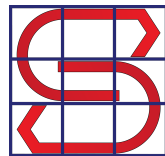


**CSCS22**  
**22<sup>nd</sup> INTERNATIONAL CONFERENCE ON**  
**CONTROL SYSTEMS AND COMPUTER SCIENCE**

**May 28-30, 2019**  
**University POLITEHNICA of Bucharest**  
**Romania**

**PROGRAMME**



# 22<sup>nd</sup> INTERNATIONAL CONFERENCE ON CONTROL SYSTEMS AND COMPUTER SCIENCE

## WELCOME

We are honored and delighted, on behalf of the CSCS22-2019 Organizing Committee, to welcome you to the 22<sup>nd</sup> International Conference on Control Systems and Computer Science, which takes place in Bucharest, on the University Politehnica of Bucharest campus, Romania, from May 28 to May 30, 2019. The CSCS22 conference continues a tradition of more than 42 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 2019 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 2019 edition of CSCS22 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 and CSCS21-2017) were indexed by ISI Web of Science database and by IEEE Xplore, thus offering increased visibility and access to the research contributions.

Main sponsors of our conference are: The Romanian Society of Control Engineering and Technical Informatics (SRAIT) and the Faculty of Automatic Control and Computers (A&C) of University Politehnica of Bucharest. 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, the Romanian Association for Artificial Intelligence (ARIA), and ASTI Automation Company.

This edition of CSCS received over 250 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 122 papers (53 for the conference and 69 for the workshops, having about 48% acceptance ratio) 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, Multi-Agent Systems, Systems and Signals, Cyber Physical Systems, Distributed Computing, Network Control Systems, Hybrid Control Systems, 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 9<sup>th</sup> International Workshop on Interdisciplinary Approaches in Fractal Analysis (IAFA-2019)* 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 6<sup>th</sup> International Workshop on Cyber Physical Systems (IWoCPS-2019)* 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.

*Robots, Artificial Intelligence and Robotic Cloud/Edge Platforms (RoboEdge-2019)* is organized in the context of ROBIN project - "Robots and Society: Cognitive Systems for Personal Robots and Autonomous Vehicles" (NR 72PCCDI / 2018, project code PN-III-P1-1.2-PCCDI-2017-0734) funded by UEFISCDI (Contract No. 33PCCDI / 2018), a user-centered project designing systems and services for the use of robots in an interconnected digital society and enables companies to develop complex, intelligent and performing products and services for users and society as a whole. The papers selected for this workshop combine advanced techniques and technologies of artificial intelligence, human-robot interaction, interaction with a pervasive environment, Cloud architectures and processing, Cloud-Edge architectures and Cloud-Robotics.

*International Workshop on Design and Spontaneity in Computer-Supported Collaborative Learning (DS-CSCL-2019)* 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-2019)* 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-2019)*. 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. The workshop is organized in the context of SPERO project – "Space technologies used in the management of disasters and major crises, manifested at local, national and regional levels" funded by the Minister of Research and Innovation, UEFISCDI, project reference: PN-III-P2-2.1-SOL-2016-03-0046 (3Sol/2017). The workshop is organized in collaboration with National Institute for Research and Development in Informatics (ICI), Bucharest.

*Monitoring and EviDEnce-based protocols, applications and platforms for active living and Aging (MEDEA-2019)*. 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-2019)* 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. The workshop is organized in the context of 50<sup>th</sup> anniversary of Computer Science Department – UPB (<https://50.cs.pub.ro>).

*Environment Control Systems (ENV-2019)*. The purpose of this workshop is 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.

*New Trends in Energy, Computer Communications, and Image Retrieval (ECI-2019)* is aimed to serve as an international forum for effective exchange of scientific knowledge and experience among researchers active in various theoretical and applied areas of electronic, communication, automatic control, energy, information technology and computer science. The workshop is organized by the College of Petroleum and Minerals Engineering was established at Tikrit University.

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 Lorretta Palagi and Randall Bilof (IEEE CPS Production Editor) for the editorial assistance and excellent cooperative collaboration to produce this valuable scientific work. 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 have a great time in Bucharest and in Romania.

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#### **Conference website**

<http://cscs22.hpc.pub.ro>

## CSCS22 SESSIONS

- **A1 - Advanced Control Strategies**  
Session Chair: *Dumitru Popescu* (University Politehnica of Bucharest, Romania)
- **A2 - Control Applications: Power Systems, Manufacturing, Agriculture**  
Session Chair: *Ioan Dumitrache* (University Politehnica of Bucharest, Romania)
- **A3 - Adaptive and Non-Linear Control**  
Session Chair: *Ciprian Lupu* (University Politehnica of Bucharest, Romania)
- **A4 - Systems and Signals (I)**  
Session Chair: *Octavian Păstrăvanu* (Gheorghe Asachi Technical University of Iași, Romania)
- **A5 - Systems and Signals (II)**  
Session Chair: *Dan Ștefănoiu* (University Politehnica of Bucharest, Romania)
- **C1 - Distributed Computing**  
Session Chair: *Radu-Ioan Ciobanu* (University Politehnica of Bucharest, Romania)
- **C2 - Cloud and Grid Computing**  
Session Chair: *Emil-Ioan Slușanschi* (University Politehnica of Bucharest, Romania)
- **C3 - Big Data and Analytics**  
Session Chair: *Nirvana Popescu* (University Politehnica of Bucharest, Romania)
- **C4 - Computer Vision and Computer Graphics**  
Session Chair: *Irina Mocanu* (University Politehnica of Bucharest, Romania)
- **C5 - Advanced Computation Techniques**  
Session Chair: *Adina Magda Florea* (University Politehnica of Bucharest, Romania)
- **C6 - System Engineering and Theory**  
Session Chair: *Mariana Mocanu* (University Politehnica of Bucharest, Romania)
- **C7 – Security (I)**  
Session Chair: *Nirvana Popescu* (University Politehnica of Bucharest, Romania)
- **C8 – Security (II)**  
Session Chair: *Nicolae Țăpuș* (University Politehnica of Bucharest, Romania)

## WORKSHOPS

### The 9<sup>th</sup> International Workshop on Interdisciplinary Approaches in Fractal Analysis – IAFA-2019 (<http://iafa2019.aii.pub.ro>)

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

- **IAFA-1: Fractal Approaches in Medicine**  
Workshop Chair: *Nebojša T. Milošević* (University of Belgrade, Serbia)
- **IAFA-2: Video Techniques in Industrial Applications**  
Workshop Chair: *Nicoleta Angelescu* (Valahia University of Târgoviște, Romania)
- **IAFA-3: Complex Networks**  
Workshop Chair: *Ștefan Mocanu* (University Politehnica of Bucharest, Romania)
- **IAFA-4: Fractals and Complexity - Miscellanea**  
Workshop Chair: *Radu Dobrescu* (University Politehnica of Bucharest, Romania)

### The 8<sup>th</sup> International Workshop on Cyber Physical Systems – IWOCPS-2019 (<http://iwocps.cpru.pub.ro>)

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



**International Workshop on Robots, Artificial Intelligence, and Digital Society in Cloud/Edge Platforms – RoboEdge 2019** (<https://roboedge.hpc.pub.ro>)

Workshop organizers:

*Adina Magda Florea* (University Politehnica of Bucharest, Romania)  
*Liviu Miclea* (Technical University of Cluj-Napoca, Romania)  
*Florin Pop* (University Politehnica of Bucharest, Romania)

**The 4<sup>th</sup> International Workshop on Design and Spontaneity in Computer-Supported Collaborative Learning – DS-CSCL-2019** (<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-2019**  
(<http://shiva.pub.ro/acsg2019>)

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-2019** (<http://ssecc.hpc.pub.ro>)

Workshop organizers:

*Adriana Alexandru* (ICI Bucharest, Romania)  
*Gabriel Neagu* (ICI Bucharest, Romania)  
*Cătălin Negru* (University Politehnica of Bucharest, Romania)  
*Florin Pop* (University Politehnica of Bucharest, Romania)

**International Workshop on Monitoring and Evidence-based Protocols, Applications and Platforms for Active Living and Aging - MEDEA-2019** (<http://medea.ici.ro>)

Workshop organizers:

*Lidia Băjenaru* (ICI Bucharest, Romania)  
*Ciprian Dobre* (ICI Bucharest, Romania)

**International Workshop on Trends in Computer Science and Engineering Education - CSE-Edu-2019** (<http://cse-edu.hpc.pub.ro>)

Workshop organizer:

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

**International Workshop on Environment Control Systems – ENV-2019**

Workshop organizers:

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

## **International workshop on New Trends in Energy, Computer Communications, and Image Retrieval - ECI-2019**

Workshop organizers:

*Muzher M. Ibrahem* (College of Petroleum and Minerals Engineering, Tikrit, Iraq)

*Zeyad H. Saleh* (College of Petroleum and Minerals Engineering, Tikrit, Iraq)

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CSCS22 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

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

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[cscs22@easychair.org](mailto:cscs22@easychair.org)

## CSCS22 TIMETABLE

### **Tuesday, May 28, 2019**

09.00 – 17.30	Registration
09.00 – 09.30	Opening Ceremony (PR001)
09.30 – 10.30	Invited Talk (Plenary Session, PR001)
10.30 – 11.00	Coffee break
11.00 – 12.30	Parallel sessions
12.30 – 14.00	Lunch
14.00 – 15.30	Parallel sessions
15.30 – 16.00	Coffee break
16.00 – 17.30	Parallel sessions
19.00 – 21.00	Cocktail

### **Wednesday, May 29, 2019**

09.30 – 17.30	Registration
09.30 – 10.30	Invited Talk (Plenary Session, PR001)
10.30 – 11.00	Coffee break
11.00 – 12.30	Parallel sessions
12.30 – 14.00	Lunch
14.00 – 15.30	Parallel sessions
15.30 – 16.00	Coffee break
16.00 – 17.30	Parallel sessions
19.00 – 21.00	Conference Dinner

### **Thursday, May 30, 2019**

09.00 – 13.00	Registration
09.00 – 10.30	Parallel sessions
10.30 – 11.00	Coffee break
11.00 – 12.30	Parallel sessions
12.30 – 14.00	Lunch
14.00 – 16.00	Parallel sessions
16.00 – 16.30	Coffee break
16.30 – 18.00	Round Table and Closing Ceremony, PR001

## Tuesday, May 28, 2019

### Invited Talk (Plenary Session, PR001), 09.30-10.30

Prof. Olivier STASSE, senior CNRS researcher at LAAS, Toulouse in Gepetto group

### CSCS22-C1: Distributed Computing

Room 1, Date: 28 May 2019, 11.00-12.30

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

Acceleration Techniques for Fully-Homomorphic Encryption Schemes

*Cristian Lupascu, Mihai Togan, and Victor-Valeriu Patriciu*

Data Gathering Optimization in Wireless Sensor Networks Using Unmanned Aerial Vehicles

*Valentin-Alexandru Vladuta, Ioana Matei, and Ion Bica*

Parameters Weighting in Elderly Monitoring Based on Multi-criteria Methods

*Ciprian Dobre, Constanta Zoie Rădulescu, and Lidia Băjenaru*

Hardware and Software Architecture for Accelerating Hash Functions Based on SoC

*Ovidiu Panait, Luminita Dumitriu, and Ioan Susnea*

### CSCS22-A1: Advanced Control Strategies

Room 2, Date: 28 May 2019, 11.00-12.30

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

Nonlinear Identification and Controller Design for the Air Levitation System

*Marc-Simon Schaefer, Daniela Escobar, and Hubert Roth*

Min-Max Coalitional Model Predictive Control Algorithm

*Anca Maxim, José M. Maestre, and Constantin F. Caruntu*

Passivity-Based Controller for Nonideal DC-to-DC Boost Converter

*Vlad Mihaly, Mircea Șușcă, and Petru Dobra*

Development of an Approach to a Biologically Inspired Self-Organizing Control Structure

*Loránd Székely, Éva-Henrietta Dulf, and Levente Kovacs*

Optimal Control for Diesel Engine Combustion Regime

*Mihaela-Ancuta Mone, Sette Diop, and Dumitru Popescu*

### IAFA 1: Fractal Approaches in Medicine

Room 3, Date: 28 May 2019, 11.00-12.30

Workshop Chair: Nebojša T. Milošević (University of Belgrade, Serbia)

Proprioception and Postural Stability of the Young Adult Human: Multifractal Analysis

*Nebojsa Milosevic, Herbert Jelinek, Nemanja Rajkovic and Luke Donnan*

The Binary Images of Aspiny Neurons from the Human Neostriatum: Cluster Classification using Parameters of Monofractal Analysis

*Nebojsa Milosevic, Velicko Vranes and Damjan Stojic*

Experimental Measurement of Pain Stimulus Effects in Skin Impedance

*Maria Ghita, Mihaela Ghita, Dana Copot, Martine Neckebroek and Clara Mihaela Ionescu*

Fractal Matrix and Morphological Analysis of Retinal Vascular Regions

*Irina Tache, Dumitru Popescu and Ruxandra Codreanu*

The Effect of Mechanical Forces on the Morphology of a Lung Epithelial Cell Line  
*Tanbir Najrana, Juan Sanchez-Esteban and Rasha Abu Eid*

### **ACSG-2019 (I)**

**Room 4, Date: 28 May 2019, 11.00-12.30**

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

Demand Dispatch for the Distribution Grid – A Proposal for the Romanian Power System  
*Nicoleta Arghira, Ioana Făgărașan, Cristina Nichiforov, Sergiu Stelian Iliescu, Iulia Stamatescu, Vasile Calofir, and Nicoleta Daniela Ignat*

Assessment of Hydropower Plants Energy Production Cost Influenced by Operational Decisions and Control Strategy  
*Ionuț Bogdan Stoenescu, Sorina Costinaș, and Gheorghe Marius Deaconu*

Modern Reactive Power Compensation for Smart Electrical Grids  
*Doina Ilisiu and Elena-Daniela Dinu*

Volt/VAr Control Application for Grid Connected Photovoltaic Systems  
*Mihai Andrei Ionescu*

### **CSCS22-C2: Cloud and Grid Computing**

**Room 1, Date: 28 May 2019, 14.00-15.30**

Session Chair: *Emil-Ioan Slușanschi* (University Politehnica of Bucharest, Romania)

An Analysis of Service Level Agreement Parameters and Scheduling in Multi-tenant Cloud Systems  
*George Iordache*

Security-Oriented Framework for Internet of Things Smart-Home Applications  
*Bogdan-Cosmin Chifor, Stefan-Ciprian Arseni, Ioana Matei, and Ion Bica*

IoT-Based Healthcare Remote Monitoring Platform for Elderly with Fog and Cloud Computing  
*Adriana Alexandru, Dora Coardos, and Eleonora Tudora*

COSMOS — Framework for Combining Optimization and Simulation Software  
*Cosmin-Gabriel Samoilă and Emil-Ioan Slușanschi*

### **CSCS22-A2: Control Applications: Power Systems, Manufacturing, Agriculture**

**Room 2, Date: 28 May 2019, 14.00-15.30**

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

Control System Design for Unicycle Robots Using Genetic Algorithms with Pareto Immunization  
*Ionuț Banu and Monica Pătrașcu*

A PI Controller Based on State-Feedback Algorithm for an X-Y Positioning System  
*Dora Sabau and Petru Dobra*

Cyber Security of Smart Grids in the Context of Big Data and Machine Learning  
*Delia Ioana Dogaru and Ioan Dumitrache*

Optimal Control for Buck Converters  
*Andrei-Alexandru and Mirela Dobra*

## **IAFA 2: Video Techniques in Industrial Applications**

**Room 3, Date: 28 May 2019, 14.00-15.30**

Workshop Chair: *Nicoleta Angelescu* (Valahia University of Târgoviște, Romania)

Multi-camera Video Surveillance

*Al. Costache, D. Popescu, C. Popa and St. Mocanu*

Simulation Based of Comparative Study of Routing Protocols for Real Time Applications

*Nastase Andrei, Predusca Gabriel, Puchianu Dan, Circiumarescu Denisa and Angelescu Nicoleta*

Leveraging Industrial Communication in Technical Training Systems

*Viorel Mihai, Cristian Dragana, Razvan Luchian, Dan Popescu*

Image Based Fault Detection Algorithm for Flexible Industrial Assembly Line

*Jan-Iliuță-Romeo Cojocar, Loretta Ichim and Dan Popescu*

## **Special Session: IEEE YPMeeting - Trends in Systems and Control**

**Room 4, Date: 28 May 2019, 14.00-15.30**

Session Chairs: *Nicoleta Arghira* and *Grigore Stamatescu* (University Politehnica of Bucharest, Romania)

Trends in Systems and Control

*Ioan Dumitrache* **11.30-13.00**

Smart Grids Digitalization

*Nicoleta Arghira*

## **CSCS22-C3: Big Data and Analytics**

**Room 1, Date: 28 May 2019, 16.00-17.30**

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

Anomaly Detection for Time Series Infrastructure Metric Data

*Ștefan-Lucian Bucur and Florica Moldoveanu*

Noise Removal from ECG Signal Based on Filtering Techniques

*Mohammed Tali Almalchy, Vlad Ciobanu, and Nirvana Popescu*

A Study on Data Accuracy for IoT Measurements of PMs Concentration

*Mihaela Bălănescu, Iulia Oprea, George Suci, Marius-Alexandru, Cristina Bălăceanu, Radu-Ioan Ciobanu, and Ciprian Dobre*

Systems Monitoring and Big Data Analysis Using the Elasticsearch System

*Vlad-Andrei Zamfir, Mihai Carabas, Costin Carabas, and Nicolae Țăpuș*

Faster and Scalable Parallel Processing Solution to Remove Visual Obstacles from Satellite Imagery **11.30-13.00**

*Andra-Teodora Ilie, Ion-Dorinel Filip, Andrei Vlad Postoacă, Cătălin Negru, and Florin Pop*

## **CSCS22-A3: Adaptive and Non-Linear Control**

**Room 2, Date: 28 May 2019, 16.00-17.30**

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

Design and Simulation Implementation for Adaptive Cruise Control Systems of Vehicles

*Duc Lich Luu, Ciprian Lupu, and Thien Van Nguyen*

Size Adaptation of Separable Dictionary Learning with Information-Theoretic Criteria  
*Andra Băltoiu and Bogdan Dumitrescu*

Dynamics Model and Design for Adaptive Cruise Control Vehicles  
*Duc Lich Luu and Ciprian Lupu*

### **ECI-2019**

**Room 3, Date: 28 May 2019, 16.00-17.30**

Session Chair: *Ziyad Hussien Salih* (Tikrit University, Iraq)

Study the Effect of Integrating the Solar Energy Source on Stability of Electrical Distribution System

*Ziyad Hussien Salih, Ghanim Thiab Hasan, Mostafa Abdulghafoor Mohammed, Marwan Ali Shnan Klib, Ahmed Hussien Ali, and Ruwaida A. Ibrahim*

Comparative Analysis between Solar and Wind Turbine Energy Sources in IoT Based on Economical and Efficiency Considerations

*Nada Qasim Mohammed, Mohammed Swish Ahmed, Mostafa Abdulghafoor Mohammed, Omar A. Hammood, Hayder Ali Nema Alshara, and Aya Ahkam Kamil*

Design of Flexible Planar Antennas Using Substrate Gap Structure for Surface Wave Reduction

*Bashar Qas Elias, Mohammad Alsajri, Ping Jack Soh, and Azremi Abdullah Al-hadi*

Impact of Light Pulses Generator in Communication System Application by Utilizing Gaussian Optical Pulse

*Hussam Dheaa Kamel Al-janabi, Haider Dheyaa Kamil Al-janabi, and Raed Abdulkareem Hasan Al-Bukamrh*

Broadband Services on Power Line Communication Systems: A Review

*Salih Hassan Mahmood, Abdulkreem Mohammed Salih, and Muhammed Ismail Khalil*

### **ACSG-2019 (II)**

**Room 4, Date: 28 May 2019, 16.00-17.30**

Workshop Chair: *Ioana Făgărășan* (University Politehnica of Bucharest, Romania)

The Influence of Digital Communications in Protection Schemes

*Anamaria Iamandi, Nicoleta Arghira, Iulia Cristina Constantin, and Sergiu Stelian Iliescu*

Simulator for Automation and Control Systems in a Power System

*Vasile Calofir, Ioana Fagarasan, Nicoleta Arghira, Mircea Stefan Simoiu, Grigore Stamatescu, Cristina Nichiforov, and Sergiu Stelian Iliescu*

Microgrid System for a Residential Ensemble

*Mihaela Vasluianu, Oana Carmen Niculescu Faida, Ramona-Oana Flangea, Neculoiu Giorgian, and Mariana Marinescu*

**Wednesday, May 29, 2019**

**Invited Talk (Plenary Session, PR001), 09.30-10.30**

**Prof. Yves DEMAZEAU**, CNRS Research Fellow, Laboratoire d'Informatique de Grenoble

**CSCS22-C4: Computer Vision and Computer Graphics**

**Room 1, Date: 29 May 2019, 11.00-12.30**

Session Chair: *Florica Moldoveanu* (University Politehnica of Bucharest, Romania)

An Intelligent Personalized Fashion Recommendation System **11.30-13.00**

*Cristiana Stan and Irina Mocanu*

Combining Neural Networks and Global Gabor Features in a Hybrid Face Recognition System

*Catalin-Mircea Dumitrescu and Ioan Dumitrache*

Experimental Analysis of Visual Cortex Activity — An EEG Study

*Florina Ungureanu, Robert Gabriel Lupu, and Andrei Rasvan Romila*

Interactive Visual Modeling with Applications in Jewelry Design

*Roxana Draganoiu, George Anescu, Florica Moldoveanu, and Alin Moldoveanu*

Real-Time Segmentation of Depth Map Frames on Mobile Devices

*Florica Moldoveanu, Andrei Ciobanu, Anca Morar, Alin Moldoveanu, and Victor Asavei*

**CSCS22-A4: Systems and Signals (I)**

**Room 2, Date: 29 May 2019, 11.00-12.30**

Session Chair: *Octavian Păstrăvanu* (Gheorghe Asachi Technical University of Iași, Romania)

Honeypot Inside an OPC UA Wrapper for Water Pumping Stations

*Cerasela-Alexandra Petre and Adrian Korodi*

Customizing Pareto Simulated Annealing for Multi-objective Optimization of Control Cabinet Layout

*Sabri Pllana, Suejb Memeti, and Joanna Kolodziej*

Detecting Vital Signs Using Inertial Measurement Unit Sensors in Military Applications

*Alexandru Cismas, Eduard Cismas, and Decebal Popescu*

Equivalence between Two Results Providing Polyhedral Contractive Sets for Discrete-Time Linear Systems with Arbitrary Switching

*Mihaela-Hanako Matcovschi and Octavian Păstrăvanu*

**IAFA-3: Complex Networks**

**Room 3, Date: 29 May 2019, 11.00-12.30**

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

DEW: A New Edge Computing Component for Distributed Dynamic Networks

*Giorgiana Cristescu, Radu Dobrescu, Oana Chenaru and Gheorghe Florea*

Towards the Development of Autonomous Wheelchair

*Mihai Craciunescu, Diana Baicu, Maria Circiumaru, Ștefan Mocanu and Radu Dobrescu*

Risk Analysis and Control

*Andrei Lacatusu, Ana Maria Chiriac and Ștefan Mocanu*



Distributed Concurrent Actor Models with Akka.NET and CAF  
*Alexandru Mihai Vulcan and Maximilian Nicolae*

Modeling Crowd Dynamics in a Multi-Agent Based Evacuation Simulation System  
*Adrian-Costin Tundrea*

### **CSCS22-C5: Advanced Computation Techniques**

**Room 1, Date: 29 May 2019, 14.00-15.30**

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

Towards Enabling Context-as-a-Service for Social Assistive Robotics  
*Alexandru Sorici, Andrei Olaru, Stelian Flonta, Enyedi Szilard, and Adina Magda Florea*

Kangaroo Mob Heuristic for Optimizing Features Selection in Learning the Daily Living Activities of People with Alzheimer's  
*Dorin Moldovan, Ionut Anghel, Tudor Cioara, Ioan Salomie, Viorica Chifu, and Cristina Pop*

Patient Flow Control Using Multi-Agent Systems  
*Cosmin Gabriel Toader, Nirvana Popescu, Ioana Alina Teodorescu, Alin Daniel Toader, and Ștefan Busnatu*

A Flexible and Lightweight Agent Deployment Architecture  
*Andrei Olaru, Alexandru Sorici, and Adina Magda Florea*

### **CSCS22-A5: Systems and Signals (II)**

**Room 2, Date: 29 May 2019, 14.00-15.30**

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

Robust Control of Benzene Distillation Column  
*Cristian Patrascioiu and Marian Popescu*

Simulating Acoustics of a Room Using MATLAB  
*Radu-Andrei Cioacă and Dan Ștefănoiu*

Analytical Algorithms for Synthesis of PID Controllers to the Complex Objects  
*Ion Fiodorov, Irina Cojuhari, Bartolomeu Izvoreanu, and Dumitru Moraru*

Sensor Fusion for Autonomous Drone Waypoint Navigation Using ROS and Numerical P Systems: A Critical Analysis of Its Advantages and Limitations  
*Andrei George Florea and Cătălin Buiu*

### **IAFA-4: Fractals and Complexity - Miscellanea**

**Room 3, Date: 29 May 2019, 14.00-15.30**

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

Universal Resource Management and Logistics using Blockchain Technology  
*Manuel Manolache and Nicolae Tapus*

Fractal Analysis on the Football Pitch  
*Levente Simon and Anna Soós*

Dedicated Algorithms for Risk Minimization in Suspect Financial Transactions  
*Cornel Ion Șerban, Stefan Mocanu, Daniela Saru and Cosmin Popa*

Fractal Techniques in Health Information Systems Management

*Poenaru Cristina-Elena and Dobrescu Radu*

Considerations about miRNA and Diseases Networks

*Radu Angelescu and Stefan Popa*

### **IWoCPS-2019**

**Room 1, Date: 29 May 2019, 16.00-17.30**

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

A Cyber-Physical Systems Oriented Platform Using Web Services

*Eugen Pop and Daniela Gîfu*

Mobile Robots Applied on Virtual and Real Environments

*Luige Vladareanu, Victor Vladareanu, Octavian Melinte, Mihai Radulescu, Marius Pandealea, and Alexandra Catalina Ciocîrlan*

A Cyber-Physical Approach in Heterogeneous Communication Networks

*Mihnea Alexandru Moisescu, Ioan Ştefan Sacală, Ioan Dumitrache, Simona Iuliana Caramihai, Nicolae Constantin, Bogdan Bărbulescu, and Marius Danciuc*

Services Integration for Cyber Physical Systems

*Eugen Pop, Ioan Ştefan Sacală, Simona Iuliana Caramihai, Mihnea Alexandru Moisescu, and Dragoş Repta*

Neuro-Fuzzy Traffic Signal Control in Urban Traffic Junction

*Andrei Nae and Ioan Dumitrache*

### **MEDEA-2019**

**Room 2, Date: 29 May 2019, 16.00-17.30**

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

Improving the Quality of Life for Older People: From Smart Sensors to Distributed Platforms

*Ciprian Dobre, Lidia Bajenaru, Ion Alexandru Marinescu, and Mihaela Tomescu*

Enhanced Framework for an Elderly-Centred Platform: Big Data in Monitoring the Health Status

*Ovidiu-Lucian Bajenaru and Adrian-Mihai Custura*

Latent Profile Analysis in Health Research: A Case Study

*Marilena Ianculescu, Alexandru Balog, Irina Cristescu, Dragoş-Daniel Iordache, and Lidia Băjenaru*

IoHT and Edge Computing, Warrants of Optimal Responsiveness of Monitoring Applications for Seniors. A Case Study

*Marilena Ianculescu, Adriana Alexandru, Nicolae-Dragoş Nicolau, Gabriel Neagu, and Ovidiu Bica*

Health Monitoring Management Solution Centred on the Cloud of Things Service Integrator

*Gabriel Neagu, Vladimir Florian, and Mădălina Zamfir*

### **ENV-2019**

**Room 3, Date: 29 May 2019, 16.00-17.30**

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

Information-Modeling Instrumental System for the Water Resource Diagnostics

*Costică Nitu, Alexandru Dumitrașcu, Vladimir F. Krapivin, Ferdenant A. Mkrtchyan, and Vladimir Yu. Soldatov*

Algorithm for Decision Making and Big Data Processing

*Costică Nitu, Anda Sabena Dobrescu, Vladimir F. Krapivin, and Vladimir Yu. Soldatov*

Designing Distributed, Scalable and Extensible System Using Reactive Architectures

*Vasile M. Tovarnițchi*

Intelligent Measuring System Using Network Wireless Sensors for Structural Diagnostics

*Eusebiu Pruteanu and Petru Gabriel*

Intelligent Wireless Sensor Network Applications in Cloud Era

*Vasile M. Tovarnițchi*

**Thursday, May 30, 2019**

**CSCS22-C6: System Engineering and Theory**

**Room 1, Date: 30 May 2019, 09.00-10.30**

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

Collecting and Processing a Self-Driving Dataset in the UPB Campus

*Andrei Nica, Mihai Trascău, Alexandru Andrei Rotaru, Constantin Andreescu, Alexandru Sorici, Adina Magda Florea, and Vlad Bacue*

Enhancing Bayes' Probabilistic Decision Support with a Fuzzy Approach

*Panagiotis Christias and Mariana Mocanu*

Using Non-Functional Requirements to Identify Cross-Cutting Concerns

*Călin Eugen Nicolae Gal-Chis and Bazil Pârv*

**SSeCC-2019**

**Room 2, Date: 30 May 2019, 09.00-10.30**

Workshop Chairs: *Adriana Alexandru* and *Gabriel Neagu* (ICI Bucharest, Roma), *Cătălin Negru* and *Florin Pop* (University Politehnica of Bucharest, Romania)

Shaping the Digital Citizen into a Smart Citizen on the Basis of IoT Capabilities

*Adriana Alexandru, Marilena Ianculescu, Ion Alexandru Marinescu, and Theodor Dan Popescu*

Pedestrian Congestion Monitoring Platform

*Nicoleta-Denisa Bortanoiu, Teodora-Maria Goran, Loredana-Marsilia Groza, and Roxana-Gabriela Stan*

Data Loss Prevention and Data Protection in Cloud Environments Based on Authentication Tokens

*Vlad Bucur, Ovidiu Stan, Liviu C. Miclea*

Apache Spark and Apache Ignite Performance Analysis

*Cristiana-Ştefania Stan, Adrian-Eduard Pandelica, Vlad-Andrei Zamfir, Roxana-Gabriela Stan, and Cătălin Negru*

**DS-CSCL-2019 (I)**

**Room 3, Date: 30 May 2019, 09.00-10.30**

Workshop Chairs: *Răzvan Rughiniş, Ştefan Trăuşan-Matu,* and *Mihai Dascălu* (University Politehnica of Bucharest, Romania)

Advanced Customer Activity Prediction Based on Deep Hierarchic Encoder-Decoders

*Andrei Damian, Laurentiu Piciu, Sergiu Turlea, and Nicolae Țăpuş*

Analysis of Trends in Online Romanian News Using Semantic Models

*Andrei Simion, Mihai Dascălu, and Ştefan Trăuşan-Matu*

Towards a Deep Speech Model for Romanian Language

*Marilena Panaite, Ştefan Ruseti, Mihai Dascalu, and Ştefan Trăuşan-Matu*

PIAM — Intelligent Platform for Retrieving Relevant Information on Drugs Marketed in Romania

*Orlando-Georgian Ene, Maria-Dorinela Sirbu, Mihai Dascalu, Stefan Trausan-Matu, and Alexandru Costin Nuta*

## **CSCS22-C7: Security (I)**

**Room 1, Date: 30 May 2019, 11.00-12.30**

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

Control Flow Integrity Based on Controlled Channel

*Radu-Alexandru Mantu, Dan Sporici, and Mihai-Daniel Chiroiu*

Android Control Flow Obfuscation Based on Dynamic Entry Points Modification

*Xueyi Yang, Lingchen Zhang, Cunqing Ma, Zongbin Liu, and Ping Peng*

Password Guessing Using Machine Learning on Wearables

*Alexandru-Ionut Pandealea and Mihai-Daniel Chiroiu*

Security Evaluation of Wordpress Backup Plugins

*Ionuț-Cosmin Cernica, Nirvana Popescu, and Bogdan Țigănoaia*

## **RoboEdge-2019**

**Room 2, Date: 30 May 2019, 11.00-12.30**

Session Chairs: *Adina Magda Florea, Florin Pop* (University Politehnica of Bucharest, Romania), and *Liviu Miclea* (Technical University of Cluj-Napoca, Romania)

Towards a Modular Framework for Human-Robot Interaction and Collaboration

*Alexandru-Florin Gavril, Alexandra Ștefania Ghiță, Alexandru Sorici, and Adina Magda Florea*

Human Action Recognition for Social Robots

*Mihai Nan, Alexandra Ștefania Ghiță, Alexandru-Florin Gavril, Mihai Trascau, Alexandru Sorici, Bogdan Cramariuc, and Adina Magda Florea*

Making Pepper Understand and Respond in Romanian

*Dan Tufiș, Verginica Barbu Mititelu, Elena Irimia, Maria Mitrofan, Radu Ion, and George Cioroiu*

Automatic Mapping of a Room Using LIDAR-Based Measuring Sensor

*Vlad-Ilie Ungureanu, Bianca-Alexandra Truțiu, Ioan Silea, Paul Negîrla, Cristian Zimbru, and Răzvan-Cătălin Miclea*

Adaptive Fractional Order Control Applied to a Multi-rotor System

*Éva-Henrietta Dulf, Daniel D. Timis, Lorand Szekely, and Liviu C. Miclea*

Control a 6DOF Anthropomorphic Robotic Structure with Computer Vision as MEMS Input

*Alexandru Pop and Ovidiu Stan*

## **DS-CSCL-2019 (II)**

**Room 3, Date: 30 May 2019, 11.00-12.30**

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

Sleep Tracking Apps' Design Choices: A Review

*Alexandra Hosszu, Daniel Rosner, and Michael Flaherty*

Sharing and Privacy in Dating Apps

*Maria-Valentina Stoicescu, Ștefania Matei, and Răzvan Rughiniș*

Cyber-Security Profiles of European Users: A Survey

*Raisa-Gabriela Zamfirescu, Cosima Rughiniș, Alexandra Hosszu, and Darie Cristea*

## **CSCS22-C8: Security (II)**

**Room 1, Date: 30 May 2019, 14.00-16.00**

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

Observations over SPROBES Mechanism on the TrustZone Architecture

*Jan-Alexandru Văduva, Ștefan Dascălu, Iulia-Maria Florea, Iulia Culic, and Răzvan Rughiniș*

Detection of Suspicious Connections on Android Mobile Devices

*Dragoș-Florin Costea and Nicolae Țăpuș*

Security Improvements for IoT Data Acquisition Process

*Ștefan-Alexandru Aldoiu and Nicolae Țăpuș*

Energy Considerations Regarding Transport Layer Security in Wireless IoT Devices

*Răzvan Tătăroiu, Florin-Alexandru Stancu, and Dumitru-Cristian Trancă*

## **CSE-Edu-2019**

**Room 2, Date: 30 May 2019, 14.00-16.00**

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

Knowing, Believing and Thinking We Know

*Petre Dimo*

Artificial Intelligence and Education

*Adina Magda Florea and Serban Radu*

Distributed Systems Education: From Traditional Models to New Paths of Learning

*Florin Pop and Valentin Cristea*

Brain-Computer Interface: Challenges and Research Perspectives

*Robert Gabriel Lupu, Florina Ungureanu, and Corina Cimpanu*

Understanding and Addressing Change in Computer Science Education

*Rodica Potolea and Camelia Lemnaru*

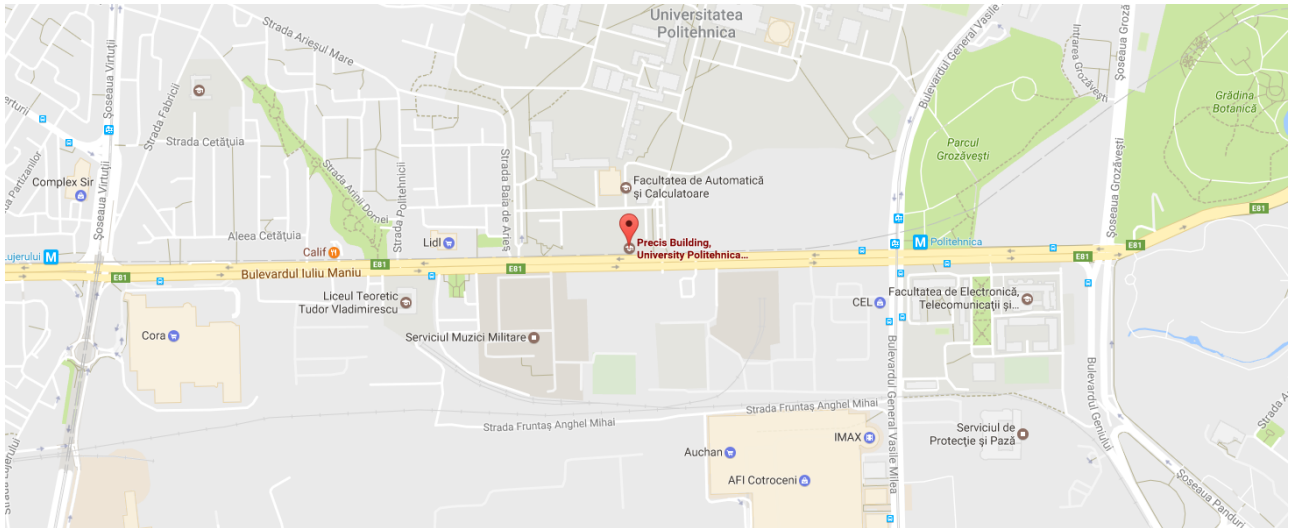
Insights and Perspectives in Computer Science and Engineering Education

*Mariana Mocanu*

# GENERAL INFORMATION

## LOCATION

CSCS22 will be held at the Faculty of Automatic Control and Computers, University *Politehnica* of Bucharest, 313 Spl. Independenței, Bucharest, Romania. The formal Opening Ceremony will be organized in the PR 001 room at the new building of Faculty of Automatic Control and Computers.



## ACCESS TO CONFERENCE SITE

The Conference site can be accessed by the following means of transportation:

By underground - The Conference site is at 5 minutes' walk from  
"Politehnica" underground station

By bus- Nos. 136, 336 (UPB Stop)

By trolley bus - Nos. 61, 62 (UPB Stop)

## CAR PARKING

There are ample parking facilities in the immediate vicinity of the Conference site, in the university campus.

## MAIL

Correspondence in connection to the CSCS22 Conference should be addressed as it follows:

CSCS22 - SRAIT  
University "POLITEHNICA" of Bucharest  
Faculty of Automatic Control and Computers  
313 Spl. Independenței, Sector 6  
77206 Bucharest, Romania  
Phone: +(40) 21 402 91 67  
Fax: +(40) 21 402 95 87

## CONFERENCE LITERATURE

The conference bag, containing all accepted papers, will be distributed to all registered participants.

## WORKING LANGUAGE

The working language of CSCS22 is English and will be used for presentations and discussions.

## NAME BADGE

An admission badge bearing the participant's name will be issued to all registered participants, thus authorizing access to all Conference sessions.

## COCKTAIL PARTY

A Cocktail Party will be held on Tuesday, May 28, 2019 from 19:00 hours at *Casa Oamenilor de Știință* Restaurant (<http://www.cos-restaurant-bucuresti.ro>).

The cost of attendance is covered by the registration fee.

## REFRESHMENTS

Refreshments will be available at the Conference site daily.

## LUNCHES

Self-lunches will be available in the Faculty of Automatic Control and Computers. The price for a lunch varies between 3 Euros and 6 Euros.

## CONFERENCE DINNER

The Conference Dinner will be held on Wednesday, May 29, 2019 from 19:00 hours. The cost of attendance is not covered by the registration fee. All information will be available at registration desk.

## REGISTRATION AND INFORMATION DESK

The CSCS22 Registration Desk will be open at the Conference site at the new building of Faculty of Automatic Control and Computers, starting from May 28<sup>th</sup>, 2019, 09:00 hrs.

Registration fee for CSCS22-2019 is 300 Euro and includes participation, Conference proceedings and memory stick, coffee breaks, and cocktail party. The fee for PhD students is 150 Euro (a scanned proof will be needed).

NOTE: At the CSCS22 Conference are not accepted more than 2 papers with the same single/first author. For the second paper, the registration fee is 150 Euro.

## CLIMATE

The weather in Bucharest is warm in May. Temperatures between 20°C to 30°C are to be expected.

## INSURANCE

The organizers cannot be held liable for accidents to participants or for damage to or loss their personal property, howsoever caused. Participants are advised to make their own insurance arrangements.





## International Conference on Control Systems and Computer Science - CSCS22 May 28-30, 2019

Tuesday May 28, 2019					Wednesday May 29, 2019					Thursday May 30, 2019			
09.00-17.30	<b>Registration</b>				09.30-17.30	<b>Registration</b>				09.00-13.00	<b>Registration</b>		
09.00-09.30	<b>Opening Ceremony (PR001)</b>									09.00-10.30	C6 (Room 1)	SSeCC (Room 2)	DS-CSCL 1 (Room 3)
09.30-10.30	<b>Invited Talk (Plenary Session, PR001) Prof. Olivier STASSE</b>				09.30-10.30	<b>Invited Talk (Plenary Session, PR001) Prof. Yves DEMAZEAU</b>							
10.30-11.00	<b>Coffee break</b>				10.30-11.00	<b>Coffee break</b>				10.30-11.00	<b>Coffee break</b>		
11.00-12.30	C1 (Room 1)	A1 (Room 2)	IAFA-1 (Room 3)	ACSG 1 (Room 4)	11.00-12.30	C4 (Room 1)	A4 (Room 2)	IAFA-3 (Room 3)	11.00-12.30	C7 (Room 1)	RoboEdge (Room 2)	DS-CSCL 2 (Room 3)	
12.30-14.00	<b>Lunch</b>				12.30-14.00	<b>Lunch</b>				12.30-14.00	<b>Lunch</b>		
14.00-15.30	C2 (Room 1)	A2 (Room 2)	IAFA-2 (Room 3)	IEEE YP (Room 4)	14.00-15.30	C5 (Room 1)	A5 (Room 2)	IAFA-4 (Room 3)	14.00-16.00	CSE-Edu (Room 1)	C8 (Room 2)		
15.30-16.00	<b>Coffee break</b>				15.30-16.00	<b>Coffee break</b>				16.00-16.30	<b>Coffee break</b>		
16.00-17.30	C3 (Room 1)	A3 (Room 2)	ECI (Room 3)	ACSG 2 (Room 4)	16.00-17.30	IWoCPS (Room 1)	MEDEA (Room 2)	ENV (Room 3)	16.30-18.00	<b>Round Table and Closing Ceremony (PR001)</b>			
19.00-21.00	Cocktail				19.00-21.00	Conference Dinner							