

2022 IEEE International Instrumentation and Measurement Technology Conference (I2MTC 2022)

**Ottawa, Ontario, Canada
16-19 May 2022**

Pages 1-651



**IEEE Catalog Number: CFP22IMT-POD
ISBN: 978-1-6654-8361-2**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22IMT-POD
ISBN (Print-On-Demand):	978-1-6654-8361-2
ISBN (Online):	978-1-6654-8360-5
ISSN:	2642-2069

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

An Efficient Model Fusion Method for Bearing Fault Diagnosis 1 <i>Honghao Ren, Xinshan Zhu, Jiayu Wang</i>	1
Shape Reconstruction for Electrical Impedance Tomography with V ² D-Net Deep Convolutional Neural Network 6 <i>Zichen Wang, Xinyu Zhang, Di Wang, Rong Fu, Xiaoyan Chen, Huaxiang Wang</i>	6
Preliminary Low-Frequency Dielectric Measurement of 3D Printed Materials 12 <i>D'Alvia Livio, Francesco Castelli Gattinara Di Zubiena, Eduardo Palermo, Zaccaria Del Prete</i>	12
Effects on the Accuracy Performance of Rogowski Coils Due to Temperature and Humidity 17 <i>Alessandro Mingotti, Federica Costa, Lorenzo Peretto, Roberto Tinarelli</i>	17
Microwave Harmonic Synthetic Aperture Radar (SAR) Imaging for Detecting Weak-Scattering Defects Exhibiting Nonlinear Behavior 23 <i>C. Liu, Reza Zoughi</i>	23
Remote Operation Status Tracking for Manufacturing Machines Via Sound Recognition Using IoT 28 <i>Boon-Yaik Ooi, Jason Jing-Wei Lim, Soung-Yue Liew, Shervin Shirmohammadi</i>	28
Hybrid Machine Learning for Anomaly Detection in Industrial Time-Series Measurement Data 34 <i>Anika Terbuch, Paul O'Leary, Peter Auer</i>	34
Wideband Microwave Dielectric Properties of Martian and Lunar Regolith Simulants 40 <i>Theodore Mathews, Joseph Filbert, Mohammad Tayeb Ghasr, Reza Zoughi</i>	40
Factors Affecting Performance of Noninvasive Magnetic Sensors for Current Measurement in Power Systems 46 <i>Prasad Shrawane, Tarlochan S. Sidhu</i>	46
Porcelain Bushing Internal Defects Intelligent Detection Based on Transient Thermography 52 <i>Zekai Shen, Hongwei Mei, Yanxin Tu, Chenjun Guo, Liming Wang</i>	52
High-Sensitivity Narrow-band CSRR-based Microwave Sensor for Monitoring Glucose Level 57 <i>Gabriele Restifo Pecorella, Gianluca Verderame, Antonio Lombardo, Patrizia Livreri</i>	57
A Real-Time Electromagnetic Localization System 63 <i>Harald Gietler, Hubert Zangl</i>	63
Beamformer-Based Multi-source Acoustic DOA Detection System for Hearing Aids 69 <i>Hala As'Ad, Martin Bouchard, Homayoun Kamkar-Parsi</i>	69
Pavement Macrottexture Evaluation for Tire Test Benches Using Surface Profile Measurements 75 <i>Johannes Handler, Paul O'Leary</i>	75
Torque Measurement with Tunable Metamaterial and a Modified Doppler Radar 81 <i>Alexander Schossmann, Dirk Hammerschmidt, Christof Michenthaler, Alexander Bergmann</i>	81
Tunable Chipless RFID Pressure Sensor Utilizing Additive Manufacturing 87 <i>Katelyn Brinker, Reza Zoughi</i>	87

InARMS: Individual Activity Recognition of Multiple Subjects with FMCW Radar	93
<i>Hossein Raeis, Mohammad Kazemi, Shervin Shirmohammadi</i>	
Development of Compact Laser Ion Source for Field-Deployable Mass Spectrometer for Nuclear Security.....	98
<i>Ankur Chaudhuri, Liqian Li, James Johnston, Martin-Lee Cusick</i>	
Biometric Classification of Frequency Following Responses to English Vowels.....	103
<i>Rui Sun, Martin Bouchard, Hilmi R. Dajani</i>	
Flow State Characterization of Horizontal Oil-Gas-water Three-phase Flow Using Independent Slow and Steady Feature Analysis	109
<i>Linghan Li, Shumei Zhang, Feng Dong</i>	
Gas-Water Two-phase Flow Status Monitoring Based on Multi-sensor Signals and CA-PCA Strategy.....	115
<i>Wentao Wu, Shumei Zhang, Feng Dong</i>	
Dynamic Behavior Analysis Based Process State Monitoring for Gas-Liquid Two Phase Flow in Horizontal Pipe.....	121
<i>Zhao Li, Shumei Zhang, Feng Dong</i>	
Hybridized Yolov4 for Detecting and Counting People in Congested Crowds.....	127
<i>Muhammad Haris Kaka Khel, Kushsairy Kadir, Sheraz Khan, Waleed Albattah, Haidawati Nasir, Mnmm Noor, Akbar Khan, Nawaf Waqas</i>	
Integration of Hough Transform and Inter-Frame Clustering for Road Lane Detection and Tracking	133
<i>Sandeep Bisht, N. Sukumar, P. Sumathi</i>	
Lossy Flange for Open-Ended Rectangular Waveguide Materials Characterization	139
<i>Anna Case, Aaron McCarville, Mohammad Tayeb Al Qaseer, Reza Zoughi</i>	
A Study on the Magnetic Polarizability Tensors of Minimum Metal Anti-Personnel Landmines	145
<i>Toykan Ozdeger, Paul D. Ledger, Anthony J. Peyton</i>	
Development of a Hardware for Frequency Scanning Interferometry for Long Range Measurement.....	151
<i>Sivagunalan Sivanathan, Mohammed Ali Roula, Nigel Joseph Copner, Bethan Copner</i>	
DC-Bias-free Surface Potential Measurements by Heterodyne AC Kelvin Probe Force Microscopy	157
<i>Thomas Hackl, Mathias Poik, Georg Schitter</i>	
Mechatronic Demodulation for Dynamic Atomic Force Microscopy Measurement Modes.....	162
<i>Mathias Poik, Mario Mayr, Thomas Hackl, Georg Schitter</i>	
A Bootstrapping Technique to Boost Input Impedance of ECG Recording Amplifiers.....	168
<i>Soumyajyoti Maji, Martin J. Burke</i>	
Photovoltaic Energy Prediction for New-Generation Cells with Limited Data: a Transfer Learning Approach	174
<i>Angelo Genovese, Vera Bernardoni, Vincenzo Piuri, Fabio Scotti, Francesca Tessore</i>	
An Electromagnetic Acoustic Transducer for Generating Acoustic Waves in Lithium-Ion Pouch Cells.....	180
<i>A. Siegl, B. Schweighofer, A. Bergmann, H. Wegleiter</i>	
What is My Heart Rate Right Now? Comparing Data from Different Devices	186
<i>Gloria Cosoli, Angelica Poli, Luca Antognoli, Susanna Spinsante, Lorenzo Scalise</i>	

Improved Amplitude Extraction Method for Attenuation Reconstruction of Transmissive Ultrasonic Tomography.....	192
<i>Hao Liu, Chao Tan, Feng Dong</i>	
Investigation into the Applicability of Software Requirements from Legal Metrology to Sensor Networks	198
<i>Marko Esche, Martin Nischwitz, Federico Grasso Toro</i>	
Real-Time Measurement of Viscosity Using Coplanar Capacitive Sensor	204
<i>Anas Al Shaghouri, Imad H. Elhadj, Daniel Asmar</i>	
Detection Method for Metal Impurities and Interlayer Moisture in Power Insulation Equipment by Terahertz Technology.....	210
<i>Shushan Wang, Hongwei Mei, Jianjun Liu, Dabing Chen, Huaiyuan Jiang, Liming Wang</i>	
Wearable Bio-Inspired Pulsating Flow Cooling for Live Garments.....	214
<i>Patrick C. K. Luk, Jiawei Tang</i>	
Range Extension of a Scanning Confocal Chromatic Sensor for Precise Robotic Inline 3D Measurements.....	220
<i>Daniel Wertjanz, Nikolaus Berlakovich, Ernst Csencsics, Georg Schitter</i>	
Measurement of Spray Droplet Velocity and Size Distribution by a Tapered Optical Fiber Probe	226
<i>Dandan Zheng, Maosen Wang</i>	
Recognition of Complex Surfaces Based on Multiscale Temporal Networks.....	232
<i>Tianshi Gao, Bin Deng, Jiangtao Luo, Jixuan Wang, Jiang Wang, Guosheng Yi</i>	
Multi-Task Learning: a Solution of Small Sample Size Problem in Floor-based Gait Recognition	238
<i>Bin Deng, Jiangtao Luo, Tianshi Gao, Zijian Cui, Jiang Wang</i>	
Improving Classification Capability of Industrial-Grade ATE by Means of Cloud Architecture	244
<i>Paolo Ferrari, Emiliano Sisinni, Paolo Bellagente, Alessandro Depari, Alessandra Flammini, Marco Pasetti, Stefano Rinaldi</i>	
Simulation and Design of Double-Winding Thermal Flow Sensor Based on COMSOL.....	250
<i>Qinhui Wang, Xiangyu Hu, Peng Wang, Wuyu Cui, Yi Wang</i>	
Planar Electrical Capacitance Tomography with Hexagonal Sensor.....	256
<i>Yu Sun, Ziqiang Cui, Huaxiang Wang, Lifeng Zhang</i>	
A Survey of Impedance Measurement Methods in Power Electronics	262
<i>Huamin Jie, Zhenyu Zhao, Fan Fei, Kye Yak See, Rejeki Simanjorang, Firman Sasongko</i>	
Study on the Channel Weight of Ultrasonic Flowmeter in Wet Gas Measurement	268
<i>Dandan Zheng, Mengxu Zhai</i>	
Stability Analysis of Mutually Synchronized Spatially Distributed 24 GHz Oscillators	274
<i>Christian Hoyer, Lucas Wetzel, Dimitris Prousalis, Jens Wagner, Frank Julicher, Frank Ellinger</i>	
Uncertainty Mitigation in Drone-Based 3D Scanning of Defects in Concrete Structures.....	280
<i>Daniele Marchisotti, Emanuele Zappa</i>	
Vertices Independent Component Analysis-Based Status Monitoring Strategy for Processes with Uncertainties.....	286
<i>Sijia Wang, Shumei Zhang</i>	

Wearable Big Data Pertinence Learning with Deep Spatiotemporal co-Mining.....	292
<i>Junhua Wong, Qingxue Zhang</i>	
Investigation of Q Factor of the QCM Resonator Under Overtone Modes	296
<i>Jianguo Hu, Tian-Ling Ren</i>	
Validation of RUL Estimation Method for Battery Prognostic Under Different Fast-Charging Conditions	301
<i>Gabriele Patrizi, Benedetta Picano, Marcantonio Catelani, Romano Fantacci, Lorenzo Ciani</i>	
Cascade Integrator Comb Filter-Aided Calibration-free Wavelength Modulation Spectroscopy Tomography	307
<i>Jiangnan Xia, Godwin Enemali, Rui Zhang, Chang Liu</i>	
Multi-Parameter Wearable Band for Wireless Data Collection from People with Epilepsy	312
<i>Hemant Kumar Chattar, Bijit Basumatary, Rahul Shukla, Birinder Singh Paul, Ranjit Kaur, Arun Khokhar, Gagandeep Singh, Ashish Kumar Sahani</i>	
Velocity Profile Reconstruction Method for Electromagnetic Flow Tomography: a Simulation Study.....	317
<i>Pengyu Yang, Ziqiang Cui, Kai Gao, Huaxiang Wang</i>	
A RP Image-Based Health Indicator Construction Method for Wind Turbine RUL Prediction	323
<i>Danyang Han, Jinsong Yu, Diyin Tang, Lingkun Kong, Xin Li</i>	
Panoptic Segmentation of Animal Fibers	329
<i>Oliver Rippel, Nikolaj Schonfelder, Khosrow Rahimi, Juliana Kurniadi, Andreas Herrmann, Dorit Merhof</i>	
Enhanced IpD2FT-Based Synchronphasor Estimation Through Narrowband Interferers Compensation.....	335
<i>Xuansheng Shan, David Macii, Dario Petri, He Wen</i>	
Influence of Operation Conditions on Condensation and Aerodynamic Shockwave in Supersonic Nozzle.....	341
<i>Shiwei Wang, Chao Wang, Hongbing Ding, Zhengqi Chen, Jiamin Ye</i>	
Measurement of Tube Thickness Using Eddy Current Testing Based on the Modified Integration Range.....	347
<i>Pu Huang, Hang Pu, Lijun Xu, Yuedong Xie</i>	
Two-Step TDLAS Tomographic Reconstruction for Temperature Imaging.....	352
<i>Jingjing Si, Xin Liu, Yinbo Cheng, Chang Liu</i>	
3-D Targets Reconstruction Based on Stepped Frequency Continuous Wave GPR System.....	357
<i>Yuxuan Wu, Feng Shen, Minghao Zhang, Tong Wan, Yongfei Miao, Dingjie Xu</i>	
Measurement Procedure to Investigate Ageing of Low-Power Voltage Transformers	363
<i>Alessandro Mingotti, Lorenzo Peretto, Roberto Tinarelli</i>	
Lab Investigation of Thermal Anemometers for Mass Flow Measurements in Harsh Operating Conditions	369
<i>G. Benincasa, C. Gabauer, M. Neumayer, B. Schweighofer, T. Leitner, M. Berger, G. Klosch, H. Wegleiter</i>	

Plug-And-Play Oxygen Auto-flow Regulator for Low Flow Oxygen Therapy: a Prototype Development	375
<i>Balasubramanian M, Avinash Bhat Pattaje, Arumulla Mohit Krishna, Bandi Jai Krishna, Pratyush Chakraborty, Aivelu Manga Parimi</i>	
Online Skin-Electrode Contact Quality Monitoring in Wearable Devices: an EEG Application.....	381
<i>Valentina Casadei, Roberto Ferrero</i>	
Measurement of Excess Noise in Thin Film and Metal Foil Resistor Networks.....	387
<i>Nikolai Beev</i>	
Measurement of Wet Gas for Fuel Cell Recycling Loop Based on Ultrasonic and Capacitive Sensors	393
<i>Ziqi Cui, Chao Tan, Hanrui Zhang, Yong Bao, Shangjie Ren, Feng Dong</i>	
Metrological Foundations of Emotional Valence Measurement Through an EEG-Based System	399
<i>Andrea Apicella, Pasquale Arpaia, Antonio Esposito, Giovanna Mastrati, Nicola Moccaldi</i>	
Permittivity Measurement of Low-Loss Materials Using Embedded Resonance	405
<i>Philip G. Bartley</i>	
An Evaluation of Machine Learning Algorithms in an Experimental Structural Health Monitoring System Incorporating LoRa IoT Connectivity.....	410
<i>Ashraf Tahat, Azmi Al-Zaben, Lubna Saad El-Deen, Sara Abbad, Chamseddine Talhi</i>	
Automatic Placental Distal Villous Hypoplasia Scoring Using a Deep Convolutional Neural Network Regression Model.....	416
<i>Afsoon Khodaei, David Grynspan, Shannon Bainbridge, Eranga Ukwatta, Adrian D. C. Chan</i>	
Anomaly Detection in Spacecraft Telemetry Data Using Graph Convolution Networks	421
<i>Yue Song, Jinsong Yu, Diyin Tang, Jie Yang, Lingkun Kong, Xin Li</i>	
Gas Holdup Measurement of Gas-Water Flow Using Microwave Transmission Line Method.....	427
<i>Huimin Ma, Ying Xu, Chao Yuan, Jinghan Wang, Yiguang Yang, Tao Zhang, Ziqiang Cui</i>	
EMG-Based Continuous Motion Decoding of Upper Limb with Spiking Neural Network.....	432
<i>Yuwei Du, Jing Jin, Qiang Wang, Jianyin Fan</i>	
Improvement of Flame Complex Permittivity Model Considering Positive Ions and Electrons.....	437
<i>Chao Wang, Shuo Jin, Xiaoning Cao, Jiamin Ye</i>	
A Fast Analytical Solution to the Filtered Canonical Polyadic Decomposition Problem	442
<i>Balazs Renczes, Jan Decuyper, Mark Runacres</i>	
Using Three-Axis Acceleration Sensor to Measure the Frequency of the Precession Vortex Signal.....	448
<i>Ying Xu, Chuan-Shun Wei, Chao Yuan, Lin-Fei Cao, Rong-Ji Zuo, Ye Liu, Xi-Li Ba</i>	
A Water Cut Measurement Method Based on TM ₀₁₀ Mode Microwave Cavity Sensor	454
<i>Ying Xu, Rong-Ji Zuo, Chao Yuan, Chuan-Shun Wei, Lin-Fei Cao, Cen-Wei Sun</i>	
A Metrology-Grade Digitizer for Power Converters in the High Luminosity Large Hadron Collider.....	459
<i>Nikolai Beev, Miguel Cerqueira Bastos, Michele Martino, Daniel Valuch</i>	
A Comparative Study of Two Kinds of Modified Venturi Over-Reading Models.....	465
<i>Ying Xu, Lin-Fei Cao, Chao Yuan, Rong-Ji Zuo, Chuan-Shun Wei, Nian-Rong Wang, Ye Liu</i>	

Measurement of Interfacial Characteristics and Droplet Entrainment in Nearly Horizontal Liquid-Liquid Flows Using PLIF Method.....	471
<i>Lusheng Zhai, Xinyu Meng, Zihan Meng, Hongxin Zhang, Ningde Jin</i>	
Simulation Study on Influencing Factors of Image Reconstruction Quality Based on UT System	477
<i>Jingyi Hu, Nan Li, Lina Wang</i>	
Co-Surface Capacitive Sensor Structure Design and Its Performance Evaluation on Single Steel Tendon Positioning in Grouting Duct.....	483
<i>Wenlong Tao, Nan Li</i>	
An Innovative Model-Based Algorithm for Power Control Strategy of Photovoltaic Panels	488
<i>Loredana Cristaldi, Marco Faifer, Christian Laurano, Emil Petkovski, Sergio Toscani, Roberto Ottoboni</i>	
Design of an Optical Sensor with Varied Sensitivities for Overhead Line Sag, Temperature and Vibration Monitoring.....	494
<i>Grzegorz Fusiek, Pawel Niewczas</i>	
Capacitive Sensing for Magnetic Nanoparticles in Molecular Communication.....	500
<i>Max Bartunik, Johannes Reichstein, Jens Kirchner</i>	
Analysis of Metrological Issues for Improving Quality and Reliability in the Automated Inspection of Composite Materials	505
<i>Giulio D'Emilia, Luciano Chiominto, Antonella Gaspari, Emanuela Natale</i>	
Network Effects on Dual Machine Learning Models Predicting Smart Home Sensor Measurements.....	511
<i>Saif Almhairat, Bruce Wallace, Julien Lariviere-Chartier, Ali El-Haraki, Rafik Goubran, Frank Knoefel</i>	
Evaluation of Interpolation Methods for EMG Arrays.....	517
<i>Emma Farago, Adrian D. C. Chan</i>	
Skin Cancer Classification Based on Cosine Cyclical Learning Rate with Deep Learning	523
<i>Yali Nie, Marco Carratù, Mattias O'Nils, Paolo Sommella, Avoci Ugwiri Moise, Jan Lundgren</i>	
Convolutional Neural Network Aided Chemical Species Tomography for Dynamic Temperature Imaging.....	529
<i>Yalei Fu, Rui Zhang, Godwin Enemali, Abhishek Upadhyay, Michael Lengden, Chang Liu</i>	
An Automated Tool to Assess Air Space Size in Histopathology Images of Lung Tissue	534
<i>Diego Politis, Sina Salsabili, Adrian D. C. Chan</i>	
SABiNN: FPGA Implementation of Shift Accumulate Binary Neural Network Model for Real-Time Automatic Detection of Sleep Apnea.....	540
<i>Omiya Hassan, Rushil Thakker, Tanmoy Paul, Dilruba Parvin, Abu Saleh Mohammad Mosa, Syed Kamrul Islam</i>	
Extension of Signal Model for Super Resolution Phase Retrieval in Continuous Domain	546
<i>Xiaodong Li, Ning Fu, Liyan Qiao</i>	
Intelligent Cross-Domain Fault Diagnosis for Rotating Machinery Using Multiscale Adversarial Convolutional Neural Network	551
<i>Ke Yue, Jipu Li, Junbin Chen, Weihua Li</i>	

A Fast Reconstruction Strategy to Image Small Objects in Electrical Tomography	557
<i>Peng Suo, Jiangtao Sun, Xiaolin Li, Shijie Sun, Lijun Xu</i>	
An Accelerometer-Based Wearable Multi-Node Motion Detection System of Freezing of Gait in Parkinson's Disease.....	562
<i>Chen Liu, Lingmin Han, Siyuan Chang, Jiang Wang</i>	
Wet Gas Vortex Metering Based on Tri-Axis Acceleration Measurement	567
<i>Hongjun Sun, Yuhang Liu, Hongbing Ding, Jinxia Li, Jiamin Ye</i>	
Effective and Fast Estimation for Multi-Source Navigation Sensor Reliability.....	573
<i>Wenqiang Li, Feng Shen, Zhongxuan Zhang, Yi Liang, Dingjie Xu, Wei Gao</i>	
Parameter Matching Method for the Measurement of Two-Dimensional Pulse Streams Signal	578
<i>Shuangxing Yun, Ning Fu, Liyan Qiao</i>	
A Measurement Approach to Validate the Predicted Behavior of a Nonlinear Mechanical Energy Harvester	583
<i>Bruno Andò, Salvatore Baglio, Adi. R. Bulsara, Vincenzo Marletta, Bruno Vaccaro</i>	
Comparison of Semantic Segmentation Methods on Renal Ultrasounds Images.....	589
<i>Qimin Zhang, Qiang Wang</i>	
Definition and Identification of an Improved Preisach Model for Magnetic Hysteresis Based on the KP Operator.....	594
<i>Massimiliano Amato, Luca Ghezzi, Luigi Piegari, Sergio Toscani</i>	
Molecularly Imprinted Polymers and Inkjet-Printer Technology to Develop Optical-Chemical Sensors	600
<i>Nunzio Cennamo, Francesco Arcadio, Aldo Minardo, Domenico Del Prete, Luigi Zeni, Maria Pesavento, Giancarla Alberti, Vincenzo Marletta, Bruno Andò</i>	
Detection of Cracks Under Cover and Corrosion Using UHF Probe	605
<i>Mohammed Saif Ur Rahman, Ademola Akeem Mustapha, Mohamed A. Abou-Khousa</i>	
Acoustic Condition Monitoring: Signal Analysis for Large Machinery Halls	610
<i>C. Pichler, M. Neumayer, B. Schweighofer, C. Feilmayr, S. Schuster, S. Puttinger, H. Wegleiter</i>	
Analysis of Sensor Effects for a Position Measurement System in Harsh Environments	616
<i>G. Gruber, M. Neumayer, B. Schweighofer, T. Leitner, M. Berger, G. Klosch, H. Wegleiter</i>	
Bio-Inspired Computing: a Deep Learning Algorithm with the Spike-frequency Adaptation	622
<i>Jixuan Wang, Bin Deng, Tianshi Gao, Jiang Wang, Guosheng Yi</i>	
Thermal Effects on Wave Structures of Falling Film Based on PLIF	628
<i>Ting Xue, Fangjun Ruan, Yan Wu</i>	
Advanced Architecture for Training and Testing NILM Systems.....	634
<i>Simone Mari, Giovanni Bucci, Fabrizio Ciancetta, Edoardo Fiorucci, Andrea Fioravanti</i>	
Multiple Correlation Analysis for Finite-Time Delay Estimation in Soft Sensors Design.....	640
<i>Salvatore Graziani, Maria Gabriella Xibilia</i>	
Dust Accumulation Sensing System with a Screen-Printed Interdigitated Sensor	646
<i>Pauliina Vilmi, Christian Schuss, Esa Hannila, Rafal Sliz, Tapio Fabritius</i>	

Temperature Telemetry with Synchronous Distance Detection System Based on CM-TDLAS.....	652
<i>Rende Wang, Lijun Xu, Ang Huang, Wanpeng Zhang, Zhang Cao</i>	
Temperature Stress Tests on Low-Cost IMU Systems: Analysis and First Proposal for Enhancing Performance.....	658
<i>Gabriele Patrizi, Marcantonio Catelani, Lorenzo Ciani, Marco Carratù, Antonio Pietrosanto, Paolo Sommella, Giovanni Betta, Domenico Capriglione</i>	
A λ -Level Partition-based Linear Back Projection Algorithm to Electrical Resistance Tomography.....	664
<i>Xuezhen Liu, Shihong Yue, Honghao Ren</i>	
Fault Diagnosis of ERT Data Acquisition System in Dredging Engineering.....	670
<i>Changhao Xin, Shihong Yue, Kun Li</i>	
Deep Feature Selection for Benign and Malignant Classification Appearing as Ground Glass Nodules.....	676
<i>Chenchen Ma, Shihong Yue, Kun Li</i>	
Towards a Multi-Pixel Time-of-Flight Indoor Navigation System for Nano-Drone Applications	682
<i>Vlad Niculescu, Hanna Muller, Iman Ostovar, Tommaso Polonelli, Michele Magno, Luca Benini</i>	
A WiFi-Based System for Recognizing Fine-grained Multiple-Subject Human Activities	688
<i>Majid Ghosian Moghaddam, Ali Asghar Nazari Shirehjini, Shervin Shirmohammadi</i>	
Comparison of Flow Velocity Measurement Methods Based on ERT in Dredging Engineering	694
<i>Yuwei Zhao, Shihong Yue, Kun Li</i>	
A Novel Image Processing Technique Based on Deep Learning for Water Consumption Detection.....	700
<i>Marco Carratù, Salvatore Dello Iacono, Giuseppe Di Leo, Vincenzo Gallo, Consolatina Liguori, Antonio Pietrosanto</i>	
Impedance Spectroscopy for Monitoring Sound Teeth and Carious Lesions.....	706
<i>Isabella Sannino, Emma Angelini, Marco Parvis, Pasquale Arpaia, Sabrina Grassini</i>	
Blink and Saccade Detection from Forehead EEG.....	711
<i>Emma Farago, Andrew J. Law, Sujoy Ghosh Hajra, Adrian D. C. Chan</i>	
Optimized Signal Generation in Pulse Voltammetry for Segmented R-String DACs.....	717
<i>Inge Siegl, Norbert Sailer, Markus Haberler, Carolin Kollegger, Christoph Steffan</i>	
The Assessment of Inertial Odometry System Performance in Tracking Upper Limb Kinematics	723
<i>Ilaria Mileti, Juri Taborri, Marco Germanotta, Irene Aprile, Eduardo Palermo, Fabrizio Patane, Stefano Rossi</i>	
Development of a New Speed Measurement Technique Based on Deep Learning.....	729
<i>Marco Carratù, Vincenzo Gallo, Consolatina Liguori, Vincenzo Paciello</i>	
A CS-Based Acquisition Method of Acoustic Emission Signals from Distributed SHM Systems.....	735
<i>Domenico L. Carnì, Luca De Vito, Francesco Lamonaca, Francesco Picariello, Ioan Tudosa</i>	
Towards a Temperature Compensated Model for a Blood-PH Sensor in Extracorporeal Circulation	741
<i>Daniele Goldoni, Alberto Ferrari, Mattia Piccini, Stefano Cattini, Luigi Rovati</i>	
Convolutional Neural Network Based Heart Sounds Recognition on Edge Computing Platform	747
<i>Venkatesh Vakamullu, Sudipto Trivedy, Madhusudhan Mishra, Anirban Mukherjee</i>	

Real-Time Heart Murmur Classification Using Attention Based Deep Learning Approach.....	753
<i>Venkatesh Vakamullu, Madhusudhan Mishra, Anirban Mukherjee</i>	
Dielectric Characterization of Curved Structures Using Flangeless Open-Ended Waveguide Measurement	759
<i>Marshall Vaccaro, Mohammad Tayeb Al Qaseer, Reza Zoughi</i>	
Fiducial Point Estimation Solution for Impedance Cardiography Measurements.....	765
<i>Olev Martens, Margus Metshein, Anar Abdullayev, Benoit Larras, Antoine Frappe, Antoine Gautier, Maryam Saeed, Deepu John, Barry Cardiff, Andrei Krivosei, Paul Annus, Marek Rist</i>	
$L_{1/2}$ -Norm Regularization for Detecting Aero-engine Fan Acoustic Mode	771
<i>Zhendong Li, Baijie Qiao, Bi Wen, Zepeng Li, Xuefeng Chen</i>	
An Optimization Design of the Iron-Core Coil Sensor for High-frequency Current Signals.....	777
<i>Lei Zhou, Yang Jiao, Hui Gong, Hongbin Li, Chaojun Ma, Chuanji Zhang</i>	
Optimization of the Measuring Tubes for High Pressure Coriolis Flowmeters.....	783
<i>Lijun Sun, Jingyu Gao, Yue Liu</i>	
An FPGA-Based Real-time Radar Coordinate Transformation by Jointly Exploiting MicroBlaze and Programmable Logic	789
<i>Jingchao Zhang, Haofeng Kuang, Peiwen Gao, Liyan Qiao</i>	
Design Optimization of Micro Coriolis Flowmeters	795
<i>Lijun Sun, Wei Wu, Jinpeng Lian</i>	
A Portable Laser Absorption Sensor for Quantitative Measurement of Ambient Temperature and Humidity.....	801
<i>Wei Wang, Kun Duan, Daxin Wen, Liu hao Ma, Yu Wang, Wei Ren</i>	
Simultaneous Decoupling Control of Translation and Rotation for a 6-DOF Vibration Isolator Based on the Stewart Platform	807
<i>Xunchao Chu, Zhenxing Li, Kang Wu</i>	
Superposition Johnson Noise Thermometer with a Fully Differential Structure.....	813
<i>Qina Han, Kunli Zhou, Yang Shi, Jian Yang, Qiming Liang, Jifeng Qu</i>	
Fast Dynamic ISAR Imaging Method Based on Low-Rank Tensor Decomposition with Alternating Minimization	819
<i>Fei Yan, Shuliang Gui, Wei He, Jiamin Huang, Xiaodong Wu, Zengshan Tian</i>	
Liquid Film Characteristics of Vertical Upward Annular Flow Under Low Surface Tension	825
<i>Ting Xue, Zhuping Li, Songlin Li, Zhuolin Li</i>	
Accuracy Improvement of High-Frequency Transmission Line Model of Induction Motor Through Multilayer Perceptron.....	830
<i>Zhenyu Zhao, Fei Fan, Quqin Sun, Pengfei Tu, Huamin Jie, Kye Yak See</i>	
Detection of Pressure Ulcers Using Electrical Impedance Tomography.....	836
<i>Saiqiang Liu, Yanbin Xu, Sitong Chen, Qingwei Hu, Feng Dong</i>	
Temperature Measurement Methodologies in Ultrasound Hyperthermia for Cancer Treatment	842
<i>Baki Karaboce, Begum Balkan Apaydin, Gokce Surucu, Dogukan Bingol</i>	

Synchronization Solutions for Power Quality Functionalities in Low Cost Smart Meters	848
<i>Paolo Castello, Carlo Muscas, Paolo Attilio Pegoraro, Sara Sulis</i>	
A Simple Method for the Preliminary Analysis and Benchmarking of Automotive LiDARs in Fog	854
<i>Davide Cassanelli, Stefano Cattini, Giorgio Di Loro, Luca Di Cecilia, Luca Ferrari, Daniele Goldoni, Luigi Rovati</i>	
5G DSS Communications: Pilot Signals' Variability Analysis from Measurements on the Field	860
<i>G. Betta, D. Capriglione, G. Cerro, G. Miele, M. D. Migliore, D. Suka</i>	
A Bioimpedance-Based Transducer for Insulin Bioavailability Assessment After Subcutaneous Administration.....	866
<i>Pasquale Arpaia, Davide Cuneo, Francesca Mancino, Nicola Moccaldi</i>	
An Experimental Characterization of Chain of PLLs for Wired Clock Synchronization of UWB Anchors for Indoor Location	871
<i>Stefano Rinaldi, Alessandro Musatti, Alessandro Depari, Paolo Ferrari, Alessandra Flammini, Emiliano Sisinni</i>	
Small-Scale Test Bench of Maritime Thruster for Digital Twin Research.....	877
<i>Sampo Haikonen, Ivar Koene, Joni Keski-Rahkonen, Raine Viitala</i>	
Characteristics Measurement of Dense Bubbly Flow Based on Laser Scanning	883
<i>Ting Xue, Songlin Li, Zhuping Li</i>	
Analysis of Non-Ideal Remote Pole in Electrical Resistivity Tomography for Subsurface Surveys	888
<i>Gabriele Patrizi, Giulia Guidi, Lorenzo Ciani, Marcantonio Catelani, Luca Cappuccini, Agnese Innocenti, Nicola Casagli, Veronica Pazzi</i>	
Teaching Instrumentation and Measurement in Local and Remote Laboratories	893
<i>Christian Schuss, Aleks Maanselkä, Mikko Kaikkonen, Tapio Fabritius</i>	
Using Generalized Cross-Correlation Estimators for Leak Signal Velocity Estimation and Spectral Region of Operation Selection	899
<i>George Othon Glentis, Kostas Angelopoulos</i>	
An Emergency Message and Call System for People with Epilepsy.....	905
<i>Krishnu R S, Rahul Shukla, Hemant Kumar Chattar, Birinder Singh Paul, Ranjit Kaur, Arun Khokhar, Gagandeep Singh, Ashish Kumar Sahani</i>	
Opti2: a Reconstruction Approach for Periodic Signals Using Compressive Sensing	910
<i>Dailys Arronde Perez, Christian Schoffmann, Hubert Zangl</i>	
A Deep Learning Approach for the Development of an Early Earthquake Warning System.....	916
<i>Marco Carratù, Vincenzo Gallo, Vincenzo Paciello, Antonio Pietrosanto</i>	
A Non-Invasive System for On-line Surface Defect Detection on Special-shaped Steel Towards Real Production Lines	922
<i>Yajiao Liu, Jiang Wang, Haitao Yu, Jiansheng Li, Fulong Li, Quanfa Zhao</i>	
A Mixed Gas Composition Identification Method Based on Sample Augmentation.....	928
<i>Yinsheng Chen, Wanyu Xia, Deyun Chen, Tianyu Zhang, Kai Song</i>	
Real-Time Blast Furnace Monitoring Based on Temporal Sub-mode Recognition	934
<i>Xin Wang, Xiao-Yu Tang, Zheng Hao, Songchen Li, Chunjie Yang</i>	

Automatic and Fast Extraction of 3D Hand Measurements Using a Deep Neural Network	940
<i>Nastaran Nourbakhsh Kaashki, Xinxin Dai, Timea Gyarmathy, Pengpeng Hu, Bogdan Iancu, Adrian Munteanu</i>	
A Blender-Based Simulation Tool for Visible Light Positioning with Portable Devices.....	946
<i>Juan D. Gutierrez, Teodoro Aguilera, Fernando J. Alvarez, Jorge Morera, Fernando J. Aranda</i>	
Simulation and Reduction of Speckle-Induced Uncertainty in Laser Triangulation Sensors.....	952
<i>Ernst Csencsics, Johannes Schlarp, Tobias Glaser, Tobias Wolf, Georg Schitter</i>	
Measurement of Cross-Sectional Velocity Distribution of Pneumatically Conveyed Particles in a Square-Shaped Pipe Through Electrostatic Sensing and Gaussian Process Regression.....	958
<i>Yongyue Wang, Lijuan Wang, Xiangchen Qian, Yong Yan</i>	
Modeling a Virtual Flow Sensor in a Sugar-Energy Plant Using Artificial Neural Network.....	964
<i>Jayne Dos Santos Lima, Juan Moises Mauricio Villanueva, Sebastian Yuri Cavalcanti Catunda</i>	
Timing Deviations in Wireless Networks Using Bluetooth Periodic Advertising	970
<i>Timo Maiwald, Qing Zhang, Max Bartunik, Kilin Shi, Fabian Lurz, Georg Fischer, Thomas Ackermann</i>	
Accuracy Evaluation of a Weeding Robot in Organic Farming	975
<i>Vitali Czymmek, Leif O. Harders, Florian J. Knoll, Stephan Hussmann</i>	
A Self-Diagnostic Flame Monitoring System Incorporating Acoustic, Optical, and Electrostatic Sensors	981
<i>Yanchao Zhang, Yong Yan, Xiaojing Bai, Jiali Wu</i>	
A Single-Point Approach Based on Nonactive Power Factor for the Assessment of Harmonic Distortion Sources in Power Systems.....	986
<i>Giovanni Artale, Giuseppe Caravello, Antonio Cataliotti, Valentina Cosentino, Dario Di Cara, Vito Ditta, Salvatore Guaiana, Nicola Panzavecchia, Giovanni Tine</i>	
FPGA-Based Large-scale Remote Sensing Image ROI Extraction for On-orbit Ship Detection	992
<i>Yutong Li, Bowen Yao, Yu Peng</i>	
Sensor Fusion Hardware Platform for Robust Electromagnetic Navigation	998
<i>Kilian O'Donoghue, Herman Alexander Jaeger, Padraig Cantillon Murphy</i>	
Wheat Spikes Counting Using Object-Level Data Augmentation.....	1004
<i>Amirhossein Zaji, Zheng Liu, Gaozhi Xiao, Pankaj Bhowmik, Jatinder S. Sangha, Yuefeng Ruan</i>	
Evaluating the Impact of Spectral Estimators on Frequency Domain Feature Classification Applications for Pipe Leakage Detection	1010
<i>Kostas Angelopoulos, Kristina Georgoulaki, George Othon Glentis</i>	
The Physical Meaning of Reactive Power and Distortion Power.....	1016
<i>N Harold Kirkham, D. Rod White</i>	
Hybrid Successive Subtraction Method of Analog to Digital Converter.....	1022
<i>Suchitra Padidala, Nimal J. Kumar, Jagadeesh Kumar V</i>	

Development of a Cryogenic DC-DC Boost Converter: Devices Characterization and First Prototype Measurements	1028
<i>Niccolò Gallice, Danilo Santoro, Paolo Cova, Nicola Delmonte, Massimo Lazzaroni, Paola Sala, Andrea Zani</i>	
A Interferometer Modulated TDLAS Temperature Sensor by Using Coherent Demodulation	1034
<i>Guangyu Hou, Lijun Xu, Wenbin Zhou, Ang Huang, Zhang Cao</i>	
Hardware Prototype Blind Calibration of MWC Based on BGPC	1039
<i>Yinuo Su, Jingchao Zhang, Siyi Jiang, Xiaodong Li, Liyan Qiao</i>	
Guided Lamb Wave Tomography Using Angle Beam Transducers and Inverse Radon Transform for Crack Image Reconstruction.....	1045
<i>Dario J. Pasadas, Mohsen Barzegar, Artur L. Ribeiro, Helena G. Ramos</i>	
Detection of Interfacial Shear Stress and Droplet Detachment Using PLIF&PIV Methods in Horizontal Liquid-Liquid Flows.....	1050
<i>Lusheng Zhai, Wenhao Wang, Xinyu Meng, Ningde Jin</i>	
Frequency Identification of a Memory Polynomial Model for PA Modeling	1056
<i>Stanislas Dubois, Bruno Lelong, Jean-Michel Hode, Guillaume Ferre, Dominique Dallet</i>	
Induction Sensor Characterisation for Electromagnetic Tracking Systems.....	1062
<i>Herman Alexander Jaeger, Kilian O'Donoghue, Padraig Cantillon Murphy</i>	
Use of Electrical Resistance to Modeling the Phase Transformation of Shape Memory Alloy	1068
<i>Wislayne Dayanne Pereira Da Silva, Jaidilson Jo Da Silva, Angelo Perkusich</i>	
RFID-Based Robot Localisation: An Unconstrained Optimisation Problem by Exploiting RSSI	1074
<i>F. Shamsfakhr, D. Macii, D. Fontanelli, A. Motroni, P. Nepa, Luigi Palopoli, A. Buffi</i>	
Human Activity and Posture Classification Using Smartphone Sensors and Matlab Mobile	1080
<i>Syahirah Jamian, Teddy Surya Gunawan, Mira Kartiwi, Robiah Ahmad Razak, Kushsairy Abdul Kadir, Muhammad Noor Nordin</i>	
Parameter Estimation for Fault Detection and Classification in Centrifugal Pumps.....	1086
<i>M. Avoci Ugwiri, V. Paciello, A. Lay-Ekuakille, A. Pietrosanto, C. Liguori</i>	
High Precision and Contactless Dielectric Loaded Resonator for Room Temperature Surface Resistance Measurements at Microwave Frequencies.....	1092
<i>Andrea Alimenti, Kostiantyn Torokhtii, Nicola Pompeo, Enrico Silva</i>	
Improvement of Communication Distance for an Unconventional Channel.....	1098
<i>Paolo Caruso, Salvatore Dello Iacono, Domenico Di Caro, Vincenzo Paciello</i>	
Application of Uncertainty-Aware Sensor Fusion in Physical Sensor Networks.....	1104
<i>Maximilian Gruber, Wenzel Pilar Von Pilchau, Varun Gowtham, Nikolaos-Stefanos Koutrakis, Nicolas Schonborn, Sascha Eichstädt, Jorg Hähner, Marius-Julian Corici, Thomas Magedanz, Julian Polte, Eckart Uhlmann</i>	
Modified YOLOv4 Framework with Thermal Images for Pedestrian Detection	1110
<i>Saurav Kumar, P. Sumathi</i>	
Traffic Safety Detection System by Digital Twins and Virtual Reality Technology	1116
<i>Zhihan Lv, Dongliang Chen, M. Shamim Hossain</i>	

Distance Measurement Characterization for Ultra Wide Band Indoor Localization Systems.....	1122
<i>Salvatore Dello Iacono, Vincenzo Paciello, Paolo Sommella</i>	
Quality Index for the Phase Information in Spectral Power Quality Analysis	1128
<i>Jan-Philipp Kitzig, Christoph Szymczyk, Gerd Bumiller</i>	
Optimization of 3-D Sensor Design for Electrical Capacitance Tomography.....	1134
<i>Ying Wang, Shijie Sun, Xupeng Lu, Jiangtao Sun, Lijun Xu</i>	
Compressed Sensing of Skin Conductance Level for IoT-Based Wearable Sensors	1140
<i>Grazia Iadarola, Angelica Poli, Susanna Spinsante</i>	
Pulse Compression Favourable Thermal Wave Imaging Approach for Estimation of Osteoporosis: A Numerical Study.....	1146
<i>Vanita Arora, Ravibabu Mulaveesala, Sreeraman Rajan, Bhashyam Balaji, Carlos Rossa</i>	
Neural Network-Based Prediction and Monitoring of Blood Glucose Response to Nutritional Factors in Type-1 Diabetes.....	1151
<i>Leopoldo Angrisani, Giovanni Annuzzi, Pasquale Arpaia, Lutgarda Bozzetto, Andrea Cataldo, Alessandra Corrado, Egidio De Benedetto, Vincenzo Di Capua, Roberto Prevete, Ersilia Vallefucio</i>	
A ML-Based Approach to Enhance Metrological Performance of Wearable Brain-Computer Interfaces	1157
<i>Leopoldo Angrisani, Andrea Apicella, Pasquale Arpaia, Egidio De Benedetto, Nicola Donato, Luigi Duraccio, Salvatore Giugliano, Roberto Prevete</i>	
Monitoring of Seagrass Meadows Using Satellite Images and U-Net Convolutional Neural Network.....	1162
<i>Marco Scarpetta, Paolo Affuso, Maddalena De Virgilio, Maurizio Spadavecchia, Gregorio Andria, Nicola Giaquinto</i>	
Additively Manufactured Capacitive Proximity and Tactile Sensors for Soft Robotic Systems.....	1168
<i>Mohammad Alshawabkeh, Hosam Alagi, Stefan Escaida Navarro, Christian Duriez, Bjorn Hein, Lisa-Marie Faller</i>	
Research on a Novel Calibration Method of Broadband Shunt.....	1174
<i>Ziyue Yang, Jing Wu, Haiming Shao, Jiafu Wang, Lixin Wang</i>	
Metrological Validation of a Photogrammetry-Based Technique	1180
<i>Leila Es Sebar, Luca Lombardo, Marco Parvis, Emma Angelini, Alessandro Re, Sabrina Grassini, Alessandro Bovero, Alessandro Lo Giudice</i>	
Pulsed-Active Microwave Thermography.....	1186
<i>Logan M. Wilcox, Mathias Bonmarin, Kristen M. Donnell</i>	
On the Use of an Hyperspectral Imaging Vision Based Measurement System and Machine Learning for Iris Pigmentation Grading	1192
<i>Tommaso Fedullo, Ettore Masetti, Giovanni Gibertoni, Federico Tramarin, Luigi Rovati</i>	
Direction of Arrival Estimation of Moving Sound Sources Using Deep Learning	1198
<i>Jana Rusrus, Martin Bouchard, Shervin Shirmohammadi</i>	
Capacitive Low-Cost System for Soil Water Content Measurement in the IoT Precision Agriculture.....	1204
<i>Pisana Placidi, Nicola Papini, Carmine Villani Delle Vergini, Paolo Mezzanotte, Andrea Scorzoni</i>	

Modality-Independent Placebo Device for Electrostimulation.....	1210
<i>Graziella Bedenik, Matheus Souza, Elyson A. N. Carvalho, Josimari Desantana, Jose Carvalho-Filho, Raimundo Freire</i>	
Microwave Surface Conductivity Measurement Using an Open-Ended Circular Waveguide Probe.....	1216
<i>Matthew Dvorsky, Mohammad Tayeb Al Qaseer, Reza Zoughi</i>	
SEMG Signal Based Hand Gesture Recognition by Using Selective Subbands Coefficients and Machine Learning.....	1222
<i>Saeed Mian Qaisar, Alberto Lopez, Dominique Dallet, Francisco Javier Ferrero</i>	
The Effect of Noise on Contactless Heart Rate Measurement Using Video Magnification.....	1228
<i>Leen Yassin Kassab, Andrew Law, Bruce Wallace, Julien Lariviere-Chartier, Rafik Goubran, Frank Knoefel</i>	
Drone Micro-Doppler Identification with Radar Calibration	1234
<i>Ian Lam, Andi Huang, Shashank Pant, Sreeraman Rajan, Prakash Patnaik, Bhashyam Balaji</i>	
Comparison of Blind Source Separation Techniques for Respiration Rate Estimation from Depth Video	1240
<i>Mohsen Mozafari, Andrew Law, Samuel Beni Tchoudem Djouaka, James R. Green, Rafik A. Goubran</i>	
Respiration Rate Estimation from Thermal Video of Masked and Unmasked Individuals Using Tensor Decomposition.....	1245
<i>Mohsen Mozafari, Andrew J. Law, James R. Green, Rafik A. Goubran</i>	
Repeatability and Reproducibility of Electrical Measurements of Spark-Plasma-Sintered Alumina-SiC _w Composites	1250
<i>Miriam Rath, Rosario Gerhardt</i>	
Investigation of Sensor Bias and Signal Quality on Target Tracking with Multiple Radars.....	1256
<i>Peter Carniglia, Bhashyam Balaji, Anthony Damini</i>	
Ferrofluid-Based Shape-Controllable and Fast-Responsive Micro-Pumping and Valving Actuation	1262
<i>Jiawei Tang, Patrick C. K. Luk</i>	
Experimental Characterization of the ORION ASIC: the Read-Out Circuit for X-γ-Ray Detection of the THESEUS Mission Spectrometer	1268
<i>M. Grassi, A. Gemelli, P. Malcovati, F. Mele, I. Dedolli, M. Gandola, G. Bertuccio, E. Marchesini, E. Virgilli, R. Campana, F. Fuschino, C. Labanti, L. Amati</i>	
Low-Cost Capacitive Sensor for Oil-level Monitoring in Aircraft.....	1274
<i>Luisa De Palma, Francesco Adamo, Filippo Attivissimo, Sergio De Gioia, Attilio Di Nisio, Anna Maria Lucia Lanzolla, Marco Scarpetta</i>	
BLE Fingerprinting Automatic Calibration Using an Ultrasonic IPS	1278
<i>Felipe Parralejo, Fernando J. Aranda, Teodoro Aguilera, Fernando J. Alvarez, Jose A. Moreno</i>	
Preliminary Design of a Scanning Resonant Cell for Beam Screen Surface Impedance Measurements.....	1284
<i>Kostiantyn Torokhtii, Andrea Alimenti, Nicola Pompeo, Enrico Silva</i>	
Investigation of Accuracy Requirements for Delta Differential Capacity and Voltage Measurements of Li-Ion Batteries	1290
<i>D. Schurholz, B. Schweighofer, M. Neumayer, A. Klug, R. Teichmann, H. Wegleiter</i>	

Instrumentation for Assessing DC Electrical Distribution Systems in Buildings.....	1296
<i>Moazzam Nazir, Omkar A. Ghatpande, Willy G. Bernal Heredia, Dusan Brhlik</i>	
Instantaneous Rotational Speed Measurement of Wind Turbine Blades Using a Marker-Tracking Method	1302
<i>Yi-Hsiang Liao, Lijuan Wang, Yong Yan</i>	
Analysis of Parameters Influence in a MOX Gas Sensor Model.....	1307
<i>Graziella Bedenik, Matheus Souza, Elyson A. N. Carvalho, Lucas Molina, Jugurta Montalvao, Raimundo Freire</i>	
Sensors Fingerprints Using Machine Learning: a Case Study on Dam Monitoring Systems.....	1313
<i>Paulo Assumpcao, Carlos Oliveira, Wilson Melo, Luiz Carmo</i>	
Performance Comparison of Omni and Cardioid Directional Microphones for Indoor Angle of Arrival Sound Source Localization	1319
<i>Meng Jiang, Chibuzo Joseph Nnonyelu, Jan Lundgren, Marten Sjostrom, Goran Thungstrom, Shan Gao</i>	
An Experimental Evaluation of a Quasicrystal-Based Thermal-Conductive Absorber for Energy Harvesting	1325
<i>Maria Paula Medeiros Gomes Miguel, Mariana Marques Ferreira, Cleonilson Protasio De Souza, Bruno Alessandro Silva Guedes De Lima, Orlando Baiocchi</i>	
Exploitation of a Spider Silk Based Sensing Element.....	1331
<i>Carlo Trigona, Caterina Cunsolo, Giuseppe Di Luca Cardillo, Michael Rizza, Salvatore Baglio</i>	
Oxygen Uptake Rate Measurement Using Sigma Delta Modulator in the Biological Domain in Activated Sludge Systems	1336
<i>Paulo Rannier Costa Da Silva, Sebastian Yuri Cavalcanti Catunda, Antonio Wallace Antunes Soares, Adrianus Cornelius Van Haandel</i>	
Hierarchical Spectral-Temporal Feature Learning for Motor Task Recognition in Brain Computer Interfaces	1341
<i>Hamidreza Sadreazami, Yaser Mohammad-Taheri, Marzieh Amini</i>	
Acoustoelectric Signal Measurement System Based on FPGA.....	1346
<i>Zhaoyang Zhang, Yanbin Xu, Zhicheng Yan, Feng Dong</i>	
A Novel Method to Estimate Measurement Error in AI-Assisted Measurements.....	1352
<i>Ammar Rashed, Shervin Shirmohammadi</i>	
Observer-Based Discrete Gabor Transform	1357
<i>Bence Orszag, Laszlo Sujbert</i>	
In Silico Study of the Surface Plasmon Resonance Use for Detecting Cancer in the Colorectal Mucosa	1363
<i>Arthur A. Melo, Eloise P. Rodrigues, Antonio M. N. Lima, Cleumar S. Moreira, Rossana M. S. Cruz</i>	
Design of Miniaturized MEMS Gyro North Finder Based on Two-Phase Axial Flux PMSM	1369
<i>Xueling Zhao, Chengbin Wang, Jianqiang Chen, Bin Zhou, Rong Zhang</i>	
Sensor Data Prediction for Fixed-Wing Drone Based on Online Sequential Learning.....	1375
<i>Jingyi Dong, Datong Liu</i>	

A New Measurement Technique to Determine the Amplitude and Phase Shift of a Sinusoidal
Voltage Signal Using a Charge Balanced Digitizer..... 1380
A Sai Kartheek Bandi, Prashanth Vooka

Infrared Image Super-Resolution Via Generative Adversarial Network with Gradient Penalty Loss..... 1386
Jian Qiang Mei, Xue Wen Ding, Dandan Zheng, Tom Page

Author Index