

# **2013 Seventh International Conference on Sensing Technology**

**(ICST 2013)**

**Wellington, New Zealand  
3-5 December 2013**



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## Program

### S0: Opening Ceremony

### S1: Keynote 1

10:00 to 10:45 Brian Cuningham  
10:45 to 11:30 Goutam Chattopdhyay

### Interval

Allow delegates to move between sessions

### S2A: Gas and Chemical Sensors 1

#### ***Selectivity of organic nanocomposite sensor for detection of aldehydes***

Ashwini Mallya (Indian Institute of Science, India); Praveen Ramamurthy (Indian Institute of Science, India)  
pp. 1-6

#### ***Integration of ZnO Nanoflakes with MEMS Platform and its Application as Gas Sensor***

Partha Bhattacharyya (Bengal Engineering and Science University, Shibpur, India)  
pp. 7-10

#### ***Tuning the Bias Sensing Layer: A New Way to Greatly Improve Metal-Oxide Gas Sensors Selectivity***

Nicolas Dufour (LAAS-CNRS, France); Audrey Chapelle (LAAS-CNRS, France); Chabane Talhi (LAAS-CNRS, France); Frederic Blanc (LAAS-CNRS, France); Bernard Franc (LAAS-CNRS, France); Philippe Menini (LAAS-CNRS, France); Khalifa Aguir (IMN2P, France)  
pp. 11-15

#### ***Soft-sensing of Liquid Desiccant Concentration Based on ELM***

Zhongtian Chen (Zhejiang University of Technology, P.R. China); Wenjian Cai (Nanyang Technological University, Singapore); Xiong Xiong He (Zhejiang University of Technology, P.R. China); Xinli Wang (Zhejiang University, P.R. China); Lei Zhao (Nanyang Technological University, P.R. China)  
pp. 16-21

#### ***Ovarian Hormone Estrone Glucuronide (E1G) Quantification- Impedimetric Electrochemical Spectroscopy Approach***

Asif Iqbal Zia (Massey University & COMSATS Institute of Information Technology, New Zealand); Anton Yudhana (Ahmad Dahlan University, Indonesia); Subhas Mukhopadhyay (Massey University, New Zealand); Pak Yu (Massey University, New Zealand); Ibrahim Al-Bahadly (Massey University, New Zealand); Chinthaka Gooneratne (King Abdullah University of Science and Technology, Saudi Arabia); Jürgen Kosel (King Abdullah University of Science and Technology, Saudi Arabia)  
pp. 22-27

### S2B: Novel Applications 1

#### ***A digital delivery system of scent for video game application***

Ibrahim Al-Bahadly (Massey University, New Zealand)  
pp. 28-33

***Identification of Single Bacteria using Micro Raman Spectroscopy***

Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria); Gerald McGunnigle (Carinthian Tech Research AG, Austria); Dirk Balthasar (TOMRA Sorting Solutions GmbH, Austria); Jürgen Popp (Friedrich-Schiller-Universität Jena, Germany); Petra Rösch (Friedrich-Schiller-University, Germany)  
pp. 34-39

***A Novel and Cost Effective Resistive Rain Sensor for Automatic Wiper Control: Circuit Modelling and Implementation***

Mukul Joshi (College of Engineering Pune, India); Kaustubh Jogalekar (College of Engineering, Pune, India); Dayanand Sonawane (College of Engineering, Pune, India); Vinayak Sagare (Automotive Research Institute of India, India); Madhuri Arunkumar Joshi (College of Engineering, Pune, India)  
pp. 40-45

***Automated Monitoring of Foraging Behaviour in Free Ranging Sheep Grazing a Biodiverse Pasture***

Alex Mason (Liverpool John Moores University, United Kingdom); Jenny Sneddon (Liverpool John Moores University, United Kingdom)  
pp. 46-51

***Development of Anal Position Detecting System for New-Toilet system***

Koshi Tokoro (Tokyo University of Science, Japan); Hiroshi Kobayashi (Tokyo University of Science, Japan)  
pp. 52-55

## **S2C: Biosensors 1**

***Developing Non-Parametric Density Estimation on Genetic Evolution Computing as a Cloud Based Sensor Fusion Method***

Tsu-Wang Shen (Tzu Chi University, Taiwan)  
pp. 56-61

***Performance Optimization of Temperature Compensated Surface Acoustic Wave Biosensors***

Shuangming Li (Nanjing University of Science & Technology, P.R. China); Yan Su (Nanjing University of Science & Technology, P.R. China); Ying Wan (Nanjing University of Science & Technology, P.R. China); Zheng Tang (Nanjing University of Science & Technology, P.R. China)  
pp. 62-66

***Biochemical Sensing Assays based on Coalescence-induced Self-propulsion Digital Microfluidics***

Volker Nock (University of Canterbury & MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand); Mathieu Sellier (University of Canterbury, New Zealand); Yannick Muller (University of Canterbury, New Zealand); Claude Verdier (CNRS and University Joseph Fourier, France)  
pp. 67-70

***Electrochemical Biosensing of Organophosphates using Vertically Aligned Multiwall Carbon Nanotubes***

Saroja Mantha (Research Associate, USA); Bryan Chin (Auburn University, USA); Aleksandr Simonian (Auburn University, USA)  
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***An A.N.N. Model of the Perception of Sound by the Human Auditory System***

Daniel Riordan (Institute of Technology, Tralee, Ireland); Pat Doody (ITTralee, Ireland); Joseph Walsh (Institute of Technology, Tralee, Ireland)  
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## **S2D: Wireless Sensors Networks 1**

***Intellectus: Multi-Hop Fault Detection Methodology Evaluation***

Tiziana Campana (University College of Dublin, Ireland); Gregory O'Hare (University College Dublin, Ireland)  
pp. 81-90

***Light-Weight History-Based Medium Access Control (MAC) Protocol for Body Area Networks***

Nesa Mouzehkesh (Charles Sturt University, Australia); Tanveer A Zia (Charles Sturt University, Australia); Saman Shafigh (Charles Sturt University, Australia); Lihong Zheng (Charles Sturt University, Australia)

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***Wireless Sensor Network Attacks: An Overview and Critical Analysis***

Arash Tayebi (University of Auckland, New Zealand); Stevan Mirko Berber (University of Auckland, New Zealand); Akshya Kumar Swain (University of Auckland, New Zealand)

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***AWSAM-3: A low power miniaturised wireless sensor mote***

Ameer Ivoghlian (The University of Auckland, New Zealand); Kevin I-Kai Wang (The University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)

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***Secured Multimedia Authentication System for Wireless Sensor Network Data related to Internet of Things***

Jyotsna Suryadevara (Malla Reddy Institute of Engineering & Technology- & JNTU-Hyderabad, India); Bollam Sunil (Malla Reddy Institute of Engineering & Technology-, India); Nagender Kumar Suryadevara (Massey University, New Zealand)

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### **S3: Invited Session 1**

14:00 - 14:30 James Brussey; 14:30 - 15:00 Goutam Chakraborty; 15:00 - 15:30 Basabi Chakraborty; 15:30 - 16:00 Ian Platt

14:00 - 14:30 Advanced sensing technologies for superconducting devices test at CERN  
Pasquale Arpaia, European Organization for Nuclear Research (CERN) and University of Sannio, Italy.  
14:30 - 15:00 Proposal of a sub-cent RFID using metal-patch - Problems and ways to overcome them  
Goutam Chakraborty, Iwate Prefectural University, Japan  
15:00 - 15:30 Feature selection for pattern analysis and mining of sensors' data  
Basabi Chakraborty Iwate Prefectural University, Japan  
15:30 - 16:00 Imaging Dielectric Structure Using Transmission Line Waveguides 47  
Ian Platt, Lincoln Ventures Ltd, New Zealand

### **S4A: Gas and Chemical Sensors 2**

***Combination of tailored acid-base and red/ox properties of nanocrystalline SnO<sub>2</sub> for optimal gas sensor performance***

Valeriy Krivetskiy (M. V. Lomonosov Moscow State University, Russia); Roman Rozhik (M. V. Lomonosov Moscow State University, Russia); Marina Rumyantseva (M. V. Lomonosov Moscow State University, Russia); Alexander Gaskov (M. V. Lomonosov Moscow State University, Russia)

pp. 116-120

***Ethanol Sensor Based on ZnO Nanoporous Prepared via Microwave Oven***

Noor Ridha (Universiti Kebangsaan Malaysia (UKM), Malaysia)

pp. 121-126

***Highly Sensitive and Stable MOSFET-Type Hydrogen Sensor with Dual FETs***

Jung-Sik Kim (University of Seoul, Korea); Bum-Joon Kim (University of Seoul, Korea)

pp. 127-130

***Semiconductor gas sensing coupled with pre-sampling system for toxic compounds and chemical threat agents detection***

Valeriy Krivetskiy (M. V. Lomonosov Moscow State University, Russia); Alexander Gaskov (M. V. Lomonosov Moscow State University, Russia); Andrey Smirnov (M. V. Lomonosov Moscow State University, Russia); Maksim Panteleev (M. V. Lomonosov Moscow State University, Russia); Leonid Logvin (M. V. Lomonosov Moscow State University, Russia)

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***Fast and Low-Cost Online Detection of Critical Micelle Concentration based on Impedance Spectroscopy***

Roman Gruden (Seuffer GmbH & Co. KG & TU Chemnitz, Germany); Olfa Kanoun (Chemnitz University of Technology, Germany)  
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## **S4B: Image, Vision and Range Sensors 1**

***Fully Integrated Vision Based Localization in Low Cost Robot Using Kinect***

Alexandre This (ECE Paris School of Engineering, France); Badis Bouchilaoun (ECE Paris School of Engineering, France); Ronan Guyomard (ECE Paris School of Engineering, France); Charles Lahaye (ECE, France); Thomas Lange (ECE Paris School of Engineering, France)  
pp. 141-144

***Hyper-spectral video endoscopy system for intra-surgery tissue classification***

Thomas Arnold (Carinthian Tech Research AG & University of Klagenfurt, Austria); Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria)  
pp. 145-150

***Ultrasonic Range Measurements on the Human Body***

Dirk Weenk (University of Twente, The Netherlands); Bert-Jan van Beijnum (University of Twente, The Netherlands); Ed Droog (University of Twente, The Netherlands); Hermie Hermens (University of Twente, The Netherlands); Peter Veltink (University of Twente, The Netherlands)  
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***A 3D vision system for high resolution surface reconstruction***

Roberto Marani (National Research Council (CNR), Italy); Giuseppe Roselli (National Research Council (CNR), Italy); Massimiliano Nitti (Consiglio delle Ricerche - ISSIA, Italy); Grazia Cicirelli (National Research Council, Italy); Tiziana D'Orazio (National Research Council, Italy); Ettore Stella (Consiglio delle Ricerche - ISSIA, Italy)  
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***Analysis of Indoor Environments by Range Images***

Roberto Marani (National Research Council (CNR), Italy); Giuseppe Roselli (National Research Council (CNR), Italy); Massimiliano Nitti (Consiglio delle Ricerche - ISSIA, Italy); Grazia Cicirelli (National Research Council, Italy); Tiziana D'Orazio (National Research Council, Italy); Ettore Stella (Consiglio delle Ricerche - ISSIA, Italy)  
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## **S4C: Biosensors 2**

***Label-free Capacitance DNA Sensing***

Yi Jia (University of Puerto Rico, Mayaguez, USA); Phillip Rivera Ortiz (University of Puerto Rico – Mayaguez, Puerto Rico); Carlos Cabrera (University of Puerto Rico – Rio Piedras, Puerto Rico); Nella Vargas (University of Puerto Rico – Rio Piedras, Puerto Rico)  
pp. 169-173

***Wireless Magnetoelastic Biosensors for the Detection of Salmonella on Fresh Produce***

Bryan Chin (Auburn University, USA)  
pp. 174-177

***A microflow cytometer chip driven by the absorbent force of on-chip superabsorbent materials***

Yan-Chang Lee (National Chung Cheng University, Taiwan); Wen-Hsin Hsieh (National Chung Cheng University, Taiwan)  
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***Magnetotactic Bacteria as Dispatched Oxygen Sensors***

Sylvain Martel (Polytechnique Montreal, Canada); Mahmood Mohammadi (Polytechnique Montreal, Canada); Dominic de Lanauze (Polytechnique Montreal, Canada); Ouajdi Felfoul (Polytechnique Montreal, Canada)  
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### **Human Sensing Using Wearable Wireless Sensors for Smart Environments**

Chika Sugimoto (Yokohama National University, Japan)  
pp. 188-192

## **S4D: Wireless Sensors Networks 2**

### **A Energy Efficient WSN System for Limited Power Source Environments**

Rodrigo Semente (Universidade Federal do Rio Grande do Norte, Brazil); Felipe Oliveira (Universidade Estadual do Rio Grande do Norte, Brazil); Alberto Lock (Universidade Federal da Paraíba, Brazil); Alexandre Silva (Universidade Federal do Rio Grande do Norte, Brazil); Andres Salazar (Federal University of Rio Grande do Norte, Brazil)  
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### **An Ultra Low Energy 8-bit Charge Redistribution ADC for Wireless Sensors**

Antonio J López-Martín (Public University of Navarra, Spain); Iñigo Cenoz Villanueva (UPNA, Spain)  
pp. 198-202

### **An Adaptive Approach to Information Discovery in Multi-Dimensional Wireless Sensor Networks**

Menik Tissera (Deakin University, Australia); Robin Doss (Deakin University, Australia); Gang Li (Deakin University, Australia); Lynn M Batten (Deakin University, Australia)  
pp. 203-208

### **Comparative Study of Routing Protocols for Opportunistic Networks**

Majeed Alajeely (Deakin University, Australia); Asma'a Ahmad (Deakin University, Australia); Robin Doss (Deakin University, Australia)  
pp. 209-214

### **Effect of Distributed Backoff mechanism to Simple Autonomous Active Period Selection Control in Cluster-tree type IEEE 802.15.4 WSNs with Cluster Mobility**

Kazuo Mori (Mie University, Japan); Katsuhiko Naito (Mie University, Japan); Hideo Kobayashi (Mie University, Japan)  
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## **S5: Keynote 2**

## **S6A: Temperature, Humidity and Flow Sensors**

### **Fluid Flow Rate Estimation using Acceleration Sensors**

Laura Fabbiano (Polytechnic of Bari, Italy); Gaetano Vacca (Politecnico di Bari, Italy); Giuseppe Dinardo (Politecnico di Bari, Italy)  
pp. 221-225

### **Mach-Zehnder interferometer as a temperature sensor based on the nested fiber ring resonator**

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Changqiu Yu (Harbin Institute of Technology, P.R. China); Kaiyang Wang (Harbin Institute of Technology, P.R. China); Chi Xu (Harbin Institute of Technology, P.R. China); Haiping Wang (Ice Training Base in HeiLongJiang Province, P.R. China); Yuhua Zhang (Harbin Normal University, P.R. China)  
pp. 226-229

### **Development of polymer coated fibre Bragg gratings for relative humidity sensing**

Adam Swanson (Massey University, New Zealand)  
pp. 230-234

### **In-vitro measurement of pulp chamber temperature increase with light cured composite resins using fiber Bragg grating thermal sensor**

Sharath Umesh (Indian Institute of Science, India); Aadarsh Koratagere (M S Ramaiah Dental College and Hospital, India); Adarsh Bhat (KLE Society's Institute of Dental Sciences and Hospital, India); Jayanth Ravi (M S Ramaiah Dental College and Hospital, India); Sundarajan Asokan (IISc, India)  
pp. 235-237

***Noncontact Temperature Profiling of Rotating Cylinder by Laser-Ultrasonic Sensing***

Ikuo Ihara (Nagaoka University of Technology, Japan); Akira Kosugi (Nagaoka University of Technology, Japan); Iwao Matsuya (Nagaoka University of Technology, Japan); Yasuhiro Ono (Nagaoka University of Technology, Japan)  
pp. 238-241

## S6B: Signal Analysis

***Circularly Moving Sensor for Use of Modulation Effect***

Masako Kishida (University of Canterbury, New Zealand); Yusuke Hioka (University of Canterbury, New Zealand)  
pp. 242-246

***Scale Factor in MEMS Gyroscopes - The Effect of Power Supply Voltage***

Martin Vágner (Brno University of Technology, Czech Republic); Petr Beneš (Brno University of Technology & FEEC, Czech Republic)  
pp. 247-251

***Noise Analysis of a Capacitor-to-Voltage Converter With a Zoom-in Technique***

Stoyan Nihtianov (Technical University - Delft, The Netherlands); Ali Heidary (Guilan University, Iran); Reza Taherkhani (Iran University of Science and Technology, Iran)  
pp. 252-255

***Wave Intensity Estimation Over Broad Wavelengths Based On Diffused Sensing***

Kenta Niwa (NTT Media Intelligence Laboratories, Japan); Yusuke Hioka (University of Canterbury, New Zealand); Kazunori Kobayashi (NTT Media Intelligence Laboratories, Japan)  
pp. 256-261

***A Novel Signal Reconstruction Strategy of Multifunctional Self-validating Sensor***

Qi Wang (Harbin Institute of Technology, P.R. China); Shen Zhengguang (Harbin Institute of Technology, P.R. China); Kai Song (Harbin Institute of Technology, P.R. China); Fengyu Zhu (Harbin Institute of Technology, P.R. China)  
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## S6C: Biosensors 3

***Brain activity measurement in the occipital region of the head using a magneto-impedance sensor***

Shingo Tajima (Nagoya University, Japan)  
pp. 267-270

***Using Wearable Near-field Radar Sensor for Non-contact Heartbeat Signal Detection***

Hong-Dun Lin (Industrial Technology Research Institute, Taiwan)  
pp. 271-274

***Higher throughput of optical detection of bacteria concentrated by negative dielectrophoresis***

Ryoji Obara (Kyushu University, Japan); Ding Zhenhao (Kyushu University, Japan); Kenta Shinzato (Kyushu University, Japan); Michihiko Nakano (Kyushu University, Japan); Junya Suehiro (Kyushu University, Japan)  
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***Wirelessly Powered Microfluidic Sensor and Actuator Systems***

Dulsha Kularatna-Abeywardana (The University of Auckland, New Zealand); Patrick Hu (University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)  
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***Apnea Sensing Using Photoplethysmography***

Gaurav Gaurav (IIT Madras, India); Mohanasankar Sivaprakasam (IIT Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)  
pp. 285-288

## S6D: Mechanical Sensors 1

### ***Force Based Pain Sensing in Animals Using Stepping Motor***

Ibrahim Al-Bahadly (Massey University, New Zealand)  
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### ***Design and Analysis of a Triple-Axis Thermal Accelerometer***

Thien Dinh (Ritsumeikan University, Japan); Yoshifumi Ogami (Ritsumeikan University, Japan)  
pp. 295-300

### ***Reducing the Probe Ball Diameters of 3D Silicon-Based Microprobes for Dimensional Metrology***

Nelson Ferreira (Technische Universität Braunschweig & Institut für Mikrotechnik, Germany); Alexander Brennecke (Technische Universität Braunschweig, Germany); Thomas Krah (Physikalisch-Technische Bundesanstalt, Germany); David Metz (Technische Universität Braunschweig, Germany); Karin Kniel (Physikalisch-Technische Bundesanstalt, Germany); Frank Härtig (Physikalisch-Technische Bundesanstalt, Germany); Andreas Dietzel (Technische Universität Braunschweig, Germany); Stephanus Büttgenbach (Technische Universität Braunschweig, Germany)  
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### ***An experimental study of the fluids mechanism and effects of liquid for capacitive pressure sensor***

Mohd Norzaidi Mat Nawi (Universiti Sains Malaysia & Underwater Robotic Research Group, Malaysia); Asrulnizam Abd Manaf (Universiti Sains Malaysia, Malaysia); Mohd Rizal Arshad (Universiti Sains Malaysia, Malaysia); Mohamad Faizal Abd Rahman (Universiti Sains Malaysia & Universiti Teknologi Mara Malaysia, Malaysia)  
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### ***Magnetic tactile sensing method with Hall element for artificial finger***

Jun-ichiro Yuji (Kumamoto National College of Technology, Japan)  
pp. 311-315

## S7: Combined Lunch and Short Oral 1

### ***An add-drop ring resonator interferometer sensor with high sensitivity***

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Xiaoqi Liu (Harbin Institute of Technology, P.R. China); Kaiyang Wang (Harbin Institute of Technology, P.R. China); Xuenan Zhang (Harbin Institute of Technology, P.R. China)  
pp. 316-319

### ***RF Capacitive Piezoelectric Displacement Extraction***

Mahmoud Alahmad (UAEU, UAE)  
pp. 320-324

### ***Glucose Detection Using an Electro-Optical Fluidic Device Based on Pulse Width Modulation***

Jing-Yau Tang (National Cheng Kung University, Taiwan); Ming-Kun Chen (National Cheng Kung University, Taiwan); Min Haw Wang (Chinese Culture University, Taiwan); Ling-Sheng Jang (National Cheng Kung University, Taiwan)  
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### ***Recent evolution of smart force transducers -***

Dan Mihai Stefanescu (Romanian Measurement Society, Romania)  
pp. 330-333

### ***Detection of Snail Tracks on Photovoltaic Modules using a Combination of Raman and Fluorescence Spectroscopy***

Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria); Christina Hirschl (Carinthian Tech Research AG, Austria)  
pp. 334-337

### ***MobiDriveScore - A System for Mobile Sensor Based Driving Analysis***

Chirabrata Bhaumik (Tata Consultancy Services & TCS Innovation Labs, India); Tapas Chakravarty (Tata Consultancy Services, India); Avik Ghose (Tata Consultancy Services, India); Arijit Chowdhury (Tata Consultancy Services, India)  
pp. 338-344



***Compressed Sensing for Wireless Pulse Wave Signal Acquisition***

Kan Luo (Southeast University, P.R. China); Jianfeng Wu (Southeast University, P.R. China); Jianqing Li (Southeast University, P.R. China); Hua Yang (Southeast University, P.R. China); Zhipeng Cai (Southeast University, P.R. China)  
pp. 345-350

***Measurement of Wireless Power Transfer***

Andi Sudjana Putra (National University of Singapore, Singapore); Sriharsha Bhat (National University of Singapore & National University of Singapore, Singapore); Vinithra Raveendran (National University of Singapore, Singapore)  
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***Develop a reading tracking function on e-book reading system by using sensing and cloudized storage technologies***

Chia-Hung Lai (National Cheng Kung University, Taiwan); Lu-Chun Pan (National Cheng Kung University, Taiwan); Chia-Cheng Hsu (National Cheng Kung University, Taiwan); Yen-Ning Su (National Cheng Kung University, Taiwan); Yu-Lin Cheng (Institute for Information Industry, Taiwan); Chia-Ju Liu (National Kaohsiung Normal University, Taiwan); Yueh-Min Huang (National Cheng Kung University, Taiwan)  
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***Contactless Potentiometers for Automotive Applications***

Antonio J López-Martín (Public University of Navarra, Spain); Alfonso Carlosena (Public University of Navarra, Spain)  
pp. 361-364

***Coupled add-drop ring resonator for highly sensitive sensing***

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Xiaoqi Liu (Harbin Institute of Technology, P.R. China); Xuenan Zhang (Harbin Institute of Technology, P.R. China); Ping Yuan (Harbin Institute of Technology, P.R. China)  
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***Temperature resilient measurement of refractive index for liquids***

Vijaya Kumar Narayanan (Government Engineering College, Thiruvananthapuram, India)  
pp. 369-373

***Detection of norovirus and rotavirus by dielectrophoretic impedance measurement***

Michihiko Nakano (Kyushu University, Japan); Ryoji Obara (Kyushu University, Japan); Ding Zhenhao (Kyushu University, Japan); Junya Suehiro (Kyushu University, Japan)  
pp. 374-378

***Direct Integration of Field Effect Transistors as Electro Mechanical Transducer for Stress***

Sven Haas (Chemnitz University of Technology & Center for Microtechnologies, Germany); Michael Schramm (TU Chemnitz, Germany); Danny Reuter (Chemnitz University of Technology, Germany); Kay-Uwe Loebel (TU Chemnitz, Germany); Andreas Bertz (University of Chemnitz, Germany); John T Horstmann (Chemnitz University of Technology, Germany); Thomas Gessner (Chemnitz University of Technology, Germany)  
pp. 379-382

***Sensing and actuating applications of potassium sodium niobate***

Asha Dahiya (University of Delhi & NSIT, India); Om Thakur (NSIT, Delhi University & Faculty of Technology, India)  
pp. 383-386

***Graphene pattern by gravure printing for wireless strain sensor***

Lei Huang (Shanghai Normal University, P.R. China)  
pp. 387-389

***CHLAC based Vision Sensing Method for Bicycle Rider Detection to Avoid Confusing Similar Shape Pedestrian***

Yuki Ishii (Tokyo University of Science, Japan); Hiroshi Hisahara (Tokyo University of Science, Japan); Masahito Ota (Tokyo University of Science, Japan); Takeki Ogitsu (Tokyo University of Science, Japan); Hiroshi Takemura (Noda Tus, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan)  
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***Low Temperature Low ppm Acetone Detection by Pd/TiO<sub>2</sub>/p-Si Metal-Insulator-Semiconductor Devices***

Arnab Hazra (Bengal Engineering and Science University, India); Basanta Bhowmik (Bengal Engineering and Science University, India); Koushik Dutta (Bengal Engineering and Science University, India); Partha Bhattacharyya (Bengal Engineering and Science University, Shibpur, India)  
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***Feedback Control of Outer Rotor Spherical Actuator Using Adaptive Neuro-Fuzzy Inference System***

Junghyun Chu (Osaka University, Japan); Noboru Niguchi (Osaka University, Japan); Katsuhiro Hirata (Graduate School of Engineering, Osaka University, Japan)  
pp. 401-405

***Common-path Heterodyne Interferometric and Magnetic Sensitivity-enhanced Surface Plasmon Resonance Carbon Monoxide gas sensor***

Kai-Pian Huang (Department of Mechatronics Engineering National Changhua University of Education, Taiwan); Shen Chih-Hsiung (National Changhua University of Education, Taiwan); Jing-Heng Chen (Feng Chia University, Taiwan)  
pp. 406-410

***A Review of Sensor Technology for In-field Phosphate monitoring***

Sheetal Mapare (Massey University, New Zealand); Pak Yu (Massey University, New Zealand); Abhimanyu Sarkar (AgResearch, Grasslands Research Centre, New Zealand); Subhas Mukhopadhyay (Massey University, New Zealand)  
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***Highly Sensitive Magnetic-Catalytic Gas Sensor***

Shen Chih-Hsiung (National Changhua University of Education, Taiwan); Shu-Jung Chen (National Changhua University of Education, Taiwan)  
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***Design and Analysis of a GMR Eddy Current probe for NDT***

Rodrigo W Porto (UFRGS, Brazil); Valner Brusamarello (UFRGS, Brazil); Ricardo de Azambuja (Plymouth University, United Kingdom); Osmar Frison Jr. (UCS, Brazil)  
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***Error in mathematical modelling and enhancement of sensing performance of electrostrictive capacitive sensors***

Om Thakur (NSIT, Delhi University & Faculty of Technology, India); Nidhi Agrawal (Netaji Subhas Institute of Technology, University of Delhi, India)  
pp. 430-433

***Practicable Camera Modeling Technique Applying Fuzzy Modeling for 3D Sensing Based on Stereo Vision***

Toshihiko Watanabe (Osaka Electro-Communication University, Japan); Yuichi Saito (DACS, Japan)  
pp. 434-439

***Sensors for Evaluation of Thermodynamical Model of pMA***

Lukas Kopečný (Brno University of Technology, Czech Republic); Ludek Zalud (Brno University of Technology, Czech Republic)  
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## **S8: Invited Session 2**

14:00 - 14:45 Jagadeesh Kumar; 14:45 - 15:15 Technic (Industry Sponsor); 15:15 - 15:45 TBC (Industry Sponsor)

## **S9A: Gas and Chemical Sensors 3**

***SERS from ZnO Nanorod Arrays and its Application for detecting N719***

Wensheng Shi (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, P.R. China)  
pp. 444-446

***Gas-Phase Biosensor with High Sensitive & Selective for Formaldehyde Vapor***

Kohji Mitsubayashi (Tokyo Medical and Dental University, Japan)  
pp. 447-450

***In2O3:Ga-based Ceramics: Advantages and Shortcoming for Application in One-electrode Gas Sensors***

Beongki Cho (Gwangju Institute of Science and Technology, Korea); Songhee Han (Mokpo National Maritime University, Korea)  
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***ISFET with Built-in Gold Electrode and Readout Circuit with Frequency-Adjustable Pulse Output***

Ruey-Lue Wang (National Kaohsiung Normal University, Taiwan); Hsin-Hao Liao (National Chip Implementation Center, Taiwan); Hann-Huei Tsai (National Chip Implementation Center, Taiwan); Ying-Zong Juang (Chip Implementation Center, National Applied Research Laboratories, Taiwan); Chien-Cheng Fu (National Kaohsiung Normal University, Taiwan); Chi Yu (National Kaohsiung Normal University, Taiwan)  
pp. 457-460

***Electronic nose for the early detection of different types of indigenous mold contamination in green coffee***

Veronica Sberveglieri (University of Modena and Reggio Emilia, Italy); Elisabetta Comini (University of Brescia, Italy); Dario Zappa (University of Brescia, Italy); Estefania Nunez Carmona (University of Modena and Reggio Emilia, Italy); Andrea Pulvirenti (University of Modena and Reggio Emilia, Italy)  
pp. 461-465

## **S9B: Novel Applications 2**

***Novel Application of Ultrasonic Sensors and Kinect Sensors to Identify People and Measure Their Location -Realization of "Human SUGOROKU", A Large Scale Board Game in which People Play as Pieces-***

Tomohiro Nakayama (Tokyo University of Science, Japan); Takayuki Adachi (Tokyo University of Science, Japan); Takeki Ogitsu (Tokyo University of Science, Japan); Hiroshi Takemura (Noda Tus, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan); Fusako Kusunoki (Tama Art University, Japan); Masanori Sugimoto (Hokkaido University, Japan); Etsuji Yamaguchi (Kobe University, Japan); Shigenori Inagaki (Kobe University, Japan); Yoshiaki Takeda (Kobe University, Japan)  
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***Microfluidic-based Capacitive Sensor for Underwater Acoustic Application***

Mohamad Faizal Abd Rahman (Universiti Sains Malaysia & Universiti Teknologi Mara Malaysia, Malaysia); Asrulnizam Abd Manaf (Universiti Sains Malaysia, Malaysia); Mohd Rizal Arshad (Universiti Sains Malaysia, Malaysia); Mohd Norzaidi Mat Nawi (Universiti Sains Malaysia & Underwater Robotic Research Group, Malaysia)  
pp. 472-476

***Low Cost Contour Check of Loading Units using PMD Sensors***

Christian Prasse (Fraunhofer Institute for Material Flow and Logistics, Germany); Jonas Stenzel (Fraunhofer Institute for Material Flow and Logistics, Germany); Bartholomäus Rudak (TU Dortmund, Germany); Frank Weichert (TU Dortmund, University of Technology, Germany); Heinrich Mueller (TU Dortmund, University of Technology, Germany); Michael ten Hompel (TU Dortmund, University of Technology & Fraunhofer-Institut Materialflow and Logistics, Germany)  
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***RFID assisted Flexible Manufacturing System***

Dinesh Herath (University of Moratuwa, Sri Lanka); Sahan Vindika (University of Moratuwa, Sri Lanka); Chanuka Prasanna (University of Moratuwa, Sri Lanka); Ranjith Amarasinghe (University of Moratuwa, Sri Lanka); Dzung Viet Dao (Griffith School of Engineering, Australia); George Mann (Memorial University of Newfoundland, Canada)  
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***Developing a low-cost general-purpose device for the Internet of Things***

Adriana Wilde (University of Southampton, United Kingdom); Richard Oliver (University of Southampton, United Kingdom); Ed Zaluska (University of Southampton, United Kingdom)  
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## S9C: Sensor Interfacing

### ***Multi-sensor Information Processing and Fusion Module***

Jiebing Yan (Xi'an Jiaotong University, P.R. China); Xiaoxin Wang (Xi'an Jiaotong University, P.R. China); Hongli Hu (Xi'an Jiaotong University, P.R. China); Hongmei Wang (Xi'an Jiaotong University, P.R. China)  
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### ***A Resistive Potentiometric Type Transducer with Contactless Slide***

Supriya V Thathachary (Indian Institute of Technology, Madras, India); Bobby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)  
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### ***Energy-Efficient Inertial Sensor Fusion on Heterogeneous FPGA-Fabric / RISC System on Chip***

Hans-Peter Brückner (Leibniz Universität Hannover & Institut of Microelectronic Systems, Germany); Christian Spindeldreier (Leibniz Universität Hannover, Germany); Holger Blume (Leibniz Universität Hannover, Germany)  
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### ***A Simple Signal Conditioning Scheme for Inductive Sensors***

Piyush Kumar (Indian Institute of Technology Madras, India); Bobby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)  
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### ***A Direct-Digital Converter for Resistive Sensor Elements in Bridge Configuration***

Ramanathan Ponnalagu (IIT Madras, India); Bobby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)  
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## S9D: Healthcare Applications 1

### ***Design and Development of a Feedback Mechanism and Approach for Patient-Instrument Stabilization during Office-based Medical Procedures***

Kok Kiong Tan (National University of Singapore, Singapore); Wenyu Liang (National University of Singapore, Singapore); Tong-Heng Lee (National University of Singapore, Singapore); Chee Hoe Choy (National University of Singapore, Singapore); Zheming Shen (National University of Singapore, Singapore)  
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### ***Implementing Sensor-Actor Networks with the Elastic Network Model for Laparoscopic Training***

Christopher C Chiu (University of Technology, Sydney, Australia); Zenon D Chaczko (University of Technology, Sydney & SoCC, Australia); Lulwah Alqarni (University of Technology, Sydney, Australia); Amna Almarwani (University of Technology Sydney, Australia)  
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### ***Investigation of Bone Resonance during Femoral Reaming in Hip Replacement Surgery***

Paul O Donoghue (Institute of Technology Tralee, Ireland); Bob Jackson (ITTralee, Ireland); Daniel Riordan (Institute of Technology, Tralee, Ireland); Joseph Walsh (Institute of Technology, Tralee, Ireland); Ali Abdulkarim (Kerry General Hospital, Ireland); John Rice (Kerry General Hospital, Ireland)  
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### ***Thick Film Flow Sensor for Respirator Applications***

Michael J. Haji-Sheikh (Northern Illinois University, USA)  
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### ***TailGait: A Light-Weight Wearable Gait Analysis System***

Jirapong Manit (King Mongkut's University of Technology Thonburi, Thailand); Prakarnkiat Youngkong (King Mongkut's University of Technology Thonburi, Thailand)  
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## S10A: Optical Sensors 1

### ***Novel Bent-Tapered Mode Converting Multimode Optical Fiber Sensor based on Evanescent Wave Absorption***

Nirmal Punjabi (Indian Institute of Technology Bombay, India); Jitendra Satija (IIT Bombay, India); Soumyo Mukherji (Indian Institute of Technology Bombay, India)  
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### ***Towards Building a Miniaturized Shape Sensor - Building process of a Shape Sensor for Use in Single Port Surgery***

Hendrikje Pauer (Karlsruhe Institut for Technology (KIT) & IPR, Germany); Christoph Ledermann (Karlsruhe Institute of Technology & Institute for Process Control and Robotics, Germany); Oliver Weede (Karlsruhe Insitute of Technology (KIT), Germany); Heinz Wörn (Karlsruhe Institute of Technology (KIT), Germany)  
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### ***Highly Accurate Refractive Index Sensor Based on Fourier-Transformed Phase Acquisition in Fiber-Optic Interferometer***

Young Ho Kim (Gwangju Institute of Science and Technology, Korea); Kwan Seob Park (Gwangju Institute of Science and Technology, Korea); Byeong Ha Lee (Gwangju Institute of Science and Technology, Korea); Seok Lee (Korea Institute of Science and Technology, Korea); Deok Ha Woo (Korea Institute of Science and Technology, Korea); Young-Tak Chough (Gwangju University, Korea)  
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### ***Tapered Plastic Optical Fiber Sensor for Detection of Ethanol Concentration in H2O***

Hasnida Saad (Universiti Teknologi MARA, Malaysia, Malaysia); Mohd. Kamil Abd. Rahman (Universiti Teknologi MARA Malaysia, Malaysia); Mohd Tarmizi Ali Ali (Universiti Teknologi Mara, Malaysia)  
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### ***Feasibility Evaluation of Multi-point Sensing for Hetero-core Spliced Optical Fiber Sensor Using Internet-based Protocol***

Lee See Goh (Soka University Japan & Graduate School of Engineering, Japan); Kazuhiro Watanabe (Soka University Japan, Japan); Norihiko Shinomiya (Soka University, Japan)  
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### ***Prototype Instrument for Sheet Resistance Measurement by Pulse Voltage Excitation***

Hideo Saotome (Chiba University, Japan); Hiroaki Kaneko (Chiba University, Japan)  
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### ***Development of Multi Core Magneto-Impedance Sensor for Stable pico-Tesla Resolution***

Tsuyoshi Uchiyama (Nagoya University, Japan)  
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### ***Design of liquid detection sensor with low-frequency electromagnetic field***

K. Tashiro (Shinshu University, Japan); Hiroyuki Wakiwaka (Shinshu University, Japan); Takeshi Mori (Shinshu University, Japan); Ryo Nakano (Shinshu University, Japan); Noor Harun (Universiti Kuala Lumpur, Malaysia); Mison Norhisam (Universiti Putra Malaysia, Malaysia)  
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### ***Nondestructive Evaluation of Hardness using AC Permeability and Impedance Analysis***

Hiroaki Kikuchi (Iwate University, Japan)  
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### ***Self-Sensing Active Magnetic Bearing Using 2-Level PWM Current Ripple Demodulation***

Wolfgang Gruber (Johannes Kepler University Linz & Institute for Electrical Drives and Power Electronics, Austria); Manuel Pichler (Johannes Kepler University Linz, Austria); Michael Rothböck (Johannes Kepler University Linz, Austria); Wolfgang Amrhein (ACCM GmbH, Austria)  
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### ***Analysis and compensation of MEMS gyroscope drift***

Zhanlin Diao (BMTI, P.R. China)  
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### ***Intentionally imperfect sensors for measuring mechanical parameters***

Norbert Schwesinger (Technische Universität München, Germany)  
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### ***Microcrystalline silicon gauges for the measure of very high deformation with less than one mm resolution***

Yannick Kervran (University of Rennes 1, France); Sabri Janfaoui (University of Rennes 1, France); Olivier De Sagazan (University Rennes 1, France); Samuel Crand (University of Rennes 1, France); Nathalie Coulon (University of Rennes 1, France); Jean-Philippe Gauthier (University of Rennes 1, France); Tayeb Mohammed-Brahim (University Rennes 1, France)  
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### ***Novel High-resolution Sidewall Imaging using Standard Atomic Force Microscopy Equipment***

Florian Krohs (University of Oldenburg & Div. Microrobotics and Control Engineering, Germany); Sergej Fatikow (University of Oldenburg, Germany)  
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### ***Coordinate measurement on wafer level - from single sensors to sensor arrays***

Thomas Krah (Physikalisch-Technische Bundesanstalt, Germany); Achim Wedmann (Physikalisch-Technische Bundesanstalt, Germany); Karin Kniel (Physikalisch-Technische Bundesanstalt, Germany); Frank Härtig (Physikalisch-Technische Bundesanstalt, Germany); Nelson Ferreira (Technische Universität Braunschweig & Institut für Mikrotechnik, Germany); Stephanus Büttgenbach (Technische Universität Braunschweig, Germany)  
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### ***Wearable Textile Sensor Sock For Gait Analysis***

Oren Tirosh (Victoria University & Motion3D, Australia); Rezaul Begg (Victoria University, Australia); Elyse Passmore (Victoria University, Australia); Nili Knopp-Steinberg (Zinman College of Physical Education and Sport Sciences at the Wingate Institute, Australia)  
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### ***Assessment of Local Muscle Fatigue by NIRS***

Yoshiki Muramatsu (Tokyo University of Science, Japan); Hiroshi Kobayashi (Tokyo University of Science, Japan)  
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### ***Non Invasive Estimation of Blood Glucose using Near Infra red Spectroscopy and Double Regression Analysis***

Swathi Ramasahayam (IIIT-H, India); Sri Haindavi Koppuravuri (IIITH, India); Bharat Kavala (IIT Guwahati, India); Shubhajit Roy Chowdhury (Centre for VLSI and Embedded Systems Technology, IIIT Hyderabad, India)  
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### ***Ambient Assisted Living Framework for Elderly Wellness Determination through Wireless Sensor Scalar Data***

Nagender Kumar Suryadevara (Massey University, New Zealand); Chia-Pang Chen (National Taiwan University, Taiwan); Subhas Mukhopadhyay (Massey University, New Zealand); Ramesh Kumar Rayudu (Victoria University of Wellington, New Zealand)  
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### ***A GMR Sensor based Guiding Tool for Location of Metal Shrapnel during Surgery***

Mithun Sakthivel (Indian Institute of Technology Madras, India); Bobby George (Indian Institute of Technology Madras, India); Mohanasankar Sivaprakasam (IIT Madras, India)  
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## S11A: Optical Sensors 2

### ***New detectors and detector architectures for high resolution optical sensor systems***

Andreas Eckardt (DLR German Aerospace Center & Institute of Optical Sensor Systems, Germany); Ralf Reulke (Humboldt-Universität zu Berlin, Germany)  
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### ***Design and Test of Prototype Attitude Control System as Telescope Stabilizer with Fiber Optic Gyroscopes***

Yongxiao Li (Peking University & China Unicom, P.R. China); Yunfeng Zhang (Peking University, P.R. China); Zinan Wang (Peking University, P.R. China); Zhengbin Li (Peking University, P.R. China); Ming Liu (Peking University, P.R. China); Liangfu Ni (Peking University, P.R. China); Chenglong Liu (Peking University, P.R. China)  
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### ***Nitrogen dioxide sensor based on optical fiber coated with a porous silica matrix incorporating lutetium bisphthalocyanine***

Marc Debliquy (University of Mons, Belgium); Driss Lahem (Materia Nova, Belgium); Antonio Bueno Martinez (Universite de Mons, Belgium); Christophe Caucheteur (Faculté Polytechnique de Mons (F.P.Ms), Belgium); Marcel Bouvet (Universite de Bourgogne, France); Patrice Mégret (University of Mons (UMONS) & Faculté Polytechnique, Belgium); Marie-Georges Olivier (Universite de Mons, Belgium)  
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### ***Lithium Niobate (LiNbO3) Optical Retarders Used as Electric Field Sensors***

Celso Gutierrez-Martínez (Instituto Nacional de Astrofísica, Óptica y electrónica (INAOE), Mexico)  
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### ***Improving sensing properties of the long-period gratings by reactive ion etching***

Mateusz Smietana (Warsaw University of Technology, Poland); Marcin Koba (Université du Québec en Outaouais, Poland); Saurabh Tripathi (University du Quebec en Outaouais, Canada); Predrag Mikulic (Université du Québec en Outaouais, Canada); Wojtek J. Bock (Université du Québec en Outaouais, Canada)  
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## S11B: Image, Vision and Range Sensors 2

### ***Soil Backscatter Measurement with Impulse (Ultra-Wideband) Radar***

Adrian Tan (Lincoln Agritech Limited & Lincoln University, New Zealand); Sean Richards (Lincoln Agritech Limited, New Zealand); Ian G Platt (Lincoln Ventures Ltd, New Zealand); Ian M Woodhead (Lincoln, New Zealand)  
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### ***Compton Camera Imaging***

Shiro Ikeda (The Institute of Statistical Mathematics, Japan); Hirokazu Odaka (Japan Aerospace Exploration Agency, Japan); Makoto Uemura (Hiroshima University, Japan); Tadayuki Takahashi (Japan Aerospace Exploration Agency, Japan); Shin Watanabe (Japan Aerospace Exploration Agency, Japan); Shin-ichiro Watanabe (Japan Aerospace Exploration Agency, Japan)  
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### ***Unsupervised Saliency Detection and A-Contrario based Segmentation for Satellite Images***

Junbo Zhao (Wuhan University, P.R. China); Shuoshuo Chen (Wuhan University, P.R. China); Diyang Zhao (University of Macau, P.R. China); Hailun Zhu (Wuhan University, P.R. China); Xiaoxiao Chen (Wuhan University, P.R. China)  
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### ***Image Quality and Image Resolution***

Ralf Reulke (Humboldt-Universität zu Berlin, Germany)  
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### ***Optics and Radar Image Fusion***

Ralf Reulke (Humboldt-Universität zu Berlin, Germany)  
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## S11C: Environmental Monitoring 1

### ***Low-Cost Sensor Array Design Optimization Based on Planar Electromagnetic Sensor Design for Detecting Nitrate and Sulphate***

Mohd Amri Bin Md Yunus (Faculty of Electrical Engineering & Universiti Teknologi Malaysia, Malaysia)  
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### ***Detection of Microorganisms in Water and different Food Matrix by Electronic Nose***

Estefania Nunez Carmona (University of Modena and Reggio Emilia, Italy); Veronica Sberveglieri (University of Modena and Reggio Emilia, Italy); Andrea Pulvirenti (University of Modena and Reggio Emilia, Italy)  
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### ***UAV-based measurement of vegetation indices for environmental monitoring***

Thomas Arnold (Carinthian Tech Research AG & University of Klagenfurt, Austria); Martin De Biasio (Carinthian Tech Research AG, Austria); Andreas Fritz (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria)  
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### ***Basic Research on an Environmental Monitoring System for Assaying Cesium and Barium Using Laser-Induced Breakdown Spectroscopy***

Satoshi Ikezawa (Waseda University, Japan)  
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### ***Improving leak detection sensing in pipelines: A multidimensional approach with FDM***

Aime' Lay-Ekuakille (University of Salento, Italy); Giuseppe Griffio (University of Salento, Italy); Patrizia Vergallo (University of Salento, Italy)  
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## S11D: Network Protocols

### ***µMobile IPv6 in Wireless Sensor Networks***

Ricardo Custódio (University of Coimbra, Portugal); Ricardo Silva (University of Coimbra, Portugal); Jorge Sá Silva (University of Coimbra, Portugal); David Nunes (University of Coimbra, Portugal); Fernando Boavida (University of Coimbra, Portugal); Carlos Herrera (Escuela Politécnica Nacional, Ecuador)  
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### ***Storage Node based Routing Protocol for Wireless Sensor Networks***

Shah Ahsanul Haque (University of South Australia, Australia); Syed Mahfuzul Aziz (University of South Australia, Australia)  
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### ***Adaptive Coverage-Preserving Routing Protocol for Wireless Sensor Network***

Che-Shen Cheng (National Taipei University of Technology, Taiwan); Chwan-Lu Tseng (National Taipei University of Technology, Taiwan); Joe-Air Jiang (National Taiwan University, Taiwan); Yi-Jhang Lin (National Taiwan University, Taiwan)  
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### ***The Study of 6LoWPAN with SCTP Multi-homing in Smart Grid***

Yang-Wen Chen (National Chi Nan University, Taiwan); Arak Sae Yuan (National Chi Nan University, Taiwan); Kuan-Ta Lu (National Chi Nan University, Taiwan); Quincy Wu (National Chi Nan University, Taiwan)  
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### ***An Infrastructure for Integrating Heterogeneous Embedded 6LoWPAN Networks for Internet of Things Applications***

Samuel Catapang (The University of Auckland, New Zealand); Zachary Roberts (The University of Auckland, New Zealand); Kevin I-Kai Wang (The University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)  
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## S12: Combined Lunch and Short Oral 2

### ***An Ultralow-Noise Ag/AgCl Electric Field Sensor with Good Stability for Marine EM Applications***

Zhendong Wang (China University of Geosciences, P.R. China); Ming Deng (China University of Geosciences, P.R. China); Kai Chen (China University of Geosciences, P.R. China); Meng Wang (China University of Geosciences, P.R. China)  
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### ***Gasoline-diesel mixtures quantifying using terahertz time-domain waveform***

Yinan Li (Tianjin University & Tianjin University, P.R. China); Jian Li (Tianjin University, P.R. China); Zhen Tian (Tianjin University, P.R. China); Nan Zhou (Tianjin University, P.R. China); Lijun Sun (North Automatic Control Technology Institute, P.R. China); Shijiu Jin (Tianjin University, P.R. China); Zhoumo Zeng (Tianjin University, P.R. China)  
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### ***ZigBee Based Wireless Sensor Networks and Their Use in Medical and Health Care***

Zhongwei Zhang (University of Southern Queensland, Australia); Xiaohua Hu (Haikou Normal University, P.R. China)  
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### ***Application of Image Processing to Laser Reflective Pattern for Multi-layer Auto-focusing System***

Wei-Yen Hsu (National Chung Cheng University, Taiwan); Chien-Sheng Liu (National Chung Cheng University, Taiwan)  
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### ***Design of Automatic Force Application System and Outlier Detection for Force Sensor***

Chi He (Changchun University of Science and Technology, P.R. China); Guangling Dong (China Baicheng Ordnance Test Center, P.R. China); Qiang Li (China Baicheng Ordnance Test Center, P.R. China); Hongqiang Wei (China Baicheng Ordnance Test Center, P.R. China); Jihua Zhang (China Baicheng Ordnance Test Center, P.R. China); Jian Lu (China Baicheng Ordnance Test Center, P.R. China)  
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### ***Second and Subsequent Fragments Headers Compression Scheme for IPv6 Header in 6LoWPAN Network***

Samer Adnan Awwad (University Putra Malaysia, Malaysia); Chee Kyun Ng (Universiti Putra Malaysia, Malaysia); Nor K. Noordin (Universiti Putra Malaysia, Malaysia); Borhanuddin B Mohd. Ali (Universiti Putra Malaysia, Malaysia); Fazirulhisyam Hashim (Universiti Putra Malaysia, Malaysia)  
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### ***Visible Light Photocatalytic Activity of TiO<sub>2</sub>/MWNTs Nanocomposite Prepared Using Modified Microwave Technique***

Firas Alosfur (Universiti Kebangsaan Malaysia (UKM), Malaysia)  
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### ***A low power environmental wireless radiation monitoring system by using 920MHz frequency band***

Yoshinori Matsumoto (Keio University, Japan)  
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### ***Wavelet Singular Entropy-based Feature Extraction From a Temperature Modulated Gas Sensor***

Kai Song (Harbin Institute of Technology, P.R. China); Qi Wang (Harbin Institute of Technology, P.R. China); Bing Wang (No. 49 Institute, China Electronics Technology Group Corporation, P.R. China); Hongquan Zhang (No. 49 Institute, China Electronics Technology Group Corporation, P.R. China)  
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### ***A Comprehensive Sensor Taxonomy and Semantic Knowledge Representation-Energy Meter Use Case***

Ranjan Dasgupta (Tata Consultancy Services Ltd, India); Sounak Dey (TCS, India)  
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### ***A Feasibility Study of Utilizing Tribo-Acoustics for Mobile User Interface***

Leong Yeng Weng (Kanazawa University & Universiti Tenaga Nasional, Japan); Hiroaki Seki (Kanazawa University, Japan); Yoshitsugu Kamiya (Kanazawa University, Japan); Masatoshi Hikizu (Kanazawa University, Japan)

***GPS-Guided Modular Design Mobile Robot Platform for Agricultural Applications***

Liqiong Tang (Massey University, New Zealand); Samuel J O Corpe (Researcher, New Zealand); Phillip Abplanalp (Researcher, New Zealand)  
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***Bio-Robotic System Using Bio-metric Signals***

Christopher Scott (Researcher, New Zealand); Liqiong Tang (Massey University, New Zealand); Gourab Sen Gupta (Massey University, New Zealand)  
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***Determination of Critical Span in Real Time using Proper Orthogonal Decomposition***

Jie-Jyun Wan (National Taiwan University, Taiwan); Chia-Pang Chen (National Taiwan University, Taiwan); Cheng-Long Chuang (Intel Labs, Intel Corporation & Intel-NTU Connected Context Computing Center, National Taiwan University, Taiwan); Po-Hsiung Chang (Central Weather Bureau, Taiwan); Hsin-I Ku (Central Weather Bureau, Taiwan); Hsin-Kai Wang (Central Weather Bureau, Taiwan); Wen Chi Huang (National Taipei University of Education, Taiwan); Joe-Air Jiang (National Taiwan University, Taiwan)  
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***An enhanced network management system for 6LoWPAN-based wireless sensor network***

Hsiang-Ting Fang (National Chi Nan University, Taiwan); Ya-Ling Wang (National Chi Nan University, Taiwan); Yang-Wen Chen (National Chi Nan University, Taiwan); Quincy Wu (National Chi Nan University, Taiwan)  
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***KIKIWAKE System for Promoting Interest in Sound Source Separation Technique - Novel Application of Microphone Array and Signal Processing -***

Tomoki Taguchi (Tokyo University of Science, Japan); Masafumi Goseki (Tokyo University of Science, Japan); Ryohei Egusa (Kobe University, Japan); Miki Namatame (Tsukuba University of Technology, Japan); Masanori Sugimoto (Hokkaido University, Japan); Fusako Kusunoki (Tama Art University, Japan); Etsuji Yamaguchi (Kobe University, Japan); Shigenori Inagaki (Kobe University, Japan); Yoshiaki Takeda (Kobe University, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan)  
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***Gain uniformity of trapezoidal triple-GEM detectors***

Yasser Maghrbi (Texas A&M University, Qatar)  
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***Stability analysis of load frequency control systems with real-time pricing and external signals***

Takehito Azuma (Utsunomiya University, Japan); Tatsuhiko Watanabe (Utsunomiya University, Japan)  
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***Wireless Underground Sensor Network Design for Irrigation Control: Simulation of RFID Deployment***

Vinod Parameswaran (University of Southern Queensland, Australia); Hong Zhou (University of Southern Queensland, Australia); Zhongwei Zhang (University of Southern Queensland, Australia)  
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***Multi-Source Information Fusion for Drowsy Driving Detection Based on Wireless Sensor Networks***

Wei Liang (Changshu Institute of Technology, P.R. China); Subhas Mukhopadhyay (Massey University, New Zealand); Razali Jidin (Universiti Tenaga Nasional, Malaysia); Chia-Pang Chen (National Taiwan University, Taiwan)  
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***Distributed Access Scheme for Body Area Networks***

Haoru Su (University of Science and Technology Beijing, P.R. China); Zhiliang Wang (University of Science and Technology Beijing, P.R. China)  
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***An Experimental Study of Temperature Effect on Material Parameters of PZT Ceramic Ring Used in Knock Sensors***

Stanislav Klusáček (Brno University of Technology & CEITEC - Central European Institute of Technology, Czech Republic); Jiří Fialka (Brno University of Technology, Czech Republic); Petr

Beneš (Brno University of Technology & FEEC, Czech Republic); Zdeněk Havránek (Brno University of Technology, Czech Republic)  
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***ZnO nanostructures synthesized by arc discharge for optical coating and sensor applications***

Fang Fang (GNS Science, New Zealand); John Kennedy (GNS Science, New Zealand); John Futter (GNS Science, New Zealand); Jerome Leveneur (GNS Science, New Zealand)  
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***Individual Nanoparticle Zeta Potential Measurements using Tunable Resistive Pulse Sensing***

Eva Weatherall (Victoria University of Wellington, New Zealand); Geoff Willmott (Callaghan Innovation, New Zealand); Ben Glossop (Izon Science, New Zealand)  
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***Geographical monitoring of Electrical Energy Quality determination: the problems of the sensors***

Maurizio Caciotta ("Roma Tre" University, Italy); Fabio Leccese ("Roma Tre" University, Italy); Sabino Giarnetti ("Roma Tre" University, Italy); Stefano Di Pasquale ("Roma Tre" University, Italy)  
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***Design and Characterization of a PCB based Capacitive Shear Force Sensor for Robotic Gripper Application***

Sheng-Jui Chen (Industrial Technology Research Institute, Taiwan); Jian-Lin Huang (Industrial Technology Research Institute, Taiwan)  
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## **S13A: Built Environment**

***Modeling for gas flow measurement consumed by a boiler. Towards a low-cost sensor for energy efficiency***

Baya Hadid (University of Poitiers & Ecole Nationale Supérieure d'Ingénieurs de Poitiers, France); Régis Ouvrard (University of Poitiers, France); Laurent Le Brusquet (Supelec, France); Thierry Pointot (University of Poitiers, France); Erik Etien (University of Poitiers, France); Frédéric Sicard (EDF R&D, France)  
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***Detection of Street Lighting Bulbs Information to Minimize Commercial Losses***

Guilherme Marcio Soares (Federal University of Juiz de Fora, Brazil); Henrique Braga (Federal University of Juiz de Fora, Brazil); Alcindo G. B. Almeida (Federal University of Juiz de Fora, Brazil); Estêvão Coelho Teixeira (Federal University of Juiz de Fora, Brazil); Raphael Mendes (Federal University of Juiz de Fora, Brazil); Missael Machado (Federal University of Espírito Santo, Brazil); Raphael Broetto (Federal University of Espírito Santo, Brazil); Murillo Castro (Federal University of Espírito Santo, Brazil); Helder Gomes Filho (Federal University of Espírito Santo, Brazil); Flávio Miguel Varejão (Federal University of Espírito Santo, Brazil); José Pereira Filho (Federal University of Espírito Santo, Brazil); André Candeia (EDP Escelsa, Brazil); Rafael Sousa (EDP Bandeirante, Brazil)  
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***Conductor Damage Inspection System for Overhead Power Cables***

Kevin J Stevens (Quest Integrity NZL Ltd, New Zealand); Keith Lichti (Quest Integrity NZL Ltd, USA); Ian Minchington (Quest Integrity NZL Ltd, New Zealand)  
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***Implementation of Transducer Electronic Data Sheet for Zigbee Wireless Sensors in Smart Building***

Harikrishnan Vijayadharan Suseelakumari (Centre for Development of Advanced Computing, India); Sabarimuthu Irene (Ubiquitous Computing & CDAC, India); Pitchiah R (Centre for Development of Advanced Computing, India)  
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## S13B: Magnetic Sensors 2

### ***A New Eddy Current Sensor Composed of Three Circumferential Gradient Winding Coils***

Peng Xu (Nanjing University of Aeronautics and Astronautics, P.R. China); Jun Huang (Nanjing University of Aeronautics and Astronautics, P.R. China)  
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