

**The 15<sup>th</sup> International Conference on  
Development and Application Systems  
DAS 2020**

**May 21-23, 2020  
Suceava - Romania**

**[www.dasconference.ro](http://www.dasconference.ro)**

# **Conference Program**

Organized by

**Stefan cel Mare University of Suceava  
Faculty of Electrical Engineering  
and Computer Science**

With technical sponsorship from

**IEEE Industry Applications Society  
IEEE Conference Record #49615**



The 15<sup>th</sup> International Conference on **Development and Application Systems (DAS)**, organized biennially by *the Faculty of Electrical Engineering and Computer Science, Stefan cel Mare University of Suceava*, has four sections:

**A - Systems, Process Control and Automation**

**B - Communications and Computer Networks**

**C - Electronics and Computer Aided Engineering**

**D - Software Engineering and Information Technologies**

The scope of the Conference is to bring together specialists from universities, research institutes and companies for useful ideas exchanges regarding concerns in their domains. The latest progresses in these fields, as well as the newest scientific and technical results, will be presented and discussed during the Conference.

#### CONTACT INFORMATION

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## Thursday - May 21, 2020 – Day Summary

09:00 - 09:15 Opening Ceremony

09:15 - 11:15 Section A

11:15 - 11:30 Break

11:30 - 12:15 Keynote Address ----- 1

12:15 - 13:15 Section A

13:15 - 14:00 Keynote Address ----- 2

14:00 - 14:45 Launch break

14:45 - 15:45 Section B

15:45 - 16:00 Break

16:00 - 16:55 Keynote Address ----- 3

16:45 - 17:30 Keynote Address ----- 4

17:30 - 18:00 Section B

***Details about paper presentation schedule for  
Section A and Section B on pages 9 and 12  
respectively.***

## Friday - May 22, 2020 – Day Summary

09:00 - 10:45 Section C

10:45 - 11:00 Break

11:00 - 11:45 Keynote Address ----- 5

11:45 - 12:30 Keynote Address ----- 6

12:30 - 14:00 Section D

14:00 - 14:45 Launch break

14:45 - 17:15 Section D

*Details about paper presentation schedule for  
Section C and Section D on pages 14 and 16  
respectively.*

**Thursday - May 21, 2020**

**09:00 - 09:15    Opening Ceremony**

*Welcome message addressed by*

**Adrian GRAUR**

DAS 2020 Conference General Chair

**11:30 - 12:15    Keynote Address ----- 1**

*New Trends in Multilevel Power Converters*

**Carlo CECATI**

IEEE Fellow

Department of Information Engineering, Computer  
Science and Mathematics, University of L'Aquila,  
ITALY

**13:00 - 13:45    Keynote Address ----- 2**

*Modulation Techniques for High Efficiency Power  
Converters*

**Concettina BUCCELLA**

IEEE Senior Member

Department of Information Engineering, Computer  
Science and Mathematics, University of L'Aquila,  
ITALY

**16:00 - 16:45    Keynote Address ----- 3**

*Microwave and Millimeter Wave Nondestructive  
Evaluation - Methods, Sensors and Applications*

**Nathan IDA**

IEEE Fellow

Department of Electrical and Computer Engineering,  
The University of Akron  
USA

**16:45 - 17:30 Keynote Address ----- 4**

*Human-Machine Artificial Intelligence for Cognitive  
Modeling and Learning Analytics*

**Wenjun WU**

School of Computer Science and Engineering,  
Beihang University,  
CHINA

**Friday - May 22, 2020**

**11:00 - 11:45 Keynote Address ----- 5**

*Renewable Energy Invasion Requires Both DC Grid  
and Wireless Energy Transfer*

**Stanimir VALTCHEV**

IEEE Senior Member  
University NOVA of Lisbon  
PORTUGAL

**11:45 - 12:30 Keynote Address ----- 6**

*Optimal Sizing of Hybrid Vehicle Components*

**Bulent H. ERTAN**

Department of Electrical and Electronics Engineering,  
Middle East Technical University  
TURKEY



**Thursday - May 21, 2020**

## **Technical Session - Section A**

### **Systems, Process Control and Automation**

#### **Session Co-Chairs**

**Iulian BIROU**

*Technical University of Cluj-Napoca, Romania*

**Călin CIUFUDEAN**

*Stefan cel Mare University of Suceava, Romania*

**Mihai RAȚĂ**

*Stefan cel Mare University of Suceava, Romania*

#### **Paper ID: A03 - 09:15 - 09:30**

*Advanced Predictive Maintenance with Machine Learning  
Failure Estimation in Industrial Packaging Robots*

Onur KOCA<sup>1</sup>, Ozgur Turay KAYMAKCI<sup>2</sup>, Muharrem MERCIMEK<sup>2</sup>

<sup>1</sup>Department of Electrical Maintenance, Pladis Global, Ulker Chocolate,  
Istanbul, Turkey

<sup>2</sup>Control and Automation Engineering, Yildiz Technical University,  
Istanbul, Turkey

#### **Paper ID: A07 - 09:30 - 09:45**

*Dynamic Behavior Analysis of a Three-Phase BLDC Motor under  
Scalar Control Strategy for Automotive Actuation Systems*

Ciprian BEJENAR<sup>1</sup>, Nicolae Daniel IRIMIA<sup>2</sup>, Marian LUCHIAN<sup>2</sup>,

Florin Ioan LAZAR<sup>2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel  
Mare University, Suceava, Romania

<sup>2</sup>Continental Automotive Romania SRL, Iasi, Romania

#### **Paper ID: A11 - 09:45 - 10:00**

*Adaptive Control for Marine Gas Turbine*

Filip NICULESCU, Adrian SAVESCU, Mirela Letitia VASILE

Automation Department, INCDT Comoti, Bucharest, Romania

#### **Paper ID: A23 - 10:00 - 10:15**

*Pedestrian Detection Based on Tensorflow Yolov3  
Embedded in a Portable System Adaptable to Vehicles*

Eduard ZADOBRISCHI<sup>1,2</sup>, Mihai NEGRU<sup>2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel  
Mare University, Suceava, Romania

<sup>2</sup>Technical University of Cluj-Napoca, Cluj-Napoca, Romania

**Paper ID: A24 - 10:15 - 10:30**

*Optimal Operation of Microgrid Employing Predictive Control*

Florinel BUTARU, Ciprian CARSTEA, Cristian LASCU,  
Mihaela-Codruta ANCUTI

Electrical Engineering Department, University Politehnica  
Timisoara, Romania

**Paper ID: A32 - 10:30 - 10:45**

*Sensorless Control of PMSM using FOC Strategy Based on Multiple ANN and Load Torque Observer*

Marcel NICOLA<sup>1</sup>, Claudiu-Ionel NICOLA<sup>1,2</sup>, Marian DUȚĂ<sup>1</sup>

<sup>1</sup>Research Department, National Institute for Research,  
Development and Testing in Electrical Engineering - ICMET,  
Craiova, Romania

<sup>2</sup>Department of Automatic Control and Electronics, University of  
Craiova, Romania

**Paper ID: A33 - 10:45 - 11:00**

*Sensorless Control of PMSM using DTC Strategy Based on PI-ILC Law and MRAS Observer*

Marcel NICOLA<sup>1</sup>, Claudiu-Ionel NICOLA<sup>1,2</sup>, Dumitru  
SACERDOȚIANU<sup>1</sup>

<sup>1</sup>Research Department, National Institute for Research,  
Development and Testing in Electrical Engineering - ICMET,  
Craiova, Romania

<sup>2</sup>Department of Automatic Control and Electronics, University of  
Craiova, Romania

**Paper ID: A36 - 11:00 - 11:15**

*Techno-economic Evaluation of a Grid-connected Residential Rooftop Photovoltaic System with Battery Energy Storage System: A Romanian Case Study*

Ciprian CRISTEA, Maria CRISTEA, Iulian BIROU, Radu-Adrian  
TÎRNOVAN

Faculty of Electrical Engineering, Technical University of Cluj-Napoca,  
Romania

**Paper ID: A37 - 12:15 - 12:30**

*Improving the performance of Real-Time Event Processing based on Preemptive Scheduler FPGA Implementation*

Ionel ZAGAN<sup>1,2</sup>, Vasile-Gheorghiu GĂITAN<sup>1,2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel  
Mare University, Suceava, Romania

<sup>2</sup>Integrated Center for Research, Development and Innovation in  
Advanced Materials, Nanotechnologies, and Distributed Systems  
for Fabrication and Control (MANSiD), Stefan cel Mare University,  
Suceava, Romania

**Paper ID: A44 - 12:30 - 12:45**

*Architectural Issues in Implementing a Distributed Control System for an Industry 4.0 Prototype*

Samuel PUSCASU, Radu Alexandru VOJU, Alexandru MATEI,  
Constantin ZAMFIRESCU BĂLĂ  
Lucian Blaga University, Sibiu, Romania

**Paper ID: A47 - 12:45 - 13:00**

*Multidimensional Digital Signal Processing for Printed Circuit Boards Testing*

Viorica SUDACEVSCHI, Victor ABABII  
Department of Computer Sciences and Systems Engineering  
Technical University of Moldova, Chisinau, Republic of Moldova

**Paper ID: A49 - 13:00 - 13:15**

*Tuning of the PID Controller to the System with Maximum Stability Degree using Genetic Algorithm*

Irina COJUHARI, Ion FIODOROV, Bartolomeu IZVOREANU,  
Dumitru MORARU  
Technical University of Moldova, Chisinau, Republic of Moldova

**Thursday - May 21, 2020**

## **Technical Session - Section B**

### **Communications and Computer Network**

#### ***Session Co-Chairs***

**Nicolae Dumitru ALEXANDRU**

*Gheorghe Asachi Technical University of Iași, Romania*

**Alin Dan POTORAC**

*Stefan cel Mare University of Suceava, Romania*

**Paper ID: B13 - 14:45 - 15:00**

*Surveillance of Sigfox Technology Integrated with  
Environmental Monitoring*

Floarea PITU<sup>1</sup>, Nicoleta Cristina GAITAN<sup>1,2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel Mare University of Suceava, Romania

<sup>2</sup>Integrated Center for Research, Development and Innovation in Advanced Materials, Nanotechnologies, and Distributed Systems for Fabrication and Control (MANSiD), Stefan cel Mare University of Suceava, Romania

**Paper ID: B19 - 15:00 - 15:15**

*IoT Messaging Protocols Analysis*

Dragos-Alexandru ANDRIOAIA, Vasile-Gheorghita GAITAN  
Computer Department, Stefan cel Mare University of Suceava, Suceava, Romania

**Paper ID: B22 - 15:15 - 15:30**

*System Prototype Proposed for Vehicle Communications Based  
on VLC-RF Technologies Adaptable on Infrastructure*

Eduard ZADOBRISCHI<sup>1,2</sup>

<sup>1</sup>Department of Computers, Electronics and Automation, Stefan cel Mare University of Suceava, Romania

<sup>2</sup>Technical University of Cluj-Napoca, Cluj-Napoca, Romania

**Paper ID: B41 - 15:30 - 15:45**

*Development of Visible Light Communication System for  
Automotive Applications Based on Organic Light Emitting Diode  
Panels*

Lucian-Mihai COSOVANU<sup>1,2</sup>, Adrian DONE<sup>1,2</sup>

<sup>1</sup>Department of Computers, Electronics and Automation, Faculty of Electrical Engineering and Computer Science, Stefan cel Mare University of Suceava, Romania

<sup>2</sup>Integrated Center for Research, Development and Innovation in Advanced Materials, Nanotechnologies, and Distributed Systems for

Fabrication and Control (MANSiD), Stefan cel Mare University of  
Suceava, Romania

**Paper ID: B50 - 17:30 - 17:45**

*Omnidirectional Antenna with Complex Conjugate Impedance  
for Radio Meteor Detection*

Cezar-Eduard LESANU<sup>1</sup>, Adrian DONE<sup>2</sup>, Cezar-Ion ADOMNITEI<sup>1,2</sup>

<sup>1</sup>Department of Computers, Electronics and Automation, Faculty of  
Electrical Engineering and Computer Science, Stefan cel Mare University  
of Suceava, Romania

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Advanced Materials, Nanotechnologies, and Distributed Systems for  
Fabrication and Control (MANSiD), Stefan cel Mare University of  
Suceava, Romania

**Paper ID: B54 - 17:45 - 18:00**

*LoRaWAN Analysis from a High-Density Internet of Things  
Perspective*

Alexandru LAVRIC, Adrian I. PETRARIU, Eugen COCA, Valentin  
POPA

Department of Computers, Electronics and Automation, Faculty of  
Electrical Engineering and Computer Science, Stefan cel Mare University  
of Suceava, Romania

**Friday - May 22, 2020**

## **Technical Session - Section C**

### **Electronics and Computer Aided Engineering**

#### **Session Co-Chairs**

**Eugen COCA**

*Stefan cel Mare University of Suceava, Romania*

**Adrian PETRARIU**

*Stefan cel Mare University of Suceava, Romania*

#### **Paper ID: C17 - 09:00 - 09:15**

*Review of Overmodulation Control Techniques of Drive  
Inverters with Synchronous Space-Vector PWM*

Valentin OLESCHUK, Vladimir ERMURATSKII, Irina VASILIEV  
Institute of Power Engineering of Moldova, Chisinau, Republic of  
Moldova

#### **Paper ID: C18 - 09:15 - 09:30**

*Transformer-Based PV System with Modified Techniques of  
PWM of Diode-Clamped Inverters*

Valentin OLESCHUK, Mihai TIRSU, Victor GALBURA, Irina  
VASILIEV

Institute of Power Engineering of Moldova, Chisinau, Republic of  
Moldova

#### **Paper ID: C26 - 09:30 - 09:45**

*Structural and Functional Synthesis of the Radioelectronic  
Means of a Pulsed NQR*

Andriy SAMILA, Serhii HALIUK, Oleh KRULIKOVSKIYI

Department of Radio Engineering and Information Security, Yuriy  
Fedkovich Chernivtsi National University, Chernivtsi, Ukraine

#### **Paper ID: C31 - 09:45 - 10:00**

*Simulation of Surge Pulse Generator and Applications in  
Automotive Immunity Testing*

Andrei-Marius SILAGHI<sup>1</sup>, Aldo De SABATA<sup>1</sup>, Adrian GRAUR<sup>2</sup>,  
Radu FECHET<sup>2</sup>

<sup>1</sup>Department of Measurements and Optical Electronics, University  
Politehnica Timisoara, Romania

<sup>2</sup>Stefan cel Mare University of Suceava, Romania

#### **Paper ID: C43 - 10:00 - 10:15**

*Analysis Concerning the Usage of Visible Light Communications  
in Automotive Applications: Achievable Distances vs. Optical  
Noise*

Sebastian-Andrei AVĂTĂMĂNIȚEI<sup>1,2</sup>, Alin-Mihai CĂILEAN<sup>1,2</sup>,  
Cătălin BEGUNI<sup>1,2</sup>, Mihai DIMIAN<sup>1,2</sup>, Valentin POPA<sup>1</sup>

<sup>1</sup>Department of Computers, Electronics and Automation, Faculty of  
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Advanced Materials, Nanotechnologies, and Distributed Systems for  
Fabrication and Control (MANSiD), Stefan cel Mare University of  
Suceava, Romania

**Paper ID: C46 - 10:15 – 10:30**

*Photodiode Amplifier with Transimpedance and Differential  
Stages for Automotive Visible Light Applications*

Cătălin BEGUNI<sup>1,2</sup>, Alin-Mihai CĂILEAN<sup>1,2</sup>, Sebastian-Andrei  
AVĂTĂMĂNIȚEI<sup>1,2</sup>, Mihai DIMIAN<sup>1,2</sup>

<sup>1</sup>Department of Computers, Electronics and Automation, Faculty of  
Electrical Engineering and Computer Science, Stefan cel Mare University  
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Advanced Materials, Nanotechnologies, and Distributed Systems for  
Fabrication and Control (MANSiD), Stefan cel Mare University of  
Suceava, Romania

**Paper ID: C52 - 10:30 - 10:45**

*Experiments Concerning the Spectrum Structure Inside an  
Automotive EMC Laboratory*

Octavian-Teodor PACURAR<sup>1</sup>, Andrei-Marius SILAGHI<sup>1</sup>,  
Cornel BALINT<sup>1</sup>, Aldo De SABATA<sup>1</sup>, Adrian GRAUR<sup>2</sup>

<sup>1</sup>Department of Measurements and Optical Electronics, University  
Politehnica Timisoara, Romania

<sup>2</sup>Stefan cel Mare University of Suceava, Romania

**Friday - May 22, 2020**

## **Technical Session - Section D**

**Software Engineering and Information Technologies**

### **Session Co-Chairs**

**Dorin Mircea POPOVICI**

*Ovidius University of Constanta, Romania*

**Stefan Gheorghe PENTIUC**

*Stefan cel Mare University of Suceava, Romania*

**Radu Daniel VATAVU**

*Stefan cel Mare University of Suceava, Romania*

**Ovidiu-Andrei SCHIPOR**

*Stefan cel Mare University of Suceava, Romania*

**Paper ID: D04 - 12:30 - 12:45**

*On One Context-free Language for Producer/Consumer Petri  
Net with the Unbounded Buffer*

Vadym MUKHIN, Vitalii STATKEVYCH

Mathematical methods of system analysis department, National  
Technical University of Ukraine, "Igor Sikorsky Kyiv Polytechnic  
Institute", Kyiv, Ukraine

**Paper ID: D05 - 12:45 - 13:00**

*The Most Used Activation Functions: Classic Versus Current*  
Marina Adriana MERCIONI, Ștefan HOLBAN

Department of Computer Science , Politehnica University Timisoara,  
Romania

**Paper ID: D08 - 13:00 - 13:15**

*An Inventory of Voice Input Commands for Users with Visual  
Impairments and Assistive Smartglasses Applications*

Adrian AIORDĂCHIOAE, Ovidiu-Andrei SCHIPOR, Radu-Daniel  
VATAVU

MintViz Lab | MANSiD Research Center, Stefan cel Mare of University  
Suceava, Romania

**Paper ID: D09 - 13:15 - 13:30**

*In-Vehicle Software System for Fostering Driver's Attentiveness*

Elena BAUTU, Crenguta M. PUCHIANU, Emanuela BRAN,

Dragos F. SBURLAN, Dorin Mircea POPOVICI

Ovidius University of Constanta, Romania



**Paper ID: D15 - 13:30 - 13:45**

*Engineering Details of a Smartglasses Application for Users with Visual Impairments*

Ovidiu-Andrei SCHIPOR, Adrian AIORDĂCHIOAE

MintViz Lab | MANSiD Research Center, Stefan cel Mare of University  
Suceava, Romania

**Paper ID: D16 - 13:45 - 14:00**

*A Novel Intelligent Tutoring System For Learning Programming*

Meng WANG, Wenjun WU, Yu LIANG

School of Computer Science and Engineering, Beihang University,  
Beijing, China

**Paper ID: D21 - 14:45 - 15:00**

*A Smartwatch-based User Interface for In-Vehicle Interactions*

Laura-Bianca BILIUS

MintViz Lab | MANSiD Research Center, Stefan cel Mare of  
University Suceava, Romania

**Paper ID: D25 - 15:00 - 15:15**

*Improving the Analysis of Hyperspectral Images Using Tensor  
Decomposition*

Laura-Bianca BILIUS<sup>1,2</sup>, Stefan Gheorghe PENTIUC<sup>1,2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel Mare  
University of Suceava, Romania

<sup>2</sup>MintViz Lab | MANSiD Research Center, Stefan cel Mare of  
University Suceava, Romania

**Paper ID: D27 - 15:15 - 15:30**

*Open Affordable Mixed Reality: A Manifesto*

Emanuela BRAN, Elena BAUTU, Dorin Mircea POPOVICI

Department of Mathematics and Computer Science, Ovidius University  
of Constanta, Romania

**Paper ID: D30 - 15:30 - 15:45**

*Experimental Results on the Accuracy of the Myo Armband  
for Short-Range Pointing Tasks*

Irina POPOVICI

MintViz Lab | MANSiD Research Center, Stefan cel Mare of  
University Suceava, Romania

**Paper ID: D34 - 15:45 - 16:00**

*Data Lake Approaches: A Survey*

Elisabeta ZAGAN<sup>1,2</sup>, Mirela DANUBIANU<sup>1,2</sup>

<sup>1</sup>Faculty of Electrical Engineering and Computer Science, Stefan cel Mare  
University of Suceava, Romania

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Advanced Materials, Nanotechnologies, and Distributed Systems for

Fabrication and Control (MANSiD), Stefan cel Mare University of  
Suceava, Romania

**Paper ID: D35 - 16:00 - 16:15**

*A System for Hierarchical Browsing of Mixed Reality Content in  
Smart Spaces*

Cristian I. PAMPARĂU

Stefan cel Mare University of Suceava, Romania

**Paper ID: D39 - 16:15 - 16:30**

*Sentiment Analysis from Students' Feedback - A Romanian High  
School Case Study*

Daniela MARCU, Mirela DANUBIANU

Faculty of Electrical Engineering and Computer Science, Stefan cel  
Mare University of Suceava, Romania

**Paper ID: D40 - 16:30 - 16:45**

*Classification of Sensorimotor Rhythms Based on Multi-layer  
Perceptron Neural Networks*

Roxana TODEREAN

Department of Health and Human Development, Stefan cel Mare  
University of Suceava, Romania

**Paper ID: D42 - 16:45 - 17:00**

*A Comparative Study of Parametric Versus Non-Parametric  
Text Classification Algorithms*

Mihaela CHISTOL

Stefan cel Mare University of Suceava, Romania

**Paper ID: D45 - 17:00 - 17:15**

*An Architecture and Protocol for Management of Multimodal  
Experimental Data*

Ovidiu GHERMAN

MintViz Lab | MANSiD Research Center, Stefan cel Mare of University  
Suceava, Romania







