

# SACI 2018

## May 17-19, 2018

### Timisoara, Romania

## IEEE 12<sup>th</sup> International Symposium on Applied Computational Intelligence and Informatics

Authors are welcome to submit original and unpublished papers and attend the **IEEE 12<sup>th</sup> International Symposium on Applied Computational Intelligence and Informatics (SACI 2018)** to be held on May 17-19, 2018 in Timisoara, Romania.

SACI conference appears on the Australian Research Council list, in class C.

[SACI 2018 Call for Papers](#)

### Plenary Talks



**Hamido Fujita** (Iwate Prefectural University, Japan): [Challenges on Data Analytics for Risk Predictions based on Deep and Ensemble Learning](#)



**Attila Bilgic** (Krohne Group, Germany): [The Disruptive Power of Machine Learning and IoT in Automation Industry](#)



**Adrian Stoica** (Manager, Robotic Systems Estimation, Decision and Control NASA Jet Propulsion Laboratory, USA): [Robots on the Moon, and their Role in a Future Lunar Economy](#)

### Invited Talk



**Marcel-Mihai Samanta** (Accenture Digital, Timisoara, Romania): [Industry X.0 – Digital disruption and smart Manufacturing IT&OT transformation journey](#)

### Topics include but not limited to

- Computational Intelligence (track chair: Róbert Fullér)
- Intelligent Mechatronics (track chair: Radu-Emil Precup)
- Systems Engineering (track chair: Gyula Hermann)
- Intelligent Manufacturing Systems (track chair: László Horváth)
- Intelligent Control (track chair: József K. Tar)
- Intelligent Robotics (track chairs: Tamás Haidegger, Claudiu Pozna)
- Informatics (track chair: Levente Kovács)

### IEEE Publication



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### Authors' Schedule

[Full paper submission: February 22, 2018](#)

[Notification: March 28, 2018](#)

[Final paper submission: April 13, 2018](#)

### Venue

**Faculty of Automation and Computers,  
Politehnica University of Timisoara  
Timisoara, Romania**

[Address: 2, Vasile Parvan Blvd. 300223  
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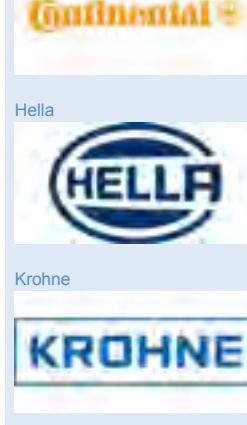
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## May 17, Thursday

**8:30 Registration Room A 107**

**9:30 – 10:00 Opening Ceremony Room A 101**

*Viorel-Aurel Serban, Liviu Ioan Cadariu-Brailoiu, Florin Dragan, Levente Kovács, Nicolae Robu, Horia Ciocârlie, Radu-Emil Precup*

**10:00 – 10:45 Plenary Session I Room A101**

Session chair: *Horia Ciocârlie*

119	Adrian Stoica	Robots on the Moon, and their Role in a Future Lunar Economy
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**10:45 – 11:00 Coffee break**

**11:00 – 11:45 Plenary Session II Room A101**

Session chair: *Radu-Emil Precup*

120	Hamido Fujita	Challenges on Data Analytics for Risk Predictions based on Deep and Ensemble Learning
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**11:45 – 13:30 Lunch break**

**13:30 – 14:50 Parallel sessions**

**13:30 – 14:50 [T1a] Session on Intelligent Control****Room A 115**Session chairs: *Dan Ionescu and Sándor Szénási*

15	<b>Dadiana-Valeria Caiman</b> and Toma-Leonida Dragomir	Non Intrusive Load Monitoring: Analytic Expressions as Load Signature
28	<b>David-Tiberiu Gruescu</b>	Access to justice for the protection of pensioners' rights
62	<b>Huba Somogyi, Daniel Pup, Péter Kőrös, András Mihály and Alexandros Soumelidis Dr.</b>	Research of required vehicle system parameters and sensor system for autonomous vehicle control
19	<b>David-Tiberiu Gruescu and <a href="#">Laura-Mariana Cismas</a></b>	SYSTEMIC ANALYSIS OF CREDIT CONTRACTS FROM THE PERSPECTIVE OF ABUSIVE CLAUSES

**13:30 – 14:50 [T1b] Session on Intelligent Robotics****Room A 109**Session chairs: *Milan Tuba and Vlad Muresan*

90	<b>András Kondákor, Zsombor Töröcsvári, Ákos Nagy and István Vajk</b>	A Line Tracking Algorithm Based on Image Processing
30	<b>Adriana-Maria Berdich and <a href="#">Gheorghe-Daniel Andreescu</a></b>	Master-Slave Tracking System for Mobile Robots
13	<b>Daniel Stojcsics, Zsolt Domozi and Andras Molnar</b>	LARGE-SCALE POINT CLOUD BASED VOLUME ANALYSIS ACCELERATION BASED ON UAV IMAGES
87	<b><a href="#">Gábor Péter</a> and Bálint Kiss</b>	Compact pose-graph SLAM framework based on algebra with embedded uncertainty

**13:30 – 14:30 [T1c] Session on Intelligent Mechatronics****Room A 110**Session chairs: *Ioan Zaharie and Éva Hajnal*

11	<b>Elena-Lorena Hedrea, Radu-Emil Precup, Claudia-Adina Bojan-Dragos and Ciprian Hedrea</b>	Tensor Product-Based Model Transformation Technique Applied to Modeling Vertical Three Tan Systems
32	<b>Zsofia Bodo and <a href="#">Bela Lantos</a></b>	Error Caused by Kinematic Control in the Dynamic Behavior of Unmanned Ground Vehicles
5	<b>Ioan-Daniel Borlea, <a href="#">Radu-Emil Precup</a>, Florin Dragan and Alexandra-Bianca Borlea</b>	Parallel Implementation of K-Means Algorithm Using MapReduce Approach

**13:30 – 14:50 [T1P] Poster session**Session chairs: *Ján Perháč and David-Tiberiu Gruescu*

65	<b><a href="#">Ján Perháč</a>, <a href="#">Daniel Mihalyi</a> and Lukáš Reřovský</b>	Distribution of Linux Log Files Described by Predicate Linear Logic Formula
92	<b>Liberios Vokorokos, Matúš Uchnár and Emília Pietriková</b>	The Raspberry Pi in an Education Process

95	Branislav Mados, Anton Balaz, <a href="#">Norbert Ádám</a> and Ján Hurtuk	Information Hiding into OBJ Format Files Using Vector Steganography Techniques
60	Iosif Szeidert, Ioan Filip, Octavian Prostean and Cristian Vasar	Above Modelling and Adaptive Control of a Double Winded Induction Generator

15:00 – 16:20 DHC I

Large Senate Room

16:30 – 17:50 DHC II

Large Senate Room

18:30 Banquet

## May 18, Friday

9:00 – 9:40

Plenary Session III

Room A 109

Session chair: *Mihai V. Micea*

118	Attila Bilgic	The Disruptive Power of Machine Learning and IoT in Automation Industry
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9:40 – 10:20 Invited Talk

Room A 109

Session chair: *Mircea-Bogdan Radac*

121	Marcel-Mihai Sămânță	Industry X.0 – Digital Disruption and Smart Manufacturing IT&OT Transformation Journey
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10:20 – 10:40 Coffee break

10:40 – 12:20 Parallel sessions

**10:40 – 12:20 [F1a] Session on Computational Intelligence I****Room A 115**Session chairs: *Gyula Hermann and Joao Papa*

24	<b>Doru Todinca</b> , Ioana Sora, Daniel-Eugen Butoianu and Radu-Emil Precup	A novel method to compute the membership value of the states of fuzzy automata
58	<b>Stelian Nicola, Oana Sorina Lupse and Lacramioara Stoicu-Tivadar</b>	Novel Gesture Interaction Using Leap Motion in 3D Applications
104	<a href="#">Dan Ionescu</a> , <a href="#">Cristian Gadea</a> and <a href="#">Bogdan Ionescu</a>	Modeling and Simulation of an Operational Transformation Algorithm using Finite State Machines
55	<b>Dinko Osmankovic and Aleksandar Acimovic</b>	K Modal Logic Approach to Maze Solving
25	<b>János Hollósi, Ernő Horváth and Claudiu Radu Pozna</b>	Two-stage Racetrack Segmentation Method using Color Feature Filtering and Superpixel-based Convolutional Neural Network

**10:40 – 12:20 [F1b] Session on Informatics I****Room A 109**Session chairs: *Iosif Szeidert and József Borbély*

22	<b>Oana-Sorina Lupse</b> , <a href="#">Ciprian-Bogdan Chirila</a> and <a href="#">Horia Ciocarlie</a>	Programming Concepts in the Silver Code Guide for Elders
83	<a href="#">Alin-Adrian Anton</a>	Romanian biometric word list for public key fingerprint validation
96	<b>Noemi-Clara Rohatinovici and Valentina Emilia Balas</b>	On Reliability of 3D Hammock Networks
23	<b>Felicia-Mirabela Costea</b> , <a href="#">Ciprian-Bogdan Chirila</a> and <a href="#">Vladimir Cretu</a>	Towards Auto-Generative Learning Objects for Industrial IT Services
54	<b>Ieva Ancveire</b>	Fit Gap Analysis Methods for ERP Systems

**10:40 – 11:20 [F1c] Session on Safety and Security****Room A 110**Session chair: *Zoltán Rajnai*

37	<a href="#">György Györök</a> and Bertalan Beszédes	Adaptive optocoupler degradation compensation in isolated feedback loops
35	Iulian Aciobanitei, Iulian Buhus and Mihai Lica Pura	Lightweight version of SQR authentication protocol based on cryptography in the cloud

**10:40 – 12:20 [F1P] Poster Session**Session chairs: *Adriana Albu and Alexandru Gavruta*

9	Adrian Mirea and <a href="#">Adriana Albu</a>	Acquisition of Physical Data in an Automated System for Monitoring Medication Stocks
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17	Luis Claudio Sugi Afonso, Leandro Passos Junior and <a href="#">Joao Paulo Papa</a>	Enhancing Brain Storm Optimization Through Optimum-Path Forest
39	Mohamed Lafif Tej and <a href="#">Stefan Holban</a>	Comparative Study of Clustering Distance Measures to Determine Neural Network Architecture
72	Luiz Fernando Cieslak, <a href="#">Kelton Augusto Pontara Da Costa</a> and João Paulo Papa	Seam Carving Detection Using Convolutional Neural Networks
125	Kinan Morani, György Eigner, Tamás Ferenci, Levente Kovács and Seref Naci Engin	Prediction of the Survival of Patients with Cardiac Failure by using Soft Computing Techniques

**12:20 – 14:00 Lunch break**

**14:00 – 16:00 [F2a] Special Session PhD Student Research in Applied Informatics and Numerical Mathematics**

**Room A 115**

Session chair: *László Horváth*

105	<b>Ákos Odry</b> and Róbert Fullér	Comparison of Optimized PID and Fuzzy Control Strategies on a Mobile Pendulum Robot
113	<b>Endre Börcsök, Ágnes Gerse and János Fülöp</b>	Applying Multiobjective Optimization for the Heat Supply in the Residential Sector in Budapest
116	<b>István Lovas and András Molnár</b>	Orthophoto creation based on low resolution thermal aerial images
97	<b>Nicolae Dicu, <a href="#">Gheorghe-Daniel Andreescu</a> and Eugen Horatiu Gurban</b>	Automotive Dead-Reckoning Navigation System Based on Vehicle Speed and Yaw Rate
110	<b>Yatish Bathla</b>	Era of Behavioral Modeling from a System to a Cyber-Physical System: State of the Art Survey
130	<b>Miklós Mezei and Imre Felde</b>	Mass Event Monitoring by Using Mobile Cell Information: A Case Study for Budapest at the Celebration of the Stat Foundation Day
115	<b>Neerendra Kumar and Zoltán Vámosy</b>	Laser Scan Matching in Robot Navigation
122	<b>Gergő Pintér, László Nádai, Gábor Bognár and Imre Felde</b>	Evaluation of Mobile Phone Signals in Urban Environment during a Large Social Event

**14:00 – 15:40 [F2b] Special Session on 'Systems, Man, and Cybernetics'**

**Room A 109**

Session chair: *Kornélia Lazányi*

129	Kornélia Lazányi	Are we ready for self-driving cars – a case of principal-agent theory
128	Zsolt Illési, Áron Halász and Péter Varga	Wireless Networks and Critical Information Infrastructure
123	Dávid János Fehér, Monika Bartok and Lajos Fehér	The effects of computer games on teenagers
126	Péter Varga, András Kálec and Zsolt Illési	Thermal Test of Mobile Devices in Normal Use
114	Dávid János Fehér and Dai Nguyen Huu Phuoc	Security concerns towards Security Operations centers

**14:00 – 15:20 [F2b] Session on Systems Engineering I****Room A 110**Session chairs: *Mihaela-Hanako Matcovschi and Ioana Sora*

99	Cosmin Copot, Cristina Muresan, Thoa Mac Thi and <b>Clara Ionescu</b>	An application to robot manipulator joint control by using constrained PID based PSO
21	Ana-Maria Dan and Toma-Leonida Dragomir	State Feedback Control Models for the Cardiovascular System in Constant Exercise Scenario
100	<a href="#">Ricardo Cajo Diaz</a> , <a href="#">Cosmin Copot</a> , <a href="#">Clara Ionescu</a> , <a href="#">Robin De Keyser</a> and <a href="#">Douglas Plaza Guingla</a>	Fractional Order PD Path-Following Control of an AR.Drone Quadrotor
50	Octavian Pastravanu and <a href="#">Mihaela-Hanako Matcovschi</a>	Comments and Expansion of a Result on Common Diagonal Quadratic Lyapunov Functions for Sets of Positive LTI Systems

**14:00 – 16:00 [F2P] Poster Session**Session chairs: *Krisztina Némethy and Monika Trojanová*

42	Balduino Estison Mugilila Camachi and <b>Dan Popescu</b>	Cyber Security of Smart Grid Infrastructure
68	Dan Georgescu and <a href="#">Loredana Stanciu</a>	Designing and Implementing a Method to Manipulate Signals in Automated Testing Using CANoe
69	Cristian Vasar, Octavian Prosteian, Ioan Filip and Iosif Szeidert	Wind Energy Conversion System – a Laboratory Setup
8	Alexander Hošovský, Monika Trojanová, Ján Pitel and Jozef Svetlík	Identification of DMSP-5 Fluidic Muscle Dynamics Using Hammerstein Model

**16:00 – 16:20 Coffee break****16:20 – 18:00 Parallel sessions****16:20 – 18:00 [F3a] Session on Computational Intelligence II****Room A 115**Session chairs: *Claudia-Adina Bojan-Dragos and Jozef Svetlík*

10	<a href="#">Leandro Aparecido Passos</a> , <a href="#">Clayton Reginaldo Pereira</a> , <a href="#">Edmar Rezende</a> , <a href="#">Tiago José Carvalho</a> , <a href="#">Silke Anna Theresa Weber</a> , <a href="#">Christian Hook</a> and <a href="#">João Paulo Papa</a>	Parkinson Disease Identification using Residual Networks and Optimum-Path Forest
29	Marina Adriana Mercioni	The recognition of the architectural style using Data Mining technique
33	Gabriel Baban, <a href="#">Alexandru Iovanovici</a> , Cristian Cosariu and <a href="#">Lucian Prodan</a>	Network Betweenness shows road congestion spots: experimental assessment by means of simulation
64	Alexandru Gavruta, Marius Marcu and Razvan Bogdan	Software Solution For Monitoring And Analyzing Driver Behavior

93	Eva Tuba, Ivana Strumberger, Ira Tuba, Nebojsa Bacanin and Milan Tuba	Water Cycle Algorithm for Solving Continuous p-Median Problem
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**16:20 – 17:40 [F3b] Session on Informatics II**

**Room A 109**

Session chairs: *Clara M. Ionescu and Andrey Savchenko*

26	<a href="#">Grigoreta Sofia Cojocar</a> and <a href="#">Adriana-Mihaela Guran</a>	A Comparative Analysis of Monitoring Concerns Implementation in Object Oriented Systems
52	<a href="#">Sebastian-Aurelian Stefaniga</a> and <a href="#">Mihail Gaianu</a>	Assessment of stereo camera calibration technique
117	László Horváth	Content Driven Engineering Model System for Cyber Physical Systems
59	Anthony Chapman, Wei Pang and George Coghill	CLEMI - An Imputation Evaluation Framework

**16:20 – 17:40 [F3c] Session on Systems Engineering II**

**Room A 110**

Session chairs: *Doru Todinca and Loredana Stanciu*

80	Niculescu – Faida Oana, Sgarciu Valentin and <b>Niculescu – Faida Adrian</b>	Software system for monitoring data traffic from a Smart Grid network
18	Ionel Romeo Petrut and Marius Otesteanu	The IoT connectivity challenges
86	Vlad Muresan, Mihail Abrudean, Mihaela-Ligia Unguresan and Tiberiu Colosi	Control of the Isotopic Exchange for 18O Isotope Production
38	Marian Ionascu, Iasmina Gruicin and Marius Marcu	Laboratory Evaluation and Calibration of Low-Cost Sensors for Air Quality Measurement

**16:20 – 18:00 [F3P] Poster Session**

Session chairs: *Franciska Hegyesi and Alexandra-Iulia Szedlak-Stinean*

98	<b>Sándor Szénási</b> , Imre Felde, Gábor Nagy and Augusto Deus	Estimating the Heat Transfer Coefficient using Universal Function Approximator Neural Network
66	<b>Gaye Ediboğlu Bartos</b> , Éva Hajnal and <b>Yaşar Hoşcan</b>	Comparison of Feature Extraction Techniques for Handwriting Recognition
131	<b>Franciska Hegyesi</b> , Gyula Kártyás and <b>József Gáti</b>	The Experiences of Online Education, MOOC Courses, at a University with Technical Training
111	<b>József Klespitz</b> and <b>Levente Kovacs</b>	Multivariable control structures of hemodialysis machines for patient fluid balance maintenance

**18:30**

**Coctail**

# May 19, Saturday

9:00 – 10:40 Parallel sessions

9:00 – 10:20 [S1a] Session on Computational Intelligence III

Room A 115

Session chairs: *Vasile Stoicu Tivadar and Péter Varga*

12	<b>Leandro Aparecido Passos Junior</b> , Douglas R. Rodrigues and <a href="#">João Paulo Papa</a>	Fine Tuning Deep Boltzmann Machines Through Meta-Heuristic Approaches
46	<b>Adrian-Aliosă Erofei</b> , Cristian-Filip Druta and Catalin Căleanu	Embedded Solutions for Deep Neural Networks Implementation
44	<b>Emilian Erman Mahmut</b> and Vasile Stoicu Tivadar	Current Challenges in the Computer-Based Assessment of Speech Sound Disorders
47	<b>Sebastian Mihai Ardelean</b> and Mihai Udrescu	QC pp >: A Behavioral Quantum Computing Simulation Library

9:00 – 10:40 [S1b] Session on Informatics III

Room A 109

Session chairs: *Antonio Luputi and Ionel Romeo Petrut*

61	<b>Renata-Graziela Boar</b> and Horia Ciocarlie	Complex Networks with Applicability to the Structure and Dynamics of Stock Market Evolution
112	<b>Eszter Kail</b> , <a href="#">Anna Bánáti</a> , László Erdődi and <a href="#">Miklós Kozlovsky</a>	Security survey of Dedicated IoT networks in the unlicensed ISM bands
94	<b>Ciprian Pungila</b> , Darius Galis	Optimizing Pattern-Matching for Memory-Efficient Heterogeneous DNA Processing in Bioinformatics
48	<a href="#">Ioana Sora</a> and Cosmin Cernazanu	Investigating Attributes that Characterize Important Classes in Object Oriented Systems
101	<b>Andrei-Mihai Nicolae</b> , Adrian Korodi and Ioan Silea	Modular and model-driven configurable approach for a centralized home-security system

9:00 – 10:40 [S1P] Poster Session

Session chairs: *Rita Fleiner and Andreea-Paula Robu*

88	<b>Andreea - Paula Robu</b> , Nicolae Robu and Adrian Neagu	New software tools for hydrogel-based bioprinting
106	<b>Rita Fleiner</b>	Linking of Open Government Data
107	<b>Nidal Chalhoub</b> and <b>Gabriella Simon-Nagy</b>	Indoor Navigation based on Linked Data at Honvéd Hospital, Budapest
124	<b>Gábor Kertész</b> , <b>Sándor Szénási</b> and <b>Zoltán Vámosy</b>	Vehicle Image Matching using Siamese Neural Networks with Multi-Directional Image Projections

10:40 – 11:00 Coffee break

**11:00 – 12:40 Parallel sessions****11:00 – 12:40 [S2a] Session on Computational Intelligence IV****Room A 115**Session chairs: *Marian-Emanuel Ionascu and Alin-Adrian Anton*

56	<b>Lucian Chis</b> and Marius Marcu	Software Tool for Audio Signal Analysis and Automatic Music Transcription
77	<b>Iasmina Gruicin, Marian-Emanuel Ionascu and Mircea Popa</b>	A Solution for Air Quality Monitoring and Forecasting
49	<b>Eugenia Capota, Cristina Stangaciu, Mihai Micea and Vladimir Cretu</b>	<b>P_FENP: A Multiprocessor Real-Time Scheduling Algorithm</b>
70	<b><a href="#">Andrey Savchenko</a></b>	Granular Computing and Sequential Analysis of Deep Embeddings in Fast Still-to-Video Face Recognition
53	<b>Jozsef Bor</b>	About Some Zero-Sum Problems

**11:00 – 12:40 [S2b] Session on Informatics IV****Room A 109**Session chairs: *Radmila Gerov and Nicolae Dicu*

82	<b>Razvan Bolintis</b> , Razvan Bogdan, Crisan-Vida Mihaela Marcella and <b><a href="#">Lăcrămioara Stoicu-Tivadar</a></b>	PillHelper, an application for treatment administration
1	<b>Silvana Albert, Gabriela Czibula and Mihai Teletin</b>	Analyzing the impact of protein representation on mining structural patterns from prote data
67	<b>Iulian Aciobanitei, Iulian Buhus and Mihai Lica Pura</b>	Using cryptography in the cloud for lightweight authentication protocols based on QR codes
41	<b>Imad Ali Hasson, Anwar Chitheer Jasim and Nicolae Tapus</b>	Privacy of Clients' Locations in Big Data and Cloud Computing
89	<b>Aleksandar Pejić and Piroška Stanić Molcer</b>	Relationship Mining in PISA CBA 2012 Problem Solving Dataset using Association Rules

**11:00 – 12:40 [S2P] Poster Session**Session chairs: *György Györök and Elena-Lorena Hedrea*

16	<b><a href="#">Peter Holcsik</a>, <a href="#">Judith Pálfi</a> and <a href="#">László Pokorádi</a></b>	Determination of customer number by matrix operations in case of network failure
27	<b>Radmila Gerov and Zoran Jovanović</b>	PID Tuning for Unstable Processes with Time Delay Based on Gain Margin
31	<b>Zoran Jovanović and Radmila Gerov</b>	Performance Analysis of Uncertain Changes in Parameters of an Unstable Time Delay Process Regulated with a PID Controller

40	<b><a href="#">Jozef Svetlik</a>, Alexander Hošovský, Monika Trojanová, Peter Demeč, Tomáš Stejskal and Miroslav Štofa</b>	Optimizing workspace for homogeneous assemblies of rotational motion modules
74	<b>György Györök</b>	Evidence of Detection of High-Energy Microwave Radiation in Electronic Equipments
75	<b>Ioan Zaharie, Geza-Mihai Erdodi and Marius Dudu</b>	The functioning of a wind system at its maximum power
102	<b><a href="#">Antonio-Marius-Flavius Lupuți</a>, <a href="#">Corina-Anca Mnerie</a> and <a href="#">Virgil-Florin Duma</a></b>	Experimental setup for an optical micrometer with a polygonal mirror-based laser scanner
103	<b>Claudia-Adina Bojan-Dragos, Alexandra-Iulia Szedlak-Stinean, Radu-Emil Precup, Lucia Gurgui, Elena-Lorena Hedrea and Ion-Cornel Mituletu</b>	Control Solutions for Vertical Three-Tank Systems
108	<b>Alexandra-Iulia Szedlak-Stinean, Radu-Emil Precup, Claudia-Adina Bojan-Dragos and Ion-Cornel Mituletu</b>	Feedback Control Solutions for an Electromechanical Process with Rigid Body Dynamics