Welcome to Zadar, Croatia, for the 2015 IEEE Sensors Applications Symposium

Welcome to the 10th IEEE Sensors Applications Symposium (SAS 2015) in Zadar, Croatia, beautiful Mediterranean city with 3000 years old heritage. IEEE SAS is one of the flagship conferences of the IEEE Instrumentation and Measurement Society bringing together the community of sensor developers, innovators and users, and provides a forum for exploring new applications in sensor technology. This year conference continues the series of one held in Queenstown, New Zealand in 2014, Galveston, Texas in 2013, Brescia, Italy in 2012, San Antonio, Texas in 2011, Limerick, Ireland in 2010, New Orleans, Louisiana in 2009, Atlanta, Georgia in 2008, San Diego, California in 2007 and Houston, Texas in 2006. We continued with improving the quality of the review process in two stage procedure. That resulted with increase of both number and quality of the accepted papers. We will continue with improvements of the review process for the future conferences. For SAS 2015, 124 papers were submitted of which 95 were accepted for presentation at the conference.

SAS 2015 will have plenary talks by experts from industry and research on integrated sensors applications, next generation telecom services based on sensor applications and basic research of the sensing principles. Also there will be five Special Sessions on multiparametric sensors in biomedicine, near fields in smart transducers, sensor clouds power management and low power design, sensors and algorithms for resource-constrained agricultural WSNs and sensors and sensing in marine robotics. This year papers cover broad range from magnetic sensing and measurements, nondestructive evaluation and remote sensing, integrated system health management, sensor arrays and multi-sensor data fusion, microsensors, wireless sensor networks, sensors for health monitoring, sensors for smart building and home automation, sensors applications in agriculture and environment monitoring. SAS 2015 will have an industry track with latest developments in sensors applications in power engineering and additionally a co-located workshop on the same topic organized by Croatian university and industry.

SAS 2015 hosts the Second Sensor Application Development Workshop that promotes the development of applications on the Sensibility Testbed, a platform for sharing smartphone sensor data between researchers.

And this year SAS shows international participation with the largest number of authors from Europe, followed by Asia/Pacific and the United States and Canada. An international Technical Program Committee of about 200 reviewers, ably led by our Technical Program Committee Co-Chairs, is responsible for the quality and selection of the papers that are being presented at this conference.
The organizers have planned for the next three days to be busy and hopefully productive for you as you engage with the sensor applications community. As always, we value your suggestions for improving SAS, and we encourage you to provide feedback to the organizers. The size and format of this symposium is meant to encourage informal interactions – so please take advantage of this special environment at SAS.

Some of the SAS 2015 highlights include:

- Plenary talks on each conference days providing insights to sensor research, industry leadership and new business models for massive sensor applications
- Five Special Sessions
- The welcome reception on Sunday evening at the conference venue, hotel Kolovare
- The banquet on Tuesday evening at the Zadar Arsenal with traditional Dalmatian klapa
- Travel and best-paper awards presented to student authors, with the support of the IEEE Instrumentation & Measurement Society
- A Special Issue in the IEEE Transactions on Instrumentation & Measurement which will contain up to ten papers selected on the basis of the results of regular peer review of the manuscripts submitted for consideration by the participants of SAS 2015

About Zadar, our host city:

The Zadar region is very inviting with its 300 islands and islets, playful sea, one of the most indented coastlines on the Mediterranean, and thousands of years of cultural heritage. Pleasant climate, enchanting protected nature, cultural and historical monuments of the 3000-year-old Zadar make it a place where heritage is joined by modern attractions such as the Sea Organ. National parks and nature parks with hundreds of islets near lakes and waterfalls, karst barren land, endless forests, unimpaired and intact nature with thousand-year-old cultivated landscape of olive groves and vineyards Gentle beaches and hidden coves under the shade of pinewoods, endless dry stone walls and an abundance of herbs, preserved, wetland habitats, karst caves and silent underwater vastness, are all accessible in the pleasant and mild Mediterranean climate.

The marvelous Zadar archipelago is a region rich with concealed beauty, clean sea and intact nature. Islands of various shape and size, inhabited and abandoned are distributed in four rows, parallel the coast which is known as the particular Dalmatian coast. This is an ideal region for all types of water activities, on sea and in the sea, seamen can find a safe port for their boat among the 50 ports, marinas, moorings and anchorages in protected coves so that the miraculous and playful chain and sea rampart of the Zadar region is today a nautical paradise. The land surface area is almost equal to the sea surface area of Zadar County. It has the smallest cathedral in the world dating from the Middle Ages, the traditions of one of the oldest universities in Europe to the newly built and world famous Sea Organ. Localities of the crowning of kings, appearance of the first Croatian novel and newspaper, city water system dating from the Roman emperor Trajan, the first electricity system in the region only 11 years after New York, Zadar Maraschino, a liqueur made according to the recipe of the Dominicans dating from the 16th century ... all these secrets from the past are to be revealed.

10,000 years of visible remains of human dwellings in this region of those before the written word until the written in old Greek itineraries and maritime maps. History is visible even today, from Cesar and the Roman Empire, birthplace of the medieval Croatian state in Nin, to Zadar as the capital of Dalmatia from the 7th century to the 1st World War. Byzantine Empire, the Carolinians, Austrian empire, Venetians, Turks, Napoleon have been engraved and built into churches, ramparts and palaces and create a treasury of cultural and historical monuments lasting through time.

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Plenary Speakers

Diego Melpignano, STMicroelectronics

Topic:
Moving forward towards a new class of integrated sensor applications: challenges and opportunities from an industrial perspective

Abstract:
As sensor networks quantify every possible aspect of our lives, applications are appearing in many professional domains that transform this huge flow of data into meaningful information. Optimizing data collection, processing and user presentation is a challenge that is poised to get bigger and bigger as the number of connected objects grows. The presentation will focus on the following aspects: 1) new sensor technologies and increasing connectivity bandwidth demands, 2) distributed computing architecture as a means of handling scalability in large systems and 3) an industrial approach for improving time-to-market for this new class of sensor applications.

Speaker Biography:
Diego Melpignano, STMicroelectronics research director, is currently responsible for Structural Health Monitoring R&D activities dealing with advanced sensors-centered embedded systems, wireless connectivity and cloud computing; earlier he has served as program manager of the Platform 2012 embedded multiprocessing 28nm chip design.

He graduated in Electronics Engineering at University of Padua in 1993. Author of several patents and scientific publications, he has joined ST in 2003 after 10 years in Philips Research. He has been a contributor to standardization activities (Bluetooth SIG and Khronos Group) and he has been technical manager of many EU funded research projects.

His research interests include wireless networking, embedded platforms software engineering and overall system scalability.

Thomas Leyrer, Texas Instruments

Topic:
Industry 4.0: the paradigm shift in the production process
Enhanced machine connectivity combined with innovative sensing technologies

Abstract:
The future of Smart systems after Smart Phones, Smart Grid and building automation is the Smart Factory. The radical change in Factory automation and process control is referred to as "The forth industrial revolution". An increasing number of sensors are used to measure and map the environment enabling machines to take their own decision independently of the central production control system. Cyber-Physical systems will soon interact with each other without human intervention by bringing together the virtual and the physical world. Precision, computing and reaction time are key to enable a more efficient production while ensuring safety compliance. The focus of the presentation is on industrial communication technologies for Industry 4.0 including communication towards material and product.

Speaker Biography:
Thomas Leyrer is the leading System Architect for Industrial Communication at TI. He is responsible to develop system solutions for Industrial applications including Fieldbus and Industrial Ethernet on TI Analog and Embedded Processor products.

Thomas has more than 20 years experience with TI's Semiconductor Group. He held several engineering and application manager positions for Computer, Automotive, Broadband Communication and Industrial Automation market. He is an advocate of Linux Open Source and system architect for industrial communication on ARM SoCs.

Thomas holds an Engineering degree in Electrical Engineering from FH Landshut.

Gordon Glusac, Iskon Internet

Topic:
"Smart" future for Telco business; planning future business models based on new services that Telco can offer in field of sensor applications.

Abstract:
Telco providers have a perfect starting position for usage of sensor applications, already present with infrastructure in consumers' home/business office/large companies we are able to offer a new range of services and create new consumer needs. Smart homes/Smart city/Internet of Things these are routes we see as a potential for new revenue stream by offering services that will help users save energy, feel safe, automatize homes, improve businesses, ect. We have the infrastructure knowhow but also we have an experience in crating customer needs by serving large scale markets. Rethinking Telco business strategy and fast market implementation will be the key to securing a "smart" Telco future.

Speaker Biography:
Mr Glušac has acquired 15 years of experience in telco industry, but also in smaller telco startups, from incumbent to alternative scene. His professional progress covers miscellaneous areas from development of modern telecom operators to creation of Internet service provider strategies. He took part in the liberalization of the telecom market and acquired vast knowledge about consumer habits in both business and private sectors. Business development and strategy, product/process development and management as well as business intelligence are the areas that he specializes in.

A handful of projects are behind him. Today he performs the dual function as Director of Strategy and Business Development as well as Director of Proposition and Customer Value Management at Iskon Internet dd, the 2nd broadband operator in Croatia, which is part of the Deutsche Telekom Group.

Adi Bulsara, Space and Naval Warfare Systems Center Pacific

Topic:
Exploiting Cooperative Behavior in Coupled Nonlinear Dynamic Systems for Sensing Applications in the Presence of a Noise-Floor.

Abstract:
A large number of devices are underpinned by systems that are, inherently, nonlinear.Examples of these systems include magnetic field detectors underpinned by ferromagnetic cores that display a hysteretic input-output transfer characteristic due to the non-simultaneous motion (or slippage) of domain walls, cryogenic detectors e.g. the two-junction (or dc) Superconducting Quantum Interference Device (SQUID), as well as devices underpinned by electrically active materials with nonlinear transfer characteristics, and devices underpinned by ferroelastic materials. While quasi-linearization of the dynamics around an "operating point" is always possible, a good understanding of the system dynamics can allow one to produce novel solutions for reducing the noise-floor, reading out the sensor, etc.
In this lecture, we cover a particular class of nonlinear devices that have found utility in a variety of detection/transduction applications: the class of nonlinear devices that pass through a bifurcation, at a critical point, past which the dependent variable (e.g. the normalized magnetic flux in a SQUID) displays a characteristic (often) oscillatory behavior. The oscillations are non-sinusoidal, close to the critical point. Typically, such behavior occurs when the system consists of N>1 degree of freedom, and a control parameter can be adjusted to sweep the system through its critical point. Then, the effect of an external (target) signal on the oscillation characteristics can be used to detect/quantify the target signal. with the detector being particularly sensitive just past the critical point (i.e. in the low-frequency regime).
We focus on some particular aspects of this class of systems, using two specific systems (the dc SQUID, and a "coupled core" magnetometer consisting of N>3 electrically coupled wound ferromagnetic cores at room temperature) for illustrative purposes, although the analytic procedure can be applied to most devices that display this critical behavior. In particular, we demonstrate how the oscillation characteristics can be, analytically, quantified just past the critical point (the low frequency regime) and how the behavior in this regime can be, elegantly, mapped onto the dynamics of spiking neurons as understood in the theoretical neuroscience repertoire. We demonstrate further, with theoretical results as well as experiments, that an understanding of the system behavior in the oscillatory regime allows us to apply a form of "injection-locking" to lower the system noise-floor at all frequencies thereby making visible, low-frequency "target" signals that would, otherwise, be hard to detect.

Speaker Biography:
Dr. Bulsara received his PhD in Physics at the University of Texas at Austin in 1978. Currently, he is the US Navy's SME (subject matter expert) in Nonlinear Dynamics and holds the position of Distinguished Scientist at The US Navy's Space and Naval Warfare Systems Center (SPAWAR)–Pacific laboratory in San Diego.

He has managed a novel sensors program for the US govt. for 10 years, and is currently involved in the physics of a new paradigm for biomimetic nano sensors for magnetic field detection. He is an elected Fellow of the American Physical Society, with about 185 peer-reviewed articles in the physics and engineering literature. He is a reviewer of grant proposals for EPSRC-UK, and a reviewer for the journals Physical Review Letters, Physical Review, Physica, Physics Letters, IEEE Transactions, Science, and Nature.

He has ongoing research collaborations with, Univ. of California-Berkeley, Notre Dame Univ., San Diego State Univ., Warwick Univ.-UK, Univ. of Catania-Italy, Univ of Brescia-Italy, and Univ. of Perugia-Italy. He holds 15 patents, with another 8 patents currently under review

Monday, April 13

08:20 - 08:30
Opening Ceremony
Room: *Dvorana Kolovare*

08:30 - 09:30
Plenary Speaker: *Diego Melpignano*
Chair: *Vedran Bilas (University of Zagreb, Croatia)*
Room: *Dvorana Kolovare*

Moving Forward Towards a New Class of Integrated Sensor Applications: Challenges and Opportunities from an Industrial Perspective
Diego Melpignano (STMicroelectronics)

09:30 - 10:50
Magnetic Sensing and Measurements
Chair: *Darko Vasić (University of Zagreb, Croatia)*
Room: *Dvorana 1*

09:30 **Measurement System for Determining the Magnetic Polarizability Tensor of Small Metal Targets**
Omar A Abdel Rehim (University of Manchester, United Kingdom)
John Davidson (University of Manchester, United Kingdom)
Liam Marsh (University of Manchester, United Kingdom)
Michael O'Toole (University of Manchester, United Kingdom)
David Armitage (University of Manchester, United Kingdom)
Anthony Peyton (University of Manchester, United Kingdom)

09:50 **A Compensation Method of Alignment Errors during Triaxial Magnetometer Onboard Calibration on Spinning Projectile**
Zhongguo Song (Xi'an University of Technology, P.R. China)
Jinsheng Zhang (Xi'an High-Tech Institute, P.R. China)
Wenqi Zhu (Xi'an University of Technology, P.R. China)
Xi Xiaoli (Xi'an University of Technology, P.R. China)

10:10 **The Application of Non-Orthogonal Procrustes Method in Magnetometer Calibration**
Zhongguo Song (Xi'an University of Technology, P.R. China)
Jinsheng Zhang (Xi'an High-Tech Institute, P.R. China)
Wenqi Zhu (Xi'an University of Technology, P.R. China)
Xi Xiaoli (Xi'an University of Technology, P.R. China)

10:30 **A novel inclinometer exploiting magnetic fluids and an IR readout strategy**
Bruno Andò (University of Catania, Italy)
Salvatore Baglio (University of Catania, Italy)
Antonio Pistorio (University of Catania, Italy)

09:30 - 10:50
Special Session: Multiparametric Sensors in Biomedicine I
Chair: *Eugenijus Kaniusas (Vienna University of Technology, Austria)*
Room: *Dvorana 2*

09:30 **Pulse Wave Intensity and ECG: a Multisensor Approach for the Risk Assessment in Systolic Heart Failure**
Bernhard Hametner (AIT Austrian Institute of Technology GmbH, Austria)
Martin Bachler (Vienna University of Technology & AIT Austrian Institute of Technology GmbH, Austria)
Stephanie Parragh (AIT Austrian Institute of Technology GmbH, Austria)
Christopher Mayer (Austrian Institute of Technology GmbH, Austria)
Thomas Weber (Klinikum Wels-Grieskirchen, Austria)
Siegfried Wassertheurer (AIT Austrian Institute of Technology GmbH, Austria)

09:50 **Suppression of Direct Wave and Wall Clutter for Through-Wall Imaging by Spread Spectrum Radar**
Xuehui Zhang (Xi'an Jiaotong University, P.R. China
Xi Xiaoli (Xi'an University of Technology, P.R. China)
Zhongguo Song (Xi'an University of Technology, P.R. China)
Daocheng Wu (Xi'an Jiaotong University, P.R. China)

10:10 **Depth Profiles of the Peripheral Blood Oxygenation in Diabetics and Healthy Subjects in Response to Auricular Electrical Stimulation**
Eugenijus Kaniusas (Vienna University of Technology, Austria)
Stefan Kampusch (Vienna University of Technology, Austria)
Jozsef Constantin Szeles (University of Vienna, Austria)

10:30 **Capacitive Sensor for Respiration Monitoring**
Josip Grlica, (University of Zagreb, Croatia)
Toni Martinović (University of Zagreb, Croatia)
Hrvoje Džapo (University of Zagreb, Croatia)

09:30 - 11:10
Special Session: Near Fields in Smart Transducers
Chair: *Hubert Zangl (Alpen-Adria Universität, Austria)*
Room: *Dvorana 3*

09:30 **De-Icing System with Integrated Ice Detection and Temperature Sensing for Meteorological Devices**
Matthias Flatscher (Graz University of Technology, Austria)
Markus Neumayer (Graz University of Technology, Austria)
Thomas Bretterklieber (Graz University of Technology, Austria)
Michael J. Moser (Graz University of Technology, Austria)
Hubert Zangl (Alpen-Adria-Universitaet Klagenfurt, Austria)

09:50 **Nearfield Sensing and Actuation for Multispectral Imaging Systems**
Maik Rosenberger (TU-Ilmenau, Germany)
Richard Fütterer (TU-Ilmenau, Germany)
Fred Ziegner (TU-Ilmenau, Germany)
Mathias Schellhorn (TU-Ilmenau, Germany)

10:10 **Object Detection Based on Electrical Capacitance Tomography**
Stephan Mühlbacher-Karrer (Alpen-Adria Universität, Austria)
Hubert Zangl (Alpen-Adria Universität, Austria)

10:30 **A Novel Low-Cost Capacitive Tactile Sensor**
Narendiran Anandan (Indian Institute of Technology Madras, India)
Boby George (Indian Institute of Technology Madras, India)

10:50 **A parallel plate dielectric resonator as a wireless passive strain sensor**
Taimur Aftab (University of Freiburg, IMTEK, Germany)
Adnan Yousaf (University of Freiburg, Germany)
Joachim Hoppe (University of Freiburg, IMTEK, Germany)
Sebastian Stoecklin (University of Freiburg, Germany)
Thomas Ostertag (University of Freiburg, Germany)
Leonhard Reindl (IMTEK - Institute for Microsystem Technology, Germany)

11:10 - 11:30 **Break**

11:30 - 12:50
Special Session: Multiparametric Sensors in Biomedicine II
Chair: *Eugenijus Kaniusas (Vienna University of Technology, Austria)*
Room: *Dvorana 1*

11:30 **Estimation of Pulse Arrival Time Using Impedance Plethysmogram from Body Composition Scales**
Birutė Paliakaitė (Kaunas University of Technology, Lithuania)
Saulius Daukantas (Kaunas University of Technology, Lithuania)
Andrius Sakalauskas (Kaunas University of Technology, Lithuania)
Vaidotas Marozas (Kaunas University of Technology, Lithuania)

11:50 **Swimmers in the Loop: sensing moving water masses for an auditory bio-feedback system**
Daniel Cesarini (Scuola Superiore Sant'Anna, Italy)
Bodo E. Ungerechts (University of Bielefeld, Germany)
Thomas Hermann (Bielefeld University, Germany)

12:10 **Autonomous Nervous System Modulation by Percutaneous Auricular Vagus Nerve Stimulation**
Stefan Kampusch (Vienna University of Technology, Austria)
Florian Thürk (Vienna University of Technology, Austria)
Eugenijus Kaniusas (Vienna University of Technology, Austria)
Jozsef Constantin Szeles (University of Vienna, Austria)

12:30 **Strategic framework for management of hybrid biosignals from study design to statistics**
Florian Thürk(Vienna University of Technology, Austria)
Stefan Kampusch (Vienna University of Technology, Austria)
Eugenijus Kaniusas (Vienna University of Technology, Austria)

11:30 - 13:10
Special Session: Sensor clouds: Power Management and Low Power Design
Chair: *Michele Magno (ETH Zurich and University of Bologna, Switzerland)*
Room: *Dvorana 2*

11:30 **Low-power Lessons from Designing a Wearable Logger for Long-term Deployments**
Eugen Berlin (AGT International, Germany)
Martin Zittel (TU Darmstadt, Germany)
Michael Bräunlein (TU Darmstadt, Germany)
Kristof Van Laerhoven (University of Freiburg, Germany)

11:50 **Energy Aware Adaptive Sampling Algorithm for Energy Harvesting Wireless Sensor Networks**
Bruno Srbinovski (University College Cork & Electrical and Electronic Engineering, Ireland)
Michele Magno (ETH Zurich and University of Bologna, Switzerland)
Brendan O'Flynn (Tyndall National Institude, Ireland)
Vikram Pakrashi (University College Cork, Ireland)
Emanuel M. Popovici (University College Cork, Ireland)

12:10 **Efficient Inductive Powering of Brain Implanted Sensors**
Sebastian Stoecklin (University of Freiburg, Germany)
Tobias Volk (University of Freiburg, Germany)
Adnan Yousaf (University of Freiburg, Germany)
Leonhard Reindl (IMTEK - Institute for Microsystem Technology, Germany)
Joan Albesa (University of Freiburg, Germany)

12:30 **Evaluation of MOX Gas Sensor Transient Response for Low-Power Operation**
Vana Jelicic (University of Zagreb, Croatia)
Dinko Oletic (University of Zagreb, Croatia)
Tomislav Sever (University of Zagreb, Croatia)
Vedran Bilas (University of Zagreb, Croatia)

12:50 **Sustainable Energy Harvesting for Robust Wireless Sensor Networks in Industrial Applications**
Achim Berger (Linz Center of Mechatronics GmbH, Austria)
Leander B Hörmann (Linz Center of Mechatronics GmbH, Austria)
Christian Leitner (Linz Center of Mechatronics GmbH, Austria)
Stefan Oswald (AVL List GmbH, Austria)
Peter Priller (AVL List GmbH, Austria)
Andreas Springer (Johannes Kepler University Linz, Austria)

11:30 - 13:10
Sensors applications in Agriculture and Environment Monitoring I
Chair: *Alessandra Flammini (University of Brescia, Italy)*
Room: *Dvorana 3*

11:30 **Capacitance-based Wireless Sensor Mote for Snail Pest Detection**
Daniel Garcia-Lesta (University of Santiago de Compostela, Spain)
Esteban Ferro (University of Santiago de Compostela, Spain)
Victor Brea (Universidad Santiago de Compostela, Spain)
Paula López (University of Santiago de Compostela, Spain)
Diego Cabello (University of Santiago de Compostela, Spain)
Francisco Javier Iglesias (University of Santiago de Compostela, Spain)
José Castillejo (University of Santiago de Compostela, Spain)

11:50 **b+WSN: Smart Beehive for Agriculture, Environmental, and Honey Bee Health Monitoring - Preliminary Results and Analysis**
Fiona Edwards Murphy (University College Cork, Ireland)
Michele Magno (ETH Zurich and University of Bologna, Switzerland)
Pádraig Whelan (University College Cork, Ireland)
Emanuel M. Popovici (University College Cork, Ireland)

12:10 **Localized Multispectral Crop Imaging Sensors: Engineering & Validation of a Cost Effective Plant Stress and Disease Sensor**
Bruce Grieve (University of Manchester, United Kingdom)
Anne Mahlein (The University of Bonn, Germany)
Simon Hammersley (The University of Manchester, United Kingdom)
Erich Oerke (The University of Bonn, Germany)
Heiner Goldbach (The University of Bonn, Germany)

12:30 **Sensor-based Breakage Detection for Electric Fences**
Eranda Tennakoon (University of Colombo School of Computing, Sri Lanka)
Charitha Elvitigala (University of Colombo School of Computing & Eurocenter DDC, Sri Lanka)
Venkat Iyer (Uppsala University, Sweden)
Thiemo Voigt (Swedish Institute of Computer Science, Sweden)
Kasun De Zoysa (University of Colombo School of Computing, Sri Lanka)
Chamath Keppitiyagama (University of Colombo School of Computing, Sri Lanka)

12:50 **Solar Powered Sensor for Continuous Monitoring of Livestock Position**
Bradley Panckhurst (University of Otago, New Zealand)
Phill Brown (University of Otago, New Zealand)
Keith Payne (University of Otago, New Zealand)
Tim C. A. Molteno (University of Otago, New Zealand)

13:10 - 15:00 **Lunch**

15:00 - 16:00
Plenary Speaker: *Thomas Leyrer*
Chair: *Alessandra Flammini (University of Brescia, Italy)*
Room: *Dvorana Kolovare*

Industry 4.0: the Paradigm Shift in the Production Process Enhanced Machine Connectivity Combined with Innovative Sensing Technologies
Thomas Leyrer (Texas Instruments)

16:00 - 16:20 **Break**

16:20 - 18:00
Special Session: Sensors and Algorithms for Resource-Constrained Agricultural WSNs
Chairs: *Nick Harris (University of Southampton, United Kingdom), Geoff V Merrett (University of Southampton, United Kingdom)*
Room: *Dvorana 1*

16:20 **Applications of a Wireless Chloride Sensor in Environmental Monitoring**
Nick Harris (University of Southampton, United Kingdom)
Andy Cranny (University of Southampton, United Kingdom)
Mark Rivers (Institute of Agriculture, Australia)
Keith Smettem (University of Western Australia, Australia)

16:40 **Data-driven Low-Complexity Nitrate Loss Model utilizing Sensor Information – Towards Collaborative Farm Management with Wireless Sensor Networks**
Huma Zia (University of Southampton, United Kingdom)
Nick Harris (University of Southampton, United Kingdom)
Geoff V Merrett (University of Southampton, United Kingdom)
Mark Rivers (Institute of Agriculture, Australia)

17:00 **How could sensor networks help with agricultural water management issues? Optimizing irrigation scheduling through networked soil-moisture sensors**
Mark Rivers (Institute of Agriculture, Australia)
Huma Zia (Electronics and Computer Science, University of Southampton, United Kingdom)
Nick Harris (University of Southampton, United Kingdom)
Neil Coles (University of Western Australia, Australia)
Richard Yates (Harvey Water, Australia)

17:20 **Empirical Evaluation of OI-MAC: Direct Interconnection between Wireless Sensor Networks for Collaborative Monitoring**
Krongboon Singhanat (University of Southampton, United Kingdom)
Teng Jiang (University of Southampton, United Kingdom)
Nick Harris (University of Southampton, United Kingdom)
Geoff V Merrett (University of Southampton, United Kingdom)

17:40 **Towards a Sensor System to Tame the Human Elephant Conflict**
Charitha Elvitigala (University of Colombo School of Computing & Eurocenter DDC, Sri Lanka)
Eranda Tennakoon (University of Colombo School of Computing, Sri Lanka)
Ayyoob Hamza (University of Colombo, Sweden)
Yasith Lokuge (University of Colombo School of Computing, Sri Lanka)
Kasun De Zoysa (University of Colombo School of Computing, Sri Lanka)
Chamath Keppitiyagama (University of Colombo School of Computing, Sri Lanka)
Kasun Hewage (Uppsala University, Sweden)
Venkat Iyer (Uppsala University, Sweden)
Thiemo Voigt (Swedish Institute of Computer Science, Sweden)

16:20 - 18:00
Integrated System Health Management (ISHM)
Chair: *Ante Elez (KONČAR, Croatia)*
Room: *Dvorana 2*

16:20 **Fault Detection of Wind Turbine Blade Under Sudden Change of Wind Speed Condition Using Fiber Optics**
Abolghassem Zabihollah (Sharif University of Technology, Iran)
Farshid Entessari (Sharif University, International Campus, Iran)
Hossein Alimohammadi (Sharif University of Technology-IC, Iran)

16:40 **A System for the Dynamic Response Characterization of Turbomachinery Tip Clearance Measurement Instruments Based on Capacitive Probes**

Tommaso Addabbo (University of Siena, Italy)
Ada Fort (University of Siena, Italy)
Marco Mugnaini (University of Siena, Italy)
Valerio Vignoli (University of Siena, Italy)
Stefano Cioncolini (Nuovo Pignone S.p.A., Italy)
Marco Marrazzo (Ge Oil & Gas, Italy)

17:00 **Development of a simple and reliable sensor for wide range hydrogen concentration measurement in fuel cell feed**
Anna Bonavita (University of Messina, Italy)
Salvatore Gianluca Leonardi (University of Messina, Italy)
Nicola Donato (University of Messina, Italy)
Giovanni Neri (University of Messina, Italy)

17:20 **Theoretical Modeling of an Electrostatic Gas-Path Debris Detection System with Experimental Validation**
Tommaso Addabbo (University of Siena, Italy)
Ada Fort (University of Siena, Italy)
Marco Mugnaini (University of Siena, Italy)
Santina Rocchi (University of Siena, Italy)
Valerio Vignoli (University of Siena, Italy)
Riccardo Garbin (GE Oil & Gas Nuovo Pignone, Italy)

17:40 **Operating Frequency Selection for Low-Power Magnetic Induction-Based Wireless Underground Sensor Networks**
Agnelo R Silva (University of Southern California, USA)
Mahta Moghaddam (University of Southern California, USA)

16:20 - 18:00
Sensors applications in Agriculture and Environment Monitoring II
Chair: *Gourab Sen Gupta (Massey University, New Zealand)*
Room: *Dvorana 3*

16:20 **3D-FEM modeling of F/TDR sensors for clay-rock water content measurement in combination with broadband dielectric spectroscopy**
Thierry Bore (Ecole Normale Supérieure de Cachan, France)
Norman Wagner (Bauhaus-University Weimar, Germany)
Sylvie Delepine-Lesoille (Andra, France)
Frederic Taillade (EDF, France
Gonzague Six (IFSTTAR, France)
Franck Daout (GEA universite Paris 10, France)
Dominique Placko (Ecole Normale Supérieure de Cachan, France)

16:40 **Time Extraction Method for Time Domain Reflectometry Measurements**
Mangesh Gurav (Indian Institute Of Technology Bombay India, India)
Shahbaz Sarik (IIT Bombay, India)
Maryam Shojaei Baghini (IITB, India)

17:00 **Stochastic Inversion of Two-Layer Soil Model Parameters from Electromagnetic Induction Data**
Darko Vasić (University of Zagreb, Croatia)
Davorin Ambruš (University of Zagreb, Croatia)
Vedran Bilas (University of Zagreb, Croatia)

17:20 **Combined Actuator Sensor Unit for Interaction with Honeybees**
Karlo Griparic (University of Zagreb,Croatia)
Tomislav Haus (University of Zagreb, Croatia)
Damjan Miklic (University of Zagreb, Croatia)
Stjepan Bogdan (University of Zagreb, Croatia)

17:40 **Indoor Blind Localization of Smartphones by means of Sensor Data Fusion**
David Ayllón (University of Alcalá, Spain)
Héctor Sánchez-Hevia (University of Alcalá, Spain)
Roberto Gil-Pita (University of Alcalá, Spain)
Manuel Rosa (University of Alcalá, Spain)

Tuesday, April 14

08:30 - 09:30
Plenary Speaker: *Gordan Glusac*
Chair: *Deniz Gurkan (University of Houston, USA)*
Room: *Dvorana Kolovare*

"Smart" Future for Telco Business; Planning Future Business Models Based on New Services That Telco Can Offer in Field of Sensor Applications
Gordon Glusac (Iskon Internet)

09:30 - 11:10
Wireless Sensor Networks I
Chair: *Alessandra Flammini (University of Brescia, Italy)*
Room: *Dvorana 1*

09:30 **Context-Aware Query for High-Voltage Transmission Line Fault Detection using Wireless Sensor Network**
Paulo Araújo (Instituto Federal de Educação, Ciência e Tecnologia do Ceará(IFCE) & Universidade de Fortaleza (UNIFOR), Brazil)
Raimir Holanda (University of Fortaleza, Brazil)
Antonio Wendell O Rodrigues (Instituto Federal do Ceará, France)
Andre Luiz Araujo (Instituto Federal de Educação, Ciência e Tecnologia do Ceará(IFCE), Brazil)
José de Aguiar Moraes, Fh (University of Fortaleza, Brazil)
Angelo Brayner (University of Fortaleza, Brazil)
João Paolo C. M. Oliveira (Instituto Federal de Educação, Ciência e Tecnologia do Ceará(IFCE), Brazil)

09:50 **A First Look at Vehicle Data Collection via Smartphone Sensors**
Michael Reininger (New York University, USA)
Seth Miller (New York University, USA)
Yanyan Zhuang (University of British Columbia & New York University, Canada
Justin Cappos (New York University, USA)

10:10 **Synchronisation using Wireless Trigger-Broadcast for Impedance Spectroscopy of Battery Cells**
Karl-Ragmar Riemschneider (Hochschule für Angewandte Wissenschaften, University of Applied Sciences, Germany)
Valentin Roscher (Hochschule für Angewandte Wissenschaften, University of Applied Sciences, Germany)
Matthias Schneider (Hamburg University of Applied Science, Germany)
Phillip Durdaut (Kiel University, Germany)
Nico Sassano (Hochschule für Angewandte Wissenschaften, University of Applied Sciences, Germany)
Sergej Pereguda (Hochschule für Angewandte Wissenschaften, University of Applied Sciences, Germany)
Eike Mense (Hochschule für Angewandte Wissenschaften, University of Applied Sciences, Germany)

10:30 **The Impact of Elimination of The Most Critical Node on Wireless Sensor Network Lifetime**
Anil Yuksel (TOBB University of Economics and Technology & Havelsan AS, Ankara, Turkey)
Erkam Uzun (New York University Abu Dhabi, UAE)
Bulent Tavli (TOBB University of Economics and Technology, Turkey)

10:50 **Wireless Sensor Based Home Automation System as an Educational Springboard**
Scott Newberry (Massey University Palmerston North, New Zealand)
Gourab Sen Gupta (Massey University, New Zealand)

09:30 - 11:10
Sensors for Smart Building and Home Automation
Chair: *Vedran Bilas (University of Zagreb, Croatia)*
Room: *Dvorana 2*

09:30 **Non-intrusive Zigbee Power Meter for load monitoring in Smart Buildings**
Domenico Balsamo (University of Bologna, Italy)
Gianluca Gallo (University of Bologna, Italy)
Davide Brunelli (University of Trento, Italy)
Luca Benini (University of Bologna, Italy)

09:50 **Application of Power Sensors in the Control and Monitoring of a Residential Microgrid**
Philip Diefenderfer (Bucknell University, USA)
Peter Jansson (Bucknell University & College of Engineering, USA)
Edward Prescott (Bucknell University, USA)

10:10 **A Kinect-based system to enable interaction by pointing in smart spaces**
Ana Fernández (Telefonica, Spain)
Luca Bergesio (Universidad Politécnica de Madrid, Spain)
Ana M. Bernardos (Universidad Politecnica de Madrid, Spain)
Juan Besada (Universidad Politecnica de Madrid, Spain)
Jose R Casar (Universidad Politecnica de Madrid, Spain)

10:30 **Nonlinear Model Predictive Control for Energy Efficient Housing with Modern Construction Materials**
Branimir Novoselnik (University of Zagreb, Croatia)
Josip Ćesić (University of Zagreb, Croatia)
Mato Baotić (University of Zagreb, Croatia)
Ivan Petrović (University of Zagreb, Croatia)

10:50 **Estimation of disturbance heat flux in buildings**
Antonio Starčić (University of Zagreb, Croatia)
Anita Martinčević (University of Zagreb, Croatia)
Mario Vašak (University of Zagreb, Croatia)

09:30 - 17:10
Sensor Application Development Workshop
Room: *Dvorana 3*

11:10 - 11:30 **Break**

11:30 - 13:10
Wireless Sensor Networks II
Chair: *Deniz Gurkan (University of Houston, USA)*
Room: *Dvorana 1*

11:30 **Smart Meters as Part of a Sensor Network for Monitoring the Low Voltage Grid**
Alessio Dedé (A2A Reti Elettriche Spa, Italy)
Davide Della Giustina (A2A Reti Elettriche SpA, Italy)
Stefano Rinaldi (University of Brescia, Italy)
Paolo Ferrari (University of Brescia, Italy)
Alessandra Flammini (University of Brescia, Italy)
Angelo Vezzoli (University of Brescia, Italy)

11:50 **Building Distributed Sensor Network Applications using BIP**
Alexios Lekidis(University of Grenoble & Verimag, France)
Paraskevas Bourgos (University of Grenoble & Verimag, France)
Simplice Djoko-Djoko (University of Grenoble & Verimag, France)
Marius Bozga (Verimag, France)
Saddek Bensalem (University of Grenoble & Verimag, France)

12:10 **Seismic and Gas Monitoring of Volcanic Sites**
Bruno Andò (University of Catania, Italy)
Salvatore Baglio (University of Catania, Italy)
Cristian Orazio Lombardo (University of Catania, Italy)
Antonio Pistorio (University of Catania, Italy)

12:30 **On the Topic of RTT and Delivery Ratio in Query Driven Wireless Sensor Networks**
Goran Horvat (J. J. Strossmayer University of Osijek, Croatia)
Drago Zagar (J.J. Strossmayer University of Osijek, Croatia)
Jelena Vlaovic (J. J. Strossmayer University of Osijek, Croatia)

12:50 **A Virtual Square Partition for Connected Coverage Assurance in Wireless Sensor Networks**
Attapol Adulyasas (University of Surrey, United Kingdom)
Zhili Sun (University of Surrey, United Kingdom)
Ning Wang (University of Surrey, United Kingdom)

11:30 - 13:10
Nondestructive Evaluation and Remote Sensing I
Chair: *Vedran Bilas (University of Zagreb, Croatia)*
Room: *Dvorana 2*

11:30 **Target Temperature Effect on Eddy-Current Displacement Sensing**
Darko Vyroubal (Karlovac University of Applied Sciences, Croatia)
Igor Lackovic (University of Zagreb, Croatia)

11:50 **Model-Based Target Classification Using Spatial and Temporal Features of Metal Detector Response**
Davorin Ambruš (University of Zagreb, Croatia)
Darko Vasić (University of Zagreb, Croatia)
Vedran Bilas (University of Zagreb, Croatia)

12:10 **Scriptable Virtual Onboard Sensors for Conducting Post-Deployment Drills in Wireless Sensor Networks**
Manos Koutsoubelias (University of Thessaly, Greece)
Spyros Lalis (University of Thessaly, Greece)
Petros Lampsas (Technological Educational Institute of Lamia, Greece)
Nasos Grigoropoulos (University of Thessaly, Greece)
Serafeim Katsikas (Prisma Electronics, Greece)
Dimitrios Dimas (Prisma Electronics, Greece)

12:30 **Rapid Non-Contact Relative Permittivity Measurement of Fruits and Vegetables using Magnetic Induction Spectroscopy**
Michael O'Toole (University of Manchester, United Kingdom)
Liam Marsh (University of Manchester, United Kingdom)
John Davidson (University of Manchester, United Kingdom)
Yee Tan (University of Manchester, United Kingdom)
David Armitage (University of Manchester, United Kingdom)
Anthony Peyton (University of Manchester, United Kingdom)

12:50 **Can Smart Devices Assist In Geometric Model Building?**
Richard Milliken (Cardiff University, United Kingdom)
Jim Cordwel (Renishaw PLC, United Kingdom)l
Stephen Anderson (Renishaw PLC, United Kingdom)
Ralph Martin (Cardiff University, United Kingdom)
David Marshall (Cardiff University, United Kingdom)

13:10 - 15:00 **Lunch**

15:00 - 16:00
Patrons Presentations
Chair: *Vedran Bilas (University of Zagreb, Croatia)*
Room: *Dvorana Kolovare*

16:00 - 16:20 **Break**

16:20 - 17:40
Agriculture, Environment and Health Monitoring
Chair: *Gourab Sen Gupta (Massey University, New Zealand)*
Room: *Dvorana 1*

16:20 **Fault Tolerant and Scalable IoT-based Architecture for Health Monitoring**
Tuan Nguyen Gia (University of Turku, Finland)
Amir-Mohammad Rahmani (University of Turku, Finland)
Tomi Westerlund (University of Turku, Finland)
Pasi Liljeberg (University of Turku, Finland)
Hannu Tenhunen (University of Turku, Finland)

16:40 **Self-Powered Wireless Sensor Nodes for Monitoring Radioactivity in Contaminated Areas using Unmanned Aerial Vehicles**
Andres Gomez (ETH Zurich, Switzerland)
Marie Francine Lagadec (ETH Zurich, Switzerland)
Michele Magno (ETH Zurich and University of Bologna, Switzerland)
Luca Benini (Unversity of Bologna, Italy)

17:00 **Design of Sensor Node for Air Quality Crowdsensing**
Dinko Oletic (University of Zagreb, Croatia)
Vedran Bilas (University of Zagreb, Croatia)

17:20 **Unmanned aerial gas leakage localization and mapping using microdrones**
Vanesa Gallego (Universidad de Oviedo, Spain)
Maurizio Rossi (University of Trento, Italy)
Davide Brunelli (University of Trento, Italy)

16:20 - 17:40
Nondestructive Evaluation and Remote Sensing II
Chair: *Deniz Gurkan (University of Houston, USA)*
Room: *Dvorana 2*

16:20 **Semi-analytical modeling of an eddy current imaging system for the characterization of defects in metallic structures**
Thierry Bore (Ecole Normale Supérieure de Cachan, France)
Pierre-Yves Joubert (University of Paris Sud, France)
Dominique Placko (Ecole Normale Supérieure de Cachan, France)

16:40 **Prediction of the asymptotical magnetic polarization tensors for cylindrical samples using the boundary element method**
Mingyang Lu, Jr. (University of Manchester, United Kingdom)
Qian Zhao (Qufu Normal University, P.R. China)
Wuliang Yin (The University of Manchester, United Kingdom)

17:00 **Evaluation of a high sensitivity radiofrequency inductive probe for the non-contact sensing of dielectric properties of organic mediums**
Gayathri Masilamany (University of Paris Sud, France)
Pierre-Yves Joubert (University of Paris Sud, France)
Stephane Serfaty(University of Cergy Pontoise, France)
Bastien Roucaries (University of Cergy Pontoise, France)
Pascal Griesmar (University of Cergy Pontoise, France)

17:20 **Fixed-pattern noise suppression in low-sensing environment of Time-of-flight devices**
Mihail Georgiev (Tampere Technical University, Finland)
Robert Bregovic (Tampere University of Technology, Finland)
Atanas Gotchev (Tampere University of Technology, Finland)

17:40 - 18:30
Pitch Workshop
Room: *Dvorana Kolovare*

19:30 - 22:00 **Social Dinner, SAS 2016 Presentation & Award Ceremony at *the Arsenal of Zadar***

Wednesday, April 15

08:30 - 09:30
Plenary Speaker: *Adi Bulsara*
Chair: *Salvatore Baglio (University of Catania, Italy)*
Room: *Dvorana Kolovare*

Exploiting Cooperative Behavior in Coupled Nonlinear Dynamic Systems for Sensing Applications in the Presence of a Noise-Floor
Adi Bulsara (Space and Naval Warfare Systems Center Pacific)

09:30 - 10:50
Sensor Arrays and Multi-sensor Data Fusion I
Chair: *Deniz Gurkan (University of Houston, USA)*
Room: *Dvorana 1*

09:30 **Sensor Fusion for Intrusion Detection Under False Alarm Constraints**
Matthew O Pugh (Sandia National Laboratories, USA)
Jerry Brewer (Sandia National Labs, USA)
Jacques Kvam (Verdigris Technologies, USA)

09:50 **A Minimax Approach to Sensor Fusion for Intrusion Detection**
Matthew O Pugh (Sandia National Laboratories, USA)

10:10 **Sensor Interoperability for Disaster Management**
Harald Rieser (Salzburg Research Forschungsgesellschaft, Austria)
Peter Dorfinger (Salzburg Research Forschungsgesellschaft mbH, Austria)
Vangelis Nomikos (University of Athens, Greece)
Vassilis Papataxiarhis (University of Athens, Greece)

10:30 **Information Fusion in Weigh In Motion Systems**
Ryszard Sroka (AGH University of Science and Technology, Poland)
Janusz Gajda (AGH University of Science and Technology, Poland)
Piotr Burnos (AGH University of Science and Technology, Poland)
Piotr Piwowar (AGH University of Science and Technology, Poland)

09:30 - 10:50
Special Session: Sensors and Sensing in Marine Robotics I
Chair: *Nikola Miskovic (University of Zagreb, Croatia)*
Room: *Dvorana 2*

09:30 **Challenges in underwater navigation: exploring magnetic sensors anomaly sensing and navigation**
Vladimir Djapic (SPAWAR Systems Center Pacific, USA)
Wenjie Dong (The University of Texas-Pan American, USA)
Adi R. Bulsara (Space and Naval Warfare Center (San Diego), USA)
Greg Anderson (Space and Naval Warfare Center (San Diego), USA)

09:50 **Preliminary Results for Hydrographic Seabed Analysis with Acoustic Devices**
Elisa Fumagalli (CNR-ISSIA, Italy)
Roberta Ferretti (CNR-ISSIA, Italy)
Enrica Zereik (CNR-ISSIA, Italy)
Marco Bibuli (CNR-ISSIA, Italy)
Gabriele Bruzzone (CNR-ISSIA, Italy)
Massimo Caccia (CNR-ISSIA, Italy)

10:10 **DiverNet - a Network of Inertial Sensors for Real Time Diver Visualization**
Geraint M. Goodfellow (Newcastle University, United Kingdom)
Ivor Rendulic (University of Zagreb, Croatia)
Jeffrey A. Neasham (Newcastle University, United Kingdom)
Dula Nad (University of Zagreb, Croatia)
Nikola Miskovic (University of Zagreb, Croatia)

10:30 **Determination of Material and Geometric Properties of Metallic Objects using the Magnetic Polarisability Tensor**
Jarmo Makkonen (Tampere University of Technology, Finland)
Liam Marsh (University of Manchester, United Kingdom)
Juho Vihonen (Tampere University of Technology, Finland)
Michael O'Toole (University of Manchester, United Kingdom)
David Armitage (University of Manchester, United Kingdom)
Ari Järvi (Rapiscan Systems Oy, Finland)
Anthony Peyton (University of Manchester, United Kingdom)
Ari Visa (Tampere University of Technology, Finland)

09:30 - 11:10
Sensors for Health Monitoring
Chair: *Bruno Andò (University of Catania, Italy)*
Room: *Dvorana 3*

09:30 **SVM-Based Fall Detection Method for Elderly People Using Android Low-Cost Smartphones**
Luca Pernini (Università Politecnica delle Marche, Italy)
Alberto Belli (Università Politecnica delle Marche, Italy)
Lorenzo Palma (Università Politecnica delle Marche, Italy)
Simone Valenti (Università Politecnica delle Marche, Italy)
Michele Paniccia (Istituto di Riabilitazione Santo Stefano, Italy)
Paola Pierleoni (Università Politecnica delle Marche, Italy)

09:50 **Position-dependent distribution of lung ventilation – A feasability study**
Andreas Waldmann (Swisstom, Switzerland)
Stephan Böhm (Swisstom, Switzerland)
Fernando Suarez-Sipmann (Uppsala University, Sweden)

10:10 **Towards the correlation between human hydration and the electrical activity of the heart using Electric Potential Sensors**
Elizabeth Rendon-Morales (University of Sussex, United Kingdom)

10:30 **Textile Antennas for On-Body Sensors**
Branimir Ivšić (University of Zagreb, Croatia)
Davor Bonefačić (University of Zagreb, Croatia)
Juraj Bartolić (University of Zagreb, Croatia)

10:50 **Comparison of different classifiers in movement recognition using WSN-based wrist-mounted sensors**
Peter Sarcevic (University of Szeged, Hungary),
Zoltán Kincses (University of Szeged, Hungary)
Szilveszter Pletl (University of Szeged, Hungary)

11:10 - 11:30 **Break**

11:30 - 12:30
Sensor Arrays and Multi-sensor Data Fusion II
Chair: *Alessandra Flammini (University of Brescia, Italy)*
Room: *Dvorana 1*

11:30 **Microimmune Algorithm for Sensor Network Localization**
Slaven Glumac (University of Zagreb, Croatia)
Damir Arbula (University of Zagreb, Croatia)
Zdenko Kovacic (University of Zagreb, Croatia)

11:50 **A Virtual Scalpel for Visualizing Patients in a Three-Dimensional, Immersive, Navigable and Interactive Virtual Reality Environment**
Mark Locuson, Jr (Rowan University, USA)
George D. Lecakes, Jr. (Rowan University, USA)
Shreekanth Mandayam (Rowan University, USA)
Mira Lalovic-Hand (Rowan University, USA)

12:10 **Using smartglasses for utility-meter reading**
Emiliano Sisinni (University of Brescia, Italy)
Alessandro Depari (University of Brescia, Italy)
Chiara Maria De Dominicis (University of Brescia, Italy)
Alessandra Flammini (University of Brescia, Italy)
Luca Fasanotti (University of Bergamo, Italy)
Paolo Gritti (ABB S.p.A., Italy)

11:30 - 12:50
Special Session: Sensors and Sensing in Marine Robotics II
Chair: *Nikola Miskovic (University of Zagreb, Croatia)*
Room: *Dvorana 2*

11:30 **AUV based mobile fluorometers: system for underwater oil-spill detection and quantification**
Antonio Vasilijevic(University of Zagreb, Croatia)
Nikola Stilinovic (University of Zagreb, Croatia)
Dula Nad (University of Zagreb, Croatia)
Filip Mandic (University of Zagreb, Croatia)
Nikola Miskovic (University of Zagreb, Croatia)
Zoran Vukic (University of Zagreb, Croatia)

11:50 **Adaptive Frequency Filtering for Forward-Looking Sonar Imagery Spectral Registration**
Natàlia Hurtós Vilarnau (University of Girona, Spain)
Narcis Palomeras (University of Girona, Spain)
Arnau Carrera (University of Girona, Spain)
Marc Carreras (University of Girona, Spain)

12:10 **Low Cost Optronic Obstacle Detection Sensor for Unmanned Surface Vehicles**
Andrea Sorbara (Italian National Research Council, Italy)
Enrica Zereik (CNR-ISSIA, Italy)
Marco Bibuli (CNR-ISSIA, Italy)
Gabriele Bruzzone (CNR-ISSIA, Italy)
Massimo Caccia (CNR-ISSIA, Italy)

12:30 **Design of Electromagnetic Sensor Arrays Optimised for Inversion of the Magnetic Polarisability Tensor**
Liam Marsh (University of Manchester, United Kingdom)
Omar A Abdel Rehim, (University of Manchester, United Kingdom)
Yee Tan (University of Manchester, United Kingdom)
Michael O'Toole (University of Manchester, United Kingdom)
David Armitage (University of Manchester, United Kingdom)
Anthony Peyton (University of Manchester, United Kingdom)

11:30 - 13:10
Microsensors
Chair: *Salvatore Baglio (University of Catania, Italy)*
Room: *Dvorana 3*

11:30 **Magnetic Micropillar Sensors for Force Sensing**
Ahmed Alfadhel (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)
Jürgen Kosel (King Abdullah University of Science and Technology, Saudi Arabia)

11:50 **Novel Mechanical Transducers for Switched Capacitor Circuits**
Carlo Trigona (University of Catania, Italy)
A. Noto (DIEEI, Italy)
Bruno Andò (University of Catania, Italy)
Salvatore Baglio (University of Catania, Italy)

12:10 **Measurement of dissolved hydrogen concentration with Clark electrode**
Dino Mislov (University of Zagreb, Croatia)
Mario Cifrek (University of Zagreb, Croatia)
Igor Krois (University of Zagreb, Croatia)
Hrvoje Džapo (University of Zagreb, Croatia)

12:30 **Portable FBG Based Optical Sensor Array**
Ivan Drazic Segrt (University of Zagreb, Croatia)
Ana Pozgajec (University of Zagreb, Croatia)
Marko Sprem (University of Zagreb, Croatia)
Marko Bosiljevac (University of Zagreb, Croatia)
Zvonimir Sipus (University of Zagreb, Croatia)

12:50 **Model Fusion for Inertial-based Personal Dead Reckoning Systems**
Michał Meina (University of Warsaw, Poland)
Krzysztof Rykaczewski (University of Warsaw, Poland)
Adam Krasuski (The Main School of Fire Service, Poland)

11:30 - 15:00
Parallel Meeting
Room: *Dvorana Kolovare*

13:10 - 13:30
Closing Ceremony
Room: *Dvorana 2*