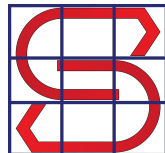


**CSCS23**  
**23<sup>rd</sup> INTERNATIONAL CONFERENCE ON**  
**CONTROL SYSTEMS AND COMPUTER SCIENCE**

**May 26-28, 2021**  
**University POLITEHNICA of Bucharest**  
**Virtual Event**  
**Romania**

**PROGRAMME**





# 23<sup>rd</sup> INTERNATIONAL CONFERENCE ON CONTROL SYSTEMS AND COMPUTER SCIENCE

## WELCOME

We are honored and delighted, on behalf of the CSCS23-2021 Organizing Committee, to welcome you to the 23<sup>rd</sup> International Conference on Control Systems and Computer Science, which takes place in Bucharest, on the University Politehnica of Bucharest, Romania, from May 26 to May 28, 2021. The CSCS23 conference continues a tradition of more than 44 years as a biennial international event.

The main scope of CSCS is to cluster the latest research topics relevant to both Control Systems and Computer Science, and to encourage the submission of ongoing work, as well as position papers and case studies of existing projects. The 2021 edition of CSCS is mainly focused on intelligent information technologies and applied control systems, as a common thread, which leads advances in fundamental and applied research in control systems and computer science. Moreover, the conference offers a forum for both academics and practitioners to share their experience and identify new and emerging trends, to cooperate and share new research directions and innovative programs.

Over the years, CSCS has been the premier and the avant-garde international conference in Control and Computer Science organized in Romania, gathering most prominent researches and scientific contributions from all over the world. We have in mind and is our duty to remember, with profound respect, our colleagues that have contributed to organize this prestigious international conference. A special remember is for the first chairman of CSCS, Professor Simion Florea who was the initiator of this type of events.

We are proud to announce that the 2021 edition of CSCS23 is organized with IEEE technical co-sponsorship and the proceedings will be published by IEEE CPS and indexed by IEEE Xplore and then by ISI Clarivate as Web of Science Proceedings. Also, the proceedings of the last editions of CSCS conference (CSCS19-2013, CSCS20-2015, CSCS21-2017, and CSCS22-2019) were indexed by ISI Web of Science database and by IEEE Xplore, thus offering increased visibility and access to the research contributions.

The main sponsors of our conference are: The Faculty of Automatic Control and Computers (A&C) of University Politehnica of Bucharest and the Romanian Society of Control Engineering and Technical Informatics (SRAIT). Other sponsors of the conference are: the Romanian Academy – Science and Information Technology Section, the IEEE Romania Section, the IEEE Romanian Chapter of Computer Society, and the Romanian Association for Artificial Intelligence (ARIA).

This edition of CSCS received over 150 paper submissions (for the main track and workshops) from all over the world. Each submission was peer-reviewed by program committee members or invited external reviewers. Finally, we selected 88 papers (30 for the conference and 58 for the workshops, having about 43% acceptance ratio for the main track of the conference) to be published in the proceedings and presented during the main sessions of the conference and workshops. The papers contained in these Proceedings cover a wide range of topics including Advanced Control Strategies, Systems and Signals, Cyber Physical Systems, Distributed Computing, Network Control Systems, Hybrid Control Systems, Artificial Intelligence, Big Data and Analytics, Future Internet, Embedded Systems, Machine Learning, Computer Vision and Computer Graphics, Semantic Web, Security, System Software, System Engineering and Theory.

*The 10<sup>th</sup> International Workshop on Interdisciplinary Approaches in Fractal Analysis (IAFA-2021)* is dedicated to the presentation and discussion of technical advances in fractal analysis and chaos theory methods for a wide array of applications in signal, image and multimedia processing, data mining and retrieval, complex systems modeling and others.

*The 7<sup>th</sup> International Workshop on Cyber Physical Systems (IWoCPS-2021)* covers the latest advances in Cyber Physical Systems. The aim is to stimulate research that will lead to the creation of responsive environments for networking and, at longer-term, the development of Cyber Physical Systems. We envision that the cyber-physical systems of tomorrow will far exceed those of today in terms of adaptability, autonomy, efficiency, functionality, reliability, safety, and usability.

*The 7<sup>th</sup> International Workshop on Environment Control Systems (ENV-2021)* aims to discuss the methods and principles that are used to understand environmental processes and to show how they are used to solve new environmental problems that are becoming more and more complex with the expansion and diversification of industrial technologies.

*International Workshop on Design and Spontaneity in Computer-Supported Collaborative Learning (DS-CSCL-2021)* is a meeting place for professionals in collaborative systems and in instructional technologies from academic and industry arenas. We invite participants to reflect, with theoretical and evidence-based arguments, on the potential of collaborative web-based technologies to animate dialogue and learning across established information borders, and to uphold productive interactions in times of uncertainty, divergence, and transformation.

*Advance Control in Smart Grid (ACSG-2021)* will be a forum to discuss issues and effective strategies for modernization of control approaches in power system industry landscape due to the advent of information and communication technology and the emergence of renewable and distributed energy resources introduced in the smart grid development. It will include an emphasis on advanced distribution management systems, the integration of distributed energy resources and the required approaches for integration of storage units, electrical vehicles or smart buildings.

*Smart Services for Edge and Cloud Computing (SSeCC-2021)*. A major goal of the workshop is to explore new directions and approaches for reasoning about smart services for Edge and Cloud Computing, based on novel models, methods and algorithms. The vision of Edge Computing consider that tasks are not exclusively allocated on centralized Cloud platforms but are distributed towards the edge of the network (as in the Internet-of-Things and Fog Computing paradigms) and transferred closer to the business thanks to Content Delivery Networks.

*Monitoring and EviDENCE-based protocols, applications and platforms for active living and Aging (MEDEA-2021)*. MEDEA is a venue for practitioners in the field to present results on management approaches, applications and technologies to satisfy these requirements and thus enable a widespread usage of AAL systems. It covers different aspect related to the planning and the operation of AAL monitoring platforms and the corresponding applications and services. The workshop is organized by National Institute for Research and Development in Informatics (ICI), Bucharest.

*Trends in Computer Science and Engineering Education (CSE-Edu-2021)* is organized by the Computer Science department from University Politehnica of Bucharest with the main scope to highlight the new trends in computer science education, distributed systems, brain-computer interface, e-learning, opening a round table with discussions and debates about education in computer science and engineering at bachelor, master and PhD levels.

Organizing this international conference for many years is a collective effort. We want to thank workshops organizers and workshops committee members for carefully reviewing the papers. We are

honored to thank all the members of the organization committee and program committee, as well as all the reviewers, for their hard work in finalizing the reviews on time, and the authors for submitting their papers. This wonderful community of researchers contributes to the success of this event. We also express our gratitude and thank to all members of local organizing committee for their valuable contribution to this successful event.

The editors would like to thanks to Meghan O'Dell (IEEE CPS Production Editor) for the editorial assistance and excellent cooperative collaboration to produce this valuable scientific work. We express our thanks to all IEEE representative how help us during the production of this conference. We appreciate the support offered by EasyChair system team to handle the paper submission, review process and communications with authors and reviewers. We thank them for this important support.

We hope you will enjoy the conference together with us and we hope to establish new connections and collaborations during this virtual event.

### **General Chair**

**Ioan Dumitrache**, *University Politehnica of Bucharest, Romania*

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## **CONFERENCE WEB SITE and E-MAIL**

<http://cscs23.hpc.pub.ro>

[cscs23@easychair.org](mailto:cscs23@easychair.org)



## CSCS23 SESSIONS

- **A1 - Advanced Control Strategies**  
Session Chair: *Ciprian Lupu* (University Politehnica of Bucharest, Romania)
- **A2 – Intelligent Control Systems**  
Session Chairs: *Theodor Borangiu, Silviu Răileanu* (University Politehnica of Bucharest, Romania)
- **A3 - Control Applications**  
Session Chair: *Valentin Sgârciu* (University Politehnica of Bucharest, Romania)
- **A4 – Stability Control Systems**  
Session Chair: *Dan Ștefănoiu* (University Politehnica of Bucharest, Romania)
- **C1 - Artificial Intelligence and Machine Learning (1)**  
Session Chair: *Adina Magda Florea, Mihai Trăscău* (University Politehnica of Bucharest, Romania)
- **C2 - Artificial Intelligence and Machine Learning (2)**  
Session Chair: *Nirvana Popescu* (University Politehnica of Bucharest, Romania)
- **C3 - Computer Vision and Computer Graphics**  
Session Chair: *Irina Mocanu* (University Politehnica of Bucharest, Romania)
- **C4 – Software Systems (1)**  
Session Chair: *Radu Ioan Ciobanu* (University Politehnica of Bucharest, Romania)
- **C5 - Software Systems (2)**  
Session Chair: *Nicolae Țăpuș, Mihai Carabaș* (University Politehnica of Bucharest, Romania)

## WORKSHOPS

### The 10<sup>th</sup> International Workshop on Interdisciplinary Approaches in Fractal Analysis – IAFA-2021

Workshop organizer: *Radu Dobrescu* (University Politehnica of Bucharest, Romania)

- **IAFA-1: Advanced Techniques in Complex Images Processing**  
Section Chair: *Dan Popescu* (University Politehnica of Bucharest, Romania)  
Honorary Chair: *Nebojša Milošević* (University of Belgrade, Serbia)
- **IAFA-2: Complex Models in Applied Sciences**  
Section Chair: *Radu Dogaru* (University Politehnica of Bucharest, Romania)  
Honorary Chair: *Zoltan Neda* (University Babes-Bolyai of Cluj-Napoca, Romania)
- **IAFA-3: Managing Complexity of Intelligent Manufacturing Systems**  
Section Chair: *Radu Dobrescu* (University Politehnica of Bucharest, Romania)  
Honorary Chair: *Vincenzo De Florio* (Vrije University of Brussels, Belgium)
- **IAFA-4: Transdisciplinary Debate on Performance and Success in Scientific Research**  
Moderator: *Ștefan Mocanu* (University Politehnica of Bucharest, Romania)  
Honorary Chair: *Albert-László Barabási* (Northeastern University Boston, USA)

### The 7<sup>th</sup> International Workshop on Cyber Physical Systems – IWoCPS-2021

Workshop organizer: *Ioan Dumitrache* (University Politehnica of Bucharest, Romania)

### The 7<sup>th</sup> International Workshop on Environment Control Systems – ENV-2021

Workshop organizers:

*Costică Nitu* (University Politehnica of Bucharest, Romania)

*Alexandru Dumitrașcu* (University Politehnica of Bucharest, Romania)

*Anca Hangan* (Technical University of Cluj-Napoca, Romania)

*Costin Chiru* (University Politehnica of Bucharest, Romania)

**The 5<sup>th</sup> International Workshop on Design and Spontaneity in Computer-Supported Collaborative Learning – DS-CSCL-2021** (<http://ds-cscl-workshop.org>)

Workshop organizers:

*Răzvan Rughiniș* (University Politehnica of Bucharest, Romania)

*Ștefan Trăușan-Matu* (University Politehnica of Bucharest, Romania)

*Mihai Dascălu* (University Politehnica of Bucharest, Romania)

**International Workshop on Advance Control in Smart Grid – ACSG-2021**

(<http://shiva.pub.ro/acsg2021>)

Workshop organizers:

*Sergiu Stelian Iliescu* (University Politehnica of Bucharest, Romania)

*Ioana Făgărășan* (University Politehnica of Bucharest, Romania)

*Iulia Stamatescu* (University Politehnica of Bucharest, Romania)

*Nicoleta Arghira* (University Politehnica of Bucharest, Romania)

**International Workshop on Smart Services for Edge and Cloud Computing – SSeCC-2021**

Workshop organizers:

*Adriana Alexandru* (National Institute for Research and Development in Informatics (ICI) Bucharest, Romania)

*Gabriel Neagu* (National Institute for Research and Development in Informatics (ICI) Bucharest, Romania)

*Elena Apostol* (University Politehnica of Bucharest, Romania)

*Ciprian Truică* (University Politehnica of Bucharest, Romania)

**International Workshop on Monitoring and Evidence-based Protocols, Applications and Platforms for Active Living and Aging - MEDEA-2021** (<http://medea.ici.ro>)

Workshop organizers:

*Lidia Băjenaru* (National Institute for Research and Development in Informatics (ICI) Bucharest, Romania)

*Ciprian Dobre* (National Institute for Research and Development in Informatics (ICI) Bucharest, Romania)

*Marilena Ianculescu* (National Institute for Research and Development in Informatics (ICI) Bucharest, Romania)

**International Workshop on Trends in Computer Science and Engineering Education - CSE-Edu-2021**

Workshop organizer:

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

**ORGANIZERS**

CSCS23 International Conference is organized and technically supported by:

- Romanian Society of Control Engineering and Technical Informatics (*SRAIT*)
- Faculty of Automatic Control and Computers, University *POLITEHNICA* of Bucharest

## CSCS23 TIMETABLE

### Wednesday, May 26, 2021

09.15 – 09.30	Opening Ceremony
09.30 – 10.30	Invited Talk ( <i>Andreas Kerren</i> )
10.30 – 12.00	Parallel sessions
12.00 – 13.30	Parallel sessions
13.30 – 14.00	Break
14.00 – 15.00	Invited Talk ( <i>Duncan McFarlane</i> )
15.00 – 16.30	Parallel sessions
16.30 – 18.00	Parallel sessions

### Thursday, May 27, 2021

09.30 – 10.30	Invited Talk ( <i>Joanna Kolodziej</i> )
10.30 – 12.00	Parallel sessions
12.00 – 13.30	Parallel sessions
13.30 – 14.00	Break
14.00 – 15.00	Invited Talk ( <i>Sorin Olaru</i> )
15.00 – 16.30	Parallel sessions
16.30 – 18.00	Parallel sessions

### Friday, May 28, 2021

09.00 – 10.30	Parallel sessions
10.30 – 12.00	Parallel sessions
12.00 – 13.30	Parallel sessions
13.30 – 14.00	Break
14.00 – 15.00	Parallel sessions
15.00 – 16.00	Parallel sessions
16.00 – 17.00	Round Table and Closing Ceremony

## Wednesday, May 26, 2021

### Invited Talk (Plenary Session), 09.30-10.30

**Dr. Andreas Kerren**, Linköping University (LiU) and Linnaeus University (LNU), Sweden

### CSCS23-A1: Advanced Control Strategies

**Date: 26 May 2021, 10.30-12.00**

Session Chair: *Ciprian Lupu* (University Politehnica of Bucharest, Romania)

Coordinated Throttle and Brake Control for Adaptive Cruise Control Strategy Design

*Lich Luu, Ciprian Lupu, Hamid Alshareefi and Truyen Pham*

Position Control of a Mobile Inverted Pendulum System using Model-Free intelligent controllers

*Andrei Baciuc and Corneliu Lazar*

Optimal LQR weight matrices selection for a CNC machine controller

*Dora Morar and Petru Dobra*

Modelling and Simulation of Products Quality Control System for Demethanizer Column from a Natural Gas Treatment Plant

*Cristian Patrascioiu, Marian Popescu and Nawwar Abdul Rahman*

### DS-CSCL-2021 (1)

**Date: 26 May 2021, 10.30-12.00**

Workshop Chairs: *Răzvan Rughiniș, Ștefan Trăușan-Matu, and Mihai Dascălu* (University Politehnica of Bucharest, Romania)

Design Issues in e-Learning during the Covid-19 Pandemic

*Alexandra Hosszu and Cosima Rughiniș*

Predicting the Global Impact of Authors from the Learning Analytics Community – A Case Study grounded in CNA

*Dragos Corlatescu, Remus Ionita, Mihai Dascalu and Danielle McNamara*

Experiments with Contextualized Word Embeddings for Keyphrase Extraction

*Cristian Dascalu and Stefan Trausan-Matu*

A new approach for chat sonification

*Razvan Paroiu and Stefan Trausan-Matu*

### CSCS23-C1: Artificial Intelligence and Machine Learning

**Date: 26 May 2021, 12.00-13.30**

Session Chair: *Adina Magda Florea, Mihai Trăscău* (University Politehnica of Bucharest, Romania)

Human Action Recognition methods based on CNNs for RGB video input

*Bogdan Alexandru Radulescu and Adina Magda Florea*

CWE Pattern Identification using Semantical Clustering of Programming Language Keywords

*Sergiu Zaharia, Traian Rebedea and Stefan Trausan-Matu*

Car crash detection in videos

*Veronica Radu, Mihai Nan, Mihai Trăscău, David Traian Iancu, Alexandra Ștefania Ghiță and Adina Magda Florea*

Top-level Scene Information Extraction from Eye-level View Images

*Alexandra Ștefania Ghița, Mihai Nan, David-Traian Iancu and Adina Magda Florea*

## **DS-CSCL-2021 (2)**

**Date: 26 May 2021, 12.00-13.30**

Workshop Chairs: *Mihai Dascălu, Ștefan Trăușan-Matu, and Răzvan Rughiniș* (University Politehnica of Bucharest, Romania)

Perils of digital intimacy. A classification framework for privacy, security, and safety risks on dating apps

*Maria Stoicescu and Cosima Rughinis*

Yggdrasil – A CSCL System for the Early Detection of Cybernetic Vulnerabilities

*Denis Iorga, Dragos Corlatescu, Octavian Grigorescu, Cristian Sandescu, Mihai Dascalu and Razvan Rughinis*

Big Data as Capital. A Case Study on the Innovation Labs Tech Accelerator

*Andrea-Mariana Budeanu and Daniel Rosner*

## **Invited Talk (Plenary Session), 14.00-15.00**

**Prof. Duncan McFarlane**, IFM, University of Cambridge, UK

## **CSCS23-A2: Intelligent Control Systems**

**Date: 26 May 2021, 15.00-16.30**

Session Chairs: *Theodor Borangiu and Silviu Raileanu* (University Politehnica of Bucharest, Romania)

Data- and model-driven digital twins for design and logistics control of product distribution

*Mihai Stan, Theodor Borangiu and Silviu Raileanu*

A quantitative research for determining the user requirements for developing a system to assist people with frailty

*Bogdan-Iulian Ciubotaru, Vasilică-Gabriel Sasu, Andrei Vasilateanu, Nicolae Goga, Ramona Dragomir and Alexandru-Filip Popovici*

Implementing a pulmonary fibrosis diagnostic system using the Matlab environment

*Cristina Maria Stancioi, Iulia Clitan, Mihai Abrudean and Vlad Muresan*

## **MEDEA-2021 (1)**

**Date: 26 May 2021, 15.00-16.30**

Workshop Chairs: *Lidia Băjenaru* (ICI Bucharest, Romania) and *Ciprian Dobre* (University Politehnica of Bucharest, Romania)

Classification of Sunflower Foliar Diseases Using Convolutional Neural Network

*Rodica Gabriela Dawod and Ciprian Dobre*

Critical Analysis and Evaluation of Current Digital Healthcare Solutions

*Marilena Ianculescu, Adriana Alexandru and Florin Pop*

Fog and Cloud Computing-based IoT in Healthcare Monitoring System for Healthy Ageing

*Eleonora Tudora, Eugenia Tirziu, Nicolae-Dragos Nicolau and Maria Gheorghe-Moisii*

IoT-based Ambient Parameters Monitoring Device for in-Home Elderly Care

*Elena Paraschiv, Ovidiu Bica, Cristian Petrache and Marilena Ianculescu*

## **CSCS23-C2: Artificial Intelligence and Machine Learning**

**Date: 26 May 2021, 16.30-18.00**

Session Chair: *Nirvana Popescu* (University Politehnica of Bucharest, Romania)

The Analysis of biological signals using Machine Learning Techniques

*Marina Ciocîrlan, Andreea Udrea and Ciprian Lupu*

Neural networks - based solutions for predicting the affective state of children with autism, using a mobile application

*Aura-Loredana Popescu and Nirvana Popescu*

ProVe - Self-supervised pipeline for automated product replacement and cold-starting based on neural language models

*Andrei Ionut Damian, Laurentiu Piciu, Cosmin Marinescu and Nicolae Tapus*

Classification with Incoherent Kernel Dictionary Learning

*Denis Ilie-Ablachim and Bogdan Dumitrescu*

## **MEDEA-2021 (2)**

**Date: 26 May 2021, 16.30-18.00**

Workshop Chairs: *Marilena Ianculescu, Lidia Băjenaru* (ICI Bucharest, Romania)

Challenges and perspectives for the development of a healthcare ecosystem for elderly within pandemic

*Ion Alexandru Marinescu, Catalina Maria Rotaru, Dragos Nicolau and Piotr Krawiec*

Association of Stride Rate Variability and Altered Fractal Dynamics with Ageing and Neurological Functioning

*Asma Channa, Najeeb Ur Rehman Malik and Nirvana Popescu*

New opportunities for older adults care transition from traditional to personalised assistive care: vINCI platform

*Ciprian Dobre, Lidia Bajenaru, Ion Alexandru Marinescu, Mihaela Tomescu, Gabriel Ioan Prada and Susanna Spinsante*

Towards the development of an innovative medical rehabilitation system

*Veronica Gavrila, Lidia Bajenaru and Ciprian Dobre*

## **Thursday, May 27, 2021**

**Invited Talk (Plenary Session), 09.30-10.30**

**Prof. Joanna Kolodziej**, NASK – National Research Institute, ul. Kolska 12, Warsaw, Poland

## **CSCS23-A3: Control Applications**

**Date: 27 May 2021, 10.30-12.00**

Session Chair: *Valentin Sgarciu* (University Politehnica of Bucharest, Romania)

Performance analysis of a low-cost small-scale flywheel energy storage system

*Valentin Dache and Valentin Sgarciu*

Reaction Wheel Control of an 3D Printed Inverted Pendulum

*Radu-Andrei Cioacă and Cristian Flutur*

Theoretical and experimental research on digital pneumatic on/off distributors

*Alexandru Ioan Sgarciu, Alin-Alexandru Năstase, Andreea Nedelcu, Bogdan Nedelcu and Valentin Sgarciu*

## **IAFA 1: Advanced Techniques in Complex Images Processing**

**Date: 27 May 2021, 10.30-12.00**

Section Chair: *Dan Popescu* (University Politehnica of Bucharest, Romania)

Honorary Chair: *Nebojša Milošević* (University of Belgrade, Serbia)

Texture analysis for images with forested areas

*Andreea Concea, Tudor Nitescu, Dan Popescu and Ichim Loretta*

Segmentation of Brain Tumors from MRI Images Using Deep Neural Networks

*Andrei Roznov, Radu Dobrescu and Dan Popescu*

Quantification of Collagen IV in normal, potentially malignant and malignant lesions of the oropharynx: A pilot study

*Prarthna Clare, Kristine Nellany and Rasha Abu-Eid*

On Complexity and Topology Measures for Evaluation of Intercellular Connectivity in Human Colon Adenocarcinomas

*Przemyslaw Waliszewski and Grzegorz Banaszak*

## **CSCS23-C3: Computer Vision and Computer Graphics**

**Date: 27 May 2021, 12.00-13.30**

Session Chair: *Irina Mocanu* (University Politehnica of Bucharest, Romania)

Aerial Drone Platform for Asset Tracking using an Active Gimbal

*George-Cristian Pătru, Iuliu Vasilescu, Daniel Rosner and Dan Tudose*

Detection and Diagnosis of Skin Cancer Based On K-Means Cluster and Convolutional Neural Network

*Ahmed Shihab, Hussein Salah and Mariana Mocanu*

Gesture-Based Human-Robot Interaction

*Irina Mocanu, Anca Tudor and Oana Cramariuc*

## **IAFA 2: Complex Models in Applied Sciences**

**Date: 27 May 2021, 12.00-13.30**

Section Chair: *Radu Dogaru* (University Politehnica of Bucharest, Romania)

Honorary Chair: *Zoltan Neda* (University Babes-Bolyai of Cluj-Napoca, Romania)

A Python Framework for Fast Modelling and Simulation of Cellular Nonlinear Networks and other Finite-difference Time-domain Systems

*Radu Dogaru and Ioana Dogaru*

Assessment of quality of health services in fractal-organized connectionist networks

*Gabriela Zinca, Ștefan Mocanu, Ana-Maria Drăgulinescu and Radu Dobrescu*

Assessment of Machine Learning Techniques used for EEG Based Pain Monitoring

*Ionela Mirela Rîciu, Daniela Hossu and Andrei Hossu*

## **Invited Talk (Plenary Session), 14.00-15.00**

**Prof. Sorin Olaru**, CentraleSupélec, Laboratory of Signals and Systems (CNRS), University Paris-Saclay, France

### **CSE-Edu-2021 (1)**

**Date: 27 May 2021, 15.00-16.30**

Workshop Chair: *Mariana Mocanu* (University Politehnica of Bucharest, Romania)

Working with Datasets: Experience from Research Projects

*Florin Pop, Ciprian Dobre, Elena-Simona Apostol, Radu-Ioan Ciobanu, Ciprian Truică, Ion-Dorinel Filip and Catalin Negru*

Bluetooth Communications in Educational Robotics

*Marin Oprea and Mariana Mocanu*

Smart reactive grading system based on genetic algorithms and behavioral psychology

*Nutescu Ciprian-Ionut and Mocanu Mariana*

Clean Code - Delivering A Lightweight Course

*Alexandru Chirvase, Laura Ruse, Vlad Ciobanu, Mihnea Muraru and Mariana Mocanu*

Object-relational Mapping Using JPA, Hibernate and Spring Data JPA

*Catalin Tudose and Carmen Odubasteanu*

### **IAFA-3: Managing Complexity of Intelligent Manufacturing Systems**

**Date: 27 May 2021, 15.00-16.30**

Section Chair: *Radu Dobrescu* (University Politehnica of Bucharest, Romania)

Honorary Chair: *Vincenzo De Florio* (Vrije University of Brussels, Belgium)

A holonic approach of manufacturing systems modeling and simulation

*Giorgiana Cristescu, Oana Chenaru and Radu Dobrescu*

Determining on-shelf availability based on RGB and ToF depth cameras

*Mihai Craciunescu, Diana Baicu, Stefan Mocanu and Cristian Dobre*

Condition Monitoring of Manufacturing Production Lines Using Fractal Analysis of Energy Consumption Datasets

*Viorel Mihai, Cristian Dragana and Dan Popescu*

Using advanced V2X communication technologies in self-organized VANETs

*Vasile-Adrian Olteanu and Maximilian Nicolae*

### **CSE-Edu-2021 (2)**

**Date: 27 May 2021, 16.30-18.00**

Moderator: *Mariana Mocanu* (University Politehnica of Bucharest, Romania)

### **IAFA-4: Transdisciplinary Debate on Performance and Success in Scientific Research**

**Date: 27 May 2021, 16.30-18.00**

Moderator: *Ştefan Mocanu* (University Politehnica of Bucharest, Romania)

Honorary Chair: *Albert-László Barabási* (Northeastern University Boston, USA)



## Friday, May 28, 2021

### ENV-2021 (1)

**Date: 28 May 2021, 09.00-10.30**

Workshop Chairs: *Costică Nitu* and *Alexandru Dumitrașcu* (University Politehnica of Bucharest, Romania)

Geocological Information-Modeling System And Its Applications

*Costica Nitu, Alexandru Dumitrascu, Vladimir F. Krapivin and Vladimir Yu. Soldatov*

Expert System for the Water System Diagnostics

*Costica Nitu, Vladimir Krapivin, Ferdenant Mkrtychyan and Anda Sabena Dobrescu*

Scalable Approaches for Environment Monitoring Solutions

*Vasile M. Tovarnițchi*

### IWoCPS-2021 (1)

**Date: 28 May 2021, 09.00-10.30**

Workshop Chairs: *Ioan Dumitrache* and *Ioan Ștefan Sacală* (University Politehnica of Bucharest, Romania)

Cyber-Physical Systems - A New Approach For Keyless Entry Systems

*Beatrix-May Balaban, Ioan Ștefan Sacală, Alina Claudia Petrescu-Niță and Florin Pop*

Adaptive Models for Microscopic Traffic Modelling

*Corneliu Andrei Nae, Ioan Dumitrache*

Enterprise Architecture Role in Hospital Management Systems Development

*George Liviu Ilie, Mihnea Alexandru Moisescu and Simona Iuliana Caramihai*

Context Awareness in Enterprise Systems Design

*Eugen Marius Oprea, Mihnea Alexandru Moisescu and Simona Iuliana Caramihai*

### ENV-2021 (2)

**Date: 28 May 2021, 10.30-12.00**

Workshop Chairs: *Anca Hangan* (Technical University of Cluj-Napoca, Romania), *Costin Chiru* (University Politehnica of Bucharest, Romania)

Anomaly detection in water supply infrastructure systems

*Zoltan Czako, Gheorghe Sebestyen and Anca Hangan*

Monitor Indoor Air Quality to Assess the Risk of COVID-19 Transmission

*Timotei Bidilă, Radu-Nicolae Pietraru, Anca Daniela Ioniță and Adriana Olteanu*

The use of IoT technology in Smart Viticulture

*Cristina Mihaela Balaceanu, Alexandru Negoita, Ana Maria Dragulinescu, Roxana Roscaneanu, Veronica Sanda Chedea and George Suci*

### IWoCPS-2021 (2)

**Date: 28 May 2021, 10.30-12.00**

Workshop Chair: *Mihnea Alexandru Moisescu* (University Politehnica of Bucharest, Romania)

Bio-Cyber-Physical System for Management of Smart City's Short Term Parking

*Radu-Constantin Simen and Ioan Ștefan Sacala*

A Review of Dynamic Resource Allocation in Edge and Fog Oriented Enterprise Systems

*Marian Cosmin Dumitru, Mihnea Alexandru Moisescu and Radu Nicolae Pietraru*

Improved Performance of the Autonomous Mobile Robot Vectors by New Intelligent Control Interfaces

*Alexandra Ciocîrlan, Victor Vladareanu, Ana Maria Travediu, Alexandru Gal, Octavian Melinte, Mihai Radulescu and Luige Vladareanu*

Pedestrian Detection in Robotic Response for the First Responders

*Ana-Maria Travediu, Octavian Melinte, Alexandra Ciocîrlan, Victor Vladareanu, Mitica Manoliu, Bogdan Capra and Luige Vladareanu*

### **SSeCC-2021**

**Date: 28 May 2021, 12.00-13.30**

Workshop Chairs: *Elena Apostol* (University Politehnica of Bucharest, Romania) and *Adriana Alexandru* (ICI Bucharest, Romania)

The PIMEO AI project – a Cloud based platform for water quality monitoring

*George Iordache, Mihaela Balanescu, George Suciu, Andrei Birdici, Adrian Pasat and Ionel Zatreanu*

Insights into Romania's economic development using satellite imagery

*Marius-Robert Drăghici and Radu-Ioan Ciobanu*

Towards automatisation of academic administrative processes: a Romanian case study

*Alexandru Hoge, Olimpia Ursu, Cristian Condruz and Ciprian Dobre*

Balancing Objects on DOORS Nodes

*Dorin Mihai Palanciuc Mawas and Florin Pop*

### **IWoCPS-2021 (3)**

**Date: 28 May 2021, 12.00-13.30**

Workshop Chair: *Bogdan Țigănoaia* (University Politehnica of Bucharest, Romania)

Cyber-Physical Systems-based Architecture for Traffic Corridor Monitoring and Control

*Constantin Florin Caruntu, Andreea Valentina Militaru and Ciprian Romeo Comsa*

Deploying blockchain technology for storing digital diplomas

*Alexandra Cernian, Elena Vlasceanu, Bogdan Tiganoaia and Alin Iftemi*

Cyber Physical Systems Architecture for Collaborative Services

*Eugen Pop and Daniela Gifu*

### **CSCS23-A4: Stability Control Systems**

**Date: 28 May 2021, 14.00-15.00**

Session Chair: *Dan Ștefănoiu* (University Politehnica of Bucharest, Romania)

A Strategy for Aerial Vehicle Trajectory Tracking using Robust Model Predictive Control

*Iulia Rădulescu and Dan Ștefănoiu*

Stability of switched linear systems with average dwell time – A result encompassing several prior approaches

*Octavian Pastravanu and Mihaela-Hanako Matcovschi*

Synthesis of the State-Feedback Controllers by the Genetic Algorithm According to the Maximum Stability Degree Criterion

*Irina Cojuhari, Ion Fiodorov, Bartolomeu Izvoreanu and Dumitru Moraru*

### **CSCS23-C4: Software Systems (1)**

**Date: 28 May 2021, 14.00-15.00**

Session Chair: *Radu Ioan Ciobanu* (University Politehnica of Bucharest, Romania)

A new metric for evaluating the performance and complexity of computer programs  
*Rares Folea and Emil-Ioan Shusanschi*

A Framework for Analyzing GPU-Executed Malware  
*Teodor-Petrut Apostol, Radu Velea and Razvan Deaconescu*

Design of hashtable for heterogeneous architectures  
*Grigore Lupescu and Nicolae Tapus*

### **CSCS23-C5: Software Systems (2)**

**Date: 28 May 2021, 15.00-16.00**

Session Chair: *Nicolae Țăpuș, Mihai Carabaș* (University Politehnica of Bucharest, Romania)

A critical analyze on bio-inspired classifiers and decision-making solutions  
*Sergiu Manolache and Nirvana Popescu*

Bhyve - JSON file format snapshot  
*Ionut Mihalache, Mihai Carabas, Darius Mihai, Maria-Elena Mihailescu and Nicolae Tapus*

Sharing of Network Flow Data across Organizations using Searchable Encryption  
*Iulia Florea, Gabriel Ghinita and Razvan Rughinis*

### **ACSG-2021**

**Date: 28 May 2021, 15.00-16.00**

Workshop Chair: *Ioana Făgărășan and Sergiu Stelian Iliescu* (University Politehnica of Bucharest, Romania)

Study on total fault clearing time in digital substations  
*Anamaria Iamandi, Iulia Constantin, Costel Constantin, Nicoleta Arghira, Ioana Fagarasan and Sergiu Stelian Iliescu*

Comparative Analysis of Predictive Models for Subway Rolling Stock Energy Forecasting  
*Mircea Stefan Simoiu, Grigore Stamatescu, Vasile Calofir, Ioana Fagarasan and Sergiu Stelian Iliescu*

Case Study for Validation of Hydropower Schedule Simulation Algorithm  
*Ionut Bogdan Stoenescu, Sorina Costinas and Gheorghe Marius Deaconu*

MPPT techniques application and comparison for photovoltaic panels  
*Marius-Alexandru Dobrea, Nicoleta Arghira, Mihaela Vasluianu, Ana-Maria-Cristiana Sandu and Georgian Neculoiu*

Structural damage mitigation using a fuzzy controller  
*Ruben Iacob Munteanu, Iulia Stamatescu, Vasile Calofir, George Nica and Sergiu Stelian Iliescu*

### **Round Table and Closing Ceremony**

**Date: 28 May 2021, 16.00-17.00**

## **GENERAL INFORMATION**

### **MAIL**

Correspondence in connection to the CSCS23 Conference should be addressed as it follows:

CSCS23 - SRAIT  
University "POLITEHNICA" of Bucharest  
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### **WORKING LANGUAGE**

The working language of CSCS23 is English and will be used for presentations and discussions.

**International Conference on  
Control Systems and Computer Science - CSCS23  
May 26-28, 2021**

Wednesday May 26, 2021			Thursday May 27, 2021			Friday May 28, 2021		
9.15-9.30	<b>Opening Ceremony</b>							
09.30-10.30	<b>Invited Talk</b> Visualization Perspectives in Explainable AI <b>Andreas Kerren</b>		09.30-10.30	<b>Invited Talk</b> Security, reliability and trust in cloud digital service chains – GUARD platform <b>Joanna Kolodziej</b>		09.00-10.30	<b>ENV-1</b> Workshop	<b>IWoCPS-1</b> Workshop
10.30-12.00	<b>CSCS-A1</b> Main track	<b>DS-CSCL-1</b> Workshop	10.30-12.00	<b>CSCS-A3</b> Main track	<b>IAFA-1</b> Workshop	10.30-12.00	<b>ENV-2</b> Workshop	<b>IWoCPS-2</b> Workshop
12.00-13.30	<b>CSCS-C1</b> Main track	<b>DS-CSCL-2</b> Workshop	12.00-13.30	<b>CSCS-C3</b> Main track	<b>IAFA-2</b> Workshop	12.00-13.30	<b>SSeCC</b> Workshop	<b>IWoCPS-3</b> Workshop
13.30-14.00	<b>Break</b>		13.30-14.00	<b>Break</b>		13.30-14.00	<b>Break</b>	
14.00-15.00	<b>Invited Talk</b> Digital Manufacturing on a Shoestring: Co creating low-cost Digital Solutions with SMEs <b>Duncan McFarlane</b>		14.00-15.00	<b>Invited Talk</b> Predictive control for congestion management and decision-making on meshed electrical grids with high power batteries <b>Sorin Olaru</b>		14.00-15.00	<b>CSCS-A4</b> Main track	<b>CSCS-C4</b> Main track
15.00-16.30	<b>CSCS-A2</b> Main track	<b>MEDEA-1</b> Workshop	15.00-16.30	<b>CSE-Edu-1</b> Workshop	<b>IAFA-3</b> Workshop	15.00-16.00	<b>CSCS-C5</b> Main track	<b>ACSG</b> Workshop
16.30-18.00	<b>CSCS-C2</b> Main track	<b>MEDEA-2</b> Workshop	16.30-18.00	<b>CSE-Edu-2</b> Workshop	<b>IAFA-4</b> Workshop	16.00-17.00	<b>Round Table and Closing Ceremony</b>	