



# MeMeA 2020 CONFERENCE PROGRAM

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## Welcome Message from the Chairpersons

On behalf of the organizing committee, we cordially welcome you to the 15<sup>th</sup> edition of the IEEE International Symposium on Medical Measurements and Application – MeMeA 2020.

MeMeA event started in 2006 in Italy with a workshop dedicated to all aspects of interaction between the measurement & instrumentation and the medical fields and, over the years, has developed into an important symposium, which collects the international community of researchers from academia and industry interested in health care and medical measurements.

Since then, the MeMeA was held in Warsaw, Poland, in 2007, Ottawa, Canada, in 2008 and 2010, and Cosenza, Italy, in 2009. The number of attendees grew in the years until, in 2011, the Workshop became a Symposium, first organized in Bari, Italy and then held in Budapest, Hungary, in 2012, Gatineau, Canada, in 2013, Lisbon, Portugal, in 2014, Turin, Italy, in 2015, Benevento, again in 2016, and then Rochester, Minnesota, USA, in 2017, Rome, Italy, in 2018 and last year it was held in Istanbul, Turkey.

This year, we were expected to meet again in Italy, in Bari, for the MeMeA 2020. Unfortunately, due to the COVID-19 pandemic, which has been defined by the World Health Organization as a global health crisis, the Symposium has been moved to online mode.

The online event is allowing us to reach a wider audience in times of travel restrictions, while maintaining the high-quality content MeMeA is known for. This way the MeMeA community can continue to stay together and grows, hoping to have soon the possibility to meet again in person to establish stronger relations and research collaborations.

MeMeA 2020 attendees will have the possibility to access the MeMeA2020 virtual platform (URL: [2020.memea-virtual.org](http://2020.memea-virtual.org)) for 1 month, from June, 1<sup>st</sup> to July, 1<sup>st</sup> 2020, to see the presentations of the more than 150 papers accepted after the rigorous reviewing process which always characterized our Symposium.

The platform will give attendees from Europe, Asia, Middle East, Canada, United States and Latin America and Australia the possibility to stay in contact, providing a common ground for researchers to share their findings about the medical measurements and applications.

With this aim MeMeA 2020 includes as in the past editions more the 15 topics, such as bioengineering and rehabilitation, sensors and devices for medical measurements, biosignal processing, Internet of Things (IoT) in medicine, which provides up-to-date discussion on cutting-edge issues in medical measurements.

Moreover, the Symposium includes a significant number of Special Sessions, application-oriented to instrumentation and measurements for movement analysis in clinical setting, measurement and data analysis in microfluidics devices, advances in biomedical sensors, instrumentation and measurements for augmented reality and brain computer interface, as well as devoted to identifying paths to promote quality of life and well-being in the life span and measurements in medicine in the past. We would like to thank the organizers of the special sessions for their cooperation and support to the conference organization.

Eventually, a Student Showcase devoted to Students and Young Professionals is organized for the first time at MeMeA. It offers an awesome opportunity for every student for building a strong professional and international network and improve networking skills.

Two keynote speeches will be given by experts in the fields of medicine and medical measurements and applications: Prof. Pasquale Arpaia from the University of Napoli Federico II, Italy and Prof. Francesco Giorgino from University of Bari Aldo Moro, Italy. We are honored to have them as plenary speakers and thank them in advance for attending to our conference to share their knowledge and experiences with us.

Following the positive experience of previous MeMeA editions, the “Domenico Grimaldi” Best Paper Award, the Best Student Paper Award and the Best Women in Engineering Paper Award will be granted on the basis of the paper classification provided by Technical Program Committee members and of the presentation quality.

Furthermore, the researches on bio-chemical sensors and sensors in diagnostic techniques for medicine presented at MeMeA 2020 drew the attention of the colleagues of the IEEE Sensors Council Italy Chapter, who decided to award the Best Paper on “Sensors for health and medicine” accepted to the Symposium.

The *MeMeA 2020 Special Issue of IEEE Transactions on Instrumentation and Measurement* has also been organized. It aims to promote the best results presented at the Symposium, and it will be published in 2020. The MeMeA 2020 Special Issue will contain technically extended papers selected on the basis of the results of regular peer review of the manuscripts submitted for consideration by the participants of the Symposium.

We would specially thank the Technical Program Committee Members and the Reviewers who contributed to make the outstanding program of this year's edition possible. Finally, a special thanks goes to the Authors, whose research and development efforts are presented during the MeMeA 2020.

Stay safe! Welcome to MeMeA 2020!

### General Chairs



**Anna Lonzalla**  
Politecnico di Bari, Italy



**Sabrina Grassini**  
Politecnico di Torino, Italy

# Organizing Committee

## General Chairs

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Sabrina Grassini, Politecnico di Torino, Torino, Italy

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Mattia Alessandro Ragolia, Politecnico di Bari, Bari, Italy  
Marco Scarpetta, Politecnico di Bari, Bari, Italy  
Leila Es Sebar, Politecnico di Torino, Torino, Italy

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Pasquale Daponte (Chair), Università del Sannio, Italy  
Aime Lay Ekuakille, Università del Salento, Italy  
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Marco Parvis, Politecnico di Torino, Italy  
Emil Petriu, University of Ottawa, Canada  
Octavian Postolache, Instituto Universitário de Lisboa and Instituto de Telecomunicações, Lisboa, Portugal  
Sreeraman Rajan, Defence Research and Development Canada-Ottawa, Canada  
Sergio Rapuano (Secretary), Università del Sannio, Italy  
Mario Savino, Politecnico di Bari, Italy  
Wendy van Moer, Vrije Universiteit Brussel, Belgium  
Annamaria Varkony-Koczy, Obuda University, Hungary  
Zaccaria Del Prete, La Sapienza University of Rome, Italy  
Lorenzo Scalise, Università Politecnica delle Marche, Ancona, Italy  
Anna Lanzolla, Politecnico di Bari, Bari, Italy  
Sandro Carrara, EPFL, Lausanne, Switzerland  
Kevin Bennett, Mayo Clinic, Minnesota, United States  
Max Cortner, Boston Scientific, Minnesota, United States

## Conference Management

Conference Catalysts, LLC

## MeMeA 2020 Reviewers

A special thank goes to all reviewers for their important contribution to the scientific program.

Adrian D.C. Chan  
Aime' Lay-Ekuakille  
Alberto Vallan  
Alessandro Massaro  
Alessio Gullino  
Anna Maria Lucia Lanzolla  
Annamária R. Várkonyi-Kóczy  
Anthony Damini  
Antonella Maria Loconsole  
Antonio Esposito  
Attilio Di Nisio  
Aydin Akan  
Baki Karaböce  
Bruce Wallace  
Chao Tan  
Cristian Fosalau  
Eduardo Palermo  
Egidio De Benedetto  
Emiliano Schena  
Emma Paola Angelini  
Eranga Ukwatta  
Eugenio Martinelli  
Filippo Attivissimo  
Francesco Adamo  
Francesco Di Nardo  
Francesco Lamonaca  
Francesco Picariello  
Gianluca Mazzilli  
Giovanni D'Addio  
Gregorio Andria  
Hilmi R Dajani  
Hüseyin Okan Durmuş  
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Pasquale Daponte  
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Salvatore Andrea Pullano  
Sara Casaccia  
Simone Corbellini  
Susanna Spinsante  
Vitoantonio Bevilacqua  
Yuu Ono

## Special Sessions and Student Showcase Organizers

### **SPS-1 Measurements and Data Analysis in Microfluidics Devices**

**Organizers:** Eugenio Martinelli, University of Rome Tor Vergata, Italy  
Arianna Mencattini, University of Rome Tor Vergata, Italy

### **SPS-2 Instrumentation and Measurements for Movement Analysis in Clinical Settings**

**Organizers:** Giovanni D'Addio, Biomedical Dpt. of IRCCS Maugeri, Italy  
Mario Cesarelli, University "Federico II" of Naples, Italy

### **SPS-3 Advances in biomedical sensors and non-invasive sensor-based diagnostic techniques**

**Organizers:** Rosario Morello, University Mediterranea of Reggio Calabria, Italy  
Ruqiang Yan, Xi'an Jiaotong University, China

### **SPS-4: Chemical Sensors for Biomedical Applications**

**Organizers:** Luca Lombardo, Politecnico di Torino, Italy  
Nicola Donato, Università di Messina, Italy

### **SPS-5: Instrumentation and Measurements for Augmented Reality and Brain Computer Interface in Medicine**

**Organizers:** Egidio De Benedetto, Università del Salento, Italy  
Nicola Moccaldi, University of Naples Federico II, Italy

### **SPS-6: Impedance spectroscopy methods and systems at the forefront of medical field innovations**

**Organizers:** Pasquale Arpaia, University of Naples Federico II, Italy  
Mauro D'Arco, University of Naples Federico II, Italy

### **SPS-7: Identifying paths to promote quality of life and well-being in the life span: The assessment of human functions in neurosciences, psychology and psychiatry**

**Organizers:** Maria Pietronilla Penna, University of Cagliari, Italy  
Pier Luigi Marconi, Artemis Neurosciences, Roma, Italy  
Eraldo Francesco Nicotra, University of Cagliari, Italy  
Mirian Agus, University of Cagliari, Italy

### **SPS-8: Measurements for medicine in the past, an interdisciplinary approach**

**Organizers:** Emma Angelini, Politecnico di Torino, Italy  
Giulia Belgioioso, University of Salento, Italy

### **Student Showcase at MeMeA2020**

**Organizer:** Filippo Attivissimo, Politecnico di Bari, Italy

# Best Paper Awards

## **Domenico Grimaldi Best Paper Award**

The "Domenico Grimaldi Best Paper Award" will be awarded to the best paper presented at the conference.

The best paper will be selected based on the technical quality and the review process of the initial full paper, as well as on the effectiveness and clarity of the virtual presentation.

## **Best Student Paper Award**

The Best Student Paper Award will be assigned to a paper whose first author is a student (undergraduate/PhD student) and marked as student paper on EDAS. The paper must be presented by the student.

The Best Student Paper will be selected based on the technical quality and the review process of the initial full paper, as well as on the effectiveness and clarity of the virtual presentation.

## **Best Women in Engineering Paper Award**

The Best Women in Engineering Paper Award will be assigned to a paper, whose first author is a woman who present it.

The Best Women in Engineering Paper will be selected based on the technical quality and the review process of the initial full paper as well as on the effectiveness and clarity of the virtual presentation.

## **Sensors Council Best Paper Award @ MeMeA 2020**

The IEEE Sensors Council Italy Chapter recognizes distinguished papers submitted to MeMeA 2020 through a presentation of an Award for the Best Paper on "Sensors for Health and Medicine" accepted and presented to the Symposium.

The Sensors Council Best Paper will be selected by a Committee of 5 members selected by the Sensor Council Italy Chapter. The selection will be based on the technical quality and the review process of the initial full paper as well as on the effectiveness and clarity of the virtual presentation. The paper must be presented by an IEEE member.

*All winners will be notified during the Symposium by email and announced by a virtual presentation, which will be uploaded on the MeMeA 2020 virtual conference platform within July, 1, 2020. The awards winners will be also published on the MeMeA 2020 website.*

## Keynote Speakers

**Pasquale Arpaia, Professor, University of Napoli Federico II**

**“Wearable Traingless Brain Computer Interfaces in Augmented Reality-based Health 4.0”**



Pasquale Arpaia took Master Degree and PhD in Electrical Engineering at University of Napoli Federico II (Italy), where he is full professor of Instrumentation and Measurements. He is also Team Manager at European Organization for Nuclear Research (CERN).

He is Associate Editor of the Institute of Physics Journal of Instrumentation, Elsevier Journal Computer Standards & Interfaces, MDPI Instruments. He was Editor at Momentum Press of the Book Collection “Emerging Technologies in Measurements, Instrumentation, and Sensors”. In last years, he was scientific responsible of more than 30 awarded research projects in cooperation with industry, with related patents and international licenses, and funded 4 academic spin off companies. He acted as scientific evaluator in several international research call panels. He has served as organizing and scientific committee member in several IEEE and IMEKO Conferences. He is plenary speaker in several scientific conferences.

His main research interests include digital instrumentation and measurement techniques for particle accelerators, evolutionary diagnostics, distributed measurement systems, ADC modelling and testing. In these fields, he published several books, and about 280 scientific papers in journals and national and international conference proceedings. His PhD students were awarded in 2006 and 2010 at IEEE I2MTC, as well as in 2016 and 2012, 2018 at IMEKO TC-10 and World Conferences, respectively.

**Francesco Giorgino, Professor, University of Bari Aldo Moro, Bari, Italy**

**“The Use Of New Technologies to Improve Glucose Control in People With Diabetes”**



Francesco Giorgino is Professor of Endocrinology and Metabolism and Chairman of the Department of Emergency and Organ Transplantation at the University of Bari Aldo Moro. He is also Chief of the Division of Endocrinology at the University Hospital Policlinico Consorziale, Bari, Italy. Professor Giorgino received his medical degree from the University of Bari Aldo Moro and his PhD from the University of Naples Federico II, Italy. After completing his clinical and research training in endocrinology and metabolism at the University of Catania, Italy, he worked for several years at the Joslin Diabetes Center and Harvard Medical School, Boston, MA, USA, first as a postdoctoral research fellow and then as a visiting scientist.

Professor Giorgino has received distinguished scientific awards from various international and national institutions, including the Juvenile Diabetes Research Foundation International Fellowship (New York, NY, USA), the Mary K. Iacocca Foundation Fellowship (Boston, MA, USA), the Glaxo-Wellcome Award from the European Association for the Study of Diabetes, the Aldo Pinchera and Cassano Awards from the Italian Society of Endocrinology, and the Alcmeone Award from the Italian Society of Diabetology. He has been the Italian delegate in various European Commission Cooperation in Science and Technology actions for diabetes research. Professor Giorgino has served on many national commissions and national boards, including the Executive Committees and Scientific Committees of the Italian Society of Diabetology and of the Italian Society of Endocrinology.

He is currently President of the Italian Society of Endocrinology. He is, or has been, an editorial board member for the following journals: PLoS ONE, Journal of Endocrinology, Endocrinology, Journal of Endocrinological Investigation, Adipocyte, Acta Diabetologica, Cardiorenal Medicine, and Diabetes/Metabolism Research and Reviews. He has published more than 200 original and review articles in prestigious scientific journals and has been an invited speaker at many national and international meetings. Professor Giorgino’s research interests include the mechanisms leading to insulin resistance and beta-cell dysfunction in Type 2 diabetes with a particular focus on skeletal muscle metabolism and organ cross-talk, inflammation and lipotoxicity, and the effects of diabetes drugs on pancreatic islets and the cardiovascular system. He has also been involved in several clinical trials investigating the effects of glucose-lowering drugs in individuals with Type 2 diabetes. He has an H-index of 56 and over 10,000 citations (Google Scholar).



# Technical Program

## Student Showcase A

**Chairs:** Filippo Attivissimo (Politecnico di Bari, Italy), Emiliano Schena (University Campus Bio-Medico of Rome, Italy)

### Design, 3D printing and characterization of a soft actuator with embedded strain sensor

Gianni Stano and Gianluca Percoco (Polytechnic of Bari, Italy)

### Assessment of position repeatability of surgical EM tracking systems employing magnetic field model

Mattia Alessandro Ragolia (Politecnico di Bari, Italy)

Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)

Attilio Di Nisio (Politecnico di Bari, Italy)

Filippo Attivissimo (Politecnico di Bari, Italy)

### Design of a surface acoustic wave resonator for sensing platform

Giovanni Niro (Politecnico di Bari, Italy)

Ilaria Marasco (Politecnico di Bari, Italy)

Francesco Rizzi (Istituto Italiano di Tecnologia, Italy)

Antonella D'Orazio (Politecnico di Bari, Italy)

Massimo De Vittorio (Istituto Italiano di Tecnologia, Italy)

Marco Grande (Politecnico di Bari, Italy)

### A 3D printed wearable device for sweat analysis

Mahshid Padash (EPFL, Switzerland)

Sandro Carrara (EPFL, Switzerland)

### On the Detection of Colorectal Polyps with Hierarchical Fine-Tuning

Giovanna Pappalardo (University of Catania, Italy)

Giovanni Maria Farinella (University of Catania, Italy)

### Feasibility investigation of low-cost microwave needle applicator for thermal ablation cancer therapy

Vincenza Portosi (Politecnico di Bari, Italy)

Antonella Maria Loconsole (Politecnico di Bari, Italy)

Marcello Valori (CNR, Italy)

Valeria Marrocco (CNR, Italy)

Francesco Bonelli (Politecnico di Bari, Italy)

Giuseppe Pascazio (Politecnico di Bari, Italy)

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Antonella Fasano (Neetra Srl, Italy)

Roberto Lorusso (Neetra Srl, Italy)

Francesco Prudeniano (Politecnico di Bari, Italy)

## Student Showcase B

**Chairs:** Filippo Attivissimo (Politecnico di Bari, Italy), Emiliano Schena (University Campus Bio-Medico of Rome, Italy)

### An Accurate EEGNet-based Motor-Imagery Brain-Computer Interface for Low-Power Edge Computing

Xiaying Wang (ETH Zurich, Switzerland)

Michael Hersche (ETH Zurich, Switzerland)

Batuhan Tömekce (ETH Zurich, Switzerland)

Burak Kaya (ETH Zurich, Switzerland)

Michele Magno (ETH Zurich, Switzerland)

Luca Benini (ETH Zurich, Switzerland)

### Innovating the patient care process: the case of multiple sclerosis at Casa Sollievo della Sofferenza

Paolo Emilio Alboini (Casa Sollievo della Sofferenza, Italy)

Piero Cosoli (Openwork Srl, Italy)

Maurizio Leone (Casa Sollievo della Sofferenza, Italy)

Angela Nuzzi (Politecnico di Bari, Italy)

Barbara Scozzi (Politecnico di Bari, Italy)

### Fitts' Evaluation of a Developed Human-in-the-Loop Assistive Device

Rui Azevedo Antunes (Escola Superior de Tecnologia de Setúbal - Polytechnic Institute of Setúbal, Portugal)

Luis Brito Palma (Universidade Nova de Lisboa & UNL - FCT, Uninova, Portugal)

### Characterization of Heart Rate Estimation Using Piezoelectric Plethysmography in Time- and Frequency-domain

Luisa De Palma (Politecnico di Bari, Italy)

Marco Scarpetta (Polytechnic University of Bari, Italy)

Maurizio Spadavecchia (Polytechnic University of Bari, Italy)

### Assessment and calibration of wearable heart rate sensors using a fully automated system

Emanuela Allegretti (Politecnico di Bari, Italy)

Elena Sibilano (Politecnico di Bari, Italy)

Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)

Maurizio Spadavecchia (Polytechnic University of Bari, Italy)

Attilio Di Nisio (Politecnico di Bari, Italy)

## **SS 1- Microfluidic devices, chemical sensors and impedance spectroscopy methods**

**Chairs:** Nicola Donato (University of Messina, Italy), Arianna Mencattini (University of Rome Tor Vergata, Italy)

### **iQPrep Kit: A milli-fluidic test kit for immunodiagnosics**

Ramdayalan Kumarasami, Jayaraj Joseph, Jayaraman Kiruthi Vasan, Sathish Pandidurai and Prabhakar Sithambaram (Healthcare Technology Innovation Centre, IIT Madras, India); Mohanasankar Sivaprakasam (IIT Madras, India)

### **A microfluidic device for shape measurement in red blood cells (RBCs)**

Arianna Mencattini, Davide Di Giuseppe and Michele D'Orazio (University of Rome Tor Vergata, Italy); Valeria Rizzuto (Institute for Bioengineering of Catalonia, Italy)

M. M. Manu Pereira (Vall d'Hebron Research Institute, Italy)

Maria Colomba Comes (University of Rome Tor Vergata, Italy)

Maria José Lopez-Martinez and Josep Samitier (Institute for Bioengineering of Catalonia, Spain)

Eugenio Martinelli (Roma Tor Vergata University, USA)

### **Ethanol breath measuring system**

Luca Lombardo and Marco Parvis (Politecnico di Torino, Italy)

Nicola Donato (University of Messina, Italy)

Sabrina Grassini and Alessio Gullino (Politecnico di Torino, Italy)

### **CO and CO<sub>2</sub> sensing by Al-Mg-ZnO based conductometric sensor**

Soumaya Jaballah, H. Dahman and L. El Mir (Gabes University, Tunisia)

Giovanni Neri and Nicola Donato (University of Messina, Italy)

### **Design and Fabrication of an EGFET Based Chemical Sensor Using Transistor Association Technique**

Salvatore Andrea Pullano (University Magna Graecia of Catanzaro, Italy)

Ifana Mahbub (The University of North Texas, USA)

Samira Shamsir (University of Missouri-Columbia, USA)

Nishat Tarannum Tasneem (University of North Texas, USA)

Marta Greco (University Magna Graecia of Catanzaro, Italy)

Syed Islam (University of Missouri-Columbia, USA)

Antonino S. Fiorillo (University of Magna Graecia, Italy)

### **Preliminary experimental identification of a FEM human knee model**

Pasquale Arpaia and Federica Crauso (University of Naples Federico II, Italy)

Sabrina Grassini (Politecnico di Torino, Italy)

Simone Minucci (University of Tuscia, Italy)

Nicola Moccaldi (University of Naples Federico II, Italy)

Isabella Sannino (Polytechnic of Turin, Italy)

## **SS 2 Instrumentation and Measurements for Movement Analysis in Clinical Settings- A**

**Chairs:** Mario Cesarelli (University of Naples Federico II, Italy), Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

### **Backpack Influence on Kinematic Parameters related to Timed Up and Go (TUG) Test in School Children**

Leandro Donisi, Armando Coccia and Federica Amitrano (University of Naples Federico II, Italy)

Luca Mercogliano (N.I.T., Italy)

Giuseppe Cesarelli (Center for Advanced Biomaterials for Healthcare Sciences, Italy)

Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

### **Experimental Development and Validation of an E-Textile Sock Prototype**

Federica Amitrano, Leandro Donisi and Armando Coccia (University of Naples Federico II, Italy)

Arcangelo Biancardi (S. Maugeri Foundation, Italy)

Gaetano Pagano (ICS Maugeri SB of Bari, Italy)

Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

### **Rehabilitation Outcome in Patients undergone Hip or Knee Replacement Surgery using Inertial Technology for Gait Analysis**

Gaetano Pagano (ICS Maugeri SB of Bari, Italy)

Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

Maurizio De Campi (ICS Maugeri SPA SB Bari, Italy)

Leandro Donisi (University of Naples Federico II, Italy)

Arcangelo Biancardi (S. Maugeri Foundation, Italy)

Mario Cesarelli (University of Naples Federico II, Italy)

### **Repeatability of Spatio-Temporal Gait Measurements in Parkinson's Disease**

Armando Coccia (University of Naples Federico II, Italy)

Bernardo Lanzillo (S. Maugeri Foundation, Italy)

Leandro Donisi and Federica Amitrano (University of Naples Federico II, Italy)

Giuseppe Cesarelli (Center for Advanced Biomaterials for Healthcare Sciences, Italy)

Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

### **Machine learning can detect the presence of Mild cognitive impairment in patients affected by Parkinson's Disease**

Carlo Ricciardi (University of Naples Federico II, Italy)

Marianna Amboni and Chiara De Santis (University of Salerno, Italy)

Gianluca Ricciardelli (Azienda Ospedaliera Universitaria OO. RR. San Giovanni di Dio Ruggi, Italy); Giovanni Improta (University of Naples Federico II, Italy)

Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telese, Italy)

Sofia Cuoco, Marina Picillo and Paolo Barone (University of Salerno, Italy)

Mario Cesarelli (University of Naples Federico II, Italy)

### **A quantitative analysis of muscular co-activation on EMG signals in spastic patients treated with Botulinum toxin**

Carlo Ricciardi (University of Naples Federico II, Italy)

Luigi Iuppariello (Santobono-Pausilipon Children's Hospital, Italy)

Gianluca Ricciardelli (Azienda Ospedaliera Universitaria OO. RR. San Giovanni di Dio Ruggi, Italy)

Marianna Amboni (University of Salerno, Italy)

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Giovanni Cannaviello (University of Salerno, Italy)

Mario Cesarelli (University of Naples Federico II, Italy)

## **SS 2 Instrumentation and Measurements for Movement Analysis in Clinical Settings- B**

**Chairs:** Mario Cesarelli (University of Naples Federico II, Italy), Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telese, Italy)

### **A Regression Approach to Assess Bone Mineral Density of Patients undergoing Total Hip Arthroplasty through Gait Analysis**

Marco Recenti (Reykjavik University, Iceland)

Carlo Ricciardi (University of Naples Federico II, Italy)

Romain Aubonnet (Reykjavik University, Iceland)

Luca Esposito (University of Naples Federico II, Iceland)

Halldór Jónsson Jr (Landspítali Hospital, Iceland)

Paolo Gargiulo (Institute of Biomedical and Neural Engineering, Reykjavik University, Iceland)

### **Global lower limb muscle coactivation during walking in trans-femoral and trans-tibial amputees**

Antonella Tatarelli (University of Rome Sapienza & INAIL, Italy)

Mariano Serrao (University of Rome Sapienza, Italy)

Tiwana Varrecchia (INAIL, Italy)

Lorenzo Fiori (University of Rome Sapienza, Italy)

Alessio Silveti (INAIL, Italy)

Cristiano De Marchis and Simone Ranaldi (University Roma Tre, Italy)

Francesco Draicchio (INAIL, Italy)

Silvia Conforto (University Roma Tre, Italy)

Alberto Ranavolo (INAIL, Italy)

### **Characterization of a low-cost markerless system for 3D gait analysis**

Erika D'Antonio (Università degli Studi Niccolò Cusano, Italy)

Juri Taborri (University of Tuscia, Viterbo, Italy)

Eduardo Palermo (Sapienza University of Rome, Italy)

Stefano Rossi (University of Tuscia, Italy)

Fabrizio Patané (Niccolò Cusano University, Italy)

### **Can the measurements of leg stability during jump landing predict and monitor anterior cruciate ligament injury? A case report of basketball player**

Luca Molinaro (University of Tuscia, Viterbo & Motustech Srl, Italy)

Juri Taborri (University of Tuscia, Viterbo, Italy)

Adriano Santospagnuolo (Sant'Andrea Hospital, Sapienza University of Rome, Rome, Italy)

Mario Vetrano and Maria Chiara Vulpiani (Sant'Andrea Hospital, Sapienza, University of Rome, Rome, Italy)

Stefano Rossi (University of Tuscia, Italy)

### **Upper limbs cranking for post-stroke rehabilitation: a pilot study on healthy subjects**

Elisa Digo, Stefano Pastorelli, Taian Vieira, Alberto Botter and Laura Gastaldi (Politecnico di Torino, Italy)

### **A real-time tracking system for tremor and trajectory estimation in Parkinson's disease affected patients**

Filippo Milano (University of Cassino and Southern Lazio, Italy)

Gianni Cerro (University of Molise, Italy)

Luigi Ferrigno (University of Cassino, Italy)

Gianfranco Miele (University of Cassino and Southern Lazio, Italy)

Paolo Carbone, Antonio Moschitta, Alessio De Angelis and Francesco Santoni (University of Perugia, Italy)

Angelo Rodio (University of Cassino and Southern Lazio, Italy)

## **SS 2 Instrumentation and Measurements for Movement Analysis in Clinical Settings- C**

**Chairs:** Mario Cesarelli (University of Naples Federico II, Italy), Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telese, Italy)

### **Methodological issues in the assessment of motor control during single-leg stance**

Marco Ghislieri and Marco Knaflitz (Politecnico di Torino, Italy)

Luciana Labanca (Istituto Ortopedico Rizzoli, Italy)

Giuseppe Barone and Laura Bragonzoni (Università degli Studi di Bologna, Italy)

Maria Grazia Benedetti (University of Bologna Istituto Ortopedico Rizzoli, Italy)

Valentina Agostini (Politecnico di Torino, Italy)

### **Quantitative performance comparison of derivative operators for intervertebral kinematics analysis**

Emilio Andreozzi (University of Naples Federico II, Italy)  
Maria Agnese Pirozzi (Italian National Research Council, Italy)  
Antonio Fratini (Aston University, United Kingdom (Great Britain))  
Giuseppe Cesarelli (Center for Advanced Biomaterials for Healthcare Sciences, Italy); Paolo Bifulco ("Federico II" University of Naples, Italy)

### **A two-dimensional clinical gait analysis protocol based on markerless recordings from a single RGB-Depth camera**

Diletta Balta, Massimo Salvi and Filippo Molinari (Politecnico di Torino, Italy)  
Giulio Figari and Gabriele Paolini (GPEM srl, Italy)  
Ugo Della Croce and Andrea Cereatti (University of Sassari, Italy)

### **Influence of clinical features of the spine on Gait Analysis in adolescent with idiopathic scoliosis**

Ilaria Bortone (University of Bari & National Institute of Gastroenterology and Research Hospital Saverio De Bellis, Italy)  
Andrea Piazzolla (Spine Unit, AOUC Policlinico di Bari, Italy)  
Domenico Buongiorno (Polytechnic University of Bari, Italy)  
Davide Bizzoca (University of Bari & Spine Unit, AOUC Policlinico di Bari, Italy)  
Pietro Fiore (Physical Medicine and Rehabilitation Unit AOUC Policlinico di Bari, Italy)  
Vitoantonio Bevilacqua (Politecnico di Bari, Italy)  
Biagio Moretti (University of Bari & Orthopaedic & Trauma Unit, AOUC Policlinico di Bari, Italy)

### **Potential for autonomous linear, curvilinear, and phase detection in natural context para skating using IMU sledge motion data**

Alicia M Gal (OCIBME & Carleton University, Canada)  
Travis Douglas (University of Toronto, Canada)  
Adrian D.C. Chan (Carleton University, Canada)  
Dean Hay (Nipissing University, Canada)

### **Novel kinematics indexes for the upper limb reaching movements evaluation with robotic exoskeleton**

Luigi Iuppariello, Giuliana Faiella and Paola Macias (Santobono-Pausilipon Children's Hospital, Italy)  
Mario Cesarelli (University of Naples Federico II, Italy)  
Maurizio Nespole (Santobono-Pausilipon Children's Hospital, Italy)  
Fabrizio Clemente (CNR - Istituto di Biostrutture e Bioimmagini, Italy)

## **SS 2 Instrumentation and Measurements for Movement Analysis in Clinical Settings- D**

**Chairs:** Mario Cesarelli (University of Naples Federico II, Italy), Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)

### **Development of site-specific biomechanical indices for estimating injury risk in cycling**

Teodorico Caporaso (University of Naples Federico II, Italy); Angela Palomba (University of Campania Luigi Vanvitelli, Italy)  
Stanislao Grazioso, Dario Panariello and Giuseppe Di Gironimo (University of Naples Federico II, Italy)  
Francesca Gimigliano and Giovanni Iolascon (University of Campania Luigi Vanvitelli, Italy)  
Antonio Lanzotti (University of Naples Federico II, Italy)

### **Assessment of mobility deficit and treatment efficacy in adhesive capsulitis by measurement of kinematic parameters using IMU sensors**

Miloš Ajčević, Manuela Deodato, Luigi Murena, Aleksandar Miladinović, Susanna Mezzarobba and Agostino Accardo (University of Trieste, Italy)

### **Classifying patients affected by Parkinson's disease into freezers or non-freezers through machine learning**

Carlo Ricciardi (University of Naples Federico II, Italy)  
Marianna Amboni and Chiara De Santis (University of Salerno, Italy)  
Gianluca Ricciardelli (Azienda Ospedaliera Universitaria OO. RR. San Giovanni di Dio Ruggi, Italy)  
Giovanni Improta (University of Naples Federico II, Italy)  
Giuseppe Cesarelli (Center for Advanced Biomaterials for Healthcare Sciences, Italy)  
Giovanni D'Addio (S. Maugeri Foundation, Rehabilitation Institute of Telesse, Italy)  
Paolo Barone (University of Salerno, Italy)

### **Adaptive IMU-based Calibration of the Center of Joints for Movement Analysis: One Case Study**

Sara García de Villa (University of Alcalá, Spain)  
Ana Jiménez Martín (University of Alcalá, Spain)  
J. Jesús García (University of Alcalá, Spain)

### **Patient Positioning in Radiotherapy**

Anthimos Georgiadis (Leuphana University Lüneburg, Germany)  
Wei Guo, Ralf Mueller-Polyzou, Nicolas Meier and Zhen Chen (Leuphana University of Lüneburg, Germany)

### **Symbolic localization of institutionalized patients for detection of daily living activities**

Ismael Miranda and Ana Jiménez Martín (University of Alcalá, Spain)  
David Gualda Gómez, J. Jesús García and Sara García de Villa (University of Alcalá, Spain)

## **SS 3 - Advances in biomedical sensors and non-invasive sensor-based diagnostic techniques - A**

**Chairs:** Rosario Morello (University Mediterranea of Reggio Calabria, Italy), Ruqiang Yan (Xi'an Jiaotong University, China)

### **An Efficient optimal threshold-based segmentation and classification model for multi-level spinal cord injury detection**

Aime' Lay-Ekuakille and Nicola Ivan Giannoccaro (University of Salento, Italy)  
Mohammad Zia Ur Rahman and Sk Hasane Ahammad (K L University, India)

### **Conductive textile element embedded in a wearable device for joint motion monitoring**

Arianna Carnevale, Carlo Massaroni, Daniela Lo Presti, Joshua Di Tocco, Martina Zaltieri, Domenico Formica and Umile Giuseppe Longo (Università Campus Bio-Medico di Roma, Italy)  
Emiliano Schena (University Campus Bio-Medico of Rome, Italy)  
Vincenzo Denaro (Università Campus Bio-Medico di Roma, Italy)

**A Personalized Assessment Platform for Non-invasive Monitoring of Pain**

Paola Casti, Arianna Mencattini, Joanna Filippi, Michele D'Orazio, Maria Colomba Comes, Davide Di Giuseppe and Eugenio Martinelli (University of Rome Tor Vergata, Italy)

**A Method for the Estimation of the Timing Of Heart Sound Components Through Blind Source Separation in Multi-Source Phonocardiography**

Noemi Giordano and Marco Knaflitz (Politecnico di Torino, Italy)

**Thermal and RGB-D Imaging for Necrotizing Enterocolitis Detection**

Yangyu Shi and Pierre Payeur (University of Ottawa, Canada)

Monique Frize (Carleton University, Canada)

Erika Barciak (Children's Hospital of Eastern Ontario, Canada)

**Atrial fibrillation predictor with reject option using belief functions theory**

Mohamed Mroueh (Lebanese University, Lebanon); Farah Mourad-Chehade (Université de Technologie de Troyes, France); Fahed Abdallah (Université Libanaise, Lebanon)

**SS 3 - Advances in biomedical sensors and non-invasive sensor-based diagnostic techniques - B**

**Chairs:** Rosario Morello (University Mediterranea of Reggio Calabria, Italy), Ruqiang Yan (Xi'an Jiaotong University, China)

**Measuring immediate effects of patellar taping on balance kinematics**

Iliaria Conforti (Sapienza University of Rome, Italy)

Stefano Fiore (Independent Researcher, Italy)

Iliaria Mileti (Sapienza University of Rome, Italy)

Lorenzo Dinia (Sapienza University of Rome, USA)

Fabio Mangini and Fabrizio Frezza (Sapienza University of Rome, Italy)

Zaccaria Del Prete (SAPIENZA University of Rome, Italy)

Eduardo Palermo (Sapienza University of Rome, Italy)

**A Laboratory Set-up for Experimentation with the Cuffless Blood Pressure Measurement**

Ireneusz Jablonski and Grzegorz Glomb (Wroclaw University of Science and Technology, Poland); Rosario Morello (University Mediterranea of Reggio Calabria, Italy)

**Preliminary investigation of radiation dose sensors based on aluminum-doped silicate optical fibers**

Massimo Olivero, Alessandro Mirigaldi and Valentina Serafini (Politecnico di Torino, Italy)

Wilfried Blanc (Université de Nice-Sophia Antipolis, France)

Mourad Benabdesselam (Université de Nice Sophia Antipolis, France)

Franck Mady (Université de Nice-Sophia Antipolis, France)

Carlo Molardi and Daniele Tosi (Nazarbayev University, Kazakhstan)

Alberto Vallan and Guido Perrone (Politecnico di Torino, Italy)

**Accuracy Evaluation and Clinical Application of an Optimized Solution for Measuring Spatio-Temporal Gait Parameters**

Iliaria Mileti (Sapienza University of Rome, Italy)

Juri Taborri (University of Tuscia, Viterbo, Italy)

Livio D'Alvia (Sapienza University of Rome, Italy)

Simone Parisi, Maria Chiara Ditto, Clara Lisa Peroni, Marco Scarati and Marta Priora (Azienda Ospedaliero-Universitaria Città della Salute e della Scienza di Torino, Italy)

Stefano Rossi (University of Tuscia, Italy)

Enrico Fusaro (Azienda Ospedaliero-Universitaria Città della Salute e della Scienza di Torino, Italy)

Zaccaria Del Prete (SAPIENZA University of Rome, Italy)

Eduardo Palermo (Sapienza University of Rome, Italy)

**Organic substrates for novel printed sensors in neural interfacing: a measurement method for cytocompatibility analysis**

Sarah Tonello and Giada Giorgi (University of Padova, Italy)

Simona Pisu (University of Rome La Sapienza, Italy)

Andrea Cester (University of Padova, Italy)

**SS 4 - Instrumentation and Measurements for Augmented Reality and Brain Computer Interface in Medicine - A**

**Chairs:** Egidio De Benedetto (University of Naples, Italy), Nicola Moccaldi (University of Naples Federico II, Italy)

**The performance of Kinect in assessing the shoulder joint mobility**

Lucio T De Paolis (University of Salento, Lecce, Italy)

Valerio De Luca (Corpo O, Campus Ecotekne, Via Monteroni & University of Salento, Italy)

**A protocol for the comparison of reaching gesture kinematics in physical versus immersive virtual reality**

Sara Arlati (Politecnico di Milano & Institute of Intelligent Industrial Technologies and Systems for Advanced Manufacturing - STIIMA Italian National Research Council - CNR, Italy)

Noel Keijsers (Sint Maartenskliniek, The Netherlands)

Giancarlo Ferrigno (Politecnico di Milano, Italy)

Marco Sacco (National Research Council, Italy)

**Towards a Wearable Augmented Reality Visor for High-Precision Manual Tasks**

Nadia Cattari (University of Pisa, Italy)

Roberta Piazza (University of Pisa & EndoCAS Center, Italy)

Renzo D'Amato and Benish Fida (University of Pisa, Italy)

Marina Carbone (University of Pisa - EndoCAS center, Italy)

Sara Condino, Fabrizio Cutolo and Vincenzo Ferrari (University of Pisa, Italy)

#### **Preliminary validation of a measurement system for emotion recognition**

Andrea Apicella (University of Campania Luigi Vanvitelli, Italy)

Pasquale Arpaia, Giovanna Mastrati, Nicola Moccaldi and Roberto Prevete (University of Naples Federico II, Italy)

#### **SS 4 - Instrumentation and Measurements for Augmented Reality and Brain Computer Interface in Medicine - B**

**Chairs:** Egidio De Benedetto (University of Naples, Italy), Nicola Moccaldi (University of Naples Federico II, Italy)

#### **Recognizing AR-guided manual tasks through autonomic nervous system correlates: a preliminary study**

Mimma Nardelli, Sara Condino, Shadi Ghiasi, Alejandro Luis Callara and Gianluca Rho (University of Pisa, Italy)

Marina Carbone (University of Pisa - EndoCAS center, Italy)

Vincenzo Ferrari, Enzo Pasquale Scilingo and Alberto Greco (University of Pisa, Italy)

#### **A preliminary quantitative EEG study on Augmented Reality Guidance of Manual Tasks**

Gianluca Rho, Alejandro Luis Callara, Sara Condino, Shadi Ghiasi and Mimma Nardelli (University of Pisa, Italy)

Marina Carbone (University of Pisa - EndoCAS center, Italy)

Vincenzo Ferrari, Alberto Greco and Enzo Pasquale Scilingo (University of Pisa, Italy)

#### **A Deep Learning Approach for Mood Recognition from Wearable Data**

Giuseppe Romano Tizzano (University of Naples Federico II, Italy)

Matteo Spezialetti (University of L'Aquila, Italy)

Silvia Rossi (University of Naples Federico II, Italy)

#### **Autism Robotic Rehabilitation by wearable Brain-Computer Interface and Augmented Reality**

Pasquale Arpaia (University of Naples Federico II, Italy)

Carmela Bravaccio and Giuseppina Corrado (Federico II University of Naples, Italy)

Luigi Duraccio, Nicola Moccaldi and Silvia Rossi (University of Naples Federico II, Italy)

#### **SS 5 - Identifying paths to promote quality of life and well-being in the life span**

**Chairs:** Mirian Agus (University of Cagliari, Italy), Giorgio Marchese (National Research Council, Italy)

#### **Use of training with BCI (Brain Computer Interface) in the management of impulsivity**

Natale Salvatore Bonfiglio and Roberta Renati (University of Pavia & Noah srl)

Davide Parodi and Eliano Pessa (University of Pavia, Italy)

Dolores Rollo (University of Parma, Italy)

Maria Pietronilla Penna (University of Cagliari, Italy)

#### **Dealing with probabilistic problems in health care: What about the role of knowledge in daily life?**

Mirian Agus (University of Cagliari, Italy)

Maribel Peró-Cebollero and Joan Guàrdia-Olmos (University of Barcelona, Spain)

Maria Pietronilla Penna (University of Cagliari, Italy)

#### **An exploratory study on the relationship between video game addiction and the constructs of coping and resilience**

Natale Salvatore Bonfiglio and Roberta Renati (University of Pavia & Noah srl)

Sabrina Costa (University of Pavia, Italy)

Dolores Rollo (University of Parma, Italy)

Francesco Sulla (University of Modena and Reggio Emilia)

Maria Pietronilla Penna (University of Cagliari, Italy)

#### **A Tool for the Evaluation of Hikikomori Risk in Italian Adolescents: A first Contribution to its Validation**

Francesco Sulla (Università degli Studi di Modena e Reggio Emilia & Università degli Studi di Parma, Italy)

Alice Masi (University of Parma, Italy)

Roberta Renati and Natale Salvatore Bonfiglio (University of Pavia, Italy)

Dolores Rollo (University of Parma, Italy)

#### **Psychometric scales in clinical psychopharmacology trials: the excess of possible clinical symptom profiles**

Eraldo Francesco Nicotra (University of Cagliari, Italy)

Daniele Lecca (University of Cagliari, Italy)

Giorgio Marchese (National Research Council, Italy)

#### **RS 1 - Embedded systems and IoT in medicine**

**Chairs:** Luca De Vito (University of Sannio, Italy), Octavian Adrian Postolache (Instituto de Telecomunicações, Lisboa/IT & Instituto Universitario de Lisboa, ISCTE-IUL, Portugal)

#### **Telemedicine DSS-AI Multi Level Platform for Monoclonal Gammopathy Assistance**

Alessandro Massaro (Dyrecta Lab srl, Italy)

Angelo Maurizio Galiano (Dyrecta Lab Srl, Italy)

Domenico Scarafile (Dyrecta Lab srl, Italy)

Angelo Vacca (DIMO, Italy)

Antonella Frassanito, Assunta Melaccio and Antonio Solimando (University of Bari, Italy); Roberto Ria (Uniba, Italy)

Francesca Vacca (Centro Analisi San Paolo, Italy)

Anna Gallone (University Bari, Italy)

Giuseppe Calamita (University of Bari, Italy)

Michela Bonomo (Università di Bari, Italy)

Filippo Attivissimo (Politecnico of Bari, Italy)

#### **A New Cyber Physical System for Gas Radon Monitoring and Controlling**

Alberto Amato, Alessandra Scarcelli, Michele Di Gioia, Maria Rizzi and Cristoforo Marzocca (Politecnico di Bari, Italy)  
Rita Dario (AOU Policlinico di Bari Italy, Italy)  
Vincenzo Di Lecce (Politecnico di Bari, Italy)

#### **Hybrid indoor and outdoor localization for elderly care applications with LoRaWAN**

Dhiego Fernandes Carvalho, Alessandro Depari, Emiliano Sisinni, Paolo Ferrari, Alessandra Flammini, Stefano Rinaldi and Marco Pasetti (University of Brescia, Italy)

#### **Improving care model for congenital heart diseases in paediatric patients using home telemonitoring of vital signs via biomedical sensors**

Massimiliano Donati, Silvia Panicacci, Luca Fanucci and Sergio Saponara (University of Pisa, Italy) Lamia Ait-Ali, Stefano Dalmiani and Pierluigi Festa (Fondazione Toscana G. Monasterio, Italy)  
Francesca Mastorci (Clinical Physiology Institute, CNR, Italy)  
Alessandro Pingitore (Institute of Clinical Physiology, National Research Council (CNR), Italy)  
Wanda Pennè (GPI SpA, Italy); Alessio Celli (IngeniArs, Italy)

#### **Identification of R-peak occurrences in compressed ECG signals**

Gennaro Laudato, Rocco Oliveto and Simone Scalabrino (University of Molise, Italy)  
Angela Rita Colavita (ASREM Regione Molise, Italy)  
Luca De Vito, Francesco Picariello and Ioan Tudosa (University of Sannio, Italy)

#### **A Low-power Two-Stage Active Rectifier for Energy Harvesting Applications**

Ana Ferreira (University of South-Eastern Norway, Norway)  
Rui Carvalho (Chongqing Technology and Business, China)  
Zhaochu Yang (Chongqing Technology and Business University, China)  
José H Correia (University of Minho, Portugal)  
Tao Dong (University of South-Eastern Norway, Norway)

#### **RS 2 - Bioengineering, rehabilitation and biomedical robotic methods - A**

**Chairs:** Rafik Goubran (Carleton University, Canada), Lorenzo Scalise (Università Politecnica delle Marche, Italy)

#### **Development and first evaluation of a RF-based rehabilitation system**

Walter Baccinelli and Maria Bulgheroni (AbAcus srl, Italy)  
Carlo Frigo (Politecnico di Milano, Italy)

#### **The CT stimulation induced abnormal response in subjects with ASD: EEG study**

Galina V Portnova (Institute of Higher Nervous Activity and Neurophysiology of RAS, Russia)  
Ivan V Skorokhodov (Rehabilitation Center for Children with ASD Our Sunny World)  
Anton Varlamov (Pushkin State Russian Language Institute, Russia)  
Igor Shpitsberg (Rehabilitation Center for Children with ASD Our Sunny World, Russia)

#### **sEMG-biofeedback armband for hand motor rehabilitation in stroke patients: a preliminary pilot longitudinal study**

Daniele Rimini, Silvia Salvalaggio, Giorgia Pregnolato, Mahmoud Alhelou, Carmine Berlingieri, Eleonora Mascotto and Andrea Turolla (San Camillo IRCCS, Italy)  
Paolo Ariano (Istituto Italiano di Tecnologia, Italy)  
Nicolò Celadon (Morecognition Srl, Italy)  
Daniyal Ahmed (Istituto Italiano di Tecnologia, Italy)

#### **Cyclic compression fatigue behaviour of PET-G tooth aligners**

Claudia Cianci, Giovanni Pappalettera, Gilda Renna and Caterina Casavola (Politecnico di Bari, Italy) Michele Laurenziello (Università di Foggia, Italy)  
Carmine Pappalettera (Politecnico di Bari, Italy)  
Domenico Ciavarella (Università di Foggia, Italy)

#### **Design, realization and experimental characterisation of a controllable-compliance joint of a robotic exoskeleton for assist-as-needed rehabilitation**

Alessia Capace (University Magna Graecia of Catanzaro, Italy)  
Luigi Randazzini (Università degli Studi Magna Græcia di Catanzaro, Italy)  
Carlo Cosentino (Università degli Studi Magna Graecia di Catanzaro, Italy)  
Maria Romano (University of Naples "Federico II", Italy)  
Alessio Merola (Università degli studi Magna Græcia di Catanzaro, Italy)  
Francesco Amato (University of Catanzaro, Italy)

#### **A case study about the load effect on the mechanical performances in a commercial WBV platform for clinical applications**

Francesco Orsini and Andrea Rossi (Roma Tre University, Italy)  
Simone Ranaldi (University Roma Tre, Italy)  
Fabio Fuiano (Roma Tre University, Italy)  
Andrea Scorza (Roma TRE University, Italy)  
Maria Sollini (Tor Vergata University, Italy)  
Federica Vurchio (University Roma Tre, Italy)  
Fabio Botta (Roma Tre University, Italy)  
Calogero Foti (Tor Vergata University, Italy)  
Silvia Conforto (University Roma Tre, Italy)  
Salvatore Andrea Sciuto (University of ROMA TRE, Italy)

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**RS 2 - Bioengineering, rehabilitation and biomedical robotic methods - B**

**Chairs:** Rafik Goubran (Carleton University, Canada), Maurizio Spadavecchia (Polytechnic University of Bari, Italy)

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**Effects of stretching on the fractal dimension of rectus femoris and vastus medialis muscles**

Necla Ozturk (Maltepe University, Turkey)  
Haris Begovic (The Hong Kong Polytechnic University, China)  
Pinar Demir (Piri Reis University, Tuzla, Istanbul, Turkey)  
Suha Yagcioglu (Hacettepe University, Faculty of Medicine, Turkey)  
Filiz Can (Hacettepe University, Turkey)

**Kinect-based wearable prototype system for ataxic patients neurorehabilitation: control group preliminary results**

Michela Franzo' and Simona Pascucci (Sapienza, University of Rome, Italy)  
Mariano Serrao (University of Rome Sapienza, Italy)  
Franco Marinuzzi (Sapienza University of Rome, Italy)  
Fabiano Bini (SAPIENZA University of Rome, Italy)

**A Plantar Pressure Biofeedback M-Health System for Stroke Patients**

Giulia Baldazzi (University of Genova & University of Cagliari, Italy)  
Grazia Krizia Masciavè, Elisa Gusai, Andrea Zedda, Salvatore Spanu, Eleonora Sulas, Luigi Raffo and Danilo Pani (University of Cagliari, Italy)

**Exploratory Analysis of Ultra-Short-Term Heart Rate Variability Features in Virtual Rehabilitation Sessions**

Roger Selzler and James R Green (Carleton University, Canada)  
Courtney Bridgewater, Alistair Boyle and Andrew Smith (The Ottawa Hospital Rehabilitation Centre, Canada)  
Adrian D.C. Chan (Carleton University, Canada)  
Janet Holly (The Ottawa Hospital Rehabilitation Centre, Canada)  
François Charih (Carleton University, Canada)  
Dorothyann Curran (The Ottawa Hospital Rehabilitation Centre, Canada)  
Markus Besemann (Canadian Forces, Health Services, Canada)

**Electrochemical behaviour of additively manufactured Titanium for biomedical applications**

Alessio Gullino, Sabrina Grassini, Emma Paola Angelini, Marco Parvis, Elisa Padovano, Claudio Badini and Leonardo Iannucci (Politecnico di Torino, Italy)

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**RS 3 - Biosignal processing - A**

**Chairs:** Pasquale Daponte (University of Sannio, Italy), Sreeraman Rajan (Carleton University, Canada)

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**Evaluation of Glasgow Coma Score Using Electroencephalogram Signals**

Fatma Latifoğlu, Çiğdem Gülüzar Altıntop, Aynur Karayol Akın and Ramis Ileri (Erciyes University, Turkey)  
Mehmet Akif Yazar (Konya Training and Research Hospital, Turkey)

**A Dynamic Time Warping Method for Improved Arterial Wall-Tracking using A-mode Ultrasound Frames: A Proof-of-Concept**

Raj Kiran V (IIT Madras, India)  
Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)  
Nabeel PM (Indian Institute of Technology Madras & HTIC-IIT Madras Research Park, India); Mohanasankar Sivaprakasam (IIT Madras, India)

**Detection of Reading Movement from EOG Signals**

Fatma Latifoğlu, Ramis Ileri, Esra Demirci and Çiğdem Gülüzar Altıntop (Erciyes University, Turkey)

**ECG Waveforms Reconstruction based on Equivalent Time Sampling**

Giorgia Fiori and Fabio Fuiano (Roma Tre University, Italy)  
Andrea Scorza (Roma TRE University, Italy)  
Maurizio Schmid (Roma Tre University, Italy)  
Silvia Conforto (University Roma Tre, Italy)  
Salvatore Andrea Sciuto (University of ROMA TRE, Italy)

**A Machine Learning Approach to Carotid Wall Localization in A-mode Ultrasound**

Shivendra Singh (Lovely Professional University, India)  
Ashish Kumar Sahani (Indian Institute of Technology Ropar, India)

**A New Method for Dictionary Matrix Optimization in ECG Compressed Sensing**

Enrico Picariello, Eulalia Balestrieri, Francesco Picariello, Sergio Rapuano, Ioan Tudosa and Luca De Vito (University of Sannio, Italy)

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**RS 3 - Biosignal processing - B**

**Chairs:** Pasquale Daponte (University of Sannio, Italy), Sreeraman Rajan (Carleton University, Canada)

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**Measurement of Local Pulse Wave Velocity using Fast Ultrasound Imaging**

Abhinav Kumar Singh (IIT Ropar, India)  
Ashish Kumar Sahani (Indian Institute of Technology Ropar, India)

**Measurement of muscle contraction timing for prosthesis control: a comparison between electromyography and force-myography**

Daniele Esposito (University of Naples Federico II & IRCCS Istituti Clinici Scientifici Maugeri, Italy)  
Gaetano Dario Gargiulo and Nawadita Parajuli (Western Sydney University, Australia)  
Giuseppe Cesarelli (Center for Advanced Biomaterials for Healthcare Sciences, Italy)  
Emilio Andreozzi (University of Naples Federico II, Italy)  
Paolo Bifulco ("Federico II" University of Naples, Italy)

**A Dynamic Approach for Compressed Sensing of Multi-lead ECG Signals**

Grazia Iadarola, Pasquale Daponte, Francesco Picariello and Luca De Vito (University of Sannio, Italy)



### **Maximum Feasible Subsystem Recovery of Compressed ECG Signals**

Fereshteh Fakhra Firouzeh, Sreeraman Rajan and John Chinneck (Carleton University, Canada)

### **A Study on the Subject and Location Specificity in Reflectance based SpO2 Estimation using R-value based Calibration Curve**

Mohamed Tanveejul Arsath. P. S (Healthcare Technology Innovation Centre, India)

Annamol Alex and Preejith Sp (HTIC-IITMadras, India)

Christopher D j and Balamugesh T (CMC Vellore, India)

Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)

Mohanasankar Sivaprakasam (IIT Madras, India)

### **A Hybrid Deep Model for Automatic Arrhythmia Classification based on LSTM Recurrent Networks**

Adeleh Bitarafan, Afra Amini, Mahdieh Soleymani Baghshah and Hamidreza Khodajou-Chokami (Sharif University of Technology, Iran)

## **RS 3 - Biosignal processing - C**

**Chairs:** Zaccaria Del Prete (SAPIENZA University of Rome, Italy), Sergio Rapuano (University of Sannio, Italy)

### **Heart Rate Variability Analysis During Exercise in Hypoxia Chamber**

Swaathi Venkat (IIT - Madras, India)

Preejith Sp (HTIC-IITMadras, India)

Vignesh Moorthy, Arumugam S, Vasanthi C and Thiagarajan KA (CSS, India)

Mohanasankar Sivaprakasam (IIT Madras, India)

### **Optimal force evaluation for isotonic fatigue characterization in mouse Tibialis Anterior muscle**

Flavia Forconi (Sapienza Università di Roma, Italy)

Francesca Martelli (Sapienza University of Rome, Italy)

Simona Pisu (University of Rome La Sapienza, Italy)

Antonio Musarò (Center for Life Nano Science@Sapienza IIT, SAPIENZA University of Rome, Italy) Emanuele Rizzuto (Sapienza University of Rome, Italy)

Zaccaria Del Prete (SAPIENZA University of Rome, Italy)

### **HRV based Stress Assessment of Individuals in a Work Environment**

Vaishali B (HTIC - IITMadras, India)

Amalan S (Healthcare Technology Innovation Center, IIT Madras, India)

Preejith Sp (HTIC-IITMadras, India)

Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)

Mohanasankar Sivaprakasam (IIT Madras, India)

### **Deterministic Compressed Domain Analysis of Multi-channel ECG Measurements**

Dipayan Mitra and Sreeraman Rajan (Carleton University, Canada)

### **Blind Deterministic Compressive Sensing for Biomedical Images**

Hadi Zanddzari (University of South Florida, USA)

Dipayan Mitra and Sreeraman Rajan (Carleton University, Canada)

## **RS 4 - Imaging and communication**

**Chairs:** Joseph Cortner (Retired, USA), Marco Parvis (Politecnico di Torino, Italy)

### **Personalized Computational Human Phantoms via a Hybrid Model-based Deep Learning Method**

Hamidreza Khodajou-Chokami and Adeleh Bitarafan (Sharif University of Technology, Iran)

Dmitry Dyllov (Skolkovo Institute of Science and Technology, Russia)

Mahdieh Soleymani Baghshah and Seyed Abolfazl Hosseini (Sharif University of Technology, Iran)

### **Comparison of different classifiers to recognize active bone marrow from CT images**

Samanta Rosati (Politecnico di Torino, Italy)

Pierfrancesco Franco, Christian Fiandra, Francesca Arcadipane and Patrick Silveti (Università degli studi di Torino, Italy)

Elena Gallio (AOU Città della Salute e della Scienza di Torino, Italy)

Jovana Panic (Candiolo Cancer Institute - FPO, IRCCS, Italy)

Umberto Ricardi (Università degli studi di Torino, Italy)

Gabriella Balestra (Politecnico di Torino, Italy)

### **Deep learning to segment liver metastases on CT images: impact on a radiomics method to predict response to chemotherapy**

Valentina Giannini and Arianna Defeudis (Candiolo Cancer Institute - FPO, IRCCS, Italy)

Samanta Rosati (Politecnico di Torino, Italy)

Giovanni Cappello, Lorenzo Vassallo, Simone Mazzetti and Jovana Panic (Candiolo Cancer Institute - FPO, IRCCS, Italy)

Daniele Regge (Candiolo Cancer Institute, FPO-IRCCS, Italy)

Gabriella Balestra (Politecnico di Torino, Italy)

### **A Content Based Image Retrieval Approach based on Multiple Multimedia Features Descriptors in E-health Environment**

Antonio M. Rinaldi (University of Naples Federico II, Italy)

Cristiano Russo (UNINA, Italy)

### **MamSim: A Computational Software Platform for Measuring and Optimizing Imaging and Dosimetry Parameters in Screen-Film and Digital Mammography Systems**

Hamidreza Khodajou-Chokami (Sharif University of Technology, Iran)

Bijan Vosoughi Vahdat (Shaif University of Technology (SUT), Iran)

Atiyeh Ebrahimi-Khankook (University of Neyshabur, Iran)

Mahsa Noorvand (Islamic Azad University, Science and Research Branch, Iran)

**Neonatal Face Tracking for Non-Contact Continuous Patient Monitoring**

Yasmina Souley Dosso, Samreen Aziz and Shermeen Nizami (Carleton University, Canada)  
Kim Greenwood (Children's Hospital of Eastern Ontario, Canada)  
JoAnn Harrold (The Children's Hospital of Eastern Ontario, CHEO, Ottawa, Canada)  
James R Green (Carleton University, Canada)

**RS 5 - Devices and methods for processing and classification of biomedical signals**

**Chairs:** Baki Karaböce (TÜBİTAK UME & National Metrology Institute of Turkey, Turkey), Bruce Wallace (AGE-WELL NIH SAM3 & Carleton University, Canada)

**A New Ergonomic Cable for Medical Ultrasound Imaging**

Yevgeniy Victor Mayevskiy, Paul Sprunger and Tom Medina (TE Connectivity Medical, USA)

**Deep Melanoma classification with K-Fold Cross-Validation for Process optimization**

Yali Nie (Mid Sweden University, Sweden)  
Laura De Santis and Marco Carratù (University of Salerno, Italy)  
Mattias O'Nils (Mid Sweden University, Sweden)  
Paolo Sommella (University of Salerno, Italy)  
Jan Lundgren (Mid Sweden University, Sweden)

**Force Sensitivity Determination of Artificial Mastoid used for Audiometric Bone-Conduction Measurements**

Baki Karaböce (TÜBİTAK UME & National Metrology Institute of Turkey, Turkey)

**Challenges with Audio Classification using Image Based Approaches for Health Measurement Applications**

Madison Cohen-McFarlane and Rafik Goubran (Carleton University, Canada)  
Bruce Wallace (AGE-WELL NIH SAM3 & Carleton University, Canada)

**RS 6 - Sensors and devices for medical measurements - A**

**Chairs:** Sandro Carrara (EPFL, Switzerland), Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)

**New Measurement Method in Drug Sensing by Direct Total-Charge Detection in Voltammetry**

Simone Aiassa (Politecnico di Torino, Italy & EPFL, Switzerland)  
José David González Martínez (EPFL, Switzerland)  
Danilo Demarchi (Politecnico di Torino, Italy)  
Sandro Carrara (EPFL, Switzerland)

**Bedding waveguide for smartphone-based ballistocardiography**

Guillaume Cathelain (Ecole Pratique des Hautes Etudes - PSL)  
Jean Bergounioux (Assistance Publique des Hôpitaux de Paris, France)  
François Jouen (Ecole Pratique des Hautes Etudes - PSL, France)

**Machine Learning Based Hardware Model for a Biomedical System for Prediction of Respiratory Failure**

Omiya Hassan, Samira Shamsir and Syed Islam (University of Missouri-Columbia, USA)

**A Bi-modal Probe Integrated with A-mode Ultrasound and Force Sensor for Single-site Assessment of Arterial Pressure-Diameter Loop**

Rahul Manoj (Indian Institute of Technology Madras, India)  
Raj Kiran V (IIT Madras, India)  
Nabeel PM (Indian Institute of Technology Madras & HTIC-IIT Madras Research Park, India)  
Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)  
Mohanaskar Sivaprakasam (IIT Madras, India)

**Carotid Stiffness Variations in the Presence of Established Risk Factors: Observations from a Clinical Study Using ARTSENS**

Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)  
Harivanzan Vijayakumar (Sri Ramachandra Medical College and Research Institute, India)  
Nabeel PM (Indian Institute of Technology Madras & HTIC-IIT Madras Research Park, India)  
Thoddi Muralidharan and Sadagopalan Thanikachalam (Sri Ramachandra Medical College and Research Institute, India)  
Mohanaskar Sivaprakasam (IIT Madras, India)

**Feasibility Study of Arterial Stiffness Monitoring based on Reflected Wave Transit Time using Carotid Acceleration Plethysmogram**

Arathy R (Indian Institute of Technology Madras, India)  
Nabeel PM (Indian Institute of Technology Madras & HTIC-IIT Madras Research Park, India)  
Jayaraj Joseph and Abhidev V V (Healthcare Technology Innovation Centre, IIT Madras, India)  
Mohanaskar Sivaprakasam (IIT Madras, India)

**RS 6 - Sensors and devices for medical measurements - B**

**Chairs:** Sandro Carrara (EPFL, Switzerland), Sabrina Grassini (Politecnico di Torino, Italy)

**Impedance Measurement Exploited for Anaphylaxis Prediction in Casein Allergic Children**

Marco Mugnaini, Ada Fort, Tommaso Addabbo and Valerio Vignoli (University of Siena, Italy)  
Marco Tani (University of Siena, Italy)  
Simona Barni (Meyer, Italy)  
Francesca Mori (Meyer Pediatric Hospital, Italy)  
Elia Landi (University of Siena, Italy)  
Riccardo Moretti (University of Siena, Italy)

**A preliminary study on a novel automatic method for angular displacement measurements in microgripper for biomedical applications**

Federica Vurchio (University Roma Tre, Italy)  
Francesco Orsini (Roma Tre University, Italy)  
Andrea Scorza (Roma TRE University, Italy)  
Fabio Fuiano (Roma Tre University, Italy)  
Salvatore Andrea Sciuto (University of ROMA TRE, Italy)

**Cloud Processing of Bed Pressure Sensor Data to Detect Sleep Apnea Events**

Hilda Azimi (University of Ottawa, Canada)  
Haoyang Liu (Carleton University, Canada)  
Martin Bilodeau (University of Ottawa, Canada)  
Bruce Wallace (AGE-WELL NIH SAM3 & Carleton University, Canada)  
Martin Bouchard (University of Ottawa, Canada)  
Rafik Goubran (Carleton University, Canada)  
Frank Knoefel (Bruyere Continuing Care, Canada)

**Quantifying the color changes in bruised skin using a color-calibrated imaging system**

Cheng-Ru Li, Hsin-Yi Tsai and Chih-Chung Yang (Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan)  
Ming-Yen Lin (Kaohsiung Medical University, Taiwan)  
Kuo-Cheng Huang (Instrument Technology Research center, National Applied Research Laboratories, Taiwan)  
Yu-Hsuan Lin (Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan)

**Adaptive excitation signals for low frequency FOT**

Cedric Busschots, Andy Keymolen, Hannes Maes, Dries Peumans, Johan Pattyn, Gerd Vandersteen and John Lataire (Vrije Universiteit Brussel, Belgium)

**Repetitively Driven Trips as a Measure of Older Adult Driver Cognitive Health - Three Case Studies**

Jennifer Howcroft (University of Waterloo, Canada)  
Bruce Wallace (AGE-WELL NIH SAM3 & Carleton University, Canada)  
Rafik Goubran (Carleton University, Canada)  
Shawn Marshall (Ottawa Hospital, Canada)  
Michelle Porter (University of Manitoba, Canada)  
Frank Knoefel (Bruyere Continuing Care, Canada)

**RS 6 - Sensors and devices for medical measurements - C**

**Chairs:** Lorenzo Scalise (Università Politecnica delle Marche, Italy), Annamária R. Várkonyi-Kóczy (Óbuda University, Hungary)

**ADLs Monitoring by Accelerometer-Based Wearable Sensors: Effect of Measurement Device and Data Uncertainty on Classification Accuracy**

Angelica Poli (Università Politecnica delle Marche, Italy)  
Lorenzo Scalise, Susanna Spinsante and Annachiara Strazza (Università Politecnica delle Marche, Italy)

**Low-Power Discreetly-Wearable Smart ECG Patch with On-Board Analytics**

Sandeep Mittal, Madina Zabran and Kanad Ghose (State University of New York at Binghamton, USA)  
James Turner (Binghamton University, USA)

**Fluorescence Signal-to-Noise Ratio Enhanced by Off-Plane Excitation for Quantitative PCR Device**

Liang-Chieh Chao, Hsin-Yi Tsai and Cheng-Ru Li (Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan)  
Kuo-Cheng Huang (Instrument Technology Research center, National Applied Research Laboratories, Taiwan)  
Yu-Hsuan Lin (Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan)  
Dar-Bin Shieh (National Cheng Kung University & NCKU Hospital, Taiwan)

**Analysing performances of Heart Rate Variability measurement through a smartwatch**

Nicole Morresi, Sara Casaccia and Matteo Sorcinelli (Università Politecnica delle Marche, Italy)  
Marco Arnesano (Università eCampus, Italy)  
Gian Marco Revel (Università Politecnica delle Marche, Italy)

**Non-contact anthropometric measurements in newborn patients**

Sara Burini (Marche Polytechnic University, Italy)  
Paolo Marchionni (Polytechnic University of Marche, Italy)  
Lorenzo Scalise and Susanna Spinsante (Università Politecnica delle Marche, Italy)  
Enrica Ferretti (Ospedali Riuniti, Italy)  
Virgilio Carnielli (Polytechnic University of Marche, Italy)

**A novel measurement technique for the assessment of best positive end-expiratory pressure in newborn patient**

Paolo Marchionni (Polytechnic University of Marche, Italy); Alessia Galli (Ospedali Riuniti, Italy); Virgilio Carnielli (Polytechnic University of Marche, Italy);  
Lorenzo Scalise (Università Politecnica delle Marche, Italy)

**RS 6 - Sensors and devices for medical measurements -D**

**Chairs:** Zaccaria Del Prete (SAPIENZA University of Rome, Italy), Paola Saccomandi (Politecnico di Milano, Italy)

**A Fast and Accurate GATE Model for Small Field Scattering Proton Beam Therapy**

Elham Piruzan and Naser Vosoughi (Sharif University of Technology, Iran)  
Hojjat Mahani (Nuclear Science and Technology Research Institute, Iran)

**The cell-matrix interplay: stiffness and strain homogeneity characterization of substrates for adherent cells**

Serena Carraro (Università di Roma Sapienza, Italy)  
Ludovica Apa (Sapienza, University of Rome, Italy)  
Enrica Urciuoli and Barbara Peruzzi (Bambino Gesù Children's Hospital, Italy)  
Zaccaria Del Prete (SAPIENZA University of Rome, Italy)  
Emanuele Rizzuto (Sapienza University of Rome, Italy)

**Heart rate monitoring under stress condition during behavioral analysis in children with neurodevelopmental disorders**

Livio D'Alvia (Sapienza University of Rome, Italy)  
Erika Pittella (Pegaso University, Italy)  
Francesca Fioriello and Andrea Maugeri (Sapienza, Italy)  
Emanuele Rizzuto and Emanuele Piuze (Sapienza University of Rome, Italy)  
Carla Sogos (Sapienza, Italy)  
Zaccaria Del Prete (SAPIENZA University of Rome, Italy)

**Hyperspectral imaging system for monitoring laser-induced thermal damage in gastric mucosa**

Martina De Landro (Politecnico di Milano, Italy)  
Manuel Barberio (University of Strasbourg, France)  
Eric Felli, Vincent Agnus, Margherita Pizzicannella and Michele Diana (Institute of Image-Guided Surgery Strasbourg, France)  
Paola Saccomandi (Politecnico di Milano, Italy)

**Detection of Neonatal Patient Motion Using a Pressure-Sensitive Mat**

Samreen Aziz, Yasmina Souley Dosso and Shermeen Nizami (Carleton University, Canada)  
Kim Greenwood (Children's Hospital of Eastern Ontario, Canada)  
JoAnn Harold (The Children's Hospital of Eastern Ontario, CHEO, Ottawa, Canada)  
James R Green (Carleton University, Canada)

**Portable System for the Functional Assessment of Older Adults**

J. Jesús García (University of Alcalá, Spain)  
Ana Jiménez Martín (University of Alcalá, Spain)  
José M. Villadangos (University of Alcalá, Spain)  
Sergio Lluva Plaza, Sergio Humanes López and Sergio Martín Serrano (University of Alcalá, Spain) Sara García de Villa (University of Alcalá, Spain)

**RS 7 - Metrology, medical instrumentation uncertainty and calibrations – A**

**Chairs:** Gregorio Andria (Politecnico di Bari, Italy), Emma Paola Angelini (Politecnico di Torino, Italy)

**Investigation of Basic Optical Properties of Tissue Phantoms Under 635 nm Low-Level Laser Irradiation**

Hüseyin Okan Durmuş (Gebze Technical University, Turkey)  
Sevgi Kocaata, Gözde Naz and Yunus Çelik (Kocaeli University, Turkey)  
Emel Çetin (National Metrology Institute, Turkey)  
Baki Karaböce (TÜBİTAK UME & National Metrology Institute of Turkey, Turkey)  
Mirhasan Seyidov (Gebze Technical University, Turkey)

**Comparison of Manual and Automated Pressure Calibration Methods of Medical Pressure Calibrator**

Ahmet Türk (TÜBİTAK UME, Turkey); Abdullah Hamarat (Tubitak - UME, Turkey)  
Baki Karaböce (TÜBİTAK UME & National Metrology Institute of Turkey, Turkey)

**Construction and set-up of a whole-room indirect calorimeter for measurement of human energy metabolism**

Paolo Piaggi, Alberto Landi, Ferruccio Santini and Mirko Marracci (University of Pisa, Italy)

**Body temperature measurement from the 17th century to the present days**

Emma Paola Angelini, Sabrina Grassini and Marco Parvis (Politecnico di Torino, Italy)  
Luca Parvis (University of Oriental Piedmont, The Netherlands)  
Andrea Gori (Galileo Museum, The Netherlands)

**Blood Mixers for Transfusion Therapy: Photoplethysmogram Application for Blood Velocity Determination**

Aleksei E. Zhdanov (Ural Federal University, Russia)  
Lucian Evdochim (Politechnic University of Bucharest, Romania)  
Vasilii Borisov and Leonid Dorosinsky (Ural Federal University, Russia)

**RS 7 - Metrology, medical instrumentation uncertainty and calibrations – B**

**Chairs:** Voicu Groza (University of Ottawa, Canada), Aime' Lay-Ekuakille (University of Salento, Italy)

**Blood Pressure Estimation using Arterial Diameter: Exploring Different Machine Learning Methods**

Poojitha Uthappa P (Indian Institute of Technology Madras & Healthcare Technology Innovation Center, India)  
Keerthi Ram (HTIC, India)  
Nabeel PM (Indian Institute of Technology Madras & HTIC-IIT Madras Research Park, India)  
Raj Kiran V (IIT Madras, India)  
Jayaraj Joseph (Healthcare Technology Innovation Centre, IIT Madras, India)  
Mohanasankar Sivaprakasam (IIT Madras, India)

**QCT: A Measuring Tool Dedicated to the Estimation of Image Parameters for Quality Assurance/Quality Control Programs of CT Scanners**

Hamidreza Khodajou-Chokami, Seyed Abolfazl Hosseini and Mohammad Ghorbanzadeh (Sharif University of Technology, Iran)  
Mohammad Mohammadi (Tehran University of Medical Science, Iran)

**Anaerobic fat transfers and emulsifiers for autologous fat grafting**

Natalia Igorevna Khramtsova, Sergei Aleksandrovich Plaksin, Artem Sotskov and Danil Ponomarev (E. A. Vagner Perm State Medical University, Russia)

**Calibration Standard for Impulse Energy of Defibrillator and Defibrillator Analyzer**

Wei Zhao and Haiming Shao (National Institute of Metrology, China)  
Huanghui Zhang (Fujian Metrology Institute, China)

**Design of Robot-based Measurement System for the Quality Assessment of Ultrasound Probes for Medical Imaging**

Francesco Bertocci, PhD and Andrea Grandoni (Esaote spa, Italy)  
Lorenzo Francalanci (Esaote Spa, Italy)  
Alessandro Fabbri (Esaote spa, Italy)

**RS 8 - Solutions for patient safety**

**Chairs:** Nicola Giaquinto (Politecnico di Bari, Italy), Annamária R. Várkonyi-Kóczy (Óbuda University, Hungary)

**Adverse Patient Events in Anesthesia Delivery - Review and Analysis of Potentially Avoidable Events**

Lorenzo Dinia (Sapienza University of Rome, USA)  
Fabio Mangini, Ilaria Mileti, Eduardo Palermo and Fabrizio Frezza (Sapienza University of Rome, Italy)

**Assessment of ultra-high-field Magnetic Resonance Imaging safety via temperature increase monitoring with Magnetic Resonance Thermometry**

Laura Biagi (Stella Maris Scientific Institute, Pisa, Italy)  
Vito Gagliardi (IRCCS Stella Maris Foundation, Italy); Giacomo Aringhieri (University of Pisa, Italy) Massimo Marletta (Azienda Ospedaliera Universitaria Pisana, Italy)  
Gianluigi Tiberi (Fondazione Imago 7, Italy)  
Alessandra Retico (Istituto Nazionale di Fisica Nucleare, Italy); Francesco Campanella (INAIL, Italy)  
Michela Tosetti (IRCCS Fondazione Stella Maris, Italy)

**Vision-based Assessment of Balance Control in Elderly People**

Laura Romeo (National Research Council of Italy, Italy)  
Roberto Marani (National Research Council (CNR), Italy)  
Nicola Lorusso (Loran SRL, Italy)  
Maria Teresa Angelillo (Catholic University of Milan, Italy); Grazia Cicirelli (National Research Council of Italy, Italy)

**Applicability of Multi-model Databases for Accessible Indoor Navigation**

Gabriella Simon-Nagy, Rita Fleiner and Annamária R. Várkonyi-Kóczy (Óbuda University, Hungary)

**HoSè: Hospital Security - How to make the surgical site safer using RFID blockchain and biometric techniques**

Giuseppe Mastronardi (Politecnico di Bari & AICA, Italy)  
Ilaria Tatò (MedicaSud srl, Italy)

**Real-time drip infusion monitoring through a computer vision system**

Nicola Giaquinto (Politecnico di Bari, Italy)  
Marco Scarpetta (Polytechnic University of Bari, Italy)  
Mattia Alessandro Ragolia and Pietro Pappalardi (Politecnico di Bari, Italy)

**An Integrated System for Parkinson's Disease Patients Diagnosis, Using Affordable Technology**

Yor J Castaño-Pino, Domiciano Rincon and Andres Navarro (Universidad Icesi, Colombia)  
Valentina Quintana (Fundacion Clínica Valle del lili, Colombia)  
Maria C Gonzalez (Centre for Age-Related Medicine (SESAM), Colombia & Stavanger University Hospital, Norway)  
Jaime Valderrama (Fundación Clínica Valle del Lili, Colombia)  
Beatriz Munoz and Jorge Luis Orozco (Valle del Lili Clinical, Colombia)

**TIM@MEMEA 2020**

**Chairs:** Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy), Sabrina Grassini (Politecnico di Torino, Italy)

**Microscale Electrochemical Platform for Interference-alleviated Sensing of Multiple Bio-analytes**

Murali Mohan Jaligam (BITS Pilani, India)