

SAUM 2016 CONFERENCE

**PROGRAM**

SESSIONS OVERVIEW

| Wednesday, November 9, 2016 |   |              |
|-----------------------------|---|--------------|
| <i>Time</i>                 | <i>Activities</i>   | <i>Place</i> |
| 10:00 – 10:30               | Registration  |              |
| 10:30 – 11:00               | Opening Ceremony  | Room 1       |
| 11:00 – 12:00               | Plenary Session I   | Room 1       |
| 12:00 – 12:15               | COMING Presentation   | Room 1       |
| 12:30 – 13:30               | Cocktail  |              |
| 13:30 – 14:00               | Presentation of Erasmus+ Projects: Re@WBC & IF4TM<br>Presentation of HORIZON 2020 S2R Project SMART | Room 1       |
| 14:00 – 15:00               | Plenary Session II  | Room 1       |
| 15:15 – 16:45               | <b>Session A:</b> Information and Communication Technologies I                                      | Room 1       |
| 15:15 – 16:45               | <b>Session B:</b> System Identification and Modeling I  | Room 2       |
| 15:15 – 16:45               | <b>Session C:</b> Intelligent Control   | Room 3       |
| 17:00 – 18:00               | <b>Session D:</b> Poster Session  | Room 4       |

| Thursday, November 10, 2016 |   |              |
|-----------------------------|---|--------------|
| <i>Time</i>                 | <i>Activities</i>   | <i>Place</i> |
| 10:00 – 11:45               | <b>Session E:</b> System Identification and Modeling II         | Room 1       |
| 10:00 – 11:45               | <b>Session F:</b> Information and Communication Technologies II | Room 2       |
| 10:00 – 11:45               | <b>Session G:</b> Hydraulic and Pneumatic Systems               | Room 3       |
| 12:00 – 13:00               | Plenary Session III   | Room 1       |
| 13:00 – 18:00               | NeReLa Workshop   | Room 1       |
| 14:00 – 15:00               | <b>Session H:</b> Remote Control                                | Room 1       |
| 14:00 – 15:00               | <b>Session I:</b> Applied Mathematics                           | Room 2       |
| 15:15 – 17:00               | <b>Session J:</b> Industrial and Process Control                | Room 1       |
| 15:15 – 17:00               | <b>Session K:</b> Robotics                                      | Room 2       |
| 19:00                       | Conference Dinner & Closing Ceremony                            |              |

# CONTENTS

## PLENARY SESSION I

|  |
|--|
| Invited Lecture  |
| G. M. Dimirovski   |
| <a href="#"><u>Switched Fuzzy Systems: New Directions for Intelligent Control and Decision</u></a> |

## PLENARY SESSION II

|   |
|---|
| Invited paper   |
| R.-E. Precup, S. Preitl, C.-A. Bojan-Dragos, M.-B. Radac, A.-I. Szedlak-Stinean, E.-L. Hedrea, R.-C. Roman                |
| <a href="#"><u>Evolving Takagi-Sugeno Fuzzy Modeling Applications of Incremental Online Identification Algorithms</u></a> |

## PLENARY SESSION III

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|--|
| Invited paper  |
| G. M. Dimirovski   |
| <a href="#"><u>An Overview of Fascinating Ideas on Complexity, Complex Networks and Systems in Computational Cybernetics</u></a> |

## Session A: INFORMATION AND COMMUNICATION TECHNOLOGIES I

*Chairperson: D. Milović*

|           |   |
|-----------|---|
| Session A | A1 • Regular paper  |
|           | Z. Perić, A. Jovanović, S. Vljakov<br><a href="#"><u>Comparative Analysis of Various PAM Constellations</u></a>   |
| Session A | A2 • Regular paper  |
|           | J. Nikolić, Z. Perić<br><a href="#"><u>Optimal Design of Piecewise Linear Companding Scalar Quantizer for Laplacian Source of Unit Variance</u></a>   |
| Session A | A3 • Regular paper  |
|           | A. M. Cvetković, V. M. Blagojević<br><a href="#"><u>The Influence of Co-channel Interference at the Relay on Outage Performance of Hybrid Satellite-Terrestrial Cooperative Network</u></a> |
| Session A | A4 • Regular paper  |
|           | Ž. J. Mančić, V. V. Petrović<br><a href="#"><u>Shielded Two-Wire Transmission Lines with Anisotropic Substrate Calculated by Strong FEM</u></a>   |
| Session A | A5 • Regular paper  |
|           | H. Stefanović, D. Milić<br><a href="#"><u>Performance Analysis of Transmit Beam Forming and Diversity Reception Technique in Fading Channels</u></a>  |
| Session A | A6 • Regular paper  |

M. I. Petković, G. T. Djordjević  
[Performance Analysis of Multi-hop Parallel Relaying FSO Systems Impaired by Atmospheric Turbulence and Pointing Errors](#)

**Session B: SYSTEM IDENTIFICATION AND MODELING I**

*Chairperson: V. Nikolić*

|  |                    |
|--|--------------------|
| Session B  | B1 • Regular paper |
| P. Lj. Janković, J. Č. Baralić, V. A. Blagojević<br><u><a href="#">Modeling as Way to Better Understanding of the Influencing Process Factors - AWJ Machining Case Study</a></u> |                    |
| Session B  | B2 • Regular paper |
| M. Radić, Z. Stajić, M. Rašić<br><u><a href="#">Experimental Identification of Actual Performance Curves in Pump Stations</a></u>  |                    |
| Session B  | B3 • Regular paper |
| D. Marinković, F. Wesolowski, G. Rama, M. Zehn<br><u><a href="#">Some Improvements in Model Reduction Techniques for Structural Dynamics</a></u>                                 |                    |
| Session B  | B4 • Regular paper |
| I. Pavlović, Ž. Čojbašić, R. Pavlović, I. Ćirić, V. Nikolić<br><u><a href="#">Determination of Moment Lyapunov Exponents for Piezoelectric Beam</a></u>                          |                    |
| Session B  | B5 • Regular paper |
| M. Lj. Jovanović, G. N. Radoičić, D. S. Jovanović<br><u><a href="#">Discrete Fourier Transformation Model for Determination of Live Human Forces Based on Experiment</a></u>     |                    |

**Session C: INTELLIGENT CONTROL**

*Chairperson: R.-E. Precup*

|   |                    |
|---|--------------------|
| Session C   | C1 • Regular paper |
| M. Milojković, D. Antić, M. Milovanović, S. Perić, S. S. Nikolić, D. B. Mitić<br><u><a href="#">Time Series Forecasting Using Endocrine Neural Network</a></u>                      |                    |
| Session C   | C2 • Regular paper |
| N. Dučić, Ž. Čojbašić, R. Slavković, N. Marković<br><u><a href="#">GA and PSO Optimization of Feeders for Sand Casting Process</a></u>  |                    |
| Session C   | C3 • Regular paper |
| D. Veljković, D. Rančić<br><u><a href="#">Application fusion of spectral and prosodic features in the function of text-dependent speaker verification</a></u>                       |                    |
| Session C   | C4 • Regular paper |
| N. Džaković, N. Dinkić, A. Stojnev, L. Stoimenov, D. Rančić<br><u><a href="#">Automatic Detection and Recognition of Digits from Video and Live Stream in Basketball Events</a></u> |                    |
| Session C   | C5 • Regular paper |
| I. T. Ćirić, M. B. Simonović, M. V. Ćirić, M. Banić, V. Nikolić<br><u><a href="#">Towards Intelligent Automation of Marshalling Yard</a></u>  |                    |

## **Session D: POSTER SESSION**

*Chairperson: D. Mitić*

|   |                     |
|---|---------------------|
| Session D   | D1 • Regular paper  |
| D. B. Petrović, G. S. Jovanović, G. S. Nikolić, T. R. Nikolić<br><a href="#"><u>A 75nW, 0.5V Subthreshold OTA Circuit Design</u></a>  |                     |
| Session D   | D2 • Regular paper  |
| I. Anastasijević, M. P. Petronijević, L. M. Korunović<br><a href="#"><u>The Case Study of Harmonic Compensation Using Photovoltaic Energy Source</u></a>                    |                     |
| Session D   | D3 • Regular paper  |
| L. M. Korunović, I. Anastasijević, M. P. Petronijević<br><a href="#"><u>The Analysis of Current Distortion of Some Outdoor Lighting Sources</u></a>                         |                     |
| Session D   | D4 • Regular paper  |
| M. V. Mrvić, M. M. Potrebić, D. V. Tošić, Z. Ž. Cvetković<br><a href="#"><u>E-plane Bandpass Waveguide Filter with Improved Stopband Using Quarter-Wave Resonators</u></a>  |                     |
| Session D   | D5 • Regular paper  |
| G. S. Nikolić, M. K. Stojčev, T. R. Nikolić, B. D. Petrović, G. S. Jovanović<br><a href="#"><u>Precise Time Synchronization in Synchronous Wireless Sensor Networks</u></a> |                     |
| Session D   | D6 • Regular paper  |
| V. Z. Kostić, N. N. Mitrović, B. G. Banković<br><a href="#"><u>The Monospiral Motorised Cable Reel in Crane Application</u></a>   |                     |
| Session D   | D7 • Regular paper  |
| B. G. Banković, N. N. Mitrović, V. Z. Kostić, M. P. Petronijević, M. Milovanovic<br><a href="#"><u>Multi Drive System for Industrial Application</u></a>                    |                     |
| Session D   | D8 • Regular paper  |
| M. N. Dubyago, N. K. Poluyanovich<br><a href="#"><u>Preparation Deterioration of Insulation Process the based on the Partial Discharge Thermal Fluctuation Theory</u></a>   |                     |
| Session D   | D9 • Regular paper  |
| N. Vučić, Z. Perić<br><a href="#"><u>Quasi-Logarithmic Quantizer with Golomb-Rice Coding</u></a>  |                     |
| Session D   | D10 • Regular paper |
| S. S. Nikolić, D. Antić, S. Perić, N. Danković, M. Spasić, M. Milovanović<br><a href="#"><u>Hybrid-Fuzzy Controllers Applied in DC Servo Drive</u></a>                      |                     |
| Session D   | D11 • Regular paper |
| P. M. Živković, M. A. Tomić, Ž. Ž. Stevanović<br><a href="#"><u>Wind Energy Potentials of Kopaonik Mountain</u></a>   |                     |

## **Session E: SYSTEM IDENTIFICATION AND MODELING II**

*Chairperson: N. D. Pavlović*

|  |                    |
|--|--------------------|
| Session E  | E1 • Regular paper |
| L. K. Kuzmina<br><a href="#"><u>Stability Theory Methods and Singular Problems in Idealization of Mechanics models</u></a> |                    |
| Session E  | E2 • Regular paper |

|  |                    |
|--|--------------------|
| V. S. Đorđević, V. Ž. Filipović  |                    |
| <a href="#"><u>Recursive Identification of Takagi-Sugeno Models in the Presence of Piecewise Polynomial Disturbances</u></a> |                    |
| Session E  | E3 • Regular paper |
| Lj. M. Dubonjić, V. Ž. Filipović, V. S. Đorđević   |                    |
| <a href="#"><u>Outlier Robust One-Step-ahead Adaptive Predictor for Hammerstein Models</u></a>                               |                    |
| Session E  | E4 • Regular paper |
| K. V. Aleksandrovich, M. M. Yurievich, M. A. Michailovich, P. N. Konstantinovich   |                    |
| <a href="#"><u>Research Prospective Wind Power Plant with a Layout Type "Rotor Fairing"</u></a>                              |                    |
| Session E  | E5 • Regular paper |
| E. Lazarevska  |                    |
| <a href="#"><u>Modeling of Residuary Resistance in Sailing Yachts Based on Extreme Learning Machine</u></a>                  |                    |
| Session E  | E6 • Regular paper |
| E. Lazarevska  |                    |
| <a href="#"><u>A Fuzzy Model of the Residuary Resistance of Sailing Yachts</u></a>   |                    |

### **Session F: INFORMATION AND COMMUNICATION TECHNOLOGIES II**

*Chairperson: D. Rančić*

|  |                    |
|--|--------------------|
| Session F  | F1 • Regular paper |
| T. K. Vasileva, S. A. Stefanova  |                    |
| <a href="#"><u>University Learning Approaches in Network Technologies School Education</u></a>                       |                    |
| Session F  | F2 • Regular paper |
| N. Stojanović, D. Stojanović   |                    |
| <a href="#"><u>A Hybrid Approach for Parallelization of Watershed Analysis Algorithm</u></a>                         |                    |
| Session F  | F3 • Regular paper |
| G. Ostojić, S. Tegeltija, M. Lazarević, D. Oros, S. Stankovski   |                    |
| <a href="#"><u>Implementation of IoT and FIWARE in Production Systems</u></a>  |                    |
| Session F  | F4 • Regular paper |
| A. I. Stojnev, D. H. Stojanović  |                    |
| <a href="#"><u>Real-time Processing of Big Geospatial Data based on Spark Streaming</u></a>                          |                    |
| Session F  | F5 • Regular paper |
| N. Simić, D. Milović   |                    |
| <a href="#"><u>Watermarking Scheme based on AMBTC Compression Technique and its Robustness to Gaussian Noise</u></a> |                    |
| Session F  | F6 • Regular paper |
| Z. Perić, B. Denić, V. Despotović  |                    |
| <a href="#"><u>Delta Modulation System with a Limited Error Propagation</u></a>                                      |                    |

### **Session G: HYDRAULIC AND PNEUMATIC SYSTEMS**

*Chairperson: Ž. Čojbašić*

|  |                    |
|--|--------------------|
| Session G  | G1 • Regular paper |
| V. A. Blagojević, P. LJ. Janković, S. Randelović   |                    |
| <a href="#"><u>Application of Digital Sliding Modes to Synchronization of the Work of Two Pneumatic Semi Rotary Drives</u></a> |                    |

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|--|--------------------|
| Session G  | G2 • Regular paper |
| S. Čajetinac, D. Šešlija, M. Todorović, S. Aleksandrov<br><b><u>Proportional and PWM Electropneumatic Control - the Choice of Optimal Solution</u></b>     |                    |
| Session G  | G3 • Regular paper |
| J. Erić Obućina, S. Čajetinac, S. Stankovski, G. Ostojčić<br><b><u>Modern Solutions Management Capacity Hydraulic Pumps Using Frequency Regulation</u></b> |                    |
| Session G  | G4 • Regular paper |
| N. N. Nedić, S. Lj. Prodanović, Lj. M. Dubonjić<br><b><u>Some Considerations on the Decoupling Control of TITO Systems</u></b>                             |                    |
| Session G  | G5 • Regular paper |
| Ž. M. Stamenković, J. D. Petrović, M. M. Kocić, M. D. Nikodijević<br><b><u>Control of Fluid Flow and Heat transfer in Porous Medium</u></b>                |                    |
| Session G  | G6 • Regular paper |
| M. Kocić, Ž. Stamenković, J. Petrović, J. Bogdanović Jovanović, M. Nikodijević<br><b><u>Control of MHD Micropolar Fluid Flow and Heat Transfer</u></b>     |                    |

### **Session H: REMOTE CONTROL**

*Chairperson: M. Petronijević*

|   |                    |
|---|--------------------|
| Session H   | H1 • Regular paper |
| M. Tomić, M. Milošević, N. Tomić, V. Pavlović, N. D. Pavlović<br><b><u>Remote Control of Mechatronic Slider-Crank Mechanism</u></b>                           |                    |
| Session H   | H2 • Regular paper |
| I. Gochev, G. Nadzinski, M. Stankovski<br><b><u>Effects of Time Delay and Loss Probability on Performance and Stability in a Networked Control System</u></b> |                    |
| Session H   | H3 • Regular paper |
| S. Arsić, S. Stankov, N. Danković, D. B. Mitić, Z. Ičić, N. Jotović<br><b><u>Remote Control of Home Automation Elements</u></b>                               |                    |

### **Session I: APPLIED MATHEMATICS**

*Chairperson: Z. Perić*

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|--|--------------------|
| Session I  | I1 • Regular paper |
| N. Danković, D. Antić, S. S. Nikolić, S. Perić, M. Milojković, M. Milovanović<br><b><u>New Classes of the Orthogonal Polynomials - An Overview</u></b> |                    |
| Session I  | I2 • Regular paper |
| P. M. Rajković, M. S. Stanković, S. D. Marinković<br><b><u>Functions Defined by a Fractional Rodrigues Formula of Legendre Type</u></b>                |                    |
| Session I  | I3 • Regular paper |
| D. M. Milošević, A. D. Milošević, M. R. Milošević<br><b><u>Some Statistical Aspects of Mobile Customer Service</u></b>                                 |                    |

## **Session J: INDUSTRIAL AND PROCESS CONTROL**

*Chairperson: M. Milojković*

|   |                    |
|---|--------------------|
| Session J   | J1 • Regular paper |
| A. R. Gaiduk, E. A. Plaksienko, N. M. Stojković<br><b><u>Analytical Design of Robust Control Systems with Desirable Performances</u></b>  |                    |
| Session J   | J2 • Regular paper |
| D. Pršić, A. Vičovac, V. Stojanović<br><b><u>The Static Characteristic of the Evaporator Superheat Control Loop</u></b>   |                    |
| Session J   | J3 • Regular paper |
| P. R. Tadić, A. LJ. Marjanović, S. M. Vujnović, G. S. Kvaščev<br><b><u>Fault Diagnosis in Redundant-Sensors Schemes: A Combined Parity Relations and Dedicated Observer Approach</u></b>          |                    |
| Session J   | J4 • Regular paper |
| A. Marjanović, P. Tadić, L. Cokić, Ž. Đurović<br><b><u>On Possibility of Modeling the Influence of Coal Firing Process Correction on Steam Drum Outlet Temperature in Thermal Power Plant</u></b> |                    |
| Session J   | J5 • Regular paper |
| S. Stankov, Z. Ičić, N. Jotović, D. Z. Mitić, S. Arsić<br><b><u>Application of Multiplexers in the Systems for Data Acquisition, Supervision and Control</u></b>                                  |                    |

## **Session K: ROBOTICS**

*Chairperson: S. S. Nikolić*

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|---|--------------------|
| Session K   | K1 • Regular paper |
| M. Kyranini, A. Leu, D. Ristic-Durrant, A. Gräser<br><b><u>Robot Learning of Basic Skills from Human Demonstrations</u></b>                           |                    |
| Session K   | K2 • Regular paper |
| E. Petrović, V. Pavlović, M. Simonović, V. Nikolić<br><b><u>Fuzzy Logic Control of Differential Drive Mobile Robot for Moving Target Tracking</u></b> |                    |
| Session K   | K3 • Regular paper |
| J.Šulc, D.Šešlija, V.Reljić, B.Bajči, S.Čajetinac<br><b><u>PWM Control of Coupled Motion of Two Axis Pneumatic Programmable Manipulator</u></b>       |                    |

## NeReLa WORKSHOP

*Chairperson: Ž. Đurović*

|               |  |
|---------------|--|
| 13:00 – 13:05 | Welcome Address                                      |
|               | N. D. Pavlović                                       |
| 13:05 – 14:00 | Invited Lecture                                      |
|               | R. Krneta<br><b>NeReLa: Past, Present and Future</b> |
| 14:00 – 15:00 | Session N-A: Joint Session with SAUM Session H       |
|               | <b>Remote Control</b>                                |
| 15:00 – 18:00 | Session N-B  |
|               | <b>Presentation of Remote Experiments</b>            |