technical University of Cluj-Napoca, North University Center of Baia Mare, Romania*)

Thursday, May 24 17:00 – 18:30	<b>Regular session A1</b>	<b>Room D22</b>
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Chairs:

Mariana MOCANU (*University Politehnica of Bucharest, Romania*)

Istvan KOVACS (*IPA Cluj-Napoca, ROMANIA*)

- 18     **Experimental Characterization of Assisted Human Arm Exercises**  
Giuseppe CARBONE (*University of Cassino and South Latium, Italy*)  
Marco CECCARELLI (*University of Cassino and South Latium, Italy*)  
Viorela Alexandra LAZAR (*Technical University of Cluj-Napoca, Romania*)  
Danielle CAFOLLA (*Technical University of Cluj-Napoca, Romania*)  
Calin VAIDA (*Technical University of Cluj-Napoca, Romania*)  
Doina PISLA (*Technical University of Cluj-Napoca, Romania*)  
Jhon Freddy RODRIGUEZ LEON (*National Polytechnic Institute Querétaro, México*)
- 21     **Camera-based Liquid Level Measurement Using the Refractive Properties of the Medium**  
Paul DRAGAN (*Technical University of Cluj-Napoca, Romania*)  
Mihai STANESE (*Technical University of Cluj-Napoca, Romania*)  
Ioan NASCU (*Technical University of Cluj-Napoca, Romania*)
- 28     **Real-time Clustering for Priority Evaluation in a Water Distribution System**  
Alexandru PREDESCU (*University Politehnica of Bucharest, Romania*)  
Catalin NEGRU (*University Politehnica of Bucharest, Romania*)  
Mariana MOCANU (*University Politehnica of Bucharest, Romania*)  
Ciprian LUPU (*University Politehnica of Bucharest, Romania*)
- 42     **Improving Energy Efficiency of an Austenitization Furnace by Heat Integration and Real-time Optimization**  
Hari S. GANESH (*University of Texas at Austin, United States of America*)  
Ofodike A. EZEKOYE (*University of Texas at Austin, United States of America*)  
Thomas EDGAR (*University of Texas at Austin, United States of America*)  
Michael BALDEA (*University of Texas at Austin, United States of America*)
- 98     **Distributed, Workflow-Driven Rendering of 3D Object Scenes on a Big Data Processing Platform**  
Constantin NANDRA (*Technical University of Cluj-Napoca, Romania*)  
Victor BACU (*Technical University of Cluj-Napoca, Romania*)  
Dorian GORGAN (*Technical University of Cluj-Napoca, Romania*)
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| Thursday, May 24<br>17:00 – 18:30 | <b>Regular session R1</b> | <b>Room 356</b> |
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- Chairs:  
Gheorghe LAZEA (*Technical University of Cluj-Napoca, Romania*)  
Mihai Olimpiu TATAR (*Technical University of Cluj-Napoca, Romania*)
- 6     **Design and Kinematics Analysis of a Robotic System for Airbrushing**  
Efrain RODRIGUEZ (*University of Brasilia, Brazil*)  
Cesar PENA (*University of Pamplona, Colombia*)
- 39     **Design and Development of the Hybrid Mobile Robots**  
Mihai Olimpiu TATAR (*Technical University of Cluj-Napoca, Romania*)  
Petre BARBU (*Technical University of Cluj-Napoca, Romania*)  
Emil TEUTAN (*Technical University of Cluj-Napoca, Romania*)
- 55     **Quadcopter Control Using Onboard Monocular Camera for Enriching Remote Laboratory Facilities**  
Fawzi KHATTAR (*University Pau & Pays Adour, France*)  
Fadi DORNAIKA (*University of the Basque Country, Spain*)  
Franck LUTHON (*University Pau & Pays Adour, France*)  
Benoit LARROQUE (*University Pau & Pays Adour, France*)

- 58 **Motion Assistance with an Exoskeleton for Stair Climb**  
 Ionut Daniel GEONEA (*University of Craiova, Romania*)  
 Daniela TARNITA (*University of Craiova, Romania*)
- 59 **A Leg Exoskeleton Command Unit for Human Walking Rehabilitation**  
 Sorin DUMITRU (*University of Craiova, Romania*)  
 Cristian COPILUSI (*University of Craiova, Romania*)  
 Nicolae DUMITRU (*University of Craiova, Romania*)

19:00 – 22:00 *Welcome reception*

### Parallel sessions 3

Friday, May 25 8:30 – 10:00	Regular session C2	Room D21
	Chairs: Tiberiu LETIA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Octavian PASTRAVANU ( <i>Gheorghe Asachi Technical University of Iasi, Romania</i> )	
29	<b>Hybrid Control Models for Flexible Manufacturing Systems</b> Liana MIC ( <i>Technical University of Cluj-Napoca, Romania</i> ) Raluca FAT ( <i>Technical University of Cluj-Napoca, Romania</i> ) Maria Magdalena SANTA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Tiberiu Stefan LETIA ( <i>Technical University of Cluj-Napoca, Romania</i> )	
35	<b>Object Enhanced Time Petri Net Models</b> Tiberiu Stefan LETIA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Dahlia AL-JANABI ( <i>Technical University of Cluj-Napoca, Romania</i> )	
36	<b>Railway Modeling with Object Enhanced Time Petri Nets</b> Mihai Florian ENACHE ( <i>Technical University of Cluj-Napoca, Romania</i> ) Dahlia AL-JANABI ( <i>Technical University of Cluj-Napoca, Romania</i> ) Tiberiu Stefan LETIA ( <i>Technical University of Cluj-Napoca, Romania</i> )	
37	<b>Diagonally Weighted Hölder Norms as Lyapunov Functions for Arbitrary Switching Linear Systems - Discrete-Time Case</b> Octavian PASTRAVANU ( <i>Gheorghe Asachi Technical University of Iasi, Romania</i> ) Mihaela-Hanako MATCOVSCHI ( <i>Gheorghe Asachi Technical University of Iasi, Romania</i> )	
52	<b>Hybrid Multiparametric Model Predictive Control with Application to the Neuromuscular Blockade</b> Ioana NASCU ( <i>Texas A&amp;M, USA</i> ) Efstratios PISTIKOPOULOS ( <i>Texas A&amp;M, USA</i> ) Ioan NASCU ( <i>Technical University of Cluj-Napoca, Romania</i> )	

Friday, May 25 8:30 – 10:00	Regular session R2	Room D22
	Chairs: Adrian PISLA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Dan GOTA ( <i>Technical University of Cluj-Napoca, Romania</i> )	
3	<b>Gaussian Random Field-Based Log Odds Occupancy Mapping</b> Hongjun LI ( <i>University of Evora, Portugal</i> ) Miguel BARAO ( <i>University of Evora and INESC-ID, Portugal</i> ) Luis RATO ( <i>University of Evora, Portugal</i> )	

- 19 **Hybrid Robot Controller Synthesis with GP and UETPN**  
 Attila Ors KILYEN (*Technical University of Cluj-Napoca, Romania*)  
 Tiberiu Stefan LETIA (*Technical University of Cluj-Napoca, Romania*)
- 72 **Non-linear Model, Simulation and Control of A New VTOL Vehicle Concept**  
 Marius COSTANDIN (*Technical University of Cluj-Napoca, Romania*)  
 Benjamin COSTANDIN (*Technical University of Cluj-Napoca, Romania*)  
 Petru DOBRA (*Technical University of Cluj-Napoca, Romania*)
- 90 **VR Interface for Cooperative Robots Applied in Dynamic Environments**  
 Florin COVACIU (*Technical University of Cluj-Napoca, Romania*)  
 Adrian PISLA (*Technical University of Cluj-Napoca, Romania*)  
 Giuseppe CARBONE (*University of Cassino and South Latium, Italy*)  
 Ferenc PUSKAS (*S.C. Electronic APRIL S.R.L., Romania*)  
 Calin VAIDA (*Technical University of Cluj-Napoca, Romania*)  
 Doina PISLA (*Technical University of Cluj-Napoca, Romania*)
- 97 **Human Leg Detection from Depth Sensing**  
 Andrei LUCIAN (*SmartTech, NTT DATA Romania*)  
 Andreea SANDU (*SmartTech, NTT DATA Romania*)  
 Radu ORGHIDAN (*SmartTech, NTT DATA Romania*)  
 Daniel MOLDOVAN (*SmartTech, NTT DATA Romania*)

Friday, May 25  
 8:30 – 10:00

**Session HSS**

**Room 356**

- Chairs:  
 Anzhela MATROSOVA (*Tomsk State University, Russia*)  
 Alfredo BENSO (*Politecnico di Torino, Italy*)
- 8 **Trojan Circuits Masking and Debugging of Combinational Circuits with LUT Insertion**  
 Anzhela MATROSOVA (*Tomsk State University, Russia*)  
 Sergei OSTANIN (*Tomsk State University, Russia*)
- 44 **A Genetic Algorithm for Obtaining Memory Constrained Near-Perfect Hashing**  
 Dan DOMNITA (*Bitdefender & Technical University of Cluj-Napoca, Romania*)  
 Ciprian OPRISA (*Bitdefender & Technical University of Cluj-Napoca, Romania*)
- 51 **Securing Bitstream Integrity, Confidentiality and Authenticity in Reconfigurable Mobile Heterogeneous Systems**  
 Alberto CARELLI (*Politecnico di Torino, Italy*)  
 Carlo Alberto CRISTOFANINI (*Politecnico di Torino, Italy*)  
 Alessandro VALLERO (*Politecnico di Torino, Italy*)  
 Cataldo BASILE (*Politecnico di Torino, Italy*)  
 Paolo PRINETTO (*Politecnico di Torino, Italy*)  
 Stefano DI CARLO (*Politecnico di Torino, Italy*)
- 78 **Lamport n-Time Signature Scheme**  
 Sinica ALBOAIE (*Alexandru Ioan Cuza University of Iasi, Technical University of Cluj-Napoca, Romania*)  
 Doina COSOVAN (*Alexandru Ioan Cuza University of Iasi, Romania*)  
 Ligia D. CHIOREAN (*Technical University of Cluj-Napoca, Romania*)  
 Mircea Florin VAIDA (*Technical University of Cluj-Napoca, Romania*)
- 108 **Fast Switch into a Trustworthy Virtual Machine for Running Security-Sensitive Applications**  
 Adrian POP (*Technical University of Cluj-Napoca, Romania*)  
 Adrian COLESA (*Technical University of Cluj-Napoca, Romania*)

Andrei LUTAS (*Technical University of Cluj-Napoca, Romania*)  
 Alexandru GURZOU (*Technical University of Cluj-Napoca, Romania*)  
 Sandor LUKACS (*Bitdefender, Romania*)  
 Raul TOSA (*Bitdefender, Romania*)  
 Daniel TICLE (*Bitdefender, Romania*)

10:00 – 10:30 *Coffee break*

Friday, May 25 10:30 – 11:30	<b>Plenary 3</b>	<b>Room D21</b>
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Chair:  
 Honoriu VALEAN (*Technical University of Cluj-Napoca, Romania*)

**Process Safety in Off-Shore Deep Sea Oil Extraction**

Cristian STANUS (*ARQES, Romania*)  
 Alin FARCAS (*ARQES, Romania*)

**Emerson Process Simulation in the Digital Era**

Andreea RATIU (*Emerson, Romania*)

**GPU based workflows in AWS: Cinematic Rendering and AI**

Radu TOEV (*SIEMENS, Romania*)  
 Lucian ITU (*SIEMENS, Romania*)

## Parallel sessions 4

Friday, May 25 11:30 – 13:00	<b>Regular session A2</b>	<b>Room D21</b>
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Chairs:  
 Eugen POP (*SC IPA SA, Romania*)  
 Mirela DOBRA (*Technical University of Cluj-Napoca, Romania*)

43 **The Matlab-Simulink Model for Monitoring of the Power Loss in Inverters which Supplies a BLDC Motor**

Mitica Iustinian NEACA (*University of Craiova, Romania*)

56 **An E-business Service Provided Through Mobile Communications Networks**

Eugen POP (*SC IPA SA, Romania*)  
 Daniela GIFU (*University Alexandru Ioan Cuza of Iasi, Institute of Computer Science Romanian Academy-Iasi Branch, Cognos Business Consulting S.R.L., Bucharest Romania*)

62 **Hyperspectral Image Classification using Combined Spectral-Spatial Denoising and Deep Learning Techniques**

Andreia Valentina MICLEA (*Technical University of Cluj-Napoca, Romania*)  
 Romulus TEREBES (*Technical University of Cluj-Napoca, Romania*)  
 Ioana ILEA (*Technical University of Cluj-Napoca, Romania*)  
 Monica BORDA (*Technical University of Cluj-Napoca, Romania*)

66 **Asteroids Detection Tehnique: Classic “Blink”. An Automated Approach**

Denisa COPANDEAN (*Technical University of Cluj-Napoca, Romania*)  
 Constantin NANDRA (*Technical University of Cluj-Napoca, Romania*)  
 Dorian GORGAN (*Technical University of Cluj-Napoca, Romania*)  
 Ovidiu VADUVESCU (*Instituto de Astrofisica de Canarias, Spain*)

96 **Computerised Decision System for Diabetes Melitius and Associated Complications – CODES**

Gabriel SPIRIDON (*IPA SA – R&D Institute for Automation*)



Anca SARBU (*University of Medicine and Pharmacy Carol Davila, Romania*)  
 Dorin CARSTOIU (*University Politehnica of Bucharest, Romania*)  
 Florian ION (*IPA SA – R&D Institute for Automation, Romania*)

Friday, May 25 11:30 – 13:00	<b>Regular session C3</b>	<b>Room D22</b>
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Chairs:

Anca SIPOS (*Lucia Blaga University of Sibiu, Romania*)

Ioan NASCU (*Technical University of Cluj-Napoca, Romania*)

- 17 **The Alcoholic Fermentation Process Temperature Automatic Control**  
 Anca SIPOS (*Lucia Blaga University of Sibiu, Romania*)
- 27 **Hierarchical Control System for Energy Savings in Wastewater Treatment Plant**  
 Ruben CRISAN (*Technical University of Cluj-Napoca, Romania*)  
 Gabriel HARJA (*Technical University of Cluj-Napoca, Romania*)  
 Ioan NASCU (*Technical University of Cluj-Napoca, Romania*)  
 Ioan NICOARA (*Research-Development for Environmental Protection Technologies and Equipment, Romania*)
- 48 **A New Orthogonalization and Sensor Fusion Algorithm for Attitude Estimation**  
 Marius COSTANDIN (*Technical University of Cluj-Napoca, Romania*)  
 Beniamin COSTANDIN (*NTT Data Cluj-Napoca, Romania*)  
 Petru DOBRA (*Technical University of Cluj-Napoca, Romania*)
- 71 **Control Strategies for Wastewater Treatment Plants Aimed to Improve Nutrient Removal and to Reduce Aeration Costs**  
 Melinda VARHELYI (*Babes-Bolyai University, Romania*)  
 Marius BREHAR (*Babes-Bolyai University, Romania*)  
 Vasile-Mircea CRISTEA (*Babes-Bolyai University, Romania*)
- 118 **Adaptive-Robust Polynomial Control for the Pantograph-Catenary Positioning System**  
 Andrei Ioan CHIRIAC (*University Politehnica of Bucharest, Romania*)  
 Severus Constantin OLTEANU (*University Politehnica of Bucharest, Romania*)  
 Dumitru POPESCU (*University Politehnica of Bucharest, Romania*)

Friday, May 25 11:30 – 13:00	<b>Regular session QT3</b>	<b>Room 356</b>
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Chair:

Szilard ENYEDI (*Technical University of Cluj-Napoca, Romania*)

- 16 **Detection of Hard-to-Detect Stuck-at Faults and Generation of Their Tests Based on Testability Functions**  
 Olga GOLUBEVA (*Tomsk State University, Russia*)
- 23 **The Effect of Gender-Specific Facial Expressions on Face Recognition System's Reliability**  
 Mohammadreza AZIMI (*Warsaw University of Technology, Poland*)  
 Andrzej PACUT (*Warsaw University of Technology, Poland*)
- 109 **Chemometric Tool for Doping Control Based on Hierarchical Cluster Analysis**  
 Mirela PRAISLER (*Dunarea de Jos University of Galati, Romania*)  
 Stefanut CIOCHINA (*Dunarea de Jos University of Galati, Romania*)  
 Madalina Manuela COMAN (*Dunarea de Jos University of Galati, Romania*)  
 Catalin NEGOITA (*Dunarea de Jos University of Galati, Romania*)
- 110 **Assistive AR Technology for Hearing Impairments in Driving Lessons**

Anca SALOMIA (*Technical University of Cluj-Napoca, Romania*)  
 Aurelia CIUPE (*Technical University of Cluj-Napoca, Romania*)  
 Serban MEZA (*Technical University of Cluj-Napoca, Romania*)  
 Bogdan ORZA (*Technical University of Cluj-Napoca, Romania*)  
 Gabriela TRIFAN (*Special Technology High School SAMUS, Romania*)

**114 Design of an Ex-proof Untethered In-pipe Inspection Robot**

Ertugrul CETINSOY (*Istanbul Ticaret University, Turkey*)  
 Hakan ESGIN (*Istanbul Ticaret University, Turkey*)

13:00 – 15:00 *Lunch*

15:00 – 17:30 *Social event*

18:30 – 21:00 *Social event - dinner*

## Parallel sessions 5

Saturday, May 26	Regular session QT4	Room D21
8:30 – 10:30	<p>Chairs:                      Anca HANGAN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Honoriu VALEAN (<i>Technical University of Cluj-Napoca, Romania</i>)</p>	
7	<p><b>Test Automation Pyramid from Theory to Practice</b></p> <p>Andrei CONTAN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Liviu MICLEA (<i>Technical University of Cluj-Napoca, Romania</i>)                      Catalin DEHELEAN (<i>Babes-Bolyai University, Romania</i>)</p>	
32	<p><b>Communication Systems for People with Severe Hearing Loss</b></p> <p>Dan Tudor POP (<i>Technical University of Cluj-Napoca, Romania</i>)                      Liviu MICLEA (<i>Technical University of Cluj-Napoca, Romania</i>)                      Catalin DEHELEAN (<i>Babes-Bolyai University, Romania</i>)</p>	
70	<p><b>A Taxonomy and Platform for Anomaly Detection</b></p> <p>Gheorghe SEBESTYEN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Anca HANGAN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Zoltan CZAKO (<i>Technical University of Cluj-Napoca, Romania</i>)                      Gyorgy KOVACS (<i>Technical University of Cluj-Napoca, Romania</i>)</p>	
93	<p><b>Traffic Control Using Distributed Greenhouse Gases Measurements</b></p> <p>Adela PUSCASIU (<i>Technical University of Cluj-Napoca, Romania</i>)                      Alexandra FANCA (POP) (<i>Technical University of Cluj-Napoca, Romania</i>)                      Honoriu VALEAN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Silviu FOLEA (<i>Technical University of Cluj-Napoca, Romania</i>)</p>	
94	<p><b>Trauma Accident Detecting and Reporting System</b></p> <p>Alexandra FANCA (POP) (<i>Technical University of Cluj-Napoca, Romania</i>)                      Adela PUSCASIU (<i>Technical University of Cluj-Napoca, Romania</i>)                      Silviu FOLEA (<i>Technical University of Cluj-Napoca, Romania</i>)                      Honoriu VALEAN (<i>Technical University of Cluj-Napoca, Romania</i>)</p>	
86	<p><b>Failure Modes and Effects Analysis for an Automatic Level Control System</b></p> <p>Claudiu BALC (<i>Technical University of Cluj-Napoca, Romania</i>)                      Alexandru CRETU (<i>Technical University of Cluj-Napoca, Romania</i>)                      Dan IUDEAN (<i>Technical University of Cluj-Napoca, Romania</i>)                      Horatiu LASLO (<i>Technical University of Cluj-Napoca, Romania</i>)</p>	

Szilard ENYEDI (*Technical University of Cluj-Napoca, Romania*)  
 Radu MUNTEANU jr (*Technical University of Cluj-Napoca, Romania*)

Saturday, May 26 8:30 – 10:30	Regular session A3	Room D22
	Chairs: Lorand SZABO ( <i>Technical University of Cluj-Napoca, Romania</i> ) Sorin HERLE ( <i>Technical University of Cluj-Napoca, Romania</i> )	
33	<b>Optimization for CNC Pathing</b>  Florin SIMONCA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Mircea SUSCA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Petru DOBRA ( <i>Technical University of Cluj-Napoca, Romania</i> )	
60	<b>System Identification and Control Analysis for CNC Machines</b>  Dora SABAU ( <i>Technical University of Cluj-Napoca, Romania</i> ) Mirela DOBRA ( <i>Technical University of Cluj-Napoca, Romania</i> )	
67	<b>Dynamic Thermal Modeling of Buildings and Application to a Hospital</b>  Octavian G. POP ( <i>Technical University of Cluj-Napoca, Romania</i> ) Ancuta C. ABRUDAN ( <i>Technical University of Cluj-Napoca, Romania</i> ) Angel M. DOGEANU ( <i>Technical University of Civil Engineering Bucharest, Romania</i> ) Adrian G. POCOLA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Lucian FECHETE TUTUNARU ( <i>Technical University of Cluj-Napoca, Romania</i> ) Mugur C. BALAN ( <i>Technical University of Cluj-Napoca, Romania</i> )	
77	<b>Model-based Observer Design Evaluation for X-Y Positioning Systems</b>  Mirela DOBRA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Dora Laura SABAU ( <i>Technical University of Cluj-Napoca, Romania</i> ) Mircea ANTON ( <i>Babes-Bolyai University, Romania</i> )	
103	<b>Movement Intention Detection from SEMG Signals Using Time-domain Features and Discriminant Analysis Classifiers</b>  Sorin HERLE ( <i>Technical University of Cluj-Napoca, Romania</i> )	
105	<b>On the Use of Rotary-Linear Generators in Floating Hybrid Wind and Wave Energy Conversion Systems</b>  Lorand SZABO ( <i>Technical University of Cluj-Napoca, Romania</i> )	
10:30 – 11:00	<i>Coffee break</i>	

## Parallel sessions 6

Saturday, May 26 11:00 – 13:00	Regular session A4	Room D21
	Chairs: Clement FESTILA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Szilard ENYEDI ( <i>Technical University of Cluj-Napoca, Romania</i> )	
15	<b>Comparison of Electric Power Steering Assistant Motor Structures Using Real-Time Model in the Loop Analysis</b>  Mircea RUBA ( <i>Technical University of Cluj-Napoca, Romania</i> ) Florin POP PIGLESAN ( <i>Technical University of Cluj-Napoca, Romania</i> ) Raul NEMES ( <i>Technical University of Cluj-Napoca, Romania</i> ) Horia HEDESIU ( <i>Technical University of Cluj-Napoca, Romania</i> ) Claudia MARTIS ( <i>Technical University of Cluj-Napoca, Romania</i> )	

- 26 **The Impact of Control Strategies Upon the Energy Flexibility of Nearly Zero-Energy Buildings**  
 Adrian FRATEAN (*Technical University of Cluj-Napoca, Romania*)  
 Petru DOBRA (*Technical University of Cluj-Napoca, Romania*)
- 41 **Object Storage in the Cloud and Multi-cloud: State of the Art and the Research Challenges**  
 Vlad BUCUR (*Technical University of Cluj-Napoca, Romania*)  
 Liviu MICLEA (*Technical University of Cluj-Napoca, Romania*)  
 Catalin DEHELEAN (*Babes-Bolyai University, Romania*)
- 76 **Analysis of a New Horizontal Axes Wind Turbine with 6/3 Blades**  
 Sergiu CHETAN (*Technical University of Cluj-Napoca, Romania*)  
 Clement FESTILA (*Technical University of Cluj-Napoca, Romania*)  
 Eva H. DULF (*Technical University of Cluj-Napoca, Romania*)  
 Roxana BOTH-RUSU (*Technical University of Cluj-Napoca, Romania*)
- 117 **Electric Cars - Challenges and Trends**  
 Szilard ENYEDI (*Technical University of Cluj-Napoca, Romania*)
- 119 **Fast Alternative to Gradient Computation in the DCT Block Domain for Local Binary Patterns Computation**  
 Ioan STOIAN (*SC IPA SA Cluj Subsidiary, Romania*)  
 Dorina CAPATINA (*SC IPA SA Cluj Subsidiary, Romania*)  
 Ovidiu GHIRAN (*SC IPA SA Cluj Subsidiary, Romania*)  
 Mihaela GORDAN (*Technical University of Cluj-Napoca, Romania*)  
 Camelia FLOREA (*Technical University of Cluj-Napoca, Romania*)
- 120 **Lessons Learned from Lightweight CNN Based Object Recognition for Mobile Robots**  
 Andrea Orsolya FULOP (*Technical University of Cluj-Napoca, Romania*)  
 Levente TAMAS (*Technical University of Cluj-Napoca, Romania*)

Saturday, May 26 11:00 – 13:00	<b>Regular session QT5</b>	<b>Room D22</b>
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- Chairs:  
 Ovidiu STAN (*Technical University of Cluj-Napoca, Romania*)  
 Radu MIRON (*Technical University of Cluj-Napoca, Romania*)
- 10 **Smart Environmental Monitoring Beacon**  
 Alexandru POP (*Technical University of Cluj-Napoca, Romania*)  
 Andrei MANEA (*Technical University of Cluj-Napoca, Romania*)  
 Cristina-Madalina SABAU (*Technical University of Cluj-Napoca, Romania*)  
 Ovidiu STAN (*Technical University of Cluj-Napoca, Romania*)
- 68 **Pharmaceutical Cold Chain Management Platform Based on a Distributed Ledger**  
 Mihai HULEA (*Technical University of Cluj-Napoca, Romania*)  
 Ovidiu ROSU (*Technical University of Cluj-Napoca, Romania*)  
 Radu MIRON (*Technical University of Cluj-Napoca, Romania*)  
 Adina ASTILEAN (*Technical University of Cluj-Napoca, Romania*)
- 81 **Video Content Transmission in a Public Safety System Model based on Flying Ad-Hoc Networks**  
 Dan RADU (*Technical University of Cluj-Napoca, Romania*)  
 Adrian CRETU (*Technical University of Cluj-Napoca, Romania*)  
 Camelia AVRAM (*Technical University of Cluj-Napoca, Romania*)  
 Adina ASTILEAN (*Technical University of Cluj-Napoca, Romania*)  
 Benoit PARREIN (*Polytech' Nantes, France*)

- 88 **Two-phase Authentication and Encryption Algorithm for Mobile Users**  
 Camelia AVRAM (*Technical University of Cluj-Napoca, Romania*)  
 Radu MIRON (*Technical University of Cluj-Napoca, Romania*)  
 Dan RADU (*Technical University of Cluj-Napoca, Romania*)  
 Adina ASTILEAN (*Technical University of Cluj-Napoca, Romania*)
- 99 **Local EHR Management Based on FHIR**  
 Ovidiu STAN (*Technical University of Cluj-Napoca, Romania*)  
 Liviu MICLEA (*Technical University of Cluj-Napoca, Romania*)
- 106 **Delay Time Petri Nets based Decision Model to Decrease the Risk of False Security Alarms**  
 Valentin SITA (*Technical University of Cluj-Napoca, Romania*)  
 Camelia AVRAM (*Technical University of Cluj-Napoca, Romania*)  
 Mirela DOBRA (*Technical University of Cluj-Napoca, Romania*)  
 Adina ASTILEAN (*Technical University of Cluj-Napoca, Romania*)

Saturday, May 26 11:00 – 13:00	<b>Special session SS2</b>	<b>Room 356</b>
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- Chairs:  
 Mihail ABRUDEAN (*Technical University of Cluj-Napoca, Romania*)  
 Tiberiu COLOSI (*Technical University of Cluj-Napoca, Romania*)  
 Vlad MURESAN (*Technical University of Cluj-Napoca, Romania*)
- 111 **Modeling and Simulation of a Waste Water Neutralization System using (MpdX) Method**  
 Diana Monica SAS (*Technical University of Cluj-Napoca, Romania*)  
 Iulia CLITAN (*Technical University of Cluj-Napoca, Romania*)  
 Zoltan KOVENDI (*University of Oradea, Romania*)
- 112 **Numerical Simulation of a Wastewater Neutralization System**  
 Diana Monica SAS (*Technical University of Cluj-Napoca, Romania*)  
 Iulia CLITAN (*Technical University of Cluj-Napoca, Romania*)  
 Zoltan KOVENDI (*University of Oradea, Romania*)
- 113 **Extension of MpdX Matrix for 4th Order Partial Diferential Equations with Two Independent Variables**  
 Tiberiu COLOSI (*Technical University of Cluj-Napoca, Romania*)  
 Mihail ABRUDEAN (*Technical University of Cluj-Napoca, Romania*)  
 Iulia CLITAN (*Technical University of Cluj-Napoca, Romania*)  
 Diana Monica SAS (*Technical University of Cluj-Napoca, Romania*)  
 Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca, Romania*)
- 116 **Modeling and Simulation of the Isotopic Exchange for 18O Isotope Production**  
 Vlad MURESAN (*Technical University of Cluj-Napoca, Romania*)  
 Mihail ABRUDEAN (*Technical University of Cluj-Napoca, Romania*)  
 Mihaela Ligia UNGURESAN (*Technical University of Cluj-Napoca, Romania*)  
 Tiberiu COLOSI (*Technical University of Cluj-Napoca, Romania*)