

2021 IEEE International Instrumentation and Measurement Technology Conference (I2MTC 2021)

**Virtual Conference
17 – 20 May 2021**

Pages 1-510



**IEEE Catalog Number: CFP21IMT-POD
ISBN: 978-1-7281-9540-7**

**Copyright © 2021 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: | CFP21IMT-POD |
| ISBN (Print-On-Demand): | 978-1-7281-9540-7 |
| ISBN (Online): | 978-1-7281-9539-1 |
| 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

| | |
|---|----|
| A CALIBRATION METHOD FOR VEHICULAR DUAL-CHANNEL RADAR DOPPLER VELOCIMETER WITH JANUS CONFIGURATION..... | 1 |
| <i>Lei Du, Qiao Sun, Jie Bai, Xiaolei Wang, Tianqi Xu</i> | |
| REAL-TIME BLUETOOTH LOW ENERGY (BLE) ELECTROCARDIOGRAM MONITORING DEVICE | 6 |
| <i>Sivagumalan Sivanathan, Alexandre Oleon</i> | |
| SIGNAL PROCESSING METHOD FOR FLIGHT TIME MEASUREMENT OF GAS ULTRASONIC FLOWMETER..... | 11 |
| <i>Dandan Zheng, Jianqiang Mei, Yang Mao, Zhibin Yang</i> | |
| FAULT DIAGNOSIS METHOD OF DIESEL ENGINE INJECTOR BASED ON HIERARCHICAL WEIGHTED PERMUTATION ENTROPY..... | 17 |
| <i>Ke Yun, Yao Chong, Song Enzhe, Yang Liping, Dong Quan</i> | |
| AREA YIELD PERFORMANCE EVALUATION OF A NONCHEMICAL WEEDING ROBOT IN ORGANIC FARMING | 23 |
| <i>Leif O. Harders, Vitali Czymmek, Florian J. Knoll, Stephan Hussmann</i> | |
| INTER-BATCH GAP FILLING USING COMPRESSIVE SAMPLING FOR LOW-COST IOT VIBRATION SENSORS..... | 29 |
| <i>Boon-Yaik Ooi, Soung-Yue Liew, Woan-Lin Beh, Shervin Shirmohammadi</i> | |
| MULTI-STATE APPLIANCES IDENTIFICATION THROUGH A NILM SYSTEM BASED ON CONVOLUTIONAL NEURAL NETWORK..... | 35 |
| <i>Giovanni Bucci, Fabrizio Ciancetta, Edoardo Fiorucci, Simone Mari, Andrea Fioravanti</i> | |
| ESTIMATING PARAMETERS OF A SINE WAVE BY THE METHOD OF VARIABLE PROJECTION..... | 41 |
| <i>Paul O'Leary, Dimitar Ninevski</i> | |
| REMOTE FIBER-BASED VELOCIMETER FOR INTERFACE-STRENGTH MEASUREMENTS | 47 |
| <i>James Smith, Bradley Benefiel, Clark Scott</i> | |
| A FAST FEATURE POINT EXTRACTION METHOD FOR OPTICAL TRACKING SYSTEM..... | 52 |
| <i>Songlin Bi, Yonggang Gu, Zhihong Zhang, Jiaqi Zou, Chao Zhai, Ming Gong</i> | |
| 3D RECONSTRUCTION IN PLANAR ARRAY ELECTRICAL CAPACITANCE TOMOGRAPHY BASED ON DEPTH ESTIMATION AND SPARSE REPRESENTATION | 57 |
| <i>Peng Suo, Lijun Xu, Jiangtao Sun, Wenbin Tian, Shijie Sun, Yuedong Xie</i> | |
| ANALYSIS AND VISUALIZATION OF TIME-VARYING HARMONICS IN TRANSFORMER INRUSH CURRENTS | 62 |
| <i>Julio Barros, Matilde De Apráz, Ramón I. Diego</i> | |
| A MACHINE-LEARNING APPROACH FOR THE PREDICTION OF INTERNAL CORROSION IN PIPELINE INFRASTRUCTURES | 68 |
| <i>Giuseppe Canonaco, Manuel Roveri, Cesare Alippi, Fabrizio Podenzani, Antonio Bennardo, Marco Conti, Nicola Mancini</i> | |

| | |
|---|-----|
| HIGH SPEED AND HIGH PRECISION ELECTROCARDIOGRAPHIC AND PLETHYSMOGRAPHIC MEASUREMENT FRONT-END | 74 |
| <i>Hans Herrmann, Hartmut Ewald</i> | |
| SELF-SENSING CONCRETE REPAIRS BASED ON ALKALI-ACTIVATED MATERIALS: RECENT PROGRESS | 80 |
| <i>Marcus Perry, Lorena Biondi, Jack McAlorum, Christos Vlachakis</i> | |
| COST-SENSITIVE FAULT IDENTIFICATION IN PREDICTIVE MAINTENANCE APPLICATIONS: A CASE STUDY | 86 |
| <i>Roberto Bodo, Matteo Bertocco, Alberto Bianchi</i> | |
| SIMULATION METHOD FOR ULTRASONIC ATTENUATION IN DROPLET FLOW | 92 |
| <i>Dandan Zheng, Mi Wang, Jun Dong, Ying Xu</i> | |
| FPGA IMPLEMENTATION OF LINEAR COMBINATION FOR SINGLE PIXEL IMAGE RECONSTRUCTION | 98 |
| <i>Freddy Del Angel-Arrieta, Carlos Javier Morales-Pérez, Jose De Jesus Rangel-Magdalen, Rubén Ramos-García</i> | |
| MINIATURISED BIDIRECTIONAL ACOUSTIC TAG TO ENHANCE MARINE ANIMAL TRACKING STUDIES | 104 |
| <i>Ivan Masmitja, Daniel Corregidor, Juan Manuel López, Enoc Martinez, Joan Navarro, Spartacus Gomariz</i> | |
| HEART RATE VARIABILITY ANALYSIS WITH WEARABLE DEVICES: INFLUENCE OF ARTIFACT CORRECTION METHOD ON CLASSIFICATION ACCURACY FOR EMOTION RECOGNITION | 110 |
| <i>Gloria Cosoli, Angelica Poli, Lorenzo Scalise, Susanna Spinsante</i> | |
| MRPM: MULTISTEP ROBUST PREDICTION MACHINE FOR DEGRADATION TIME SERIES PROJECTION | 116 |
| <i>Wenjuan Mei, Zhen Liu, Yuanzhang Su</i> | |
| PROGRESS IN REAL-TIME CAPACITANCE TOMOGRAPHY OF MULTIPHASE FLOWS BASED ON THE MAXWELL-WAGNER-SILLARS EFFECT | 123 |
| <i>R. K. Rasel, F. L. Teixeira, Q. M. Marashdeh</i> | |
| MEASUREMENT OF CIRCUMFERENTIAL LIQUID FILM THICKNESS IN HORIZONTAL GAS-LIQUID ANNULAR FLOW USING ULTRASOUND | 128 |
| <i>Mi Wang, Dandan Zheng, Wenqin Wang</i> | |
| OPTIMIZATION OF THE STRUCTURE OF ELECTRODE ARRAY OF VOLTAGE-DRIVEN ELECTRICAL RESISTANCE TOMOGRAPHY | 134 |
| <i>Chao Wang, Ran Pang, Qingqing Cao, Jiamin Ye</i> | |
| AN IMPROVED SPARSE RECONSTRUCTION ALGORITHM BASED ON SINGULAR VALUE DECOMPOSITION FOR ELECTRICAL RESISTANCE TOMOGRAPHY | 140 |
| <i>Shouxiao Li, Huaxiang Wang, Joanna N. Chen, Ziqiang Cui</i> | |
| A PRELIMINARY INVESTIGATION OF THE ROBUSTNESS OF A MEASURING INSTRUMENT FOR BLOOD-PCO ₂ MEASUREMENT DURING ECC | 146 |
| <i>Stefano Cattini, Luca Accorsi, Stefano Truzzi, Alberto Ferrari, Luigi Rovati</i> | |
| ADAPTIVE POWER MANAGEMENT OF ENERGY AUTONOMOUS STRUCTURAL HEALTH MONITORING SYSTEMS FOR WIND TURBINES | 152 |
| <i>Eike Grundkötter, Joachim Melbert</i> | |

| | |
|--|-----|
| 3D PRINTED SELF-SENSING ALKALI-ACTIVATED COATINGS FOR CIVIL INFRASTRUCTURE..... | 158 |
| <i>Christos Vlachakis, Marcus Perry, Jack McAlorum</i> | |
| PREDICTION OF KI-67 EXPRESSION LEVEL BASED ON NON-SMALL CELL LUNG CANCER..... | 163 |
| <i>Chang Sun, Yanqiu Wang, Shihong Yue, Jun Chen, Qi Li</i> | |
| DESIGN OF ON BOARD X-BAND DATA TRANSMISSION SYSTEM OF SVOM MISSION | 169 |
| <i>Yuanyuan Dai, Yang Liu, Shunjing Yu, Haiying Hu, Zongde Li, Haichen Wu</i> | |
| INFLUENCE OF PARAMETERS IN KALMAN-FILTER-BASED METHOD ON IMAGE QUALITY FOR ELECTRICAL CAPACITANCE TOMOGRAPHY | 174 |
| <i>Ying Wang, Lijun Xu, Shijie Sun, Xupeng Lu, Jiangtao Sun</i> | |
| ADAPTIVE VARIANCE ESTIMATION OF SENSOR NOISE WITHIN A SENSOR DATA FUSION FRAMEWORK..... | 180 |
| <i>Dominik Schneider, Bernhard Liebhart, Christian Endisch</i> | |
| A WEAK CURRENT TO VOLTAGE CONVERSION CIRCUIT BASED ON RESONANT AMPLIFIERS AND CRYSTAL FILTERS | 186 |
| <i>Yifan Wang, Kai Chen, Xuan Gou, Rongdie Chen</i> | |
| THE NONINVASIVE AND OPTICAL ONLY GLUCOSE MONITORING INVESTIGATION AND ANALYSIS..... | 192 |
| <i>Yi-Hsiung Lee, Yu-Hsuan Lin, Hsin-Yi Tsai, Wen-Tse Hsiao, Kuo-Cheng Huang</i> | |
| REAL-TIME WAVE MONITORING ON COASTAL AREAS USING LPWAN-BASED EMBEDDED SYSTEMS | 197 |
| <i>Matias Carandell, Daniel Mihai Toma, Carola Artero, Manel Gasulla, Joaquín Del Río</i> | |
| IDENTIFYING PRISTINE AND PROCESSED ANIMAL FIBERS USING MACHINE LEARNING..... | 203 |
| <i>Oliver Rippel, Niclas Bilitewski, Khosrow Rahimi, Juliana Kurniadi, Andreas Herrmann, Dorit Merhof</i> | |
| A VERSATILE DIRECT-DIGITAL INTERFACE FOR RESISTIVE SENSORS USING SIGMA-DELTA APPROACH..... | 209 |
| <i>Tapabrata Sen, C. S. Anoop, Siddhartha Sen</i> | |
| WATER CONTENT MEASUREMENT BY AN ORTHOGONAL TWO-DIMENSIONAL ELECTROMAGNETIC FIELD BASED MICROWAVE SENSOR..... | 215 |
| <i>Hui-Min Ma, Ying Xu, Tao Zhang, Yi-Guang Yang, Jing Wang, Xi-Gang Wang</i> | |
| THE INFLUENCE OF PSEUDO-SLUG FLOW ON THE MEASUREMENT CHARACTERISTICS OF VENTURI..... | 221 |
| <i>Jing Wang, Ying Xu, Hai-Tao Wu, Yi-Guang Yang, Tao Zhang, Xi-Gang Wang</i> | |
| SLOW AND STEADY FEATURE ANALYSIS BASED STATUS MONITORING FOR GAS-LIQUID TWO-PHASE FLOW IN HORIZONTAL PIPE | 227 |
| <i>Linghan Li, Shumei Zhang, Feng Dong</i> | |
| FLOW REGIMES IDENTIFICATION OF GAS-WATER TWO-PHASE FLOW USING CONDUCTANCE AND CONTINUOUS WAVE ULTRASONIC DOPPLER SENSORS | 233 |
| <i>Shuo Zhang, Xuwei Shi, Chao Tan, Feng Dong</i> | |

| | |
|---|-----|
| MULTI-SENSOR SIGNAL STATISTICAL FEATURE PROCESSING METHOD FOR STATUS MONITORING OF GAS-WATER TWO-PHASE FLOW IN HORIZONTAL PIPE..... | 239 |
| <i>Wentao Wu, Shumei Zhang, Shangjie Ren, Feng Dong</i> | |
| STUDY ON THE MEASUREMENT METHOD OF WET GAS FLOW VELOCITY BY ULTRASONIC FLOW METER..... | 245 |
| <i>Dandan Zheng, Mengxu Zhai, Jiayu Hu</i> | |
| A FRACTIONAL-ORDER PID CONTROLLED ITERATIVE CALDERON'S METHOD FOR ELECTRICAL CAPACITANCE TOMOGRAPHY..... | 251 |
| <i>Yu Tian, Cao Zhang, Die Hu, Xin Gao, Lijun Xu</i> | |
| DYNAMIC MEASUREMENT OF THICKNESS DISTRIBUTION IN A SOAP FILM BY USING A PHASE-MODULATED LARGE LATERAL SHEARING INTERFEROMETER..... | 256 |
| <i>Xiaoyang Tang, Zhang Cao, Zhonghong Wang, Heng Xie, Lijun Xu</i> | |
| EXPERIMENTAL STUDY ON THE POWER CONSUMPTION OF TIMERS EMBEDDED INTO MICROCONTROLLERS..... | 261 |
| <i>Ferran Reverter, Manel Gasulla</i> | |
| AN AUTOCORRELATION METHOD FOR ASYNCHRONOUS VIBRATION FEATURE EXTRACTION IN BLADE TIP TIMING..... | 266 |
| <i>Zengkun Wang, Zhibo Yang, Haoqi Li, Shuming Wu, Ruqiang Yan, Shaohua Tian, Xuefeng Chen</i> | |
| RESEARCH ON NUMERICAL SIMULATION OF STRATIFIED GAS-LIQUID FLOW THROUGH CRESCENT ORIFICE PLATE..... | 272 |
| <i>Zhuo-Lan Xue, Ying Xu, Tao Zhang, Jing-Li Zhang, Zeng-Hui Chen</i> | |
| GENERALIZED MINIMAX-CONCAVE REGULARIZATION FOR AERO-ENGINE FAN ACOUSTIC MODE MEASUREMENTS..... | 278 |
| <i>Zepeng Li, Baijie Qiao, Bi Wen, Xuefeng Chen</i> | |
| COMPARISON OF RTV COATING THICKNESS IDENTIFIED BY DIFFERENT FREQUENCY DOMAIN THERMAL CHARACTERISTICS..... | 284 |
| <i>Chenglongcong, Hongwei Mei, Hui Niu, Lishuai Liu, Liming Wang</i> | |
| ROBOT-ASSISTED MEASUREMENT OF HEAVY METALS IN INDOOR DUST USING ICP-MS..... | 290 |
| <i>Heidi Fleischer, Janne Widmer, Sascha Statkevych, Regina Stoll, Thomas Roddelkopf, Kerstin Thurow</i> | |
| A LOW-COST ELECTRICAL IMPEDANCE ANALYSER FOR INTERROGATING SELF-SENSING CEMENT REPAIRS..... | 296 |
| <i>Jack McAlorum, Christos Vlachakis, Marcus Perry</i> | |
| NANOPARTICLE-BASED FIBER OPTOFLUIDIC LASER FOR LABEL-FREE PROTEIN DETECTION..... | 302 |
| <i>Xi Yang, Yanqiong Wang, Yiling Liu, Wanjing Zhao, Yun-Jiang Rao, Yuan Gong</i> | |
| DNN-BASED RFID ANTENNA TAGS LOCALIZATION..... | 307 |
| <i>Sohel J Patel, Maciej Zawodniok</i> | |
| CHIPLESS RFID TAGS AS MICROWAVE SENSORS FOR DELAMINATION DETECTION IN LAYERED STRUCTURES..... | 313 |
| <i>Katelyn Brinker, Reza Zoughi</i> | |

| | |
|---|-----|
| REGIONAL NAVIGATION RECONSTRUCTION STRATEGY AND PERFORMANCE SIMULATION BASED ON MICRO-NANO SATELLITES | 319 |
| <i>Yang Liu, Longfei Tian, Guohua Liu, Zongde Li, Yuanyuan Dai, Zeying Dong</i> | |
| A CALIBRATION METHOD FOR 77GHZ MILLIMETER-WAVE RADAR BASED ON VIRTUAL INSTRUMENT TECHNOLOGY | 324 |
| <i>Tianqi Xu, Lei Du</i> | |
| DETECTION OF DOUBLE-LAYER AIR GAP DEFECTS BASED ON TERAHERTZ IMAGING METHOD | 330 |
| <i>Huaiyuan Jiang, Hongwei Mei, Xingming Bian, Lanxin Li, Lei Wang, Liming Wang</i> | |
| MACHINE LEARNING BASED WAVELENGTH MODULATION SPECTROSCOPY FOR RAPID GAS SENSING | 335 |
| <i>Wanlu Zhang, Rui Zhang, Yalei Fu, Godwin Enemali, Jingjing Si, Chang Liu</i> | |
| CONDUCTED NOISE VOLTAGE MEASUREMENT USING SHOE-SHAPED WEARABLE DEVICES IN A RAISED-FLOOR OFFICE ROOM..... | 340 |
| <i>Naruto Arai, Toshihisa Masuda, Masato Maruyama, Jun Kato, Ken Okamoto, Ken Sasaki</i> | |
| THE ESTIMATION OF ABSOLUTE PERMEABILITY DISTRIBUTION OF MAGNETIC CATALYST BASED ON TMR-EMT SYSTEM | 345 |
| <i>Chao Wang, Zhengnan Li, Qi Guo, Jiamin Ye, Ping Zou</i> | |
| EVALUATION OF COIL LOCATION OF TMR-BASED ELECTROMAGNETIC TOMOGRAPHY SENSOR..... | 350 |
| <i>Chao Wang, Xiao Liang, Jiamin Ye, Xuechen Zhang</i> | |
| IMAGE RECONSTRUCTION FOR ELECTROSTATIC TOMOGRAPHY BASED ON RESIDUAL NETWORK CONSIDERING THE PRIOR KNOWLEDGE OF BOUNDARY MEASUREMENT..... | 355 |
| <i>Chao Wang, Xuechen Zhang, Hongjun Sun, Xiao Liang, Jiamin Ye</i> | |
| PLANAR MIT SENSOR ARRAY WITH GRADIOMETERS FOR LOCAL HEMORRHAGE DETECTION..... | 361 |
| <i>Yixuan Chen, Chao Tan, Feng Dong, Shu Zhao</i> | |
| DUAL-ARM ROBOTIC COMPOUND-ORIENTED MEASUREMENT SYSTEM: INTEGRATION OF A POSITIVE PRESSURE SOLID PHASE EXTRACTION UNIT | 367 |
| <i>Heidi Fleischer, Lea Ariana Kroos, Shalaka Joshi, Thomas Roddelkopf, Regina Stoll, Kerstin Thurow</i> | |
| A CROSS-CONDUCTIVE SENSOR TO MEASURE BOTTLED WATER QUALITY | 373 |
| <i>Tarikul Islam, Arshi Salamat, Sandeep Kumar Singh, Mahfoozur Rehman</i> | |
| LOCALIZED SURFACE STRAIN MEASUREMENT FOR LOAD DETECTION USING DIAMOND LIKE CARBON COATING ON A LINEAR GUIDE..... | 379 |
| <i>David Krampert, Sebastian Unsleber, Leonhard Reindl</i> | |
| AN AUTOMATED V-I ACQUISITION SYSTEM FOR MICROBOLOMETER ARRAY WITH FPGA-BASED DRIVE | 385 |
| <i>Julio Hernandez, Jose Rangel-Magdaleno, Ricardo Jimenez, Mario Moreno, Alfonso Torres, Arturo Ponce, Daniel Ferrusca, Jorge Castro-Ramos</i> | |
| A SIMPLE MULTIPARAMETRIC ANALYSIS TO GUIDE, COMPARE AND OPTIMIZE THE DESIGN OF “LENSLESS” LED ILLUMINATORS | 391 |
| <i>Stefano Cattini, Fabrizio Pancaldi, Alessandro Bertacchini, Andrea Parmeggiani</i> | |

| | |
|---|-----|
| MICROSTRIP PATCH ANTENNA BIOINSPIRED IN PRIMROSE FLOWER FOR WLAN AND BLUETOOTH APPLICATIONS | 397 |
| <i>Dailan De Jesus Pereira Bernardes, Ewaldo Eder Carvalho, Santana, Paulo Fernandes Da Silva, Maciel A. Oliveira, Alexandre Jean, Rene Serres, Raimundo Carlos Silvério Freire, Marlo Andrade Santos, Icaro Meneses Ferreira De Santana, Paulo Henrique Da Fonseca Silva</i> | |
| CONSTRAINED MODEL PREDICTIVE CONTROL FOR SIX-DOF VIBRATION ISOLATOR OF THE ABSOLUTE MARINE GRAVIMETER..... | 401 |
| <i>Zhenxing Li, Kang Wu, Meiyang Guo, Yicong Chen, Yi Wen, Lijun Wang</i> | |
| MACHINE LEARNING MODELS FOR DROWSINESS DETECTION | 406 |
| <i>Harshit Meda, Janapareddy Mohan Padmanabha Ganesh, Ashish Sahani</i> | |
| MEASUREMENT OF SYNCHROPHASORS WITH STAND ALONE MERGING UNITS: A PRELIMINARY STUDY | 411 |
| <i>Paolo Castello, Antonio Delle Femine, Daniele Gallo, Mario Luiso, Carlo Muscas, Paolo Attilio Pegoraro</i> | |
| SPARSE POINT CLOUD GENERATION BASED ON TURNTABLE 2D LIDAR AND POINT CLOUD ASSEMBLY IN AUGMENTED REALITY ENVIRONMENT..... | 417 |
| <i>Jiaqiang Zhou, He Xu, Zhen Ma, Yihan Meng, Daquan Hui</i> | |
| DESIGN OF STRAIN SIGNAL DATA ACQUISITION SYSTEM FOR WIND TUNNEL BALANCE BASED ON ZYNQ | 423 |
| <i>Wang Liu, Jianxin Liu, Debao Wei, Liyan Qiao</i> | |
| EFFECTS OF INACCURATE ELECTRODE POSITIONING IN SUBSURFACE RESISTIVITY MEASUREMENTS FOR ARCHEOLOGICAL PURPOSES | 429 |
| <i>Marcantonio Catelani, Lorenzo Ciani, Giulia Guidi, Gabriele Patrizi, Nicola Casagli, Mattia Ceccatelli, Veronica Pazzi, Luca Cappuccini</i> | |
| FAST TRANSIENT HARMONIC SELECTIVE EXTRACTION BASED ON MODULATION-CDSC-SDFT | 435 |
| <i>Jingwen Zhang, Zhenglei Wang, Xiaotao Han</i> | |
| INVESTIGATING THE USE OF LOW-COST AND LOW-POWER MILLIMETER WAVE RADAR TO IMPROVE QUALITY OF TOMATO HARVESTING..... | 441 |
| <i>Matthew Smithson, Melanie Po-Leen Ooi, Lauren Gris, Ye Chow Kuang, Marilyn Manley-Harris, Shen Hin Lim</i> | |
| PERFORMANCE EVALUATION OF RANGE HOOD BASED ON VISUAL QUANTIFICATION | 447 |
| <i>Rongbo Fan, Zhongcheng Wang, Jianhua Yang, Jiajia Gao, Da Wang</i> | |
| AN IMAGE RECONSTRUCTION ALGORITHM BASED ON TWO-STEP ITERATIVE SHRINKAGE/THRESHOLDING FOR ELECTRICAL RESISTANCE TOMOGRAPHY | 453 |
| <i>Shouxiao Li, Joanna N. Chen, Huaxiang Wang, Ziqiang Cui</i> | |
| PSEUDO-SLUG DETECTION OF HORIZONTAL GAS-LIQUID FLOW USING ULTRASONIC TRANSDUCER | 458 |
| <i>Lusheng Zhai, Haiyan Xia, Jie Yang, Yinglin Wu</i> | |
| MODEL-BASED VS. DATA-DRIVEN APPROACHES FOR ANOMALY DETECTION IN STRUCTURAL HEALTH MONITORING: A CASE STUDY | 464 |
| <i>Amirhossein Moallemi, Alessio Burrello, Davide Brunelli, Luca Benini</i> | |

| | |
|--|-----|
| STUDY CASE IN MINING INDUSTRY: MONITORING ROLLERS USING EMBEDDED LORAWAN..... | 470 |
| <i>Ralf Luis De Moura, Danilo Bibancos, Luiz Paulo Barreto, Alex Calegari Fracaroli, Eduardo Martinelli</i> | |
| RECURRENT LSTM ARCHITECTURE FOR APPLIANCE IDENTIFICATION IN NON-INTRUSIVE LOAD MONITORING | 476 |
| <i>Laura De Diego-Otón, David Fuentes-Jimenez, Álvaro Hernández, Rubén Nieto</i> | |
| EVALUATION OF A VOLTAGE RAMP GENERATOR FOR LOW CURRENT CALIBRATION | 482 |
| <i>Marcus Vinícius Viegas Pinto, Regis Pinheiro Landim, Rodrigo Pereira David</i> | |
| AN OPTIMIZED HARDWARE IMPLEMENTATION OF DEEP LEARNING INFERENCE FOR DIABETES PREDICTION | 488 |
| <i>Md Maruf Hossain Shuvo, Omiya Hassan, Dilruba Parvin, Mengrui Chen, Syed Kamrul Islam</i> | |
| TESTING PATH SEARCHING FOR DIGITAL MICROFLUIDIC BIOCHIPS BASED ON THE IMPROVED PARTICLE SWARM OPTIMIZATION..... | 494 |
| <i>Wenbin Zheng, Jinlong Shi, Jiaqing Qiao, Ping Fu, Hongyuan Jiang</i> | |
| AN FPGA-BASED LOW LATENCY AWG FOR SUPERCONDUCTING QUANTUM COMPUTERS..... | 500 |
| <i>Yuchen Yang, Zhongtao Shen, Xing Zhu, Chunqing Deng, Shubin Liu, Qi An</i> | |
| A FLEXIBLE AND LOW-COST SOLUTION TO MEASURE AND STIMULATE NNS SKILLS OF PREMATURE BABIES..... | 506 |
| <i>José Dias Pereira, Vítor Manuel Rodrigues Viegas, Octavian Adrian Postolache, Pedro Silva Girão</i> | |
| CONCEPTUAL DESIGN AND EVALUATION OF AN OPTICAL SENSOR FOR WIDE-AREA HIGH-VOLTAGE METERING AND PROTECTION APPLICATIONS..... | 511 |
| <i>Grzegorz Fusiek, Pawel Niewczas</i> | |
| DEGRADATION PREDICTION AND UNCERTAINTY QUANTIFICATION FOR PEMFC USING NSGA-OPTIMIZED DEEP LEARNING METHOD..... | 517 |
| <i>Yucen Xie, Jianxiao Zou, Chao Peng, Yun Zhu</i> | |
| A METHOD FOR IMPLEMENTING FRACTIONAL ORDER DIFFERENTIATOR AND INTEGRATOR BASED ON DIGITAL OSCILLOSCOPE..... | 523 |
| <i>Bo Xu, Kai Chen, Yifan Wang, Hang Geng, Songting Zou, Bo Yu</i> | |
| ON THE USE OF CORRELATION ANALYSIS IN THE ESTIMATION OF FINITE-TIME DELAY IN SOFT SENSORS DESIGN..... | 529 |
| <i>Salvatore Graziani, Maria G. Xibilia</i> | |
| COMPENSATION OF SYSTEMATIC MEASUREMENT ERRORS IN PMU-BASED MONITORING SYSTEMS FOR TRANSMISSION GRIDS | 535 |
| <i>Carlo Muscas, Paolo Attilio Pegoraro, Carlo Sitzia, Antonio Vincenzo Solinas, Sara Sulis</i> | |
| REGULARIZATION PARAMETERS DETERMINATION METHOD BASED ON RANDOM MATRIX CLUSTERING | 541 |
| <i>Yuanyuan Zhang, Shihong Yue, Jia Li, Chang Sun</i> | |

| | |
|--|-----|
| MEASUREMENT METHODOLOGY TO CHARACTERIZE PERMITTIVITY-MASS CONCENTRATION RELATIONS OF AERATED BULK MATERIALS..... | 546 |
| <i>T. Suppan, M. Neumayer, T. Bretterkieber, H. Wegleiter, S. Puttinger</i> | |
| PERFORMANCE ASSESSMENT FRAMEWORK FOR ELECTRICAL CAPACITANCE TOMOGRAPHY BASED MASS CONCENTRATION ESTIMATION IN PNEUMATIC CONVEYING SYSTEMS | 552 |
| <i>T. Suppan, M. Neumayer, T. Bretterkieber, H. Wegleiter, S. Puttinger</i> | |
| IMPROVING BROADBAND EMISSION-BASED SOOT PYROMETRY USING CONVOLUTIONAL NEURAL NETWORKS..... | 558 |
| <i>Alonso Rodríguez, Jorge Portilla, Juan José Cruz, Felipe Escudero, Rodrigo Demarco, Andrés Fuentes, Gonzalo Carvajal</i> | |
| DATA COLLECTION AND CLOUD PROCESSING ARCHITECTURE APPLIED TO NILM TECHNIQUES FOR INDEPENDENT LIVING | 564 |
| <i>Rubén Nieto, Laura De Diego-Otón, Álvaro Hernández, Jesús Ureña</i> | |
| METHOD AND IMPLEMENTATION OF ROCK MELON DETECTION AND LOCALISATION FOR FAST AND RELIABLE AUTONOMOUS HARVESTING | 570 |
| <i>Michael Jay Ellis, Melanie Po-Leen Ooi, Shen Hin Lim</i> | |
| THE AC AMPLITUDE MEASUREMENT CHARACTERISTICS OF HIGH-RESOLUTION DIGITIZERS BASED ON CALIBRATION WITH THERMAL VOLTAGE CONVERTER AND SWERLEIN ALGORITHM..... | 576 |
| <i>Jure Konjevod, Roman Malaric, Petar Mostarac, Marko Jurcevic</i> | |
| DESIGN OF A HIGH-ACCURACY AND TRACEABLE REFERENCE INSTRUMENT FOR FLICKERMETER CERTIFICATION..... | 581 |
| <i>Guglielmo Frigo</i> | |
| IMPEDANCE CHARACTERIZATION OF A QCM-BASED MEASUREMENT SYSTEM IN LIQUID MEDIA | 587 |
| <i>Ada Fort, Enza Panzardi, Pietro Vaccarella, Valerio Vignoli, Marco Mugnaini, Anna Lo Grasso</i> | |
| ROBOTIC INSTALLATION OF WIRELESS STRAIN GAUGES INTO PRECAST CONCRETE ELEMENTS | 593 |
| <i>Tresor Tshimbombo, Marcus Perry, Chris Hoy, Efi Tzoura, Christos Vlachakis, Jack McAlorum</i> | |
| A CORRECTION METHOD FOR SIGHT AXIS OF NONORTHOGONAL SHAFTING TOTAL STATION AFTER CALIBRATION | 599 |
| <i>Peng Congcong, Wu Bin, Ma Gaoju, Kang Jiehu</i> | |
| A WAVELET-BASED METHODOLOGY FOR FEATURES EXTRACTION IN POSTURAL INSTABILITY ANALYSIS..... | 605 |
| <i>Bruno Ando, Salvatore Baglio, Salvatore Castorina, Ruben Crispino, Vincenzo Marletta, Giovanni Mostile, Mario Zappia</i> | |
| HOW SIMPLIFYING A CONDITION MONITORING PROCEDURE AFFECTS ITS PERFORMANCES | 611 |
| <i>Giulio D'Emilia, Antonella Gaspari, Emanuela Natale</i> | |
| TOWARDS ALWAYS-ON EVENT-BASED CAMERAS FOR LONG-LASTING BATTERY- OPERATED SMART SENSOR NODES..... | 616 |
| <i>Moritz Scherer, Philipp Mayer, Alfio Di Mauro, Michele Magno, Luca Benini</i> | |

| | |
|--|-----|
| BRAIN-COMPUTER INTERFACES FOR DAILY-LIFE APPLICATIONS: A FIVE-YEAR EXPERIENCE REPORT | 622 |
| <i>Leopoldo Angrisani, Pasquale Arpaia, Egidio De Benedetto, Antonio Esposito, Nicola Moccaldi, Marco Parvis</i> | |
| ANALYSIS AND INITIAL DESIGN OF BIDIRECTIONAL ACOUSTIC TAG MODULATION SCHEMES AND COMMUNICATION PROTOCOL | 628 |
| <i>Daniel Corregidor, Ivan Masmitja, Juan Manuel López, Spartacus Gomariz, Joan Navarro, Guillermo De Arcas</i> | |
| SPACECRAFT LEAKAGE DETECTION USING ACOUSTIC EMISSIONS BASED ON EMPIRICAL MODE DECOMPOSITION AND SUPPORT VECTOR MACHINE | 634 |
| <i>Hongbing Ding, Zhenxin Liang, Lei Qi, Hongjun Sun, Xixi Liu</i> | |
| ENHANCEMENT OF THE MEASUREMENT STABILITY OF CONDUCTIVE INK BASED SENSOR BY TOPOLOGY OPTIMIZATION | 640 |
| <i>Yudong Zhang, He Xu, Feng Sun, Yuhan Zhao</i> | |
| PRODUCTION OF DATA SET BASED ON ADJUSTABLE ROTARY TABLE AND PART IDENTIFICATION BASED ON DEEP LEARNING | 645 |
| <i>Yihan Meng, He Xu, Zhen Ma, Jiaqiang Zhou, Daquan Hui</i> | |
| IMPROVING HARMONIC MEASUREMENTS WITH INSTRUMENT TRANSFORMERS: A COMPARISON AMONG TWO TECHNIQUES | 651 |
| <i>Giovanni D'Avanzo, Marco Faifer, Carmine Landi, Christian Laurano, Palma Sara Letizia, Mario Luiso, Roberto Ottoboni, Segio Toscani</i> | |
| MACHINE ANOMALY DETECTION UNDER CHANGING WORKING CONDITION WITH SYNCRETIC SELF-REGRESSION AUTO-ENCODER..... | 657 |
| <i>Jingyao Wu, Zhibin Zhao, Hongbing Shang, Chuang Sun, Ruqiang Yan, Xuefeng Chen</i> | |
| THERMOGRAPHY OF PHOTOVOLTAIC PANELS AND DEFECT DETECTION UNDER OUTDOOR ENVIRONMENTAL CONDITIONS..... | 662 |
| <i>Christian Schuss, Kari Remes, Kimmo Leppänen, Bernd Eichberger, Tapio Fabritius</i> | |
| ABSOLUTE WAVENUMBER DETERMINATION FOR DISTRIBUTED FEEDBACK LASER FROM ABSORPTION SPECTRAL PROFILES | 668 |
| <i>Yudong Guo, Lijun Xu, Fanghao Lu, Zhang Cao</i> | |
| EXPERIMENTAL CHARACTERIZATION OF AN IOV FRAMEWORK LEVERAGING MOBILE WIRELESS TECHNOLOGIES | 674 |
| <i>Paolo Ferrari, Emiliano Sisinni, Paolo Bellagente, Alessandro Depari, Alessandra Flammini, Marco Pasetti, Stefano Rinaldi</i> | |
| MULTIPLE WEIGHTED FREQUENCY-DIFFERENCE METHOD FOR ELECTRICAL IMPEDANCE TOMOGRAPHY..... | 680 |
| <i>Qingwei Hu, Yanbin Xu, Ziqi Liu, Changbin Li, Feng Dong</i> | |
| AN IMAGING-BASED AUTOREFRACTOR..... | 686 |
| <i>Matteo Menolotto, Iain A. T. Livingstone, Mario E. Giardini</i> | |
| STEREO VISION BASED OPTIC NERVE HEAD 3D RECONSTRUCTION USING A SLIT LAMP FITTED WITH CAMERAS: PERFORMANCE TRIAL WITH AN EYE PHANTOM | 692 |
| <i>Ian Coghill, Mario Ettore Giardini</i> | |

| | |
|--|-----|
| DORSAL HAND VEINS BIOMETRICS USING NIR IMAGES WITH FUSION OF CLASSIFIERS AT SCORE LEVEL..... | 698 |
| <i>Julian M. Ruiz-Echeverri, Juan C. Bernal-Romero, Juan Manuel Ramirez-Cortes, Pilar Gomez-Gil, Jose Rangel-Magdaleno, Hayde Peregrina-Barreto</i> | |
| A MICROCONTROLLER BASED CHARGE BALANCED TRAPEZOIDAL STIMULUS GENERATOR FOR FES SYSTEM..... | 704 |
| <i>Bijit Basumatary, Rajat Suvra Halder, Ashish Sahani</i> | |
| A NOVEL MEASUREMENT TECHNIQUE FOR DC VOLTAGE AND CURRENT REDUCING THE DMM LOADING EFFECTS..... | 708 |
| <i>Emilio Torres, Carlos Monzo, Ferran Reverter</i> | |
| ENABLE SOFTWARE-DEFINED RADIOS FOR REAL-TIME MIMO CHANNEL SOUNDING..... | 713 |
| <i>Daniel Stanko, Gerd Sommerkorn, Alexander Ihlow, Giovanni Del Galdo</i> | |
| A DUAL-INPUT FAULT DIAGNOSIS MODEL BASED ON CONVOLUTIONAL NEURAL NETWORKS AND GATED RECURRENT UNIT NETWORKS FOR ANALOG CIRCUITS | 718 |
| <i>Tianyu Gao, Jingli Yang, Shouda Jiang, Cheng Yang</i> | |
| EIT IMAGE RECONSTRUCTION METHOD BASED ON DNCNN | 724 |
| <i>Qi Wang, Hanyu Zhang, Ronghua Zhang, Xiuyan Li, Jianming Wang, Xiaojie Duan</i> | |
| ELECTROMAGNETIC IMAGING OF METAL DEFECTS BASED ON BAYESIAN STATISTICAL MODEL..... | 729 |
| <i>Qi Wang, Kexin Liu, Ronghua Zhang, Xiuyan Li, Xiaojie Duan, Jianming Wang</i> | |
| RESEARCH ON LUNG ELECTRICAL IMPEDANCE IMAGING METHOD BASED ON THREE-DIMENSIONAL INTERPOLATION..... | 734 |
| <i>Xiuyan Li, Yu Wei, Qi Wang, Ronghua Zhang, Jianming Wang, Xiaojie Duan</i> | |
| DETERMINATION OF FAT, SNF AND PROTEIN CONTENT IN COW MILK FROM THE VOLTAGE OUTPUT OF 'MILKTESTER' | 739 |
| <i>Suman Biswas, Ajoy Mandal, Moupali Chakraborty, Karabi Biswas</i> | |
| CHARACTERIZATION OF ABSOLUTE PHASE ANGLE IN WIDEBAND CURRENT SHUNTS AT INMETRO | 744 |
| <i>Rodrigo Rodrigues Nascimento Zampilis, Marcus Vinícius Viegas Pinto, Leonardo Augusto Abreu De Souza, Gean Marcos Geronimo, Regis Pinheiro Landim</i> | |
| VORTEX CONVECTION CHARACTERISTICS IN MIST FLOW BASED ON FLUCTUATING PRESSURE MEASUREMENT | 750 |
| <i>Hongjun Sun, Chenrui Song, Hongbing Ding, Jinxia Li, Pengfei Lv, Yuhang Liu</i> | |
| ULTRASONIC THICKNESS MEASUREMENT USING THE MARTLET WIRELESS SENSING SYSTEM | 756 |
| <i>Yu Otsuki, Peter Lander, Yang Wang</i> | |
| GENERAL DENSITY-PEAKS-CLUSTERING ALGORITHM..... | 762 |
| <i>Tianyi Li, Shihong Yue, Chang Sun</i> | |
| AN EXPERIMENTAL DEVICE FOR CALIBRATION OF CONCENTRATION AND VELOCITY OF TWO-PHASE FLOW BASED ON ELECTRICAL IMPEDANCE MEASUREMENT SYSTEM..... | 768 |
| <i>Jiacheng Wu, Shihong Yue, Haitao Ma</i> | |

| | |
|---|-----|
| COMPARATIVE STUDY OF ELECTRICITY-THEFT DETECTION BASED ON GRADIENT BOOSTING MACHINE | 773 |
| <i>Zhongzong Yan, He Wen</i> | |
| FINITE-ELEMENT MODELING OF BIOLOGICAL TISSUE RESPONSE TO FOCUSED ULTRASOUND WITH DIFFERENT INTENSITY | 779 |
| <i>Meiqi Kang, Shengnan Zhang, Yanbin Xu, Changbin Li, Feng Dong</i> | |
| A LIGHTWEIGHT SHIP DETECTION METHOD IN OPTICAL REMOTE SENSING IMAGE UNDER CLOUD INTERFERENCE | 785 |
| <i>Jinxiang Yu, Xiyuan Peng, Shaoli Li, Yibo Lu, Wenjia Ma</i> | |
| AN IMPROVED ERROR CORRECTION ALGORITHM FOR SINS BASED ON STAR SENSOR..... | 791 |
| <i>Yanze Zhu, Rong Ma, Yihong Quan, Di Pan</i> | |
| PHASE SENSITIVE DETECTOR FOR MULTI-ELECTRODE ELECTROMAGNETIC FLOWMETER | 797 |
| <i>Kai Gao, Ziqiang Cui, Zihan Xia, Huaxiang Wang</i> | |
| DEEP TRANSFER LEARNING STRATEGY FOR INVASIVE LUNG ADENOCARCINOMA CLASSIFICATION APPEARING AS GROUND GLASS NODULES | 802 |
| <i>Chenchen Ma, Shihong Yue, Qi Li</i> | |
| PARAMETER MEASUREMENT FUSION ALGORITHM BASED ON CHOQUET INTEGRAL | 807 |
| <i>Xuezhen Liu, Shihong Yue, Lusheng Zhai</i> | |
| FEEDBACK CONTROL SYSTEM IN DREDGING ENGINEERING BASED ON CONVOLUTIONAL NEURAL NETWORK PREDICTION | 813 |
| <i>Changhao Xin, Shihong Yue, Liu Yang</i> | |
| DESIGN AND IMPLEMENTATION OF IOT PLATFORM FOR ELECTRICAL RESISTANCE TOMOGRAPHY SYSTEM | 818 |
| <i>Qian Zhang, Ziqiang Cui, Long Yan, Zihan Xia, Huaxiang Wang</i> | |
| ESA-NET: A NETWORK WITH EFFICIENT SPATIAL ATTENTION FOR SMOKY VEHICLE DETECTION..... | 823 |
| <i>Jianan Zhou, Shaowei Qian, Zhongzong Yan, Jingbo Zhao, He Wen</i> | |
| AN ADVANCED PV SIMULATION MODEL FOR ELECTRIC VEHICLES WITH PHOTOVOLTAIC INSTALLATIONS | 829 |
| <i>Christian Schuss, Bernd Eichberger, Tapio Fabritius</i> | |
| GAS-LIQUID TWO-PHASE FLOW PATTERN IDENTIFICATION BY DIFFERENTIAL PRESSURE AND ULTRASONIC ECHOES | 835 |
| <i>Bixiao Sun, Chao Tan, Xuwei Shi, Shangjie Ren, Feng Dong</i> | |
| DEEP LEARNING APPROACH FOR HIGH ENERGY EFFICIENT REAL-TIME DETECTION OF WEEDS IN ORGANIC FARMING..... | 841 |
| <i>Vitali Czymbek, Clarissa Möller, Leif O. Harders, Stephan Hussmann</i> | |
| COMPRESSIVE SAMPLING ON RFSOC FOR DISTRIBUTED WIDEBAND RF SPECTRUM MEASUREMENTS | 847 |
| <i>Luca De Vito, Francesco Picariello, Sergio Rapuano, Ioan Tudosa</i> | |

| | |
|--|-----|
| ULTRA-WIDE BAND MICROWAVE CHEMICAL SENSING WITH TIME-DOMAIN MEASUREMENT SYSTEMS..... | 853 |
| <i>Reza Ebrahimi Ghiri, Kamran Entesari</i> | |
| A SELF-POWERED AMBIENT LIGHT POWER MEASUREMENT PLATFORM WITH TIME-DOMAIN READOUT..... | 858 |
| <i>Roberto La Rosa, Mario Costanza, Catherine Dehollain, Patrizia Livreri, Carlo Trigona</i> | |
| MULTIPHASE FLOWRATE MEASUREMENT WITH TIME SERIES SENSING DATA AND SEQUENTIAL MODEL | 863 |
| <i>Haokun Wang, Delin Hu, Yunjie Yang, Maomao Zhang</i> | |
| SELF-TIMED RING OSCILLATOR BASED TIME-TO-DIGITAL CONVERTER: A 0.35 μ M CMOS PROOF-OF-CONCEPT PROTOTYPE | 869 |
| <i>Assia El-Hadbi, Oussama Elissati, Laurent Fesquet</i> | |
| TESTING OF AN ULTRASONIC THERMOMETER DEVELOPED AT THE IDAHO NATIONAL LABORATORY | 875 |
| <i>Joshua Daw, Lance Hone, Kris Woodbury</i> | |
| A WIRELESS FLEXIBLE ELECTROOCULOGRAM MONITORING SYSTEM WITH PRINTED ELECTRODES..... | 882 |
| <i>Shibam Debbarma, Seyedfakhreddin Nabavi, Sharmistha Bhadra</i> | |
| OPTICAL POWER SUPPLY OF A WIRELESS TEMPERATURE SENSOR FOR ROTATING MACHINES MONITORING PURPOSE | 888 |
| <i>Racha Benarrait, Frederic Lamarque, Jeremy Terrien, Hani Al Hajjar, Muneeb Ullah Khan, Andreas Dietzel</i> | |
| STUDY OF A WIRELESS ENERGY TRANSMISSION SYSTEM FOR AN ENDOSCOPY CAPSULE WITH DYNAMIC TUNING..... | 894 |
| <i>Lucas Murliky, Gustavo Oliveira, Gabriel Gosmann, Valner João Brusamarello, Fernando Rangel De Sousa</i> | |
| QUANTITATIVE SOUND VELOCITY RECONSTRUCTION BASED ON ULTRASONIC TOMOGRAPHY | 900 |
| <i>Miaobo Wang, Chao Tan, Feng Dong, Yong Bao</i> | |
| CHAOS GAME REPRESENTATION OF AUDIO SIGNALS | 905 |
| <i>Madison Cohen-McFarlane, Kevin Dick, James R. Green, Rafik Goubran</i> | |
| STUDY ON PERFORMANCE IMPROVEMENTS OF A FLOW EXCITATION SYSTEM | 911 |
| <i>Pengda Ren, Bin Wang, Youkun Zhu</i> | |
| FAST 3-DIMENSIONAL ESTIMATION OF THE FOVEAL AVASCULAR ZONE FROM OCTA..... | 917 |
| <i>Giovanni Ometto, Giovanni Montesano, Usha Chakravarthy, Frank Kee, Ruth E. Hogg, David P. Crabb</i> | |
| 12.5-M DISTANCE MEASUREMENT IN HIGH-INTERFERENCE ENVIRONMENT USING ULTRASONIC ARRAY SENSORS | 924 |
| <i>Yukiko Yoshikawa, Yuto Yasuda, Ishii Toru, Shintaro Izumi, Hiroshi Kawaguchi</i> | |
| A THREE-PHASE FLOW VISUALIZATION METHOD USING WIRE-MESH SENSOR BASED ON CONTINUOUS PHASE CONDUCTANCE COMPENSATION..... | 930 |
| <i>Lusheng Zhai, Yuqing Wang, Jie Yang, Ningde Jin</i> | |

| | |
|---|------|
| ON THE USE OF WAVELET TRANSFORM BASED ADAPTIVE FILTERING FOR DE- NOISING OF PULSE OXIMETER SIGNALS | 936 |
| <i>B. Venumaheswar Rao, K. Ashoka Reddy</i> | |
| MEASURING CAMERA EXPOSURE TIME USING EQUIVALENT SAMPLING | 940 |
| <i>Márk Rátosi, Gergely Vakulya, Gyula Simon</i> | |
| HIGH PRECISION IDENTIFICATION METHOD OF FAN MAIN SHAFT DEFECTS BASED ON ROTATING MAGNETIC FIELD DETECTION | 946 |
| <i>Lisha Peng, Songling Huang, Shen Wang, Wei Zhao</i> | |
| INVISIBLE LIGHTING SYSTEM FOR REMOTE SURVEILLANCE..... | 952 |
| <i>Chun-Han Chou, Chih-Chung Yang, Chen-Ju Lee, Hsin-Yi Tsai, Yu-Hsuan Lin, Kuo-Cheng Huang</i> | |
| MONOCULAR STEREO VISION BASED METHOD FOR VALIDATING PATH ACCURACY OF INDUSTRIAL ROBOTS | 958 |
| <i>Xiao Li, Wei Li, Xiaokang Yin, Xin Ma, Xin'An Yuan, Jianming Zhao</i> | |
| BAND MEASUREMENT MATRIX BASED ANALOG TO INFORMATION CONVERSION | 964 |
| <i>Jingchao Zhang, Liyan Qiao, Yuting Wang</i> | |
| EVALUATION OF MUSCLE OXYGEN SATURATION OF HUMAN BY MEASURING SKIN TISSUE ON MEDIAL FOREARM..... | 969 |
| <i>Hsin-Yi Tsai, Chih-Chung Yang, Cheng-Ru Li, Chun-Han Chou, Kuo-Cheng Huang, Yu-Hsuan Lin</i> | |
| GENERATIVE DATA AUGMENTATION FOR LEARNING-BASED ELECTRICAL IMPEDANCE TOMOGRAPHY VIA VARIATIONAL AUTOENCODER..... | 974 |
| <i>Yangen Zhan, Ru Guan, Shangjie Ren, Feng Dong</i> | |
| INVESTIGATION OF ASYMMETRY IN HORIZONTAL GAS-LIQUID ANNULAR FLOW BASED ON PLANAR LASER INDUCED FLUORESCENCE | 979 |
| <i>Ting Xue, Tao Zhang, Mengrui An</i> | |
| INVESTIGATION OF LIQUID FILM IN HORIZONTAL SLUG FLOW BASED ON THE IMAGE PROCESSING..... | 984 |
| <i>Ting Xue, Jingyu Zhao, Tao Zhang</i> | |
| SUPERSHAPE AUGMENTED RECONSTRUCTION METHOD FOR ELECTRICAL IMPEDANCE TOMOGRAPHY..... | 989 |
| <i>Danping Gu, Dong Liu, Jiansong Deng, Jiangfeng Du</i> | |
| WAVELET MULTI-RESOLUTION ANALYSIS OF LIQUID FILM THICKNESS IN VERTICAL UPWARD ANNULAR FLOW | 994 |
| <i>Ting Xue, Mengrui An, Jingyu Zhao</i> | |
| MEASURING HEART RATE WITH A HEAT FLUX SENSOR | 1000 |
| <i>Antti Immonen, Saku Levikari, Heikki Peltonen, Mika Silvennoinen, Heikki Kyröläinen, Andrey V. Mityakov, Pertti Silventoinen, Mikko Kuisma</i> | |
| MACHINE LEARNING BASED CALIBRATION TIME REDUCTION FOR GAS SENSORS IN TEMPERATURE CYCLED OPERATION..... | 1006 |
| <i>Yannick Robin, Payman Goodarzi, Tobias Baur, Caroline Schultealbert, Andreas Schütze, Tizian Schneider</i> | |

| | |
|---|------|
| INVESTIGATION OF BACTERIAL CELLULOSE-BASED FRACTIONAL ORDER ELEMENT BEHAVIOUR | 1012 |
| <i>Riccardo Caponetto, Giovanna Di Pasquale, Salvatore Graziani, Emanuele Murgano, Antonino Pollicino, Carlo Trigona</i> | |
| COMPARISON OF ULTRASONIC ATTENUATION MODEL IN MID-WAVELENGTH REGION FOR DROPLET MEASUREMENT | 1017 |
| <i>Dandan Zheng, Wenqin Wang, Mi Wang, Jun Dong</i> | |
| RF ENERGY HARVESTER INTEGRATED SELF-POWERED WEARABLE RESPIRATORY MONITORING SYSTEM..... | 1022 |
| <i>Dilruba Parvin, Omiya Hassan, Taeho Oh, Syed Kamrul Islam</i> | |
| MINIATURIZED MAGNETIC ENERGY HARVESTER: LIGHTWEIGHT AND SAFE TRANSFORMER DESIGN | 1028 |
| <i>Gabriel Gruber, Markus Neumayer, Thomas Bretterkieber, Alexander Siegl, Richard Felsberger</i> | |
| ULTRASOUND ATTENUATION ANALYSIS OF LIQUID-SOLID MIXTURES WITH MULTI-FREQUENCY ULTRASOUND EXCITATION | 1034 |
| <i>Wenxiu Hou, Chao Tan, Feng Dong</i> | |
| WAVELENGTH SCANNING INTERFEROMETRY FOR TOPOGRAPHY OF MICROCHANNELS AT ROLL-TO-ROLL LINE WITH OPTICAL COHERENCE TOMOGRAPHY | 1039 |
| <i>Janne Lauri, Christina Liedert, Tapio Fabritius</i> | |
| SAMPLING LFM SIGNAL WITH STRETCH PROCESSING BASED ON FINITE RATE OF INNOVATION METHOD..... | 1045 |
| <i>Zhiliang Wei, Ning Fu, Yan Wang, Siyi Jiang, Liyan Qiao</i> | |
| JOINT CARRIER AND 2D-DOA ESTIMATION FOR L-SHAPED ARRAY BASED ON SUB-NYQUIST SAMPLING | 1050 |
| <i>Siyi Jiang, Ning Fu, Zhiliang Wei, Liyan Qiao, Xiyuan Peng</i> | |
| B-MODE ULTRASOUND IMAGES GUIDED ELECTRICAL IMPEDANCE TOMOGRAPHY IMAGE RECONSTRUCTION VIA CROSS GRADIENT | 1055 |
| <i>Yu Wang, Feng Dong, Shangjie Ren</i> | |
| A VIRTUAL BLADE TIP TIMING MEASUREMENT METHOD FOR FOREIGN OBJECT DAMAGE | 1061 |
| <i>Shuming Wu, Zhibo Yang, Haoqi Li, Zengkun Wang, Shaohua Tian, Ruqiang Yan, Xuefeng Chen</i> | |
| EXPLOITING AUGMENTED REALITY AND INTERNET OF THINGS FOR GAMMA RAY EXPERIMENTS IN EDUCATIONAL FIELD..... | 1066 |
| <i>Enzo Caputo, Rosario Schiano Lo Moriello, Francesco De Pandi, Annalisa Liccardo, Vito Gallicchio, Maria Quarto</i> | |
| PILOT ANALYSIS ON SOIL MOISTURE IMPACT ON UNDERGROUND TO ABOVEGROUND LORAWAN TRANSMISSIONS FOR IOT CONTEXTS | 1072 |
| <i>Stefano Parrino, Giacomo Peruzzi, Alessandro Pozzebon</i> | |
| HOMOGENEOUS LIGHT STIMULATION OF MELANOPsin AND CONES WITH A MAXWELLIAN VIEW DEVICE FOR THE HUMAN EYE | 1078 |
| <i>Flückiger Patrick, Schmid Jessica, Evéquoz Gilles, Bressy Pierre, Geiser Martial</i> | |

| | |
|--|------|
| DISTRIBUTED IOT SYSTEM TO ENHANCE WORKER SAFETY IN LARGE OPEN AREAS | 1083 |
| <i>Marco Tani, Lorenzo Parri, Ada Fort, Marco Mugnaini, Valerio Vignoli, Alberto Toccafondi, Riccardo Moretti, Elia Landi</i> | |
| MAGNETIC RESONANCE-BASED MEASUREMENT SYSTEM: COMPARISON OF 2D AND 3D ECHO-PLANAR IMAGING SEQUENCES FOR THERMOMETRY APPLICATION | 1089 |
| <i>Martina De Landro, Sanzhar Korganbayev, Khalid Ambarki, Juan Verde, Henrik Odeen, Céline Giraudeau, Paola Saccomandi</i> | |
| ECG NOISE REMOVAL AND EFFICIENT ARRHYTHMIA IDENTIFICATION BASED ON EFFECTIVE SIGNAL-PILOTED PROCESSING AND MACHINE LEARNING | 1095 |
| <i>Saeed Mian Qaisar, Dominique Dallet</i> | |
| AN OPTIMIZED TONGUE DRIVE SYSTEM FOR DISABLED PERSONS | 1101 |
| <i>Komal Chand, Kavilash Chand, Rahul Kumar, Bibhya Sharma, Mansour H. Assaf, Sunil R. Das, Voicu Groza, Emil M. Petriu, Satyendra N. Biswas</i> | |
| MICROWAVE QUANTIFICATION OF POROSITY LEVEL IN 3D PRINTED POLYMERS | 1107 |
| <i>Anna Case, Aaron McCarville, Mohammad Tayeb Al Qaseer, Reza Zoughi</i> | |
| EOG SIGNAL COMPRESSION USING TURNING POINT ALGORITHM | 1112 |
| <i>Alberto López, Francisco Javier Ferrero, José Ramón Villar</i> | |
| AN AFFORDABLE AIRBORNE ULTRASONIC SENSOR FOR PREDICTIVE MAINTENANCE APPLICATIONS | 1116 |
| <i>José Ramón Blanco, Juan Menéndez, Francisco Javier Ferrero, Alberto López, José Ramón Villar</i> | |
| A ZERO OFFSET REDUCTION METHOD FOR RTD-BASED THERMAL FLOW SENSORS | 1121 |
| <i>Jun Long, Yong Li, Xuhui Liu</i> | |
| DEVELOPMENT OF A CRYOGENIC SYSTEM FOR THE CHARACTERIZATION OF ADVANCED CMOS TECHNOLOGIES DOWN TO 350 MK | 1125 |
| <i>Ismael Martínez-R., Omar López-L, D. Ferrusca, M. Velázquez, E. A. Gutiérrez-D, D. Durini, F. J. De La Hidalga-W</i> | |
| CORRUGATED COMPLIANT CAPACITOR TOWARDS SMART BANDAGE APPLICATION | 1131 |
| <i>Han Liu, Simon Laflamme, Eric M. Zellner, Sarah A. Bentil, Iris V. Rivero, Thomas W. Secord, Ali Tamayol</i> | |
| S- AND Z-PARAMETERS IN FREQUENCY AND TIME DOMAIN: IN ACCORDANCE WITH EXPECTATIONS? | 1137 |
| <i>Michael E. Gadringer</i> | |
| IMPROVE THE SENSING MATRIX MODEL FOR RANDOM DEMODULATION IN THE CASE OF MIXER WITH NON-IDEAL CHARACTERISTICS | 1143 |
| <i>Xiaodong Li, Ning Fu, Liyan Qiao</i> | |
| MEASUREMENT AND SIGNAL PROCESSING TECHNIQUES FOR EXTRACTING HIGHLY ACCURATE AND WIDEBAND RCS | 1148 |
| <i>Rachel E. Jarvis, Justin G. Metcalf, Jessica E. Ruyle, Jay W. McDaniel</i> | |
| A HUBER FUNCTION BASED RESTORATION ALGORITHM FOR ASTRONOMY IMAGE COMPRESSION | 1154 |
| <i>Lei Xin, Feng Li, Xue Yang, Shijie Sun, Yu Zhou, Zhijia Liu</i> | |

| | |
|---|------|
| EFFICIENT SELECTION OF TIME DOMAIN FEATURES FOR LEAKAGE DETECTION IN PIPES CARRYING LIQUID COMMODITIES | 1159 |
| <i>George Othon Glentis, Kristina Georgoulaki, Kostas Angelopoulos</i> | |
| SOUND VELOCITY MEASUREMENT IN ACOUSTIC LEAK NOISE CORRELATION SYSTEMS..... | 1165 |
| <i>George Othon Glentis, Kostas Angelopoulos</i> | |
| INTERNAL AND EXTERNAL DEFECTS DISCRIMINATION OF PIPELINES USING COMPOSITE MAGNETIC FLUX LEAKAGE DETECTION | 1171 |
| <i>Yue Long, Songling Huang, Lisha Peng, Wenzhi Wang, Shen Wang, Wei Zhao</i> | |
| REPEATABILITY ANALYSIS OF DECODER-BASED EMF EXPOSURE MEASUREMENTS IN LTE CELLULAR SYSTEMS..... | 1177 |
| <i>G. Betta, D. Capriglione, G. Miele, M. D. Migliore, M. Salone D'Amata, G. Cerro</i> | |
| A UWB-BASED LOCALIZATION SYSTEM: ANALYSIS OF THE EFFECT OF ANCHOR POSITIONS AND ROBUSTNESS ENHANCEMENT IN INDOOR ENVIRONMENTS | 1183 |
| <i>L. Ferrigno, G. Miele, F. Milano, V. Pingerna, G. Cerro, M. Laracca</i> | |
| DEEP LEARNING FOR IMPROVING THE STORAGE PROCESS: ACCURATE AND AUTOMATIC SEGMENTATION OF SPOILED AREAS ON APPLES..... | 1189 |
| <i>Nikita Stasenko, Elizaveta Chernova, Dmitrii Shadrin, George Ovchinnikov, Ivan Krivolapov, Mariia Pukalchik</i> | |
| EFFECT OF IMAGE ACQUISITION AND PROCESSING PARAMETERS ON THE ESTIMATION OF CROWD-INDUCED DYNAMIC LOADING ON STADIUM GRANDSTANDS | 1195 |
| <i>Simone Turrisi, Emanuele Zappa, Alfredo Cigada, Miguel Ruiz Vivanco, Nerea Carrera Avin</i> | |
| DEVELOPMENT OF A DESIGN FOR SIPMS READOUT IN CRYOGENIC ENVIRONMENT FOR LARGE AREA PHOTON DETECTORS | 1201 |
| <i>Niccolò Gallice, Andrea Zani, Paola Sala, Massimo Lazzaroni, Mauro Citterio, Alessandro Andreani</i> | |
| SMART GRAVIMETRIC SYSTEM BASED ON DEEP LEARNING FOR ENHANCED SAFETY OF ACCESSES TO PUBLIC PLACES | 1207 |
| <i>Tommaso Addabbo, Ada Fort, Marco Mugnaini, Valerio Vignoli, Matteo Intravaia, Marco Tani, Monica Bianchini, Franco Scarselli, Barbara Toniella Corradini</i> | |
| A CNN-BASED APPROACH TO MEASURE WOOD QUALITY IN TIMBER BUNDLE IMAGES..... | 1213 |
| <i>Marco Carratú, Vincenzo Gallo, Consolatina Liguori, Antonio Pietrosanto, Mattias O'Nils, Jan Lundgren</i> | |
| FEMTOCOULOMB RANGE TRIBOELECTRIC NOISE METER FOR SUPER-LOW NOISE CABLES..... | 1219 |
| <i>Karl-Olov Wallin, Richard L. Andersson, Per Ångskog, José Chilo</i> | |
| ATTENTION BASED INCEPTION MODEL FOR ROBUST EEG MOTOR IMAGERY CLASSIFICATION..... | 1225 |
| <i>Syed Umar Amin, Hamdi Altaheri, Ghulam Muhammad, Mansour Alsulaiman, Wadood Abdul</i> | |
| A QUALITY-HIERARCHICAL TEMPERATURE IMAGING NETWORK FOR TDLAS TOMOGRAPHY..... | 1231 |
| <i>Jingjing Si, Gengchen Fu, Rui Zhang, Chang Liu</i> | |

| | |
|---|------|
| OVERLOAD CURRENT INTERRUPTION PROTECTION METHOD BASED ON TUNNEL MAGNETORESISTIVE SENSOR MEASUREMENT..... | 1236 |
| <i>Changxin Chen, Wenchao Guo, Chenbin Wang, Yifeng Ren, Tiehua Ma</i> | |
| PRECISION CHEMICAL COMPOUNDS ANALYSIS IN CHEMICAL TANK REACTORS USING CONDUCTIVITY ANALYSIS AND MODEL PREDICTIVE CONTROL..... | 1242 |
| <i>Nawshin Rafiq, Teddy Surya Gunawan, Robiah Ahmad, Azhar A Rahman, Mira Kartiwi, Eko Ihsanto</i> | |
| MICROWAVE WEARABLE SYSTEM FOR SENSING SKIN HYDRATION..... | 1248 |
| <i>Raissa Schiavoni, Giuseppina Monti, Annarita Tedesco, Luciano Tarricone, Emanuele PiuZZi, Egidio De Benedetto, Antonio Masciullo, Andrea Cataldo</i> | |
| PVDF PIEZOELECTRIC SENSORS ON 3D LOW-MELTING POINT SUBSTRATES: A PRELIMINARY STUDY ON PAPER..... | 1254 |
| <i>Michela Borghetti, Edoardo Cantù, Emilio Sardini, Mauro Serpelloni</i> | |
| NEURAL NETWORKS FOR THE ESTIMATION OF LOW-ORDER STATISTICAL MOMENTS OF A STOCHASTIC DIELECTRIC..... | 1259 |
| <i>Simon Stenmark, Thomas Rylander, Tomas McKelvey</i> | |
| CONDITIONING OF BACTERIAL CELLULOSE-BASED MOTION SENSORS..... | 1265 |
| <i>Giovanna Di Pasquale, Salvatore Graziani, Santhosh Kurukunda, Antonino Pollicino, Carlo Trigona</i> | |
| A PLANT-BASED SENSOR FOR UV-A RADIATION MEASUREMENTS..... | 1270 |
| <i>Carlo Trigona, Giuseppe Napoli, Stefania Pasquale, Ivana Puglisi, Andrea Baglieri, Anna Maria Gueli</i> | |
| DEVELOPMENT OF SMART SURVEILLANCE SYSTEM USING CLOUD FOR SECURITY APPLICATION..... | 1275 |
| <i>Abdul Wahab Usman Ullah, Jawad Ali Shah, Kushsairy Kadir, Abdul Wahid</i> | |
| LONG RANGE (LORA) TRANSMISSION THROUGH ICE: PRELIMINARY RESULTS..... | 1281 |
| <i>Irene Cappelli, Gabriele Di Renzone, Ada Fort, Marco Mugnaini, Alessandro Pozzebon, Valerio Vignoli</i> | |
| SIMPLE AND ROBUST MICROCONTROLLER-BASED ACQUISITION SYSTEM FOR DIFFERENTIAL CAPACITIVE SENSORS..... | 1287 |
| <i>Alessandro Depari, Emiliano Sisinni, Paolo Bellagente, Paolo Ferrari, Alessandra Flammini, Stefano Rinaldi</i> | |
| ADAPTIVE FOURIER ANALYSIS IN THE CASE OF DATA LOSS..... | 1293 |
| <i>András Palkó, László Sujbert</i> | |
| INTEGER LINEAR PROGRAMMING FOR OPTIMIZING THE POSITION OF IEDS IN MEDIUM VOLTAGE SMART GRIDS..... | 1299 |
| <i>Claudio Sterle, Vincenzo Caragallo, Annalisa Liccardo, Adriano Masone, Alessandro Fatica, Francesco Bonavolontà</i> | |
| REGRESSION APPLIED TO MEASURE NORMALIZED DIFFERENCE VEGETATION INDEX IN SOYBEAN IMAGES WITH VISIBLE COLOR SPACES COLLECTED BY SMARTPHONES..... | 1304 |
| <i>Murilo Caminotto Barbosa, Ana Carolina Sottana De Padua, Deryk Sedlak Ribeiro, Alan Salvany Felinto, Lucas Henrique Fantin, Marcelo Giovanetti Canteri</i> | |

| | |
|--|------|
| BISTATIC MICROWAVE SENSOR FOR IN-SITU COMPOSITE INSPECTION AND STRUCTURAL HEALTH MONITORING | 1309 |
| <i>Katelyn Brinker, Anna Case, M. T. Al Qaseer</i> | |
| MODELLING FOR AN ELECTROMAGNETIC GROUNDWATER FLOWMETER | 1315 |
| <i>Ben Mitchell, Michael Hayes, Bill Heffernan</i> | |
| “FREQUENCY” AND THE PMU STANDARD | 1321 |
| <i>A. Riepnieks, D. Strickland, D. R. White, H. Kirkham</i> | |
| COMPUTATIONAL IMAGING FOR DRILL BIT WEAR ESTIMATION | 1327 |
| <i>Salvatore Dello Iacono, Giuseppe Di Leo, Consolatina Liguori</i> | |
| NOISE ATTENUATION ON IMU MEASUREMENT FOR DRONE BALANCE BY SENSOR FUSION | 1333 |
| <i>Minh Long Hoang, Marco Carratù, Vincenzo Paciello, Antonio Pietrosanto</i> | |
| RECONSTRUCTION OF GALVANIC SKIN RESPONSE PEAKS VIA SPARSE REPRESENTATION | 1339 |
| <i>Grazia Iadarola, Angelica Poli, Susanna Spinsante</i> | |
| A MACHINE LEARNING APPROACH FOR A VISION-BASED VAN-HERICK MEASUREMENT SYSTEM | 1345 |
| <i>Tommaso Fedullo, Davide Cassanelli, Giovanni Gibertoni, Federico Tramarin, Luciano Quaranta, Giovanni De Angelis, Luigi Rovati</i> | |
| UTILIZING THE NONLINEARITY OF GMI SENSORS FOR TIME-PROPORTIONAL MAGNETIC FIELD MEASUREMENTS | 1351 |
| <i>Marvin Sandner, Phil Meier, Kris Rohrmann, Marcus Prochaska</i> | |
| DESIGN OF A QCM-SENSOR FOR ON-LINE MONITORING BIOFILM GROWTH..... | 1357 |
| <i>Miquel-àngel Amer, Marc Navarro, Antoni Turó, Miguel Garcia Hernandez, Jordi Salazar, Juan A. Chávez</i> | |
| LORAWAN TRANSMISSION SYSTEM CAPABILITY ASSESSMENT IN INDUSTRIAL ENVIRONMENT UNDER TEMPERATURE AND HUMIDITY CHARACTERIZATION | 1362 |
| <i>Gabriele Di Renzone, Ada Fort, Marco Mugnaini, Giacomo Peruzzi, Alessandro Pozzebon, Valerio Vignoli</i> | |
| A GLOBAL-LOCAL DYNAMIC ADVERSARIAL NETWORK FOR INTELLIGENT FAULT DIAGNOSIS OF SPINDLE BEARING | 1368 |
| <i>Jipu Li, Ruyi Huang, Jingyan Xia, Zhuyun Chen, Weihua Li</i> | |
| RELIABILITY AND FUNCTIONAL ANALYSIS OF IMU SYSTEMS UNDER TEMPERATURE-BASED STRESS TESTS..... | 1374 |
| <i>Marcantonio Catelani, Lorenzo Ciani, Gabriele Patrizi, Marco Carratù, Antonio Pietrosanto, Paolo Sommella, Domenico Capriglione</i> | |
| A SIMPLE DIGITIZATION SCHEME FOR RESISTIVE SENSORS AND ITS ADAPTATION FOR REMOTE MEASUREMENTS | 1380 |
| <i>K Elangovan, C. S. Anoop</i> | |
| A DIGITAL READOUT SUITABLE FOR RESISTIVE SENSORS AFFECTED WITH A PARASITIC CAPACITANCE ELEMENT | 1386 |
| <i>K Elangovan, C. S. Anoop</i> | |

| | |
|--|------|
| DUAL-BAND METAMATERIAL-INSPIRED MICROWAVE SENSOR FOR LIQUID DIELECTRIC SPECTROSCOPY | 1391 |
| <i>Mahdieh Gholami Mayani, Francisco Javier Herraiz-Martínez, Javier Matanza Domingo, Romano Giannetti, Carlos Rodríguez-Morcillo García</i> | |
| WIRELESS STRESS MEASUREMENT ON METAL SURFACE BASED ON PASSIVE INTEGRATED RFID SENSOR TAG | 1396 |
| <i>Ximeng Cheng, Yating Yu, Lei Wang, Cheng Sun, Guiyun Tian</i> | |
| PERFORMANCE DEGRADATION PREDICTION OF AIRCRAFT AUXILIARY POWER UNIT USING THE IMPROVED SVR | 1402 |
| <i>Xiaolei Liu, Liansheng Liu, Lulu Wang, Xiyuan Peng</i> | |
| MEASUREMENT OF VERY FAST TRANSIENT OVERVOLTAGES IN CURRENT TRANSFORMERS AT OPEN AIR HV SUBSTATIONS | 1408 |
| <i>Daniel Slomovitz, Marcelo Brehm, Rogelio Sandler, Carlos Faverio, Leonardo Trigo, Alejandro Santos, Gonzalo Aristoy</i> | |
| DEALING WITH STOCHASTIC SIGNALS AND PHYSICAL PHENOMENA IMPACTING PIPELINE LEAK LOCALIZATION ACCURACY | 1414 |
| <i>Georgios-Panagiotis Kousiopoulos, Nikolaos Karagiorgos, Dimitrios Kampelopoulos, Vasileios Konstantakos, Spyros Nikolaidis</i> | |
| INSTRUMENTATION OF A ROVING INSPECTION TEST RIG WITH SURFACE GEOMETRY MEASUREMENT OF FIBER BUNDLES | 1420 |
| <i>Sophia Lehner, Stefan Neunkirchen, Ewald Fauster, Paul O'Leary</i> | |
| CLASSROOM QUALITY: ON THE AMOUNT OF AMBIENT LIGHT IN TODAY'S CLASSROOM - A FIELD STUDY | 1426 |
| <i>Christian Schuss, Tapio Fabritius</i> | |
| A NOVEL METHOD TO REALIZE CONTINUOUS INPUT POWER CONTROL DURING ACOUSTIC DROPLET EJECTION | 1432 |
| <i>Qing Guo, Mengchuan Shao, Xingguo Zhang, Xiao Su, Haixia Yu, Dachao Li</i> | |
| FEATURE EXTRACTION METHOD FOR ROLLING BEAR FAULT SIGNAL BASED ON TIME-DELAYED FEEDBACK ASYMMETRIC TRISTABLE STOCHASTIC RESONANCE | 1437 |
| <i>Xiao Su, Peiming Shi, Qing Guo, Xingguo Zhang, Haixia Yu, Dachao Li</i> | |
| ANOMALY DETECTION OF SPACECRAFT TELEMETRY DATA USING TEMPORAL CONVOLUTION NETWORK | 1443 |
| <i>Yuan Wang, Yan Wu, Qiong Yang, Jun Zhang</i> | |
| ON MULTI-LABEL CLASSIFICATION FOR NON-INTRUSIVE LOAD IDENTIFICATION USING LOW SAMPLING FREQUENCY DATASETS | 1448 |
| <i>Mohamed Aymane Ahajjam, Chaimaa Essayeh, Mounir Ghogho, Abdellatif Kobbane</i> | |
| LINEAR ELECTRODE ARRAY FOR FLOW VELOCITY ESTIMATION | 1454 |
| <i>Ziqiang Cui, Long Yan, Pengyu Yang, Yu Sun, Huaxiang Wang</i> | |
| CHARACTERIZATION OF 3D IMAGE-BASED BIOMETRIC SYSTEMS IN DYNAMIC ACQUISITION CONDITIONS | 1459 |
| <i>G. Betta, D. Capriglione, M. Salone, D. Amata, C. Liguori, E. Zappa</i> | |

| | |
|--|------|
| PERFORMANCE MEASUREMENT OF PIEZOELECTRIC ENERGY HARVESTER WITH PERMANENT MAGNET ASSEMBLY FOR WEARABLE DEVICES | 1465 |
| <i>Mohamad Safiddin Mohd Tahir, Noor Hazrin Hany Mohamad Hanif, Muhammad Hafizuddin Che Kassim</i> | |
| IMPLEMENTATION OF A PLC FIELD ANALYZER ON A G3 MODEM PLATFORM..... | 1470 |
| <i>Giovanni Artale, Giuseppe Caravello, Antonio Cataliotti, Valentina Cosentino, Dario Di Cara, Riccardo Fiorelli, Salvatore Guaiana, Nicola Panzavecchia, Giovanni Tinè</i> | |
| A LOW-COST AUTOMATIC ACQUISITION SYSTEM FOR PHOTOGRAMMETRY | 1476 |
| <i>Leila Es Sebar, Sabrina Grassini, Marco Parvis, Luca Lombardo</i> | |
| IMPLEMENTATION AND CALIBRATION OF A LOW-COST SENSOR NODE FOR HIGH-RESOLUTION, CONTINUOUS AND NO-MANNING RECORDING OF FRUIT GROWTH | 1482 |
| <i>Lorenzo Mistral Peppi, Matteo Zauli, Luigi Manfrini, Luca Corelli Grappadelli, Luca De Marchi, Pier Andrea Traverso</i> | |
| FREQUENCY SPAN OPTIMIZATION FOR ASYMMETRIC RESONANCE CURVE FITTING..... | 1488 |
| <i>Kostiantyn Torokhtii, Andrea Alimenti, Nicola Pompeo, Enrico Silva</i> | |
| AN IMPROVED MFL METHOD FUSING MULTI-SPACE MAGNETIC FIELD INFORMATION FOR THE SURFACE DEFECT INSPECTING..... | 1493 |
| <i>Wenzhi Wang, Songling Huang, Lisha Peng, Yue Long, Shen Wang, Wei Zhao</i> | |
| MULTI-LAYER CONVOLUTIONAL SPARSE CODING FRAMEWORK FOR RESTORATION OF UNDER-SAMPLED MR IMAGES | 1499 |
| <i>Abdul Wahid, Abdul Wahab Usman Ullah, Kushairy Kadir, Syed Saadain</i> | |
| EVALUATION OF FILTERING METHODS FOR THE PREDICTION OF HUMAN POSITION DURING WALKING BY MEANS OF KINEMATICAL MODELS | 1505 |
| <i>Leticia González, Antonio M. López, Diego Álvarez, Juan C. Álvarez</i> | |
| CAUSES OF ERROR FOR TURBINE RADIAL PALETTE MEASUREMENT | 1511 |
| <i>Alessandro Pesatori, Michele Norgia</i> | |
| AN RMS-BASED APPROACH FOR LEAK MONITORING IN NOISY INDUSTRIAL PIPELINES | 1516 |
| <i>Dimitrios Kampelopoulos, Nikolaos Karagiorgos, George P. Kousiopoulos, Dimitrios Porlidas, Vasileios Konstantakos, Spyridon Nikolaidis</i> | |
| A NOVEL TECHNIQUE FOR EARTHQUAKES MAGNITUDE ESTIMATION..... | 1522 |
| <i>Marco Carratù, Vincenzo Paciello, Antonio Espírito-Santo, Gustavo Monte</i> | |
| WIRELESS SENSOR NODES FOR EARLY DETECTION OF FOOD DEGRADATION IN RESTAURANTS AND COMMERCIAL KITCHENS | 1528 |
| <i>Jorge Enrique Quiroz Oviedo, Tobias Alanko, Jorge Javier Mendoza Montoya, Mauricio Postigo-Málaga, Javier Alvaro Rivera Suaña, José Chilo</i> | |
| REMOTE ULTRASONIC IMAGING OF A WIRE ARC ADDITIVE MANUFACTURED Ti-6Al-4V COMPONENT USING LASER INDUCED PHASED ARRAY | 1534 |
| <i>Peter Lukacs, Geo Davis, Theodosia Stratoudaki, Stewart Williams, Charles N. Macleod, Anthony Gachagan</i> | |
| A MODULAR SAMPLING STANDARD FOR QUANTUM TRACEABLE POWER MEASUREMENTS: COMPARISON AND PERSPECTIVES..... | 1540 |
| <i>Bruno Trinchera, Danilo Serazio</i> | |

| | |
|---|------|
| AN UNCERTAINTY-DRIVEN ANALYSIS FOR DELAYED MAPPING SLAM..... | 1546 |
| <i>Davide Dorigoni, Daniele Fontanelli</i> | |
| DATA TRANSMISSION FROM ATEX BOXES BY MEANS OF LORA TECHNOLOGY FOR INDUSTRIAL INTERNET OF THINGS (IIOT) APPLICATIONS | 1552 |
| <i>Gabriele Di Renzone, Ada Fort, Marco Mugnaini, Alessandro Pozzebon, Valerio Vignoli</i> | |
| IN-SITU ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY OF BATTERY CELLS BY MEANS OF BINARY SEQUENCES..... | 1558 |
| <i>Alessio De Angelis, Roberta Ramilli, Marco Crescentini, Antonio Moschitta, Paolo Carbone, Pier Andrea Traverso</i> | |
| LOCALIZATION OF BLOOD VESSELS IN IN-VITRO LSCI IMAGES WITH K-MEANS | 1563 |
| <i>F. Lopez-Tiro, H. Peregrina-Barreto, J. Rangel-Magdaleno, J. C. Ramirez-San-Juan</i> | |
| A NEW PROCESSING METHOD TO SEGMENT OLIVE TREES AND DETECT XYLELLA FASTIDIOSA IN UAVS MULTISPECTRAL IMAGES | 1568 |
| <i>Francesco Adamo, Filippo Attivissimo, Attilio Di Nisio, Mattia Alessandro Ragolia, Marco Scarpetta</i> | |
| SNR-BASED REINFORCEMENT LEARNING RATE ADAPTATION FOR TIME CRITICAL WI-FI NETWORKS: ASSESSMENT THROUGH A CALIBRATED SIMULATOR..... | 1574 |
| <i>Giovanni Peserico, Tommaso Fedullo, Alberto Morato, Federico Tramarin, Luigi Rovati, Stefano Vitturi</i> | |
| CASCADE BASED METHODS IN DETECTING ROTATING FAULTS USING VIBRATION MEASUREMENTS | 1580 |
| <i>M. Avoci Ugwiri, M. Carratù, A. Lay-Ekuakille, V. Paciello, A. Pietrosanto</i> | |
| RULING UNCERTAINTIES IN RANGE-ONLY ROBOT LOCALISATION..... | 1585 |
| <i>Farhad Shamsfakhr, Luigi Palopoli, David Macii, Daniele Fontanelli</i> | |
| A NOVEL SINGLE-ELEMENT INDUCTANCE-TO-DIGITAL CONVERTER WITH AUTOMATIC OFFSET ELIMINATOR..... | 1591 |
| <i>P. P. Narayanan, Sreenath Vijayakumar</i> | |
| DEEP LEARNING TECHNIQUES FOR ENHANCEMENT OF WEEDS GROWTH CLASSIFICATION..... | 1597 |
| <i>Dmitrii Vypirailenko, Elizaveta Kiseleva, Dmitrii Shadrin, Mariia Pukalchik</i> | |
| UNBIASED SINE-WAVE FREQUENCY ESTIMATION BY PARABOLIC INTERPOLATION OF DTFT SAMPLES..... | 1603 |
| <i>Daniel Belega, Dario Petri</i> | |
| ANALYSIS AND EVALUATION OF VIBRATION SENSORS FOR PREDICTIVE MAINTENANCE OF LARGE GEARS WITH AN APPROPRIATE TEST BENCH..... | 1608 |
| <i>Florian Strakosch, Holger Nikoleizig, Faouzi Derbel</i> | |
| MULTIVARIATE DATA PREDICTION IN A WIRELESS SENSOR NETWORK BASED ON SEQUENCE TO SEQUENCE MODELS..... | 1614 |
| <i>Carlos R. Morales, Fernando R. De Sousa, Valner Brusamarello, Nestor C. Fernandes</i> | |
| PULSE-BASED TECHNIQUE FOR HARD FAULTS IDENTIFICATION IN COMPLEX WIRE NETWORKS..... | 1619 |
| <i>Dhia Haddad, Ahmed Yahia Kallel, Najoua Essoukri Ben Amara, Olfa Kanoun</i> | |

| | |
|---|------|
| MEASUREMENT SYSTEM FOR TIME VARIABLE SUBCYCLE IMPEDANCE ON POWER LINES..... | 1625 |
| <i>Christoph Nieß, Jan-Philipp Kitzig, Gerd Bumiller</i> | |
| INVESTIGATION OF A 100 μ M MAGNETIC WIRE FOR TEMPERATURE SENSING BASED ON A TIME DOMAIN READOUT | 1631 |
| <i>Gianluca Caposciutti, Mirko Marracci, Carlo Trigona, Salvatore Baglio, Bernardo Tellini</i> | |
| A SWITCHED-CAPACITOR CVC AND CFC FOR CAPACITIVE SENSORS REPRESENTABLE USING π -MODEL..... | 1637 |
| <i>Pinku Sebastian, P. P. Narayanan, Sreenath Vijayakumar</i> | |
| NOVEL WEARABLE THERMAL-COLOR DUAL MODAL IMAGING SYSTEM FOR COVID-19 TEMPERATURE SCREENING..... | 1643 |
| <i>Maziyar Askari, Yang Liu</i> | |
| THERMAL CHARACTERIZATION OF ELECTRICAL RESISTANCE OF 3D PRINTED SENSORS | 1648 |
| <i>Mattia Alessandro Ragolia, Attilio Di Nisio, Anna Maria Lanzolla, Gianluca Percoco, Marco Scarpetta, Gianni Stano</i> | |
| FPGA-BASED 16-BIT 20 MHZ DEVICE FOR THE INDUCTIVE MEASUREMENT OF ELECTRICAL BIO-IMPEDANCE | 1654 |
| <i>Eiko Priidel, Ksenija Pesti, Mart Min, Jaan Ojarand, Olev Martens</i> | |
| FUSING PRESSURE-SENSITIVE MAT DATA WITH VIDEO THROUGH MULTI-MODAL REGISTRATION | 1659 |
| <i>Daniel G. Kyrollos, Randa Hassan, Yasmina Souley Dosso, James R. Green</i> | |
| A NEUTRON GENERATOR TESTING PLATFORM FOR THE RADIATION ANALYSIS OF SRAM-BASED FPGAS | 1665 |
| <i>L. Bozzoli, C. De Sio, B. Du, L. Sterpone</i> | |
| LOW PEAK DERIVATIVE SUM OF SINES..... | 1670 |
| <i>Manouane Caza-Szoka, Daniel Massicotte, Messaoud Ahmed Ouameur</i> | |
| ANALYSIS OF TDR SIGNALS WITH CONVOLUTIONAL NEURAL NETWORKS..... | 1676 |
| <i>Marco Scarpetta, Maurizio Spadavecchia, Gregorio Andria, Mattia Alessandro Ragolia, Nicola Giaquinto</i> | |
| REDUCING MOTION IMPACT ON VIDEO MAGNIFICATION USING WAVELET TRANSFORM AND PRINCIPAL COMPONENT ANALYSIS FOR HEART RATE ESTIMATION..... | 1682 |
| <i>Ahmed Alzahrani, Jila Hosseinkhani, Sreeraman Rajan, Eranga Ukwatta</i> | |
| AN EXCITATION METHOD FOR FAULT DIAGNOSIS OF DC-AC CONVERTER BASED ON SIMULATION | 1688 |
| <i>Yun Yang, Cen Chen, Xuerong Ye, Chengzhi Sun</i> | |
| RECOVERY OF NOISY COMPRESSIVELY SENSED SPEECH VIA REGULARIZED MAXIMUM FEASIBLE SUBSYSTEM ALGORITHM..... | 1694 |
| <i>Fereshteh Fakhar Firouzeh, Sreeraman Rajan, J. W. Chinneck</i> | |
| DEVELOPMENT OF SMART ALARM BASED ON SLEEP CYCLE ANALYSIS | 1700 |
| <i>Zahrina Anwar, Teddy Surya Gunawan, Robiah Ahmad, Mira Kartiwi</i> | |

| | |
|---|------|
| RESISTANCE MEASUREMENTS OF POLYDIMETHYLSILOXANE (PDMS) STRETCH-SENSORS EMBEDDED WITH A CONDUCTIVE GEL..... | 1705 |
| <i>Gerald Olson, Clive Davies, Gourab Sen Gupta, Rose Davies, Luke Fullard</i> | |
| SENSITRAY: AN INTEGRATED MEASURING DEVICE FOR MONITORING CHILDREN'S MEALTIME DIETARY INTAKE..... | 1710 |
| <i>Hunter S. Guru, Anthony D. Weng, Santosh Pitla, Dipti A. Dev</i> | |
| A DEEP CONVOLUTIONAL NEURAL NETWORK CLASSIFICATION OF HEART SOUNDS USING FRACTIONAL FOURIER TRANSFORM | 1716 |
| <i>E. A. Nehary, Zaid Abduh, Sreeraman Rajan</i> | |
| WINDOWING COMPENSATION IN FOURIER BASED SURROGATE ANALYSIS..... | 1721 |
| <i>Manouane Caza-Szoka, Daniel Massicotte</i> | |

Author Index