



**9th International Conference on Sensors
and Electronic Instrumentation Advances (SEIA '2023)**

5th IFSA Frequency & Time Conference (IFTC '2023)

**5th International Conference on Microelectronic Devices
and Technologies (MicDAT '2023)**

Conference Programme

**20-22 September 2023
Funchal (Madeira Island), Portugal**



Message from Chairman

On behalf the Organizing Committee I would like to welcome you to the *9th International Conference on Sensors and Electronic Instrumentation Advances (SEIA' 2023)*, *5th International Conference on Microelectronic Devices and Technologies (MicDAT '2023)* and *5th IFSA Frequency & Time Conference (IFTC' 2023)*, in Funchal (Madeira Islands), Portugal.

This conference umbrella is a forum for presentation, discussion, exchange of information and latest research and development results in both theoretical and experimental research in appropriate areas. It brings together researchers, developers, and practitioners from diverse fields including international scientists and engineers from academia, research institutes, and companies to present and discuss the latest results in the field of sensors, microelectronics and frequency-time measurements.

Next to all the technical subjects, a major function of this series of events lies in the opportunities for meeting colleagues and the future partners for joint research projects. This aspect of our IFSA events has always been giving high marks and we continue to pay much attention to it. Coffee breaks, Welcome cocktail, Gala Dinner and Farewell cocktail are the best opportunity for social contacts.

The conferences are organized by the *International Frequency Sensor Association (IFSA)* - one of the major professional associations serving for the sensor industry and academy since 1999, in technical cooperation with the IFSA Group company *IFSA Publishing S.L.* (Spain), and media partners - open access MDPI journals: *Sensors* (ISSN 1424-8220), *Chemosensors* (ISSN 2227-9040), *Biosensors* (ISSN: 2079-6374), *Micromachines* (ISSN 2072-666X) and *Chips* (ISSN 2674-0729).

We trust that you will find this conference umbrella professionally rewarding and stimulating as well as enjoyable. Welcome to SEIA' 2023, MicdDAT' 2023 and IFTC' 2023 !

Prof., Dr. Sergey Y. Yurish
Chairman

Conference Venue

The Conference will take place on 20-23 September 2023 in the Pestana Casino Park Hotel, conference room *Caracas* (4th floor).

Insurance and Liability

The conference organizers do not accept responsibility for any individual, medical, travel or personal insurance policies as necessary.

Registration

The Registration Desk is open in the Pestana Casino Park Hotel:

- Tuesday, 19 September, 20:00-21:30 (in the Welcome Cocktail area)
- Wednesday, 20 September, 8:45-18:00 (near the conference room *Caracas*)
- Thursday, 21 September, 8:45-18:00 (near the conference room *Caracas*)
- Friday, 22 September, from 8:45-12:00 (near the conference room *Caracas*)

Language

The official language of the Conference is English. There will be no simultaneous interpretation.

Conference Identification Tag

The Organizing Committee request that you wear your identification tag (badge) at all times during the conference. Your conference identification tag will serve as your admission to all conference paper presentation sessions and social events.

Coffee/Tea Refreshment

Coffee/tea will be served near the Conference Room *Caracas* at the times indicated in the programme.

Special Issues of Journals

Selected papers from the conferences will be published in special issues of open access journals: *Sensors & Transducers* journal (ISSN: 2306-8515, e-ISSN 1726-5479) in both: print and electronic formats; *MDPI Sensors* (ISSN 1424-8220), *MDPI Chemosensors* (ISSN 2227-9040), *MDPI Biosensors* (ISSN: 2079-6374), *MDPI Micromachines* (ISSN 2072-666X) and *MDPI Chips* (ISSN 2674-0729) electronic format. All authors of selected papers will be invited after the conference by the Chairman to submit their extended papers into the appropriate journals.

Chapters in Book Series

Authors will be also invited to submit book chapters for the 'Advances in Sensors: Reviews', Book Series, Vol. 9, 'Advances in Measurements and Instrumentations', Book Series, Vol. 3, 'Advances in Microelectronics: Reviews' Book Series, Vol. 4. This open access books volumes will be published in 2024.

Organizing Committee

Chairman

Prof., Dr. Sergey Y. Yurish (*IFSA, Spain*)

Advisory Chairmen

Prof. Vincenzo Piuri (*Universit' degli Studi di Milano, Italy*)

Prof. Vijyakumar Varadarajan (*Univ. of New South Wales, Australia*)

Prof. José Miguel Pereira (*Instituto Politécnico de Setúbal, Portugal*)

Prof. George Kiriakidis (*European Materials Research Society France*)

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Prof. Arkady Zhukov (*University of the Basque Country, Spain*)

Dr. Pavel Shuk (*Saint-Gobain NorPro, USA*)

Dr. Marius Gheorghe (*Ideal Aerosmith, Inc., USA*)

Dr. Paolo Dabove (*Politecnico di Torino, Italy*)

Conference and Publication Manager

Mrs. Tetyana Zakharchenko (*IFSA Publishing, S.L., Spain*)

Welcome Cocktail

19 September 2023, Tuesday (20:00-21:30), Pestana Casino Park Hotel, in the Sunset outside bar. Do not miss this opportunity to say the first "hello" to attendees and committee members.

Gala Dinner

21 September 2023, Thursday (20:00-23:30). The Gala Dinner will take place in the Pestana Casino Park Hotel, *Sunset* restaurant.

Farewell Cocktail

22 September 2023, Friday (13:30-15:30), Pestana Casino Park Hotel, the Conference Room *Rio de Janeiro*, together with the Poster Session.

Conferences' web sites:

- SEIA' 2023: <http://www.seia-conference.com>
- MicDAT' 2023: <http://www.micdat-conference.com>
- IFTC' 2023: <http://www.iftc-conference.com>

Sponsors and Media Partners:



Keynote Speakers



Dr. Kinam Kim
Samsung Electronics and NAEK
(National Academy of Engineering of Korea),
South Korea

Sustainable Economic Growth of Future Semiconductor Industry by Innovative Technologies: Transform Physical Challenges into Opportunities

Abstract: Recently we have witnessed that digital transformation (DX) has been deeply penetrated into everyday life by unprecedented revolution of AIs such as GPT-4.0, which providing unexplored significant growth opportunities to our semiconductor industry. In order to satisfy such a demanding market's requirement with considering extremely smaller physical dimensions of Si devices than 10 nm, however, there is an exciting and fruitful concern about how to achieve technical advancements in a profitable way. Thus, the key is cost-effectively improving PPA (power-performance-area) by relentless drive of technical innovations thru ecosystem-wide and shared efforts. To this aim, this presentation will discuss what are the primary drivers and challenges of DRAM, Flash and Logic technologies, and the promising technical innovations including structures, materials, equipment and processes for next decades.

Short Biography: Dr. Kinam Kim is a chairman of Samsung Electronics and the president of NAEK (National Academy of Engineering of Korea). Prior to that, he was a vice chairman and CEO of Samsung Electronics, overseeing global operations of the memory, system LSI and foundry business units. He is one of the global experts in the development of semiconductor technologies with over 40 years' experience, impacting on the innovation and progression which has not only elevated the South Korean economy and correspondingly, South Korea's status as a technology hub, but also greatly contributing to the well being of society worldwide. Many of the technologies developed under his leadership were initiated via bold bets that were often not considered feasible by others.



Dr. Yanxia Hou

*University Grenoble Alpes, CEA, CNRS,
IRIG-SYMMES,
Grenoble, France*

The Biomimetic Optoelectronic Nose: Getting Closer to the Human Nose

Abstract: Using approximately 400 different types of olfactory receptors, the human nose has the extraordinary ability to detect and recognize odors through the combination of two recognition principles: specific and cross-reactive. Inspired by the human nose, we have been developing original biomimetic electronic noses (eNs) for ten years using biomolecules as sensing materials, including peptides, hairpin DNA and odorant binding proteins (OBPs) with the ambition to approach the performance of the human nose for the reliable and rapid analysis of volatile organic compounds (VOCs). One of the main challenges is to design relevant specific and cross-reactive sensing materials and combine them in a rational way on the same chip. Our electronic nose is based on an optical detection system, surface plasmon resonance imaging (SPRi), which allows to monitoring binding events in a label-free and real-time manner by providing temporal responses with kinetic information, with capacity for simultaneous detection on a multiplexed sensor array. The combination of such a detection system with novel biological sensing materials provides our eNs with improved performance in terms of sensitivity and selectivity. Furthermore, our technology has been valorized by a local company for the development of an efficient portable device for odor analysis in diverse domains.

Short Biography: Dr. Yanxia Hou obtained her PhD in Analytical Chemistry at Ecole Centrale de Lyon (France) in 2005. In 2006, she did her first postdoc at University of California San Francisco and Touro University (USA), followed by a 2nd postdoc at CEA-LETI, Grenoble (France). Today she is research director at French National Center for Scientific Research (CNRS). She has strong expertise on electronic noses, biosensors and biochips for biomedical and many other applications. Since 2008, she leads the development of novel optoelectronic noses and tongues based on surface plasmon resonance imaging at the laboratory of SyMMES, at the French Alternative Energies and Atomic Energy Commission (CEA, Grenoble, France). She is one of the co-founders of the start-up company Aryballe for the miniaturization of the optoelectronic nose for digital olfaction. Today, she is the head of a research group of 24 persons at the laboratory of SyMMES.




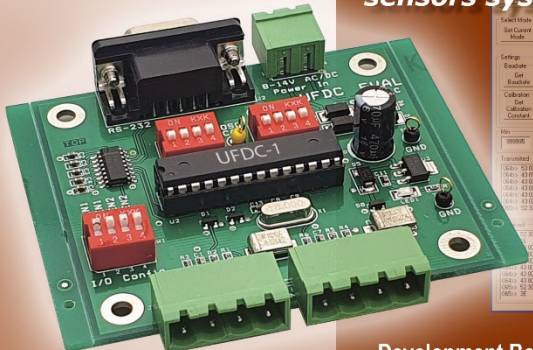
Prof., Dr. Juyang Weng
Brain-Mind Institute and GENISAMA,
USA

The First Conscious Learning Algorithm Avoids 'Deep Learning' Misconduct

Abstract: From a fruit fly to a human, with many animal species in between, do they share a set of biological mechanisms to regulate the lifelong development of the brains? We have seen very impressive advances in understanding the principles of neuroscience. However, what is still missing is a holistic algorithm that is both broad and deep. By broad, we mean it approximates such mechanisms across a range of species. By deep, we mean that it specifies sufficient details so that the algorithm can be biologically and computationally verified and possibly corrected across a deep hierarchy of scales, from neurotransmitters, to cells, to brain patterns, to behaviors, to intelligence, to consciousness across the time span of a life. This talk outlines such a conscious learning algorithm, the first in the category as far as the presenter is aware of, called Developmental Network 3 (DN-3). All its predecessors, Cresceptron, IHDR, DN-1 and DN-2 were not capable of conscious learning till DN-3. A major extension from DN-2 to DN-3 is that the model starts from a single cell inside the skull so that brain patterning is fully automatic in a coarse to fine way. This biological model has been supported by computational experiments with real sensory data for vision, audition, natural languages, and planning, to be presented during the talk. This first ever algorithm for conscious learning is free from “deep learning” misconduct, including ChatGPT.


Short Biography: Prof. Juyang Weng received the BS degree from Fudan University, in 1982, M. Sc. and PhD degrees from the University of Illinois at Urbana-Champaign, in 1985 and 1989, respectively, all in computer science. He is a former faculty member of Department of Computer Science and Engineering, faculty member of the Cognitive Science Program, and faculty member of the Neuroscience Program at Michigan State University, East Lansing. He was a visiting professor at the Computer Science School of Fudan University, Nov. 2003 - March 2014, and did sabbatical research at MIT, at Media Lab Fall 1999 – Spring 2000 and at Department of Brain and Cognitive Science Fall 2006-Spring 2007 and taught BCS9.915/EECS6.887 Computational Cognitive and Neural Development during Spring 2007. Since the work of Cresceptron (ICCV 1993) the first deep learning neural networks for 3D world without post-selection

misconduct, he expanded his research interests in biologically inspired systems to developmental learning, including perception, cognition, behaviors, motivation, machine thinking, and conscious learning models. He has published over 300 research articles on related subjects, including task muddiness, intelligence metrics, brain-mind architectures, emergent Turing machines, autonomous programming for general purposes (APFGP), Post-Selection flaws in “deep learning”, vision, audition, touch, attention, detection, recognition, autonomous navigation, and natural language understanding. He published with T. S. Huang and N. Ahuja a research monograph titled *Motion and Structure from Image Sequences*. He authored a book titled *Natural and Artificial Intelligence: Computational Introduction to Computational Brain-Mind*. Dr. Weng is an Editor-in-Chief of the *International Journal of Humanoid Robotics*, the Editor-in-Chief of the *Brain-Mind Magazine*, and an associate editor of the *IEEE Transactions on Autonomous Mental Development* (now *Cognitive and Developmental Systems*). With others’ support, he initiated the series of International Conference on Development and Learning (ICDL), the *IEEE Transactions on Autonomous Mental Development*, the Brain-Mind Institute, and the startup GENISAMA LLC. He was an associate editor of the *IEEE Transactions on Pattern Recognition and Machine Intelligence* and the *IEEE Transactions on Image Processing*.

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Programme at Glance

Time/Date (GMT+1)	20.09.2023 Wednesday	21.09.2023 Thursday	22.09.2023 Friday
	<i>Conference Room Caracas (4th floor)</i>		
8:45-9:00	Registration	Registration	Registration
9:00-9:15	* Opening Session	* Daily announcements	* Daily announcements
9:15-10:00	Keynote Speaker I Dr. Kinam Kim <i>Samsung Electronics and NAEK South Korea</i>	Keynote Speaker II Dr. Yanxia Hou <i>University Grenoble, CEA, CNRS, IRIG-SYMMES, Grenoble France</i>	Virtual Session in Zoom (Live streams)
10:00-10:30	<i>Coffee Break</i>	<i>Coffee Break</i>	
10:30-12:30	Regular Session: Modern Electronics Devices & Materials	Special Session: Chemical Sensors and Biosensors	
12:30-13:30	<i>Lunch on your own</i>	<i>Lunch on your own</i>	
13:30-15:30	Regular Session: IoT, Networks & Communications	Regular Session: Measurement Systems	
15:30-16:00	<i>Coffee Break</i>	<i>Coffee Break</i>	* Closing Session Conference Room Caracas
16:00-16:45	Regular Session: Physical Sensors & its Applications	Keynote Speaker III Prof. Juyang Weng <i>Brain-Mind Institute and GENISAMA, USA</i>	-
16:45-17:00		-	
17:00-18:00		-	
18:00-20:00		-	
20:00-23:00		-	

* The must attend sessions.

Technical Conference Programme

Day 1

20 September 2023, Wednesday

Regular Session: Modern Electronics Devices and Materials

(Conference Room Caracas):

Chairman: **Dr. Daewon Ha**

Samsung Electronics,

South Korea

- 1. Effect of Asymmetric Transistor Aging on GPGPUs**
Freddy Gabbay, Firas Ramadan, Majd Ganaiem, Ofrie Rosenthal
and Li-Or Bashari
(Israel)
- 2. Modeling of Ultra-Scaled Magnetoresistive Random Access Memory**
Mario Bendra, Roberto Lacerda de Orio, Wolfgang Goes,
Viktor Sverdlov and Siegfried Selberherr
(Austria, UK)
- 3. A Novel Nonlinear Small-Signal Detection Circuit Using Divergence Properties of Second-Order Linear Differential Equations**
Soichiro Yamakawa, Kota Ando, Megumi Akai-Kasaya
and Tetsuya Asai
(Japan)
- 4. On the Effect of Substrate Orientation on the Properties of Quantum Well Semiconductors**
Marta Gladysiewicz and Marek S. Wartak
(Poland, Canada)

5. 3D Thermal Simulation of GaAs Based HEMT on Foreign Substrate

Aleš Chvála, Jaroslav Kováč, Dagmar Gregušová, Milan Ťapajna, Filip Guemann, Juraj Marek and Martin Florovič
(Slovakia)

6. Injection of holes in Poly (3-hexylthiophene) - P3HT

Taiza Neves, Taiane Neves and Henri Boudinov
(Brazil)

7. Nonlinear Effect of Ge Concentration on the Test npn ICs Transistors Structures Gain (β) and Percentage of Yield of Suitable Products (pre-recorded video presentation)

Sergey Bytkin and Tatiana Krytskaja
(Ukraine)

**Regular Session:
IoT, Networks & Communications**

(Conference Room *Caracas*):

Chairman: **Prof., Dr. Bernhard Kurz**

Munich University of Applied Sciences, Germany

1. Visible Light Communication for Indoors Automated Guidance Vehicles

Paula Louro, Manuela Vieira and Manuel Augusto Vieira
(Portugal)

2. Traffic Signaling and Cooperative Trajectories Based on Visible Light Communication

Manuela Vieira, Manuel Augusto Vieira, Gonçalo Galvão, Mario Vestias, Pedro Vieira and Paula Louro
(Portugal)

3. Visible Light: An Identifier (ID) System for Building Guidance

Manuela Vieira, Manuel Augusto Vieira, Pedro Vieira and Paula Louro
(Portugal)

4. **An IoT Communication Platform for Interactive Buildings Energy Management System**
Lucian Mihet-Popa
(Norway)
5. **Internet of Things-based Geo-Awareness System for Civilian Drones**
Stefan Kunze
(Germany)
6. **Software Defined Radio Based Concept for Extending Orthogonal Multi-tone Time Domain Reflectometry Method to Analyze Electrical Power Grids**
Alexander Faschingbauer
(Germany)
7. **Implementing an NTS-Based Security Mechanism for PTPv2.1**
Martin Langer, Jannik Köstel and Rainer Bermbach
(Germany)

Regular Session:
Physical Sensors & its Applications
(Conference Room *Caracas*)

Chairman: **Prof., Dr. Bernhard Zagar**
Montanuniversitaet Leoben, Austria

1. **Difference in Sensor Placement Position of Insole-type Pressure Transducers**
Yasutaka Uchida, Tomoko Funayama, Eiichi Ohkubo and Yoshiaki Kogure (*Japan*)
2. **Comparison of the Depth Accuracy of a Plenoptic Camera and a Stereo Camera System in Spatially Tracking Single Refuse-derived Fuel Particles in a Drop Shaft**
Miao Zhang, Robin Streier, Markus Vogelbacher, Siegmund Wirtz, Viktor Scherer and Jörg Matthes
(Germany)

3. Sensing the Mechanical Properties of AlN Films Using Micromechanical Membranes

Adity Yadav, Timo Sommer, Matthias Althammer and Menno Poot
(Germany)

4. Video Stream Processing for an Autonomous Tunnel Drainage Rover

Alessandro Giordano, Tobias Schachinger, Vesna Micic-Batka and Bernhard Zagar
(Austria)

5. Geospatial Sensor-based Approach to Provide Defibrillators by Using Drones in Mountain Areas: A Study Case in South Tyrol, Italy

Eliezer Fajardo-Figueroa, Roberto Mendicino, Michiel van Veelen, Giovanni Vinetti, Gianluca Ristorto, Giulio Maria Bianco, Sebastian Mayrgündter, Liu Meng and Abraham Mejia-Aguilar
(Germany, Italy)

6. Exploring Sustainable Printed Paper Sensors for Analyzing Cure Behavior and Detecting Cracks in Composites

(pre-recorded video presentation)

Arunjunai Raj Mahendran, Nitin Gupta, Christian Koren and Herfried Lammer
(Austria)

7. Calibration of a Hail-Impact Sensor Based on Piezoelectric Transducers

Florencia Blasina, Andrés Echarri and Nicolás Pérez
(Uruguay)

Day 2
21 September 2023, Thursday

**Special Session:
Chemical Sensors & Biosensors**
(Conference Room Caracas):

Chairman: **Dr. Yanxia Hou**

University Grenoble, CEA, CNRS, IRIG-SYMMES, Grenoble, France

1. Exploration of Phage Display Peptides as Novel Sensing Materials for Highly Sensitive and Selective Biomimetic Optoelectronic Nose

Vanessa Escobar, Yanxia Hou, Sophie Brenet, Marielle El Kazzy, Charlotte Hurot, Natale Scaramozzino, Arnaud Buhot and Raphael Mathey
(France)

2. Impact of Solvent on Ammonia Detection Performance of Polyaniline-based Sensors

Sabine Vassaux, Nathalie Redon, Edilene A. da Silva and Caroline Duc
(France)

3. Advanced Polymer Materials for Real-time Sensing of Inflammation and Infection

Martin Hruby, Hanna Zhukouskaya and Elena Tomsik
(Czech Republic)

4. Sensor Device for Pathogen Detection Using Impedance Biosensors

Tharun Reddy Kandukuri and Luigi Occhipinti
(UK)

5. Near-Field Microwave Probe Technique for Local Broadband Characterization of Nanocomposite Materials

Hind Bakli and Mourad Makhlof
(Algeria)

6. pH Sensing Properties of Screen-Printed Oxides of Copper
Kiranmai Uppuluri, Dorota Szwagierczak and Krzysztof Szostak
(Poland)

7. APHRODITE: Design and Preliminary Tests of an Autonomous and Reusable Photo-sensing Device for Immunological Test Aboard the International Space Station

Lorenzo Nardi, Nithin Maipan Davis, Serena Sansolini, Thiago Baratto De Albuquerque, Mohcine Laarraj, Domenico Caputo, Giampiero De Caserare, Seyedeh Rojin Shariati Pour, Martina Zangheri, Donato Calabria, Massimo Guardigli, Michele Balsamo, Elisa Carrubba, Fabrizio Carubia, Marco Ceccarelli, Michele Ghiozzi, Liyana Popova, Andrea Tenaglia and Marino Crisconio
(Italy)

**Regular Session:
Measurement Systems**
(Conference Room *Caracas*):

Chairman: **Prof., Dr. Manuela Vieira**
ISEL-Polytechnic Institute of Lisbon, Portugal

- 1. Vehicle Speed Measurement through Ground Vibrations Induced by Transverse Rumble Strips**
Dhirath Thanglerdsompan, Paramote Wardkein and Lerson Kirasamuthranon
(Thailand)
- 2. Hyperspectral Imaging as Microscopic Setup**
Wolfgang Kurz, Aaron Flügge Arus, Emre Kariper and Olcay Akgün
(Germany)
- 3. Physiological Assistance by Climate Comfort: Measurements and Indicators**
Bernhard Kurz and Christoph Russ
(Germany)
- 4. Wind Estimation via UAV Parameters and Artificial Intelligence related to Hypersonic Anemometer Measurements**
Michael Kurz, Federico Mothes and Alexander Knoll
(Germany)
- 5. Terahertz Sensor System with Sual Mode Operation**
Janez Trontelj, Andrej Svigelj, Domen Visnar and Janez Ml. Trontelj
(Slovenia)
- 6. Electrochemical determination of Cd²⁺, Pb²⁺, Cu²⁺ and Zn²⁺ in Liquids Using Modified Titanium Dioxide**
(pre-recorded video presentation)
Vera Vorobets
(Ukraine)
- 7. Determination of Frequency of Acoustic Waves by Bragg Light Diffraction Method** (pre-recorded video presentation)
Farkhad Akhmedzhanov
(Uzbekistan)

Day 3
22 September 2023, Friday

Virtual Session in Zoom
(Live Streams):
(Conference Room *Caracas*):

Chairman: **Prof., Dr. Sergey Y. Yurish**

International Frequency Sensor Association (IFSA), Barcelona, Spain

- 1. Capacitive Sensor System with Frequency Output for Reading Extrinsically Inserted Hidden Information in 3D Objects**
Florian Marocko, Felix Irmeler, Florian Piepereit and Anett Bailleu
(*Germany*)

- 2. Hardware Acceleration of Pulse Analysis Using FPGAs in MTCA**
Cesar Gonzalez, Mariano Ruiz, Antonio Carpeño, Alejandro Piñas, Daniel Cano-Ott, Julio Plaza del Olmo, Trino Martinez and David Villamar
(*Spain*)

- 3. Feasibility of Gait Change Detection Using Smart Footwear**
Tomoko Funayama, Yasutaka Uchida, Yoshiaki Kogure, Daisaku Souma and Ryota Kimura
(*Japan*)

- 4. Digital Twins Based Models of Human Activities, Localization and Energy Consumption of WBAN Network Using IMU Sensors**
Noureddine Boujnah and Rafika Brahmi
(*Ireland, Tunisia*)

- 5. Research on the Effect of Mechanical Deformation in the Structure of Stretchable Substrate with Metal Horseshoe Conductors**
Nikolai S. Gorlov, Denis V. Vertyanov, Sergey P. Timoshenkov, Svetlana I. Gladkova and Raiymbek N. Zhumagali
(*Russia*)

- 6. A Novel Direct Digital Phase Comparison and Phase-locked Loop Technology between Complex Phase Change Signals**
Wei Zhou and Zhiqi Li
(China)
- 7. Common-view Time Transfer Using GPS, Galileo, GLONASS, BeiDou-2, and BeiDou-3**
Gihan Gomah
(Egypt)
- 8. The use of Azure Cloud Tools for Monitoring Indoor Air Quality**
Eduardo Lopes da Cruz, Alexandre César Rodrigues Da Silva
and Tércio Alberto Santos Filho
(Brazil)
- 9. Routine Measurement and Monitoring System for the Activity of Elderly People with Dementia: A Systematic Review**
Júlia Rodrigues, Pedro Morais and Vítor Carvalho
(Brazil, Portugal)
- 10. Virtual Reality and Artificial Intelligence as Tools to Aid the Management of Chronic Pain: A Comprehensive Literature Review**
Arthur Gomes, Vítor Carvalho and Duarte Duque
(Brazil, Portugal)
- 11. Using Machine Learning to Classify Network Abnormalities into Legitimate or Assault in IoT-Based Cyber Physical System**
Stephen Afrifa, Vijayakumar Varadarajan, Peter Appiahene
and Tao Zhang
(China, Australia, Ghana)

Poster Session

(Conference Room *Rio de Janeiro*):
22 September 2023 (13:30-15:30)

1. Fiber Optic Current Sensor Based on 22.5° Faraday Rotator and Polarizing Beam Splitter

Andrea Madaschi, Paolo Martelli and Pierpaolo Boffi
(Italy)

2. Detection of Trafficable Areas in Outdoors with a Downward Looking 2D LiDAR

Alejandro Olivas and Fernando Torres
(Spain)

3. Classification of Sports Exercises and Repetition Counting Based on Inertial Measurement Data

Pascal Krutz, Matthias Rehm, Zhuxi Lang, Martin Dix and Justyna Patalas-Maliszewska
(Germany, Poland)

4. Exploring the Hidden Complexity: Approximate Entropy Analysis in Pulse Oximetry of Female Athletes

A.M. Cabanas, D. Catalán, N. Sáez, C. Flores and P. Martín-Escudero
(Spain, Chile)

5. Development of a Smart Irrigation System for Apple Fields using a LoRaWAN Network

Roberto Mendicino, Simone Tritini, Abraham Mejia-Aguilar and Roberto Monsorno
(Italy)

6. Zinc Tin Oxide Nanostructures Synthesized by the Microwave Hydrothermal Method Applied to Gas Sensors

Ranilson Angelo da Silva, Mateus Gallucci Masteghin and Marcelo Ornaghi Orlandi
(Brazil, UK)

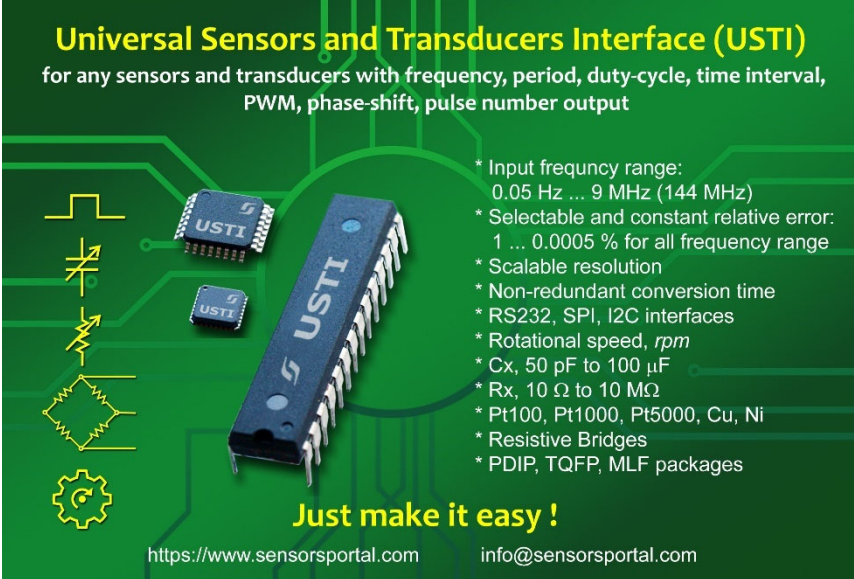
- 7. Replication of a DSC Device using 3D Computational Modelling: Correction of Heat Flow Diagrams of Selected Geopolymers by Processing the Experimental Data**
Vaclav Koci
(Czech Republic)
- 8. Development of Bimetallic Zn/Ti-BMOF Thin Film Composite Optical Waveguides for Gas Detection at Ambient Temperature**
Patima Nizamidin and Huifang Chen
(China)
- 9. Biodegradable Substrate Based on Glycerol and Agar for Transient Printed Electronics**
Beata Synkiewicz-Musialska, Bartłomiej Sikora, Kiranmai Uppuluri, Krzysztof Szostak, Radosław Cichocki and Kamil Mazela
(Poland)
- 10.10 ppm/K BiCMOS Temperature-Compensated Current Source**
Si Chen, Manuel Gonzalez and Damien Pr ele
(France)
- 11.High Sensitivity On-Chip BiCMOS Thermometer with Differential Output and Offset Nulling**
Bao Ton, Si Chen, Damien Pr ele and Manuel Gonzalez
(France)
- 12.A Four-Quadrant Active Phase Shifter for 5G Communication Systems**
Athanasios Stefanou, Moschos Antoniadis, Vasilis F. Pavlidis and Alkiviadis Hatzopoulos
(Greece)
- 13.Fast 3D Flux Calculation using Monte Carlo Ray Tracing on GPUs**
Tobias Reiter and Lado Filipovic
(Austria)
- 14.High Ferroelectric and Photocurrent Response of Epitaxial BaTiO₃ Thin Films on Silicon**
Miguel Rengifo, Diego Rubi and Myriam Aguirre
(Argentina, Spain)

15. Static and Dynamic Calibration of Pneumatic Pressure Sensors and Instruments

José Pereira and Octavian Postolache
(Portugal)

16. On the Analysis of the Physical Properties of a Thermal Interface Based on a Two-dimensional Modification of Nanocarbon for Cooling Laser Lighting Devices

Sergei Zuev and Dmitry Prokhorov
(Russia)



Universal Sensors and Transducers Interface (USTI)
for any sensors and transducers with frequency, period, duty-cycle, time interval, PWM, phase-shift, pulse number output

- * Input frequency range:
0.05 Hz ... 9 MHz (144 MHz)
- * Selectable and constant relative error:
1 ... 0.0005 % for all frequency range
- * Scalable resolution
- * Non-redundant conversion time
- * RS232, SPI, I2C interfaces
- * Rotational speed, *rpm*
- * Cx, 50 pF to 100 μ F
- * Rx, 10 Ω to 10 M Ω
- * Pt100, Pt1000, Pt5000, Cu, Ni
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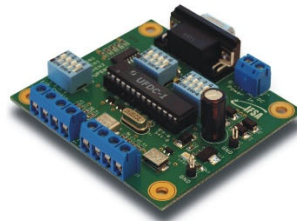
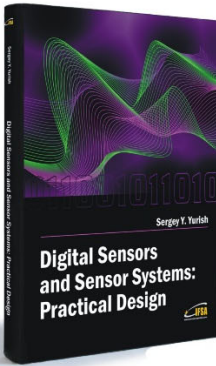
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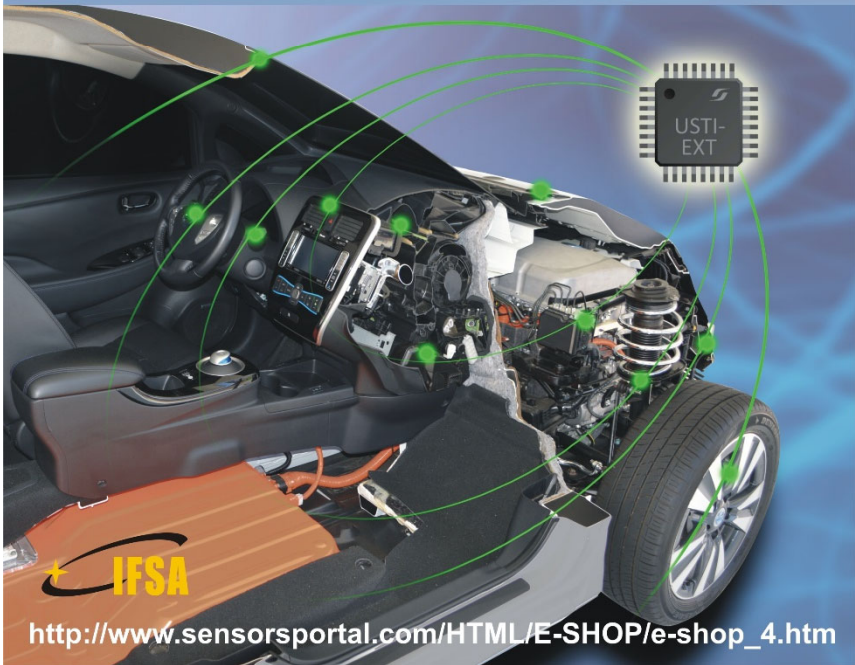
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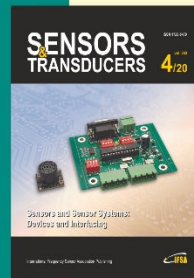
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