

2020 IEEE International Symposium on Medical Measurements and Applications (MeMeA 2020)

**Bari, Italy
1 June – 1 July 2020**



**IEEE Catalog Number: CFP20MEA-POD
ISBN: 978-1-7281-5387-2**

**Copyright © 2020 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:	CFP20MEA-POD
ISBN (Print-On-Demand):	978-1-7281-5387-2
ISBN (Online):	978-1-7281-5386-5

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

TELEMEDICINE DSS-AI MULTI LEVEL PLATFORM FOR MONOCLONAL GAMMOPATHY ASSISTANCE.....	1
<i>Alessandro Massaro, Angelo Galiano, Domenico Scarafile, Angelo Vacca, Antonella Frassanito, Assunta Melaccio, Antonio Solimando, Roberto Ria, Giuseppe Calamita, Michela Bonomo, Francesca Vacca, Anna Gallone, Filippo Attivissimo</i>	
NEW MEASUREMENT METHOD IN DRUG SENSING BY DIRECT TOTAL-CHARGE DETECTION IN VOLTAMMETRY.....	6
<i>Simone Aiassa, José David González Martínez, Danilo Demarchi, Sandro Carrara</i>	
BEDDING WAVEGUIDE FOR SMARTPHONE-BASED BALLISTOCARDIOGRAPHY	12
<i>Guillaume Cathelain, Jean Bergounioux, François Jouen</i>	
AN EFFICIENT OPTIMAL THRESHOLD-BASED SEGMENTATION AND CLASSIFICATION MODEL FOR MULTI-LEVEL SPINAL CORD INJURY DETECTION	17
<i>Sk. Hasane Ahammad, Md. Zia Ur Rahman, A. Lay-Ekuakille, N. I. Giannoccaro</i>	
USE OF TRAINING WITH BCI (BRAIN COMPUTER INTERFACE) IN THE MANAGEMENT OF IMPULSIVITY	23
<i>Natale Salvatore Bonfiglio, Roberta Renati, Davide Parodi, Eliano Pessa, Dolores Rollo, Maria Pietronilla Penna</i>	
DEVELOPMENT AND FIRST EVALUATION OF A RF-BASED REHABILITATION SYSTEM	28
<i>Walter Baccinelli, Maria Bulgheroni, Carlo Albino Frigo</i>	
DEALING WITH PROBABILISTIC PROBLEMS IN HEALTH CARE: WHAT ABOUT THE ROLE OF KNOWLEDGE IN DAILY LIFE?	33
<i>Mirian Agus, Maribel Peró-Cebollero, J. Guàrdia-Olmos, M. P. Penna</i>	
AN EXPLORATORY STUDY ON THE RELATIONSHIP BETWEEN VIDEO GAME ADDICTION AND THE CONSTRUCTS OF COPING AND RESILIENCE.....	39
<i>Natale Salvatore Bonfiglio, Roberta Renati, Sabrina Costa, Dolores Rollo, Francesco Sulla, Maria Pietronilla Penna</i>	
THE CT STIMULATION INDUCED ABNORMAL RESPONSE IN SUBJECTS WITH ASD: EEG STUDY	44
<i>Galina V. Portnova, Ivan V. Skorokhodov, Anton A. Varlamov, Igor L. Shpitsberg</i>	
MACHINE LEARNING BASED HARDWARE MODEL FOR A BIOMEDICAL SYSTEM FOR PREDICTION OF RESPIRATORY FAILURE	49
<i>Omiya Hassan, Samira Shamsir, Syed K. Islam</i>	
A BI-MODAL PROBE INTEGRATED WITH A-MODE ULTRASOUND AND FORCE SENSOR FOR SINGLE-SITE ASSESSMENT OF ARTERIAL PRESSURE-DIAMETER LOOP	54
<i>Rahul Manoj, Raj V. Kiran, P. M. Nabeel, Jayaraj Joseph, Mohanasankar Sivaprakasam</i>	
SEMG-BIOFEEDBACK ARMBAND FOR HAND MOTOR REHABILITATION IN STROKE PATIENTS: A PRELIMINARY PILOT LONGITUDINAL STUDY.....	60
<i>Daniele Rimini, Silvia Salvalaggio, Giorgia Pregnolato, Mahmoud Alhelou, Carmine Berlingieri, Eleonora Mascotto, Andrea Turolla, Paolo Ariano, Nicolò Celadon, Daniyal Ahmed</i>	

EVALUATION OF GLASGOW COMA SCORE USING ELECTROENCEPHALOGRAPH SIGNALS	65
<i>Fatma Latifoglu, Çigdem Güllüzar Altıntop, Aynur Karayol Akin, Ramis Ileri, Mehmet Akif Yazar</i>	
A DYNAMIC TIME WARPING METHOD FOR IMPROVED ARTERIAL WALL-TRACKING USING A-MODE ULTRASOUND FRAMES: A PROOF-OF-CONCEPT.....	71
<i>Raj V. Kiran, Jayaraj Joseph, P. M. Nabeel, Mohanasankar Sivaprakasam</i>	
DETECTION OF READING MOVEMENT FROM EOG SIGNALS.....	77
<i>Fatma Latifoglu, Ramis Ileri, Esra Demirci, Çigdem Güllüzar Altıntop</i>	
CAROTID STIFFNESS VARIATIONS IN THE PRESENCE OF ESTABLISHED RISK FACTORS: OBSERVATIONS FROM A CLINICAL STUDY USING ARTSENS	82
<i>Jayaraj Joseph, Harivanzan Vijayakumar, P. M. Nabeel, Thoddi Muralidharan, Sadagopalan Thanikachalam, Mohanasankar Sivaprakasam</i>	
BACKPACK INFLUENCE ON KINEMATIC PARAMETERS RELATED TO TIMED UP AND GO (TUG) TEST IN SCHOOL CHILDREN.....	88
<i>Leandro Donisi, Armando Coccia, Federica Amitrano, Luca Mercogliano, Giuseppe Cesarelli, Giovanni D'Addio</i>	
BLOOD PRESSURE ESTIMATION USING ARTERIAL DIAMETER: EXPLORING DIFFERENT MACHINE LEARNING METHODS	93
<i>Uthappa P. Poojitha, Keerthi Ram, Nabeel Pm, Raj Kiran V., Jayaraj Joseph, Mohanasankar Sivaprakasam</i>	
PERSONALIZED COMPUTATIONAL HUMAN PHANTOMS VIA A HYBRID MODEL-BASED DEEP LEARNING METHOD.....	99
<i>Hamidreza Khodajou-Chokami, Adeleh Bitarafan, Dmitry V. Dylov, Mahdieh Soleymani Baghshah, Seyed Abolfazl Hosseini</i>	
A NEW ERGONOMIC CABLE FOR MEDICAL ULTRASOUND IMAGING.....	105
<i>Eugene Mayevskiy, Paul Sprunger, Tom Medina</i>	
FEASIBILITY STUDY OF ARTERIAL STIFFNESS MONITORING BASED ON REFLECTED WAVE TRANSIT TIME USING CAROTID ACCELERATION PLETHYSMOGRAM.....	111
<i>R. Arathy, Jayaraj Joseph, P. M. Nabeel, V. V. Abhidev, Mohanasankar Sivaprakasam</i>	
ADVERSE PATIENT EVENTS IN ANESTHESIA DELIVERY – REVIEW AND ANALYSIS OF POTENTIALLY AVOIDABLE EVENTS	117
<i>Lorenzo Dinia, Fabio Mangini, Ilaria Mileti, Eduardo Palermo, Fabrizio Frezza</i>	
QCT: A MEASURING TOOL DEDICATED TO THE ESTIMATION OF IMAGE PARAMETERS FOR QUALITY ASSURANCE/QUALITY CONTROL PROGRAMS OF CT SCANNERS	122
<i>Hamidreza Khodajou-Chokami, Seyed Abolfazl Hosseini, Mohammad Ghorbanzadeh, Mohammad Mohammadi</i>	
EXPERIMENTAL DEVELOPMENT AND VALIDATION OF AN E-TEXTILE SOCK PROTOTYPE.....	128
<i>Federica Amitrano, Leandro Donisi, Armando Coccia, Arcangelo Biancardi, Gaetano Pagano, Giovanni D'Addio</i>	

IMPEDANCE MEASUREMENT EXPLOITED FOR ANAPHYLAXIS PREDICTION IN CASEIN ALLERGIC CHILDREN.....	133
<i>Simona Barni, Marco Mugnaini, Ada Fort, Francesca Mori, Marco Tani, Valerio Vignoli, Elia Landi, Riccardo Moretti, Tommaso Addabbo</i>	
REHABILITATION OUTCOME IN PATIENTS UNDERGONE HIP OR KNEE REPLACEMENT SURGERY USING INERTIAL TECHNOLOGY FOR GAIT ANALYSIS	138
<i>Gaetano Pagano, Giovanni D'Addio, Maurizio De Campi, Leandro Donisi, Arcangelo Biancardi, Mario Cesarelli</i>	
REPEATABILITY OF SPATIO-TEMPORAL GAIT MEASUREMENTS IN PARKINSON'S DISEASE	143
<i>Armando Coccia, Bernardo Lanzillo, Leandro Donisi, Federica Amitrano, Giuseppe Cesarelli, Giovanni D'Addio</i>	
MACHINE LEARNING CAN DETECT THE PRESENCE OF MILD COGNITIVE IMPAIRMENT IN PATIENTS AFFECTED BY PARKINSON'S DISEASE.....	149
<i>Carlo Ricciardi, Marianna Amboni, Chiara De Santis, Gianluca Ricciardelli, Giovanni Improta, Giovanni D'Addio, Sofia Cuoco, Marina Picillo, Paolo Barone, Mario Cesarelli</i>	
A QUANTITATIVE ANALYSIS OF MUSCULAR CO-ACTIVATION ON EMG SIGNALS IN SPASTIC PATIENTS TREATED WITH BOTULINUM TOXIN.....	155
<i>Carlo Ricciardi, Luigi Iuppariello, Gianluca Ricciardelli, Marianna Amboni, Giuseppe Cesarelli, Giovanni Improta, Giovanni D'Addio, Giovanni Cannaviello, Mario Cesarelli</i>	
ETHANOL BREATH MEASURING SYSTEM.....	161
<i>Luca Lombardo, Sabrina Grassini, Marco Parvis, Nicola Donato, Alessio Gullino</i>	
DESIGN, 3D PRINTING AND CHARACTERIZATION OF A SOFT ACTUATOR WITH EMBEDDED STRAIN SENSOR	167
<i>G. Stano, G. Percoco</i>	
CYCLIC COMPRESSION FATIGUE BEHAVIOUR OF PET-G TOOTH ALIGNERS	173
<i>Claudia Cianci, Giovanni Pappalettera, Gilda Renna, Caterina Casavola, Michele Laurenziello, Carmine Pappalettere, Domenico Ciavarella</i>	
ECG WAVEFORMS RECONSTRUCTION BASED ON EQUIVALENT TIME SAMPLING.....	179
<i>Giorgia Fiori, Andrea Scorza, Silvia Conforto, Fabio Fuiano, Maurizio Schmid, Salvatore Andrea Sciuto</i>	
A PRELIMINARY STUDY ON A NOVEL AUTOMATIC METHOD FOR ANGULAR DISPLACEMENT MEASUREMENTS IN MICROGRIPPER FOR BIOMEDICAL APPLICATIONS.....	185
<i>Federica Vurchio, Francesco Orsini, Andrea Scorza, Fabio Fuiano, Salvatore Andrea Sciuto</i>	
A REGRESSION APPROACH TO ASSESS BONE MINERAL DENSITY OF PATIENTS UNDERGOING TOTAL HIP ARTHROPLASTY THROUGH GAIT ANALYSIS	190
<i>Marco Recenti, Carlo Ricciardi, Romain Aubonnet, Luca Esposito, Halldór Jónsson, Paolo Gargiulo</i>	
CONDUCTIVE TEXTILE ELEMENT EMBEDDED IN A WEARABLE DEVICE FOR JOINT MOTION MONITORING	196
<i>Arianna Carnevale, Carlo Massaroni, Daniela Lo Presti, Joshua Di Tocco, Martina Zaltieri, Domenico Formica, Umile Giuseppe Longo, Emiliano Schena, Vincenzo Denaro</i>	

CLOUD PROCESSING OF BED PRESSURE SENSOR DATA TO DETECT SLEEP APNEA EVENTS.....	202
<i>Hilda Azimi, Haoyang Liu, Martin Bilodeau, Bruce Wallace, Martin Bouchard, Rafik Goubbran, Frank Knoefel</i>	
A NEW CYBER PHYSICAL SYSTEM FOR GAS RADON MONITORING AND CONTROLLING.....	207
<i>Alberto Amato, Alessandra Scarcelli, Maria Rizzi, Michele Di Gioia, Cristoforo Marzocca, Rita Dario, Vincenzo Di Lecce</i>	
HYBRID INDOOR AND OUTDOOR LOCALIZATION FOR ELDERLY CARE APPLICATIONS WITH LORAWAN.....	213
<i>Carvalho D. Fernandes, A. Depari, E. Sisinni, P. Ferrari, A. Flammini, S. Rinaldi, M. Pasetti</i>	
INVESTIGATION OF BASIC OPTICAL PROPERTIES OF TISSUE PHANTOMS UNDER 635 NM LOW-LEVEL LASER IRRADIATION.....	219
<i>Hüseyin Okan Durmus, Sevgi Kocaata, Gözde Naz, Yunus Emre Çelik, Emel Çetin, Baki Karaböce, Mirhasan Yu Seyidov</i>	
QUANTIFYING THE COLOR CHANGES IN BRUISED SKIN USING A COLOR-CALIBRATED IMAGING SYSTEM.....	225
<i>Cheng-Ru Li, Hsin-Yi Tsai, Chih-Chung Yang, Ming-Yen Lin, Kuo-Cheng Huang, Yu-Hsuan Lin</i>	
DESIGN, REALIZATION AND EXPERIMENTAL CHARACTERISATION OF A CONTROLLABLE-COMPLIANCE JOINT OF A ROBOTIC EXOSKELETON FOR ASSIST-AS-NEEDED REHABILITATION.....	230
<i>A. Capace, L. Randazzini, C. Cosentino, M. Romano, A. Merola, F. Amato</i>	
ADAPTIVE EXCITATION SIGNALS FOR LOW FREQUENCY FOT.....	236
<i>Cedric Busschots, Andy Keymolen, Hannes Maes, Dries Peumans, Johan Pattyn, Gerd Vandersteen, John Lataire</i>	
A MICROFLUIDIC DEVICE FOR SHAPE MEASUREMENT IN RED BLOOD CELLS (RBCS).....	241
<i>Arianna Mencattini, Davide Di Giuseppe, Michele D'Orazio, Valeria Rizzuto, M. M. Mañú Pereira, Maria Colomba Comes, Maria José Lopez-Martinez, Josep Samitier, Eugenio Martinelli</i>	
GLOBAL LOWER LIMB MUSCLE COACTIVATION DURING WALKING IN TRANS-FEMORAL AND TRANS-TIBIAL AMPUTEES.....	246
<i>Antonella Tatarelli, Mariano Serrao, Tiwana Varrecchia, Lorenzo Fiori, Alessio Silvetti, Cristiano De Marchis, Simone Ranaldi, Francesco Draicchio, Silvia Conforto, Alberto Ranavolo</i>	
A PERSONALIZED ASSESSMENT PLATFORM FOR NON-INVASIVE MONITORING OF PAIN.....	252
<i>Paola Casti, Arianna Mencattini, Joanna Filippi, Michele D'Orazio, Maria Colomba Comes, Davide Di Giuseppe, Eugenio Martinelli</i>	
ASSESSMENT OF ULTRA-HIGH-FIELD MAGNETIC RESONANCE IMAGING SAFETY VIA TEMPERATURE INCREASE MONITORING WITH MAGNETIC RESONANCE THERMOMETRY.....	257
<i>Laura Biagi, Vito Gagliardi, Alessandra Retico, Massimo Marletta, Giacomo Aringhieri, Gianluigi Tiberi, Francesco Campanella, Michela Tosetti</i>	

IMPROVING CARE MODEL FOR CONGENITAL HEART DISEASES IN PAEDIATRIC PATIENTS USING HOME TELEMONITORING OF VITAL SIGNS VIA BIOMEDICAL SENSORS	262
<i>Massimiliano Donati, Silvia Panicacci, Luca Fanucci, Sergio Saponara, Lamia Ait-Ali, Stefano Dalmiani, Pierluigi Festa, Francesca Mastorci, Alessandro Pingitore, Wanda Pennè, Alessio Celli</i>	
CHARACTERIZATION OF A LOW-COST MARKERLESS SYSTEM FOR 3D GAIT ANALYSIS	268
<i>D'Antonio Erika, Taborri Juri, Palermo Eduardo, Rossi Stefano, Patané Fabrizio</i>	
REPETITIVELY DRIVEN TRIPS AS A MEASURE OF OLDER ADULT DRIVER COGNITIVE HEALTH – THREE CASE STUDIES.....	274
<i>Jennifer Howcroft, Bruce Wallace, Rafik Goubran, Shawn Marshall, Michelle M. Porter, Frank Knoefel</i>	
A MACHINE LEARNING APPROACH TO CAROTID WALL LOCALIZATION IN A-MODE ULTRASOUND	280
<i>Shivendra Singh, Ashish Kumar Sahani</i>	
COMPARISON OF DIFFERENT CLASSIFIERS TO RECOGNIZE ACTIVE BONE MARROW FROM CT IMAGES	285
<i>Samanta Rosati, Pierfrancesco Franco, Christian Fiandra, Francesca Arcadipane, Patrick Silveti, Elena Gallio, Jovana Panic, Umberto Ricardi, Gabriella Balestra</i>	
ASSESSMENT OF POSITION REPEATABILITY OF SURGICAL EM TRACKING SYSTEMS EMPLOYING MAGNETIC FIELD MODEL	290
<i>Mattia Alessandro Ragolia, Filippo Attivissimo, Attilio Di Nisio, Anna Maria Lucia Lanzolla</i>	
CAN THE MEASUREMENTS OF LEG STABILITY DURING JUMP LANDING PREDICT AND MONITOR ANTERIOR CRUCIATE LIGAMENT INJURY? A CASE REPORT OF BASKETBALL PLAYER.....	296
<i>Luca Molinaro, Adriano Santospagnuolo, Maria Chiara Vulpiani, Juri Taborri, Mario Vetrano, Stefano Rossi</i>	
DESIGN OF A SURFACE ACOUSTIC WAVE RESONATOR FOR SENSING PLATFORMS	302
<i>Giovanni Niro, Iliaria Marasco, Francesco Rizzi, Antonella D'Orazio, Massimo De Vittorio, Marco Grande</i>	
A METHOD FOR THE ESTIMATION OF THE TIMING OF HEART SOUND COMPONENTS THROUGH BLIND SOURCE SEPARATION IN MULTI-SOURCE PHONOCARDIOGRAPHY	308
<i>Noemi Giordano, Marco Knaflitz</i>	
UPPER LIMBS CRANKING FOR POST-STROKE REHABILITATION: A PILOT STUDY ON HEALTHY SUBJECTS	314
<i>Elisa Digo, Stefano Pastorelli, Taian Vieira, Alberto Botter, Laura Gastaldi</i>	
A NEW METHOD FOR DICTIONARY MATRIX OPTIMIZATION IN ECG COMPRESSED SENSING	320
<i>Enrico Picariello, Eulalia Balestrieri, Francesco Picariello, Sergio Rapuano, Ioan Tudosa, Luca De Vito</i>	
ADLS MONITORING BY ACCELEROMETER-BASED WEARABLE SENSORS: EFFECT OF MEASUREMENT DEVICE AND DATA UNCERTAINTY ON CLASSIFICATION ACCURACY	326
<i>Angelica Poli, Lorenzo Scalise, Susanna Spinsante, Annachiara Strazza</i>	

VISION-BASED ASSESSMENT OF BALANCE CONTROL IN ELDERLY PEOPLE	332
<i>Laura Romeo, Roberto Marani, Nicola Lorusso, Maria Teresa Angelillo, Grazia Cicirelli</i>	
IDENTIFICATION OF R-PEAK OCCURRENCES IN COMPRESSED ECG SIGNALS	338
<i>Gennaro Laudato, Rocco Oliveto, Simone Scalabrino, Angela Rita Colavita, Luca De Vito, Francesco Picariello, Ioan Tudosa</i>	
LOW-POWER DISCREETLY-WEARABLE SMART ECG PATCH WITH ON-BOARD ANALYTICS	344
<i>Sandeep S. Mittal, Madina Zabran, Kanad Ghose, James N. Turner</i>	
MEASUREMENT OF LOCAL PULSE WAVE VELOCITY USING FAST ULTRASOUND IMAGING	350
<i>Kumar Abhinav Singh, Ashish Kumar Sahani</i>	
CO AND CO ₂ SENSING BY AL-MG-ZNO BASED CONDUCTOMETRIC SENSOR	355
<i>S. Jaballah, H. Dahman, L. El Mir, G. Neri, N. Donato</i>	
A REAL-TIME TRACKING SYSTEM FOR TREMOR AND TRAJECTORY ESTIMATION IN PARKINSON'S DISEASE AFFECTED PATIENTS	360
<i>L. Ferrigno, G. Miele, F. Milano, A. Rodio, F. Santoni, A. De Angelis, A. Moschitta, P. Carbone, G. Cerro</i>	
A CASE STUDY ABOUT THE LOAD EFFECT ON THE MECHANICAL PERFORMANCES IN A COMMERCIAL WBV PLATFORM FOR CLINICAL APPLICATIONS	366
<i>Francesco Orsini, Andrea Scorza, Calogero Foti, Andrea Rossi, Maria Laura Sollini, Silvia Conforto, Simone Ranaldi, Federica Vurchio, Salvatore Andrea Sciuto, Fabio Fuiano, Fabio Botta</i>	
METHODOLOGICAL ISSUES IN THE ASSESSMENT OF MOTOR CONTROL DURING SINGLE-LEG STANCE	371
<i>Marco Ghislieri, Marco Knaflitz, Luciana Labanca, Giuseppe Barone, Laura Bragonzoni, Maria Grazia Benedetti, Valentina Agostini</i>	
A TOOL FOR THE EVALUATION OF HIKIKOMORI RISK IN ITALIAN ADOLESCENTS: A FIRST CONTRIBUTION TO ITS VALIDATION	377
<i>Francesco Sullà, Alice Masi, Roberta Renati, Salvo Bonfiglio, Dolores Rollo</i>	
A 3D PRINTED WEARABLE DEVICE FOR SWEAT ANALYSIS	382
<i>Mahshid Padash, Sandro Carrara</i>	
QUANTITATIVE PERFORMANCE COMPARISON OF DERIVATIVE OPERATORS FOR INTERVERTEBRAL KINEMATICS ANALYSIS	387
<i>Emilio Andreozzi, Maria Agnese Pirozzi, Antonio Fratini, Giuseppe Cesarelli, Paolo Bifulco</i>	
ANAEROBIC FAT TRANSFERS AND EMULSIFIERS FOR AUTOLOGOUS FAT GRAFTING	393
<i>N. I. Khramtsova, S. A. Plaksin, A. Y. Sotskov, D. N. Ponomarev</i>	
MEASUREMENT OF MUSCLE CONTRACTION TIMING FOR PROSTHESIS CONTROL: A COMPARISON BETWEEN ELECTROMYOGRAPHY AND FORCE-MYOGRAPHY	398
<i>Daniele Esposito, Gaetano Dario Gargiulo, Nawadita Parajuli, Giuseppe Cesarelli, Emilio Andreozzi, Paolo Bifulco</i>	
A DYNAMIC APPROACH FOR COMPRESSED SENSING OF MULTI-LEAD ECG SIGNALS	404
<i>Grazia Iadarola, Pasquale Daponte, Francesco Picariello, Luca De Vito</i>	

DEEP MELANOMA CLASSIFICATION WITH K-FOLD CROSS-VALIDATION FOR PROCESS OPTIMIZATION	410
<i>Yali Nie, Laura De Santis, Marco Carratù, Mattias O’Nils, Paolo Sommella, Jan Lundgren</i>	
MAXIMUM FEASIBLE SUBSYSTEM RECOVERY OF COMPRESSED ECG SIGNALS	416
<i>Fereshteh Fakhar Firouzeh, Sreeraman Rajan, John W. Chinneck</i>	
THERMAL AND RGB-D IMAGING FOR NECROTIZING ENTEROCOLITIS DETECTION.....	422
<i>Yangyu Shi, Pierre Payeur, Monique Frize, Erika Bariciak</i>	
ON THE DETECTION OF COLORECTAL POLYPS WITH HIERARCHICAL FINE-TUNING.....	428
<i>Giovanna Pappalardo, Giovanni Maria Farinella</i>	
A TWO-DIMENSIONAL CLINICAL GAIT ANALYSIS PROTOCOL BASED ON MARKERLESS RECORDINGS FROM A SINGLE RGB-DEPTH CAMERA.....	433
<i>Diletta Balta, Massimo Salvi, Filippo Molinari, Giulio Figari, Gabriele Paolini, Ugo Della Croce, Andrea Cereatti</i>	
ATRIAL FIBRILLATION PREDICTOR WITH REJECT OPTION USING BELIEF FUNCTIONS THEORY	439
<i>Mohamed Mroueh, Farah Mourad-Chehade, Fahed Abdallah</i>	
FORCE SENSITIVITY DETERMINATION OF ARTIFICIAL MASTOID USED FOR AUDIOMETRIC BONE-CONDUCTION MEASUREMENTS	445
<i>Baki Karaböce</i>	
FLUORESCENCE SIGNAL-TO-NOISE RATIO ENHANCED BY OFF-PLANE EXCITATION FOR QUANTITATIVE PCR DEVICE.....	450
<i>Liang-Chieh Chao, Hsin-Yi Tsai, Cheng-Ru Li, Kuo-Cheng Huang, Yu-Hsuan Lin, Dar-Bin Shieh</i>	
CALIBRATION STANDARD FOR IMPULSE ENERGY OF DEFIBRILLATOR AND DEFIBRILLATOR ANALYZER	456
<i>Wei Zhao, Haiming Shao, Huanghui Zhang</i>	
DEEP LEARNING TO SEGMENT LIVER METASTASES ON CT IMAGES: IMPACT ON A RADIOMICS METHOD TO PREDICT RESPONSE TO CHEMOTHERAPY	461
<i>Valentina Giannini, Arianna Defeudis, Samanta Rosati, Giovanni Cappello, Lorenzo Vassallo, Simone Mazzetti, Jovana Panic, Daniele Regge, Gabriella Balestra</i>	
ANALYSING PERFORMANCES OF HEART RATE VARIABILITY MEASUREMENT THROUGH A SMARTWATCH	466
<i>Nicole Morresi, Sara Casaccia, Matteo Sorcinelli, Marco Arnesano, Gian Marco Revel</i>	
PSYCHOMETRIC SCALES IN CLINICAL PSYCHOPHARMACOLOGY TRIALS: THE EXCESS OF POSSIBLE CLINICAL SYMPTOM PROFILES	472
<i>Eraldo Francesco Nicotra, Daniele Lecca, Giorgio Marchese</i>	
MEASURING IMMEDIATE EFFECTS OF PATELLAR TAPING ON BALANCE KINEMATICS	477
<i>Ilaria Conforti, Stefano Fiore, Iliaria Mileti, Lorenzo Dinia, Fabio Mangini, Fabrizio Frezza, Zaccaria Del Prete, Eduardo Palermo</i>	
EFFECTS OF STRETCHING ON THE FRACTAL DIMENSION OF RECTUS FEMORIS AND VASTUS MEDIALIS MUSCLES	483
<i>Necla Ozturk, Haris Begovic, Pinar Demir, Suha Yagcioglu, Filiz Can</i>	

INFLUENCE OF CLINICAL FEATURES OF THE SPINE ON GAIT ANALYSIS IN ADOLESCENT WITH IDIOPATHIC SCOLIOSIS.....	489
<i>Ilaria Bortone, Andrea Piazzolla, Domenico Buongiorno, Davide Bizzoca, Pietro Fiore, Vitoantonio Bevilacqua, Biagio Moretti</i>	
CHALLENGES WITH AUDIO CLASSIFICATION USING IMAGE BASED APPROACHES FOR HEALTH MEASUREMENT APPLICATIONS.....	495
<i>Madison Cohen-McFarlane, Rafik Goubran, Bruce Wallace</i>	
FEASIBILITY INVESTIGATION OF LOW-COST MICROWAVE NEEDLE APPLICATOR FOR THERMAL ABLATION CANCER THERAPY	500
<i>Vincenza Portosi, Antonella Maria Loconsole, Marcello Valori, Valeria Marrocco, Francesco Bonelli, Giuseppe Pascazio, Vito Lampignano, Antonella Fasano, Roberto Lorusso, Francesco Prudeniano</i>	
A STUDY ON THE SUBJECT AND LOCATION SPECIFICITY IN REFLECTANCE BASED SPO ₂ ESTIMATION USING R-VALUE BASED CALIBRATION CURVE	506
<i>Arsath P. S Mohamed Tanveejul, Annamol Alex, S P Preejith, D J Christopher, Balamugesh, Sujith Chandy, Jayaraj Joseph, Mohanasankar Sivaprakasam</i>	
KINECT-BASED WEARABLE PROTOTYPE SYSTEM FOR ATAXIC PATIENTS NEUROREHABILITATION: CONTROL GROUP PRELIMINARY RESULTS	512
<i>Michela Franzo, Simona Pascucci, Mariano Serrao, Franco Marinozzi, Fabiano Bini</i>	
APPLICABILITY OF MULTI-MODEL DATABASES FOR ACCESSIBLE INDOOR NAVIGATION.....	518
<i>Gabriella Simon-Nagy, Rita Fleiner, Annamária Várkonyi-Kóczy</i>	
A LABORATORY SET-UP FOR EXPERIMENTATION WITH THE CUFFLESS BLOOD PRESSURE MEASUREMENT	523
<i>Ireneusz Jablonski, Grzegorz Glomb, Rosario Morello</i>	
HOSÈ: HOSPITAL SECURITY - HOW TO MAKE THE SURGICAL SITE SAFER USING RFID BLOCKCHAIN AND BIOMETRIC TECHNIQUES	529
<i>Giuseppe Mastronardi, Sabina Ilaria Tatò</i>	
DESIGN AND FABRICATION OF AN EGFET BASED CHEMICAL SENSOR USING TRANSISTOR ASSOCIATION TECHNIQUE	535
<i>S. A. Pullano, M. Greco, S. A. Fiorillo, I. Mahbub, N. T. Tasneem, S. Shamsir, S. K. Islam</i>	
AN ACCURATE EEGNET-BASED MOTOR-IMAGERY BRAIN-COMPUTER INTERFACE FOR LOW-POWER EDGE COMPUTING.....	540
<i>Xiaying Wang, Michael Hersche, Batuhan Tömekce, Burak Kaya, Michele Magno, Luca Benini</i>	
A PLANTAR PRESSURE BIOFEEDBACK M-HEALTH SYSTEM FOR STROKE PATIENTS	546
<i>Giulia Baldazzi, Grazia Krizia Masciavè, Elisa Gusai, Andrea Zedda, Salvatore Spanu, Eleonora Sulas, Luigi Raffo, Danilo Pani</i>	
A HYBRID DEEP MODEL FOR AUTOMATIC ARRHYTHMIA CLASSIFICATION BASED ON LSTM RECURRENT NETWORKS	551
<i>Adeleh Bitarafan, Afra Amini, Mahdieh Soleymani Baghshah, Hamidreza Khodajou-Chokami</i>	
EXPLORATORY ANALYSIS OF ULTRA-SHORT-TERM HEART RATE VARIABILITY FEATURES IN VIRTUAL REHABILITATION SESSIONS.....	557
<i>Roger Selzler, Andrew Smith, François Charih, Alistair Boyle, Janet Holly, Courtney Bridgewater, Markus Besemann, Dorothyann Curran, Adrian D. C. Chan, James R. Green</i>	

REAL-TIME DRIP INFUSION MONITORING THROUGH A COMPUTER VISION SYSTEM	563
<i>Nicola Giaquinto, Marco Scarpetta, Mattia Alessandro Ragolia, Pietro Pappalardi</i>	
COMPARISON OF MANUAL AND AUTOMATED PRESSURE CALIBRATION METHODS OF MEDICAL PRESSURE CALIBRATOR.....	568
<i>Ahmet Türk, Abdullah Hamarat, Baki Karaböce</i>	
THE PERFORMANCE OF KINECT IN ASSESSING THE SHOULDER JOINT MOBILITY.....	574
<i>Lucio Tommaso De Paolis, Valerio De Luca</i>	
CONSTRUCTION AND SET-UP OF A WHOLE-ROOM INDIRECT CALORIMETER FOR MEASUREMENT OF HUMAN ENERGY METABOLISM	580
<i>Paolo Piaggi, Alberto Landi, Ferruccio Santini, Mirko Marracci</i>	
POTENTIAL FOR AUTONOMOUS LINEAR, CURVILINEAR, AND PHASE DETECTION IN NATURAL CONTEXT PARA SKATING USING IMU SLEDGE MOTION DATA	585
<i>Alicia M. Gal, Travis Douglas, Adrian. D. C. Chan, Dean C. Hay</i>	
A PROTOCOL FOR THE COMPARISON OF REACHING GESTURE KINEMATICS IN PHYSICAL VERSUS IMMERSIVE VIRTUAL REALITY.....	591
<i>Sara Arlati, Noël Keijsers, Giancarlo Ferrigno, Marco Sacco</i>	
NON-CONTACT ANTHROPOMETRIC MEASUREMENTS IN NEWBORN PATIENTS	597
<i>Sara Burini, Paolo Marchionni, Lorenzo Scalise, Susanna Spinsante, Enrica Ferretti, Virgilio Paolo Carnielli</i>	
INNOVATING THE PATIENT CARE PROCESS: THE CASE OF MULTIPLE SCLEROSIS AT CASA SOLLIEVO DELLA SOFFERENZA.....	602
<i>Paolo Emilio Alboini, Piero Cosoli, Maurizio Angelo Leone, Angela Nuzzi, Barbara Scozzi</i>	
TOWARDS A WEARABLE AUGMENTED REALITY VISOR FOR HIGH-PRECISION MANUAL TASKS.....	607
<i>Nadia Cattari, Roberta Piazza, Renzo D'Amato, Benish Fida, Marina Carbone, Sara Condino, Fabrizio Cutolo, Vincenzo Ferrari</i>	
PRELIMINARY VALIDATION OF A MEASUREMENT SYSTEM FOR EMOTION RECOGNITION.....	613
<i>Andrea Apicella, Pasquale Arpaia, Giovanna Mastrati, Nicola Moccaldi, Roberto Prevete</i>	
RECOGNIZING AR-GUIDED MANUAL TASKS THROUGH AUTONOMIC NERVOUS SYSTEM CORRELATES: A PRELIMINARY STUDY	619
<i>Mimma Nardelli, Sara Condino, Shadi Ghiasi, Alejandro Luis Callara, Gianluca Rho, Marina Carbone, Vincenzo Ferrari, Enzo Pasquale Scilingo, Alberto Greco</i>	
A PRELIMINARY QUANTITATIVE EEG STUDY ON AUGMENTED REALITY GUIDANCE OF MANUAL TASKS.....	625
<i>Gianluca Rho, Alejandro Luis Callara, Sara Condino, Shadi Ghiasi, Mimma Nardelli, Marina Carbone, Vincenzo Ferrari, Alberto Greco, Enzo Pasquale Scilingo</i>	
A NOVEL MEASUREMENT TECHNIQUE FOR THE ASSESSMENT OF BEST POSITIVE END-EXPIRATORY PRESSURE IN NEWBORN PATIENT.....	630
<i>Paolo Marchionni, Alessia Galli, Virgilio Paolo Carnielli, Lorenzo Scalise</i>	
PRELIMINARY EXPERIMENTAL IDENTIFICATION OF A FEM HUMAN KNEE MODEL.....	635
<i>Pasquale Arpaia, Federica Crauso, Sabrina Grassini, Simone Minucci, Nicola Moccaldi, Isabella Sannino</i>	

BODY TEMPERATURE MEASUREMENT FROM THE 17TH CENTURY TO THE PRESENT DAYS.....	641
<i>Emma Angelini, Sabrina Grassini, Marco Parvis, Luca Parvis, Andrea Gori</i>	
HEART RATE VARIABILITY ANALYSIS DURING EXERCISE IN HYPOXIA CHAMBER.....	647
<i>Swaathi Venkat, S. P. Preejith, Vignesh Moorthy, S. Arumugam, Vasanthi, K. A. Thiagarajan, Mohanasankar Sivaprakasam</i>	
A CONTENT BASED IMAGE RETRIEVAL APPROACH BASED ON MULTIPLE MULTIMEDIA FEATURES DESCRIPTORS IN E-HEALTH ENVIRONMENT.....	653
<i>Antonio M. Rinaldi, Cristiano Russo</i>	
MAMSIM: A COMPUTATIONAL SOFTWARE PLATFORM FOR MEASURING AND OPTIMIZING IMAGING AND DOSIMETRY PARAMETERS IN SCREEN-FILM AND DIGITAL MAMMOGRAPHY SYSTEMS.....	659
<i>H. Khodajou-Chokami, B. Vosoughi Vahdat, A. Ebrahimi-Khankook, M. Noorvand</i>	
FITTS' EVALUATION OF A DEVELOPED HUMAN-IN-THE-LOOP ASSISTIVE DEVICE.....	665
<i>Rui Azevedo Antunes, Luís Brito Palma</i>	
A FAST AND ACCURATE GATE MODEL FOR SMALL FIELD SCATTERING PROTON BEAM THERAPY.....	671
<i>Elham Piruzan, Naser Vosoughi, Hojjat Mahani</i>	
CHARACTERIZATION OF HEART RATE ESTIMATION USING PIEZOELECTRIC PLETHYSMOGRAPHY IN TIME- AND FREQUENCY-DOMAIN.....	676
<i>Luisa De Palma, Marco Scarpetta, Maurizio Spadavecchia</i>	
ASSESSMENT AND CALIBRATION OF WEARABLE HEART RATE SENSORS USING A FULLY AUTOMATED SYSTEM.....	682
<i>Emanuela Allegretti, Elena Sibilano, Attilio Di Nisio, Anna Maria Lucia Lanzolla, Maurizio Spadavecchia</i>	
NOVEL KINEMATICS INDEXES FOR THE UPPER LIMB REACHING MOVEMENTS EVALUATION WITH ROBOTIC EXOSKELETON.....	688
<i>Luigi Iuppariello, Giuliana Faiella, P. Macias, Mario Cesarelli, M. Nespoli, Fabrizio Clemente</i>	
DEVELOPMENT OF SITE-SPECIFIC BIOMECHANICAL INDICES FOR ESTIMATING INJURY RISK IN CYCLING.....	693
<i>Teodorico Caporaso, Angela Palomba, Stanislao Grazioso, Dario Panariello, Giuseppe Di Gironimo, Francesca Gimigliano, Giovanni Iolascon, Antonio Lanzotti</i>	
PRELIMINARY INVESTIGATION OF RADIATION DOSE SENSORS BASED ON ALUMINUM-DOPED SILICATE OPTICAL FIBERS.....	698
<i>Massimo Olivero, Alessandro Mirigaldi, Wilfried Blanc, Mourad Benabdesselam, Franck Mady, Carlo Molardi, Daniele Tosi, Alberto Vallan, Guido Perrone</i>	
BLOOD MIXERS FOR TRANSFUSION THERAPY: PHOTOPLETHYSMOGRAM APPLICATION FOR BLOOD VELOCITY DETERMINATION.....	703
<i>Lucian Evdochim, Aleksei E. Zhdanov, Vasili I. Borisov, Dragos Dobrescu, Leonid G. Dorosinsky</i>	
DESIGN OF ROBOT-BASED MEASUREMENT SYSTEM FOR THE QUALITY ASSESSMENT OF ULTRASOUND PROBES FOR MEDICAL IMAGING.....	709
<i>Francesco Bertocci, Andrea Grandoni, Lorenzo Francalanci, Alessandro Fabbri</i>	

A LOW-POWER TWO-STAGE ACTIVE RECTIFIER FOR ENERGY HARVESTING APPLICATIONS.....	715
<i>Ana C. R. Ferreira, Rui Carvalho, Zhaochu Yang, J. H. Correia, Tao Dong</i>	
THE CELL-MATRIX INTERPLAY: STIFFNESS AND STRAIN HOMOGENEITY CHARACTERIZATION OF SUBSTRATES FOR ADHERENT CELLS.....	720
<i>Serena Carraro, Ludovica Apa, Enrica Urciuoli, Barbara Peruzzi, Zaccaria Del Prete, Emanuele Rizzuto</i>	
ACCURACY EVALUATION AND CLINICAL APPLICATION OF AN OPTIMIZED SOLUTION FOR MEASURING SPATIO-TEMPORAL GAIT PARAMETERS	726
<i>Ilaria Mileti, Juri Taborri, Livio D'Alvia, Simone Parisi, Maria Chiara Ditto, Clara Lisa Peroni, Marco Scarati, Marta Priora, Stefano Rossi, Enrico Fusaro, Zaccaria Del Prete, Eduardo Palermo</i>	
OPTIMAL FORCE EVALUATION FOR ISOTONIC FATIGUE CHARACTERIZATION IN MOUSE TIBIALIS ANTERIOR MUSCLE	732
<i>Flavia Forconi, Francesca Martelli, Simona Pisu, Antonio Musaro, Emanuele Rizzuto, Zaccaria Del Prete</i>	
ORGANIC SUBSTRATES FOR NOVEL PRINTED SENSORS IN NEURAL INTERFACING: A MEASUREMENT METHOD FOR CYTOCOMPATIBILITY ANALYSIS.....	737
<i>Sarah Tonello, Giada Giorgi, Simona Pisu, Andrea Cester</i>	
IQPREP KIT: A MILLI-FLUIDIC TEST KIT FOR IMMUNODIAGNOSTICS	743
<i>Ramdayalan Kumarasami, Jayaraj Joseph, Jayaraman Kiruthi Vasan, Sathish Pandidurai, Prabhakar Sithambaram, Mohanasankar Sivaprakasam</i>	
HEART RATE MONITORING UNDER STRESS CONDITION DURING BEHAVIORAL ANALYSIS IN CHILDREN WITH NEURODEVELOPMENTAL DISORDERS	749
<i>Livio D'Alvia, Erika Pittella, Francesca Fioriello, Andrea Maugeri, Emanuele Rizzuto, Emanuele Piuze, Carla Sogos, Zaccaria Del Prete</i>	
HYPERSPECTRAL IMAGING SYSTEM FOR MONITORING LASER-INDUCED THERMAL DAMAGE IN GASTRIC MUCOSA	755
<i>Martina De Landro, Manuel Barberio, Eric Felli, Vincent Agnus, Margherita Pizzicannella, Michele Diana, Paola Saccomandi</i>	
ASSESSMENT OF MOBILITY DEFICIT AND TREATMENT EFFICACY IN ADHESIVE CAPSULITIS BY MEASUREMENT OF KINEMATIC PARAMETERS USING IMU SENSORS.....	761
<i>Miloš Ajčević, Manuela Deodato, Luigi Murena, Aleksandar Miladinovic, Susanna Mezzarobba, Agostino Accardo</i>	
HRV BASED STRESS ASSESSMENT OF INDIVIDUALS IN A WORK ENVIRONMENT	766
<i>B. Vaishali, S. Amalan, S. P. Preejith, Jayaraj Joseph, Mohanasankar Sivaprakasam</i>	
DETECTION OF NEONATAL PATIENT MOTION USING A PRESSURE-SENSITIVE MAT.....	772
<i>Samreen Aziz, Yasmina Souley Dosso, Shermeen Nizami, Kim Greenwood, Joann Harrold, James R. Green</i>	
DETERMINISTIC COMPRESSED DOMAIN ANALYSIS OF MULTI-CHANNEL ECG MEASUREMENTS	778
<i>Dipayan Mitra, Sreeraman Rajan</i>	
BLIND DETERMINISTIC COMPRESSIVE SENSING FOR BIOMEDICAL IMAGES	784
<i>H. Zanddizari, D. Mitra, S. Rajan</i>	

AN INTEGRATED SYSTEM FOR PARKINSON'S DISEASE PATIENTS DIAGNOSIS, USING AFFORDABLE TECHNOLOGY	789
<i>Yor J Castaño-Pino, Domiciano Rincon, Andres Navarro, Valentina Quintana, Maria Camila Gonzalez, Jaime Valderrama, Beatriz Munoz, Jorge Orozco</i>	
ELECTROCHEMICAL BEHAVIOUR OF ADDITIVELY MANUFACTURED TITANIUM FOR BIOMEDICAL APPLICATIONS.....	794
<i>Alessio Gullino, Sabrina Grassini, Emma Angelini, Elisa Padovano, Claudio Badini, Leonardo Iannucci, Marco Parvis</i>	
A DEEP LEARNING APPROACH FOR MOOD RECOGNITION FROM WEARABLE DATA	799
<i>Giuseppe Romano Tizzano, Matteo Spezialetti, Silvia Rossi</i>	
CLASSIFYING PATIENTS AFFECTED BY PARKINSON'S DISEASE INTO FREEZERS OR NON-FREEZERS THROUGH MACHINE LEARNING	804
<i>Carlo Ricciardi, Marianna Amboni, Chiara De Santis, Gianluca Ricciardelli, Giovanni Improta, Giuseppe Cesarelli, Giovanni D'Addio, Paolo Barone</i>	
ADAPTIVE IMU-BASED CALIBRATION OF THE CENTER OF JOINTS FOR MOVEMENT ANALYSIS: ONE CASE STUDY.....	810
<i>Sara García De Villa, Ana Jiménez Martín, Juan Jesús García Domínguez</i>	
ROBOTIC AUTISM REHABILITATION BY WEARABLE BRAIN-COMPUTER INTERFACE AND AUGMENTED REALITY	816
<i>Pasquale Arpaia, Carmela Bravaccio, Giuseppina Corrado, Luigi Duraccio, Nicola Moccaldi, Silvia Rossi</i>	
PATIENT POSITIONING IN RADIOTHERAPY	822
<i>Wei Guo, Ralf Müller-Polyzou, Zhen Chen, Nicolas Meier, Anthimos Georgiadis</i>	
SYMBOLIC LOCALIZATION OF INSTITUTIONALIZED PATIENTS FOR DETECTION OF DAILY LIVING ACTIVITIES	828
<i>Ismael Miranda Gordo, Ana Jiménez Martín, David Gualda Gómez, Juan Jesús García Domínguez, Sara García De Villa</i>	
PORTABLE SYSTEM FOR THE FUNCTIONAL ASSESSMENT OF OLDER ADULTS.....	833
<i>Juan Jesús García Domínguez, Ana Jiménez Martín, José M. Villadangos Carrizo, Sergio Lluva Plaza, Sergio Humanes López, Sergio Martín Serrano, Sara García De Villa</i>	
NEONATAL FACE TRACKING FOR NON-CONTACT CONTINUOUS PATIENT MONITORING	839
<i>Yasmina Souley Dosso, Samreen Aziz, Shermeen Nizami, Kim Greenwood, Joann Harrold, James R. Green</i>	

Author Index