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Jeju 2023 | 6.14-6.16

MeMeA 2023
CONFERENCE PROCEEDINGS

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2023 IEEE International Symposium on Medical Measurements and Applications (MeMeA) Proceedings

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Welcome Message

Dear Participants,

It is with great pleasure that we welcome you to the Medical Measurements and Applications (MeMeA) 2023 Conference! As the conference co-chairs, we are thrilled to be hosting this year's event, which promises to be an exciting and informative experience for all.

Our program features a wide range of topics and speakers that will explore the latest advances in this rapidly evolving field of medical measurements and applications. Our goal is to provide a platform for researchers, practitioners, and industry experts to share their insights and perspectives on the latest trends and developments in medical measurement and application.

We have assembled a talented group of keynote speakers and presenters who will share their research and expertise on a diverse range of topics, including Bioengineering and rehabilitation, Sensors and devices for medical measurements, Artificial Intelligence & Machine Learning for Biosignal Measurement and Processing, and more. In addition to our academic program, we have organized a range of social events and networking opportunities, allowing you to connect with your peers and colleagues in a relaxed and informal setting.

We would like to take this opportunity to thank our sponsors, organizers, and partners who have contributed to making this event possible. We also extend my heartfelt thanks to all the participants who have traveled from far and wide to be with us.

We are confident that this conference will be a great success with your participation and will contribute to the advancement of medical measurements and applications in the digital age. Once again, welcome to the Medical Measurements and Applications (MeMeA) 2023 Conference, and we look forward to a fantastic event.

Sincerely,

Taesung Kim
2023 General Co-Chair
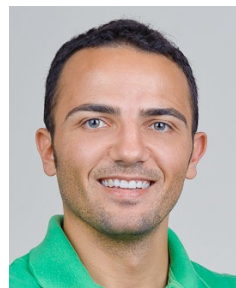
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SS1: Sensor- and AI-based Methods as Diagnostic and Monitoring Tools for Clinical Applications

Juri Taborri *University of Tuscia, Viterbo (IT)*
Stefano Rossi, *University of Tuscia, Viterbo (IT)*

SS2: Micro-Nanomaterials Based Sensor's and Devices For Healthcare Monitoring

Fabrizio Marra, *University of Roma La Sapienz*
Hossein Cheraghi Bidsorkhi, *University of Roma La Sapienz*
Marco Fortunato, *University of Roma La Sapienz*

SS3: Advances in Healthcare 4.0 and Internet of Medical Things

Merone Mario, *University Campus Bio-Medico di Roma*
Oluwarotimi Williams Samuel, *Chinese Academy of Sciences, SIAT, China*
Luca Vollero *University Campus Bio-Medico di Roma*

SS4: Advances in Measurement-based Diagnostic Models and Processing Algorithms

Laura Fabbiano, *Politecnico di Bari, Italy*
Rosario Morello, *University Mediterranea of Reggio Calabria, Italy*
Ruqiang Yan, *Xi'an Jiaotong University, China*

SS5: Sensors, Electronic Interfaces and Biosignal Processing for Healthcare Applications

Antonino S. Fiorillo, *Magna Græcia University of Catanzaro, Italy*
Salvatore A. Pullano, *Magna Græcia University of Catanzaro, Italy*

SS6: Wearable Sensors and Devices for (Bio)medical Applications

Carlo Massaroni, *Università Campus Bio-Medico di Roma, Italy*
Lorenzo Scalise, *Università Politecnica delle Marche, Italy*
Emiliano Schena, *Università Politecnica delle Marche, Italy*
Daniela Lo Presti, *Università Politecnica delle Marche, Italy*
Glorida Cosoli, *Università Politecnica delle Marche, Italy*
Alessia Noccaro, *Newcastle University, Newcastle upon Tyne, UK*

SS7: Wearable Sweat Sensing

Massimo Mischi, *Eindhoven University of Technology, Eindhoven, The Netherlands*
Elisabetta Peri, *Eindhoven University of Technology, Eindhoven, The Netherlands*

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SS1: Sensor- and AI-based Methods as Diagnostic and Monitoring Tools for Clinical Applications
>Juri Taborri, *University of Tuscia, Viterbo (IT)*
>Ilaria Mileti, *University Niccolò Cusano, Italy*

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>Daniela Lo Presti, *Università Politecnica delle Marche, Italy*
>Alessia Noccaro, *Newcastle University, Newcastle upon Tyne, UK*

SS7: Wearable Sweat Sensing
>Massimo Mischi, *Eindhoven University of Technology, Eindhoven, The Netherlands*
>Elisabetta Peri, *Eindhoven University of Technology, Eindhoven, The Netherlands*

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RS1: Biopotential measurement
    Marco Parvis, *Politecnico di Torino*
    Dukhyun Choi, *Sungkyunkwan University*

RS2: Medical Imaging
    Luca Lombardo, *Politecnico di Torino*
    Taesung Kim, *Sungkyunkwan University*

RS3: Machine Learning in Medicine
    Anna Lanzolla, *Polytechnic of Bari, Italy*
    Lorenzo Scalise, *Università Politecnica delle Marche, Italy*

RS4: Cardiovascular and Respiratory Methods
    Carlo Massaroni *Università Campus Bio-Medico di Roma, Italy*
    Lorenzo Scalise, *Università Politecnica delle Marche, Italy*

RS5: Biomedical Processing
    Pasquale Daponte, *Università del Sannio, Italy*

    Sabrina Grassin, *Politecnico de Torino, Italy*

RS6: Sensors and Medical Devices
    Sandro Carrara, *Fédérale de Lausanne (EPFL), Switzerland*
    Marco Tarabini, *Politecnico di Milano*

RS7: Assessment of Sensor and Medical Device Performances
    Taesung Kim, *Sungkyunkwan University*
    Marco Parvis, *Politecnico di Torino*

General Information & Social Events

Registration Hours

Wednesday, June 14	8:00 – 18:00
Thursday, June 15	8:00 – 18:00
Friday, June 16	8:00 – 15:00

Welcome Reception

Date: Wednesday, June 14th
Location: Tamna Hall
Time: 17:00 – 19:00
Welcome to the 18th edition of the IEEE International Symposium on Medical Measurements and Applications! The Symposium Organizing Committee invites attendees to join old friends and meet new acquaintances at the MeMeA 2023 Welcome Reception.

Gala Dinner

Date: Thursday, June 15th
Location: Tamna Hall
Time: 18:30 – 21:00
Join us for great food and even better company at the MeMeA 2023 Gala Dinner, featuring a special performance from K-Pop dance group!

IEEE MeMeA 2023 Awards

All winners will be announced and will receive a certificate at the Closing Session Awards Ceremony on June 16th at 17:00. The award winners will also be published on the MeMeA 2023 website following the conference.

The Domenico Grimaldi Best Paper Award

Description: 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.

Best Student Paper Award

Description: The Best Student Paper will be selected based on the technical quality and the review process of the initial full paper.

Eligibility: First author of the paper must be a student (undergraduate/PhD student) and marked as student paper on EDAS. The paper must be presented by the student.

Best Women in Engineering Paper Award

Description: The Best Women in Engineering Paper will be selected based on the technical quality and the review process of the initial full paper.

Eligibility: First author and presenter of the paper must a women

Keynote Speakers

Domenico Formica, *Newcastle University, UK*

"Robotic Tools for Studying Human Biomechanics in Healthy Subjects and Neurological Patients"

Abstract: The fourth industrial revolution is bringing together robotics, digital mobile devices, and services, wearable sensor,s and IoT systems, building a highly interconnected ecosystem often intimately coupled with human beings and their body. The biomedical sector can leverage this revolution by exploiting such integrated technologies to foster cutting-edge research in a variety of fields, from basic science research to biological and medical applications.

Domenico Formica received the B.S., M.S., and Ph.D. degrees in biomedical engineering from the Università Campus Bio-Medico di Roma, Italy, in 2002, 2004, and 2008 respectively. Until 2022 he was an Associate Professor in Industrial Bioengineering at the Università Campus Bio-medico di Roma, where he co-founded the NEXT: Neurophysiology and Neuroengineering of Human-Technology Interaction research unit, a multidisciplinary research group with a focus on the study of motor neuroscience in both healthy subjects and neurological patients. In 2007 he was visiting student at the Department of Mechanical Engineering of the Massachusetts Institute of Technology and from 2014 to 2018 he has been visiting scientist at the Nanyang Technological University of Singapore. He is currently y Professor of Bioengineering at Newcastle University (UK), where he leads the Neurorobotics group. His research interests lie at the intersection of robotics/mechatronics and neuroscience and include the areas of mechatronic technologies for studying human motor control, quantitative assessment of patients with neuromuscular disorders, and novel robotic devices to improve motor learning. On these topics, he published more than 140 peer-reviewed scientific papers in international journals and conference proceedings. He actively contributed to several National and EU-funded projects, and he has been awarded three national grants for young researchers. Currently, he is the European Coordinator of the EU project CONBOTS and PI of the EU project NIMA.

Dr. Roozbeh Ghaffari, *Epicore Biosystems, Inc, USA*

"Soft, Wearable Systems with Integrated Microfluidics and Biosensors for Remote Health Monitoring"

Abstract: Soft, wearable electronics and microfluidics, enabled by recent advances in materials science and mechanics, have been designed with mechanical properties that approach the flexibility and elasticity of human skin. These systems are referred to as epidermal electronics and epifluidics by virtue of their stretchable form factors and soft mechanics compared to conventional packaged electronics and sensors. In this presentation, I will provide an overview of recent advances in mechanics and designs for emerging classes of fully-integrated wearable microfluidic systems. These devices incorporate arrays of sensors, microfluidic channels and electrochemical sensors, configured in flexible formats for continuous monitoring of hydration, stress, and health biomarkers. Quantitative analyses of device performance in field trials highlight the utility of these wearable systems in clinical and uncontrolled settings. We will conclude with representative and commercialized examples of these wearable systems, in sports and industrial safety sectors.

Dr. Roozbeh Ghaffari is co-founder and CEO of Epicore Biosystems, Inc., a company developing a proprietary wearable microfluidic sensing platform. He also serves as an Associate Research Professor in the Department of Biomedical Engineering at Northwestern University and is Director of Translational Research at the Querrey-Simpson Institute for Bioelectronics. Dr. Ghaffari received his PPh.D.in biomedical engineering from the Harvard Medical School-MIT Program in Health Sciences and Technology. His research and translational contributions in wearable bioelectronics, microfluidic systems, and auditory neuroscience have been recognized with multiple awards. He has published over 100 academic papers and is the inventor on over 60 issued patents.

Sungsu Park, *School of Mechanical Engineering, Sungkyunkwan University, Korea*

"3D Microfluidic Cell Culture Device Recapitulating the Acceleration of Drug Resistance in Tumor and Spreading of Virus Infection in a Human Society"

Abstract: In this presentation, I introduce microfluidic devices with heterogeneous microhabitats for studying cancer drug resistance and virus transmission. By integrating concentration gradients and microfabricated habitat in a microfluidic chip, we could mimic the spatiotemporally heterogeneous ecosystem of cancer cells in the tumor tissues of patients receiving chemotherapy. The same chip can be used to recapitulate the virus propagation and herd immunity of the COVID-19 virus. These results suggest that microfluidic devices with heterogeneous microhabitats can be utilized for drug screening as well as mathematical modeling of vaccination.

Professor Sungsu Park received his Ph.D. from the Department of Food Science of Cornell University in 1999 and worked as a postdoctoral researcher at several institutes: Department of Bioengineering of Tokyo Institute Technology (199the 9), Department of Environmental and Agricultural Engineering of Cornell University (2000), and Department of Physics at Princeton University (2001-2003). In 2004, he joined as an assistant professor at the Chemistry and Nano Science Department of Ewha Woman's University in Seoul, Korea, and was promoted to full professor in 2011. He moved to the School of Mechanical Engineering at Sungkyunkwan University in 2014. His major research interests are focused on organs on a chip, tumors on a chip, and 3D-printed paper fluidic devices for molecular diagnostics and point of care (POC) testing.

Tutorial Speakers

Wednesday, June 14ᵗʰ
11:20 – 12:20 | Tamna Hall

Daniela Lo Presti, *University Campus Bio-Medico di Roma, Italy*

"Wearable Systems for Cardiorespiratory Monitoring: From Design to Data Analysis"

Abstract: There is an ever-growing demand for wearable systems able to estimate cardiorespiratory parameters in many scenarios ranging from clinical settings, to harsh environments and sports science. This information is important for health monitoring, clinical diagnoses, and treatment, but collecting it noninvasively while achieving both comfort and high metrological performance remains a challenge. However, the sensitiveness of cardiac and respiratory parameters to different pathological conditions (e.g., adverse cardiac events, pneumonia, and clinical deterioration) and stressors, is pushing new advances in flexible systems to unleash a higher-performing and more comfortable generation of wearable devices. This tutorial provides an overview of the next-generation wearables for measuring cardiac and respiratory activity. Then, specific use cases are presented underlining the main steps in the design, fabrication, and assessment of flexible sensing elements developed for this application. The last part of the tutorial will be focused on the main algorithms used to process and extract cardiac and respiratory parameters from typical cardiorespiratory signals recorded by wearables.

Daniela Lo Presti obtained an M.Sc. and a Ph.D. in Biomedical Engineering at Università Campus Bio-Medico di Roma (UCBM). She is actually Assistant Professor at UCBM where she leads the research activities focused on the design, fabrication, and feasibility assessment of wearable systems for medical applications. In the last years, she worked in the field of sensor encapsulation into silicone and 3D-printed substrates to improve sensor robustness and performance and on the development of custom algorithms for the extraction of cardiorespiratory parameters. She was awarded several prizes and was involved in many national and international research projects as WP and task coordinator. She is the first author, co-author, and corresponding author of more than 80 articles published in high-profile journals and international scientific conferences, which are highly cited (>1800).

Dukhyun Choi, *Sungkyunkwan University, Korea*

"Energy Harvesting for Medical Application"

Abstract: Serious climate changes and energy-related environmental problems are currently critical issues in the world. In order to reduce carbon emissions and save our environment, renewable energy harvesting technologies will serve as a key solution in near future. Among them, triboelectric nanogenerators (TENGs), which is one of the promising mechanical energy harvesters by means of contact electrification phenomenon, are explosively developing due to abundant wasting mechanical energy sources and a number of superior advantages in a wide availability and selection of materials, relatively simple device configurations, and low-cost processing. Significant experimental and theoretical efforts have been achieved toward understanding fundamental behaviors and a wide range of demonstrations since its first report in 2012. As a result, considerable technological advancement has been exhibited and it advances the timeline of achievement in the proposed roadmap. Now, the technology has reached the stage of prototype development with verification of performance beyond the lab scale environment toward its commercialization. In this tutorial, we investigate the fundamental principles, materials, and system designs for TENGs. Furthermore, we show their unique features to make TENG a very promising candidate as an alternative power source for biomedical devices by utilizing available biomechanical energy. While the majority of applications are still focusing on battery charging for wearable or implantable devices (it is indeed a very promising application direction), this tutorial discusses another emerging application direction where the electricity from TENGs is directly used for providing biomedical functions, such as therapeutic electrostimulations (ES).

Dukhyun Choi is a professor of Mechanical Engineering at Sungkyunkwan University, where he has been a faculty since 2021 fall. He received his Ph.D. in Mechanical Engineering from Postech in 2006 and joined at dept. of bioengineering at UC Berkeley as a post-doc in 2007. During 2008-2010, he was an R&D staff at Samsung Institute of Technology (SAIT). From 2010 fall, he was a faculty of Mechanical Engineering at Kyung Hee University (KHU) for 11 years. At KHU, his group was Nanostructures and Nanomaterials lab. (NNL), where he had an interest in nano/microfabrication and a variety of applications of nanostructures and nanomaterials in energy, sensors, and electronics. He also focused on the novel design and the development of hybrid nanocomposite structures for various self-powered electronics and biological systems. At SKKU, he will further focus on Nanoenergy and Nanosensors. He is the first author, co-author, and corresponding author of more than 140 articles published in high-profile journals including Energy & Environmental Science, Advanced Materials, Advanced Energy Materials, ACS Energy Letters, Nature Communications, J. Am. Chem. Sci., Nano Letters, ACS Nano, Scientific Reports, Lab Chip, Small, and Acta Materialia, which are highly cited (>6000).

Marco Tarabini, *Politecnico di Milano, Italy*

"Human Response to Vibration: Measurement and Assessment of Risk"

Abstract: The seminar aims at providing insight into human responses to vibration and focuses on the experimental identification of the response of the body to mechanical vibration and on the quantification of the risk deriving from the workers' vibration exposure. The seminar will start with the definition of the different types of human vibration (hand-arm vibration, whole-body vibration, and foot-transmitted vibration). The principal laboratory techniques for determining the biomechanical response (in terms of driving point mechanical impedance, apparent mass, or vibration transmissibility) of different body parts will be described. Finally, we will present the measurement techniques for quantifying the exposure at the workplace; one specific case study for each type of human vibration will be presented. The last part of the seminar will cover the possible mitigating actions for the reduction of vibration exposure.

Marco Tarabini obtained a master's degree in Mechanical Engineering and a PhD cum laude in Engineering of Mechanical systems at Politecnico di Milano. He is actually an associate professor at the Politecnico di Milano. Dr. Tarabini's research focuses on the study of the response of the human body to vibration and on the design of measurement instruments for industrial application. He is a member of the ISO/TC 108/SC 4 – Human Exposure to mechanical vibration and shock and project leader for the definition of standards for Foot-Transmitted Vibration. Dr. Tarabini coordinated different research projects funded by the Lombardy region, by the Italian National Institute for Safety and Health, and by the Italian Ministry the Economical Growth in the above-mentioned research areas.

Min-Ho Lee, *Chung-Ang University, Korea*

"Brief Introduction of Diagnostic Devices"

Abstract: In this seminar, the basic mechanism and kinds of diagnostic tools will be presented. Overall definition of diagnostic biosensor and their overall applications. The various techniques for purification, pretreatment, and handling biological samples before measurements will be presented. In addition, some tools utilized for detecting COVID-19 will be introduced. Finally, fast and efficient PCR for conventional use of tube will be introduced in the last part.

Min-Ho Lee is a professor at the School of Integrative Engineering at Chung-Ang University, where he has been faculty since 2017. He received his Ph.D. in Bioengineering from Rice University in 2006. During 2006-2017, he was a Team Leader, Managerial Researcher at Korea Electronics Technology Institute, where he built several medical devices and diagnostic readers including LFA and PCR. He also focused on the development of high-tech combined biosensors. At CAU, he is working with many diagnostic companies for developing highly sensitive sensors. He has published over 120 papers including Biosensors and Bioelectronics, Small, Analytical Chemistry

PROGRAM AT A GLANCE

WEDNESDAY, JUNE 14, 2023

	Tamna Hall
8:45 – 9:40	Registration
9:45 – 10:15	Opening Session
10:15 – 11:00	**Keynote 1: Robotic tools for studying human biomechanics in healthy subjects and neurological patients** Domenico Formica
11:00 – 11:15	Morning Break
11:20 – 12:20	**Tutorial 1: Wearable Systems for cardiorespiratory monitoring: from design to data analysis** Daniela Lo Presti
12:20 – 13:20	**Tutorial 2: Energy harvesting for medical application** Dukhyun Choi
13:20 – 14:30	Lunch
14:30 – 15:30	**Tutorial 3: Human Response to Vibration: measurement and Assessment of Risk** Marco Tarabini
15:30 – 16:30	**Tutorial 4: Brief Introduction of Diagnostic Devices** Min-Ho Lee
17:00 – 19:00	Welcome Reception

THURSDAY, JUNE 15, 2023

	Tamna Hall	Ora Hall	Halla Hall
8:00 – 8:30	Registration Opens		
8:30 – 9:20	**Keynote 2: Soft, Wearable Systems with Integrated Microfluidics and Biosensors for Remote Health Monitoring** Roozbeh Ghaffari		
9:20 – 11:00 Chairs	**SS1-1** I.Mileti & J. Taborri	**SS2** T. Kim & F. Marra	**RS1** D. Choi & M. Parvis
9:20 – 9:40	**1570880979** B. Wallace	**1570883647** J. Chen	**1570889802** S. Banerjee, R. Swaminathan
9:40 – 10:00	**1570886722** P. Aqueveque	**1570886557** H. Seok	**1570885446** G. Gronska
10:00 – 10:20	**1570887546** I. Mileti	**1570889723** H. Bidsorkhi	**1570890189** V. Groza
10:20 – 10:40	**1570885840** L. Mattioli	**1570889937** N. Faramarzi, H. Bidsorkhi	**1570883193** M. Shahbakht
10:40 – 11:00	**1570894772** M. Lancini	**1570889762** K.Kajie	**1570885721** M. Beiramvand
11:00 – 11:20	Morning Break		

PROGRAM AT A GLANCE

	Tamna Hall	Ora Hall	Halla Hall
11:20 – 13:00 Chairs	**SS1-2** I.Mileti & J. Tabri	**SS7** M.Mischi & E. Peri	**RS2** T. Kim & L. Lombardo
11:20 – 11:36	**1570885958** C. Green	**1570885473** L. Apa	**1570878611** K. Imagawa
11:36 – 11:53	**1570886665** S. Huq	**1570885757** S. Kani	**1570880715** M.Faisal
11:53 – 12:10	**1570886709** J. Taborri	**1570889800** S. Carrara	**1570885781** E. de Boer
12:10 – 12:26	**1570885523** C. Fernandes	**1570889827** S. Carrara	**1570889717** Riandini
12:23 – 12:43	**ATHENA Project** I. Mileti	**1570889941** J. JOSEPH	**1570889906** P. Premkumar
12:43 – 13:00		**1570878675** X. Yin	1570886487 A. Rifi
13:00 – 14:30	**Lunch**		
	Tamna Hall	**Ora Hall**	**Halla Hall**
14:30 – 16:10 Chairs	**SS1-3** I.Mileti & J. Taborri	**SS5-1** S. Pullano & C. Romano	**SS6-1** D. Lo Presti & L. Scalise
14:30 – 14:50	**1570893010** E. Ningrum	**1570882555** B. Basumatary	**1570889933** P. Premkumar
14:50 – 15:10	**1570889886** V. De Dekan	1570885738 G. Woo	**1570885758** D. Lo Presti
15:10 – 15:30	**1570889882** C. Raets	**1570886148** R. Asahi	**1570880888** L. Scalise
15:30 – 15:50	**1570889936** F. Kulwa	**1570886276** R. Gutierrez	**1570893026** N. PM
15:50 – 16:10	**1570885419** M. Matella	**1570886536** S. Marty	**1570888029** C. Massaroni
16:10 – 16:30	**Afternoon Break**		
	Ara Hall	**Ora Hall**	**Halla Hall**
16:30 – 18:10 Chairs	**RS3** A.Lanzolla & L. Scalise	**SS5-2** S. Pullano & C. Romano	**SS6-2** A.Noccaro & C. Massarnoi
16:30 – 16:50	**1570886684** C. Liu	**1570886753** M. Suzuki	**1570886616** C. Carissimo
16:50- 17:10	**1570886714** C. Liu	**1570889846** S. Pullano	**1570889845** A. Noccaro
17:10 – 17:30	**1570889578** P. Asli	**1570893022** N. PM, J. Joseph	**1570889847** G. Giovannetti
17:30 – 17:50	**1570889794** V. Groza	**1570893029** N. Pm	**1570889851** T. Di Libero
17:50 – 18:10	**1570892933** A.Lanzolla	**1570889378** R. Marcia	**1570889852** S. Buscaglione
18:30 – 21:00	**Gala Dinner**		

FRIDAY, JUNE 16, 2023

8:25 – 9:00	Registration Opens		
9:00 – 9:45	**Keynote 3: 3D Microfluidic cell culture device recapitulating the acceleration of drug resistance in tumor and spreading of virus infection in a human society** Sungsu Park		
	Tamna Hall	**Ora Hall**	**Halla Hall**
9:45 – 11:25 Chairs	**RS6** S. Carrara & M. Tarabini	**SS3** Z. Del Prete & E. Schena	**SS4-1** A.Varkonyi-Koczy & S. Carrara
9:45 – 10:05	**1570885492** M. Tarabini	**1570886748** F. Kulwa	**1570886080** M. Han
10:05 – 10:25	**1570889702** M. Tarabini	**1570889746** F. Kulwa	**1570886158** A.Khattak
10:25 – 10:45	**1570885976** K. Gibbs	**1570889795** B. Basumatary	**1570889943** P. Premkumar, M. Sivaprakasam
10:45 – 11:05	**1570886691** M. Roglic	**1570892537** O. d Angelis	**1570886676** A.Keymolen
11:05 – 11:25	**1570885821** L. Apa	**1570886744** A.Varkonyi-Koczy	**1570886713** P. Premkumar,
11:25 – 11:45	Morning Break		
	Tamna Hall	**Ora Hall**	**Halla Hall**
11:45 – 13:25 Chairs	**RS5** S. Grassini & P. Daponte	**SS6-3** E. Schena & D. Lo Presti	**SS4-2** A.Varkonyi-Koczy & S. Carrara
11:45 – 12:05	**1570885453** A.Lochbihler	**1570889987** L. Iannucci	**1570886403** P. Premkumar, M. Sivaprakasam
12:05 – 12:25	**1570886105** C. Yen, F. Wu	**1570888365** C. Romano	(12:10) **1570889519** L. Lombardo
12:25 – 12:45	**1570889880** S. Blotwijk	**1570888856** P. Premkumar	(12:35) **1570889707** L. De Palma
12:45 – 13:05	**1570886287** W. Bae	**1570885743** F. Kharrat	(13:00) **1570890788** P. Daponte
13:05 – 13:25	**1570886688** E. Ferlinghetti	**1570889732** S. Shrivastava	
13:25 – 14:55	Lunch		

PROGRAM AT A GLANCE

	Tamna Hall	Ora Hall	Halla Hall
14:55 – 16:35 Chairs	**RS4** L.Scalise & C. Massaroni	**SS6-4** E.Schena & A.Noccaro	**RS7** T. Kim & M. Parvis
14:55 – 15:09	**1570886601** A.Roy	**1570886511** S. Pascucci	**1570885762** U. Khan
15:09 – 15:23	**1570887667** K. Lan	(15:20) **1570889889** I.Morales	(15:15) **1570886679** K. Beange
15:23 – 15:37	**1570893014** N. PM	(15:45) **1570885691** J. Pascal	(15:35) **1570889744** K. Liu
15:37 – 15:52	**1570889617** D. Chiang	(16:10) **1570889724** F. Picariello	(15:55) **1570889767** A.Connelly
15:52 – 16:06	**1570889833** N. PM		(16:15) **1570889948** J. Joseph
16:06 – 16:20	**1570889853** N. PM		
16:20 – 16:35	**1570889947** N. PM		
16:35 – 16:55	Afternoon Break		
	Tamna Hall		
16:55 – 17:15	Closing Session Awards Ceremony		

Technical Program

Wednesday, June 14, 2023

9:45 – 10:15
Opening Ceremony & Keynote Introduction
Room: Tamna Hall

10:15 – 11:00
Keynote 1: Robotic Tools for Studying Human Biomechanics in Healthy Subjects and Neurological Patients
Room: Tamna Hall
Speaker: Domenico Formica

11:00 – 11:15
Break
Room: Banquet Lobby

11:20 – 12:20
Tutorial 1: Wearable Systems for Cardiorespiratory Monitoring: From Design to Data Analysis
Room: Tamna Hall
Speaker: Daniela Lo Presti

12:20 – 13:20
Tutorial 2: Energy Harvesting for Medical Application
Room: Tamna Hall
Speaker: Dukhyun Choi

13:20 – 14:30
Lunch
Room: Tammora (Deli shop on the 1st Floor)

14:30 – 15:30
Tutorial 3: Human Response to Vibration: measurement and Assessment of Risk
Room: Tamna Hall
Speaker: Marco Tarabini

15:30 – 16:30
Tutorial 4: Brief Introduction of Diagnostic Devices
Room: Tamna Hall
Speaker: Min-Ho Lee

17:00 – 19:00
Welcome Reception
Room: Tamna Hall

Thursday, June 15, 2023

9:20 – 11:00
Special Session 1: Sensor- and AI-based Methods as Diagnostic and Monitoring Tools for Clinical Applications
Room: Tamna Hall
Session Chair: Juri Taborri (University of Tuscia, Viterbo, Italy)
　　　　　　Ilaria Mileti (University Niccolò Cusano, Italy)

9:20

Decision Tree Machine Learning to Determine Direction of Steering Force for Hospital Bed Push Handle System
　　　　Bahareh Chimehi (Carleton University & AGE-WELL NIH SAM3, Canada)
　　　　Bruce Wallace (AGE-WELL NIH SAM3 & Carleton University, Canada)

9:40

Automatic platform for upper extremity musculoskeletal disorder risks estimation from repetitive actions, Preliminary results
　　　　Pablo Aqueveque (Universidad de Concepcion, Chile)
　　　　Manuel Gutierrez (Universidad de Concepcion, Chile)
　　　　Guisella Peña (Universidad de Concepcion, Chile)
　　　　Gustavo Retamal (Universidad de Concepcion, Chile)
　　　　Enrique Germany (University of Concepcion, Chile)
　　　　Britam Gómez (Universidad de Santiago de Chile, Chile)
　　　　Paulina Ortega (Universidad de Concepcion, Chile)

10:00

Accuracy of position and orientation for consumer-grade tracking sensors with Hand-Eye Calibration
　　　　Ilaria Mileti (University Niccolò Cusano, Italy)
　　　　Fabrizio Patanè (University Niccolò Cusano, Italy)

10:20

Kinematic evaluation of upper limb impairment in stroke survivors through box and block test and IMUs
　　　　LuLuca Mattioli (University of Rome "La Sapienza", Italy)
　　　　Ilaria Conforti (Sapienza University of Rome, Italy)
　　　　Emma Colamarino (Sapienza University of Rome, Italy)
　　　　Ilaria Mileti (University Niccolò Cusano, Italy)
　　　　Valeria de Seta (Sapienza University of Rome, Italy)
　　　　Floriana Pichiorri (IRCCS Fondazione Santa Lucia, Italy)
　　　　Donatella Mattia (Fondazione Santa Lucia IRCCS, Italy)
　　　　Zaccaria Del Prete (SAPIENZA University of Rome, Italy)
　　　　Jlenia Toppi (University of Rome "Sapienza" & IRCCS Fondazione Santa Lucia, Italy)
　　　　Febo Cincotti (Sapienza University of Rome & IRCCS Fondazione Santa Lucia, Italy)
　　　　Eduardo Palermo (Sapienza University of Rome, Italy)

10:40

Body measurement estimations using 3D scanner for individuals with severe motor impairments

Cristina Nuzzi (University of Brescia, Italy)
Marco Ghidelli (University of Brescia, Italy)
Alessandro Luchetti (University of Trento, Italy)
Matteo Zanetti (University of Trento, Italy)
Francesco Crenna (University of Genova, Italy)
Matteo Lancini (University of Brescia, Italy)

9:20 – 11:00
Special Session 2: Micro-Nanomaterials Based Sensor's and Devices For Healthcare Monitoring
Room: Ora Hall
Session Chair: Taesung Kim (Sungkyunkwan University, Korea)
            Fabrizio Marra (Sapienza University of Rome, Italy)

9:20

New Insights for DNA Measurement by Memristive Biosensors

Junrui Chen (École Polytechnique Fédérale de Lausanne, Switzerland)
Sandro Carrara (EPFL, Switzerland)

9:40

Hazardous Biomolecules Sensing in Water using Nanostructured Metal Oxides

Hyunho Seok (Sungkyunkwan University, Korea)
Taesung Kim (Sungkyunkwan University, Korea)
Aneesh Koyappayil (Chung-Ang University, Korea)
Sihoon Son (Sungkyunkwan University, Korea)
Min-Ho Lee (Chung-Ang University, Korea)

10:00

Potential Application of PVDF/CoFe2O4 Nanocomposites as Piezoelctric Plantar Pressure Sensors

Marco Fortunato (Sapienza University of Rome, Italy)
Hossein Cheraghi Bidsorkhi (Sapienza University of Rome, Italy)
Alessandro Giuseppe D'Aloia (Sapienza University of Rome, Italy)
Alessio Tamburrano (Italy)
Maria Sabrina Sarto (University of Rome, La Sapienza, Italy)

10:20

Graphene-based Smart Insole for Gait Monitoring

Negin Faramarzi (Sapienza University of Rome, Italy)
Babar Ali (Sapienza University of Rome, Italy)
Hossein Cheraghi Bidsorkhi (Sapienza University of Rome, Italy)
Alessandro Giuseppe D'Aloia (Sapienza University of Rome, Italy)
Alessio Tamburrano (Italy)
Maria Sabrina Sarto (University of Rome, La Sapienza, Italy)

10:40

Control of drug release in ultrasound-responsive liposome-encapsulated gel patches

Kano Kajie, Zugui Peng, and Tohru Yagi (Tokyo Institute of Technology, Japan)
Kenta Shimba (The University of Tokyo, Japan)
Takashi Shibata (University of Toyama, Japan)
Yoshitaka Miyamoto (National Center for Child Health and Development, Japan)

9:20

Analysis of Survival Probability and Its Association with Time to Task Failure in Induced Fatiguing Dynamic Contractions of Biceps Brachii Muscle using Surface Electromyography
> Sowmya S (Indian Institute of Technology Madras, India);
> Shib Sundar Banerjee (Indian Institute of Technology Madras, India);
> Ramakrishnan Swaminathan (IIT Madras & Chennai, India)

9:40

Removal of electrocardiographic interference and artifacts from diaphragm electromyography
> Gabriela Maria Grońska (Eindhoven University of Technology, The Netherlands)
> Elisabetta Peri (Eindhoven University of Technology, The Netherlands)
> Xi Long (Eindhoven University of Technology & Philips Research, The Netherlands)
> Johannes P van Dijk (Center for Sleep Medicine Kempenhaeghe, The Netherlands)
> Massimo Mischi (Eindhoven University of Technology, The Netherlands)

10:00

 ECG Multi Class Classification Using Machine Learning Techniques
> Vijayeskar Kumar (The University of the South Pacific, Fiji)
> Shahil Kumar (The University of the South Pacific, Fiji)
> Krish Kumar Raj (The University of the South Pacific, Fiji)
> Mansour H Assaf (University of South Pacific & Faculty of Science & Technology, Fiji)
> Voicu Groza (University of Ottawa, Canada)
> Rahul Ranjeev Kumar (University of the South Pacific, Fiji)

10:20

A Reliable Method to Estimate the Bispectral Index Value Using a Single Frontal EEG Channel for Intra and Inter Subject Variability
> M Shahbakhti (Kaunas University of Technology, Lithuania)
> Matin Beiramvand (Tampere University, Finland)
> Roza Krycinska (Jagiellonian University, Poland)
> Erfan Nasiri (Allameh Tabatabai University, Iran)
> Wei Chen (Fudan University, China)
> Jordi Sole (Vic University, Spain)
> Michał Wierzchoń (Jagiellonian University in Kraków, Poland)
> Anna Broniec (AGH University of Science and Technology, Poland)
> Piotr Augustyniak (AGH University of Science and Technology, Poland)
> Vaidotas Marozas (Kaunas University of Technology, Lithuania)

10:40

Mental Workload Assessment using Low-Channel Prefrontal EEG Signals
> Matin Beiramvand (Tampere University, Finland);
> Tarmo Lipping (Tampere University, Finland);
> Nina Karttunen (Satakunta University of Applied Sciences, Finland);
> Reijo Koivula (Tampere University, Finland)

11:00 – 11:15
AM Break
Room: Banquet Lobby

11:20 – 13:00
Special Session 1.2: Sensor- and AI-based Methods as Diagnostic and Monitoring Tools for Clinical Applications
Room: Tamna Hall
Session Chair: Juri Taborri (University of Tuscia, Viterbo, Italy)
                    Ilaria Mileti (University Niccolò Cusano, Italy)

11:20

Sleep-Wake and Body Position Classification with Deep Learning using Pressure Sensor Mat Measurements
        Martin Bouchard (University of Ottawa, Canada)
        Carter J Green (University of Ottawa, Canada)
        Rafik Goubran (Carleton University, Canada)
        Frank Knoefel (Bruyere Continuing Care, Canada)
        Rebecca Robillard (University of Ottawa, Canada)
        Caitlin Higginson (University of Ottawa, Canada)
        Elliott Lee (Sleep Disorders Clinic, Canada)

11:40

Data Augmentation using Reverb and Noise in Deep Learning Implementation of Cough Classification
        Saiful Huq (Carleton University, Canada)
        Pengcheng Xi (National Research Council Canada, Canada)
        Rafik Goubran (Carleton University, Canada)
        Julio Valdes (Researcher at the National Research Council of Canada, Canada)
        Frank Knoefel (Bruyere Continuing Care, Canada)
        James R Green (Carleton University, Canada)

12:00

Assessment of cognitive skills in karatekas pre-post technical training
        Luca Molinaro (University of Tuscia, Viterbo & Motustech Srl, Italy)
        Juri Taborri (University of Tuscia, Viterbo, Italy)
        Massimo Montecchiani (Gruppo Sportivo Fiamme Oro Polizia di Stato, Italy)
        Stefano Rossi (University of Tuscia, Italy)

12:20

Prostate cancer risk assessment using a radiogenomic analysis
        Catarina Dinis Fernandes (Eindhoven University of Technology, The Netherlands)
        Annekoos Schaap (Eindhoven University of Technology, The Netherlands)
        Joan Kant (Eindhoven University of Technology, The Netherlands)
        Petra van Houdt (The Netherlands Cancer Institute, The Netherlands)
        Hessel Wijkstra (Eindhoven University of Technology, The Netherlands)
        Uulke van der Heide (The Netherlands Cancer Institute, The Netherlands)
        Wilbert Zwart (The Netherlands Cancer Institute, The Netherlands)
        Massimo Mischi (Eindhoven University of Technology, The Netherlands)
        Federica Eduati (Eindhoven University of Technology, The Netherlands)
        Simona Turco (Eindhoven University of Technology, The Netherlands)

12:23

ATHENA Project

  Ilaria Mileti (University Niccolò Cusano, Italy)

11:20

Skin safety test in electrowetting application: a preliminary study

  Livio D'Alvia (Sapienza University of Rome, Italy)
  Emma J.M. Moonen (Eindhoven University of Technology, The Netherlands)
  Ludovica Apa (Sapienza, University of Rome, Italy)
  Eduard Pelssers (Eindhoven University of Technology, The Netherlands)
  Zaccaria Del Prete (SAPIENZA University of Rome, Italy)
  Jaap den Toonder (Eindhoven University of Technology, The Netherlands)

11:35

Wearable sweat sensing device determining sweat rate per gland

  Sevda Malek Kani (Eindhoven University of Technology, The Netherlands)
  Ruben J.H Marteijn (Eindhoven University of Technology, The Netherlands)
  Eduard Pelssers (Eindhoven University of Technology, The Netherlands)
  Jaap den Toonder (Eindhoven University of Technology, The Netherlands)

11:50

Multimodal Sweat Ion and Sweat Rate Sensing with Inkjet-printed Flexible Bracelet and Paperfluidic

  Sarah Tonello (University of Padova, Italy)
  Ata Golparvar (EPFL, Switzerland)
  Ali Meimandi (EPFL, Switzerland)
  Sandro Carrara (EPFL, Switzerland)

12:05

Flexible Microfluidics for Raman Measurements on Skin

  Ata Golparvar (EPFL, Switzerland)
  Assim Boukhayma (EPFL & CEA-LETI, France)
  Sandro Carrara (EPFL, Switzerland)

12:20

Cover slip handling and mounting media dispensation for reliable automated cover slipping of large tissue sections

  Hari Narayanan (Indian Institute of Technology, Madras, India)
  Sudhan Chandrasekaran (Indian Institute of Technology Madras, India)
  Jayaraman Kiruthi Vasan (Healthcare Technology Innovation Centre, India)
  Ramdayalan Kumarasami (Indian Institute of Technology, Madras, India)
  Mohanasankar Sivaprakasam (IIT Madras, India)
  Jayaraj Joseph (Indian Institute of Technology Madras, India)

12:35

Estimation of blood glucose levels by sweat sensing based on biophysical modeling of glucose transport

  Xiaoyu Yin (Eindhoven University of Technology, The Netherlands)
  Elisabetta Peri (Eindhoven University of Technology, The Netherlands)
  Eduard Pelssers (Eindhoven University of Technology, The Netherlands)

11:20 – 13:00
Regular Session 2: Medical Imaging
Room: Halla Hall
Session Chair: Luca Lombardo (Politecnico di Torino, Italy)
Taesung Kim (Sungkyunkwan University, Korea)

11:20

Performance change with the ratio of training data A case study on the binary classification of COVID-19 chest X-ray by using convolutional neural networks

Kuniki Imagawa (Tokyo City University, Japan)
Kohei Shiomoto (Tokyo City University, Japan)

11:35

CheXViT: CheXNet and Vision Transformer to Multi-Label Chest X-Ray Image Classification

Muhamad Faisal (National Taiwan University of Science and Technology, Taiwan)
Jeremie Theddy Darmawan (Indonesia International Institute for Life Sciences, Indonesia)
Nabil Bachroin (National Taiwan University of Science and Technology, Taiwan)
Cries Avian (National Taiwan University of Science and Technology, Taiwan)
Jenq-Shiou Leu (National Taiwan University of Science and Technology, Taiwan)
Chia-Ti Tsai (National Taiwan University Hospital, Taiwan)

11:50

Quantitative Assessment Of Carotid Diameter Measurements In Parallel Versus Rotated And Tilted Orientation Using Ultrasound In The Operating Room - A Comparative Analysis

Esmée C. de Boer (Eindhoven University of Technology, The Netherlands)
Catarina Dinis Fernandes (Eindhoven University of Technology, The Netherlands)
Danihel van Neerven (Maastricht University Medical Center, The Netherlands)
Christoph Pennings (Maastricht University Medical Center, The Netherlands)
Rohan Joshi (Philips Engineering Solutions, The Netherlands)
Sabina Manzari (University of Rome Tor Vergata, Italy)
Sergei Shulepov (Philips Engineering Solutions, The Netherlands)
Luuk van Knippenberg (Eindhoven University of Technology, The Netherlands)
John van Rooij (Philips Engineering Solutions, The Netherlands)
Arthur R. Bouwman (Catharina Hospital Eindhoven, The Netherlands)
Massimo Mischi (Eindhoven University of Technology, The Netherlands)

12:10

A U-Net-Based System for Cine Cardiac Segmentation on MR Images: The Effect of Fuzzy Pooling Layer Type

Riandini (ITS), Indonesia);
Tri Sardjono (ITS, Indonesia)
Ketut Purnama (ITS, Indonesia)
Eko Mulyanto Yuniarno (ITS, Indonesia)
Mauridhi Hery Purnomo (ITS, Indonesia)

12:25

Eliminating Vertical Fixed Pattern Noise in CMOS-Based Endoscopic Images using Modified Dark Frame Subtraction

Ajay Kumar Gurrala (IIT Madras, India)
Rahul G S (Indian Institute of Technology Madras, India)
Amalan S (Healthcare Technology Innovation Center, IIT Madras, India)
Preejith Sreelatha Premkumar (HTIC-IITMadras, India)
Mohanasankar Sivaprakasam (IIT Madras, India)

12:40

Murine in vivo tumor model to explain the interpretability of radiomic features

       Amir Laraki Rifi (Vrije Universiteit Brussel, Belgium)

       Febe Geirnaert (Vrije Universiteit Brussel, Belgium)

       Camille Raets (Vrije Universiteit Brussels, Belgium)

       Chaïmae El Aisati (UZ Brussel, Belgium)

       Inès Dufait (Vrije Universiteit Brussel, Belgium)

       Mark De Ridder (UZ Brussel, Belgium)

       Kurt Barbé (Vrije Universiteit Brussel & Faculty of Sciences, Belgium)

13:00 – 14:30
Lunch
Room: Tammora (Deli shop on the 1st Floor)

14:30 – 16:10
Special Session 1.3: Sensor- and AI-based Methods as Diagnostic and Monitoring Tools for Clinical Applications
Room: Tamna Hall
Session Chair: Juri Taborri (University of Tuscia, Viterbo, Italy)
              Ilaria Mileti (University Niccolò Cusano, Italy)

14:30

Early Detection of Infant Cerebral Palsy Risk based on Pose Estimation using OpenPose and Advanced Algorithms from Limited and Imbalance Dataset

       Endah Suryawati Ningrum (Politeknik Elektronika Negeri Surabaya, Indonesia)

       Eko Mulyanto Yuniarno (Institut Teknologi Sepuluh November, Indonesia)

       Mauridhi Hery Purnomo (Institut of Technology Sepuluh Nopember, Indonesia)

14:50

Mapping care pathways in children with TBI using Markov Models

       Viktor-Jan De Deken (Vrije Universiteit Brussel, Belgium)

       Wilfried Cools (Vrije Universiteit Brussel, Belgium)

       Helena Van Deynse (Vrije Universiteit Brussel, Belgium)

       Koen Putman (Vrije Universiteit Brussel, Belgium)

       Kurt Barbé (Vrije Universiteit Brussel & Faculty of Sciences, Belgium

15:10

Predicting the Response to Chemoradiotherapy in Rectal Cancer Patients Using Bayesian Evolutionary Random Forest and Three-Dimensional Discrete Fourier Transform

       Camille Raets (Vrije Universiteit Brussels, Belgium)

       Kurt Barbé (Vrije Universiteit Brussel & Faculty of Sciences, Belgium)

       Amir Laraki Rifi (Vrije Universiteit Brussel, Belgium)

       Mark De Ridder (UZ Brussel, Belgium)

       Chaïmae El Aisati (UZ Brussel, Belgium

15:30

Inspection of EEG Signals for Noninvasive Blood Glucose Monitoring in Prediabetes Diagnosis

> Tobore Igbe (University of Virginia, USA
> Abhishek Kandwal (Shoolini University, India)
> Oluwarotimi Williams Samuel (University of Derby, United Kingdom)
> Jingzhen Li (Shenzhen Institutes of Advanced Technology, China)
> Yuhang Liu (Shenzhen Institute of Advanced Technology, China)
> Frank Kulwa (Shenzhen Institute of Advanced Technology, China)
> Ze-dong Nie (Shenzhen Institute of Advanced Technology China)

15:50

Computational Modelling of Probe Configurations for Electrical Impedance Spectroscopy-based Differentiation of Thyroid and Parathyroid Tissues

> Malwina Matella (The University of Sheffield, United Kingdom (Great Britain))
> Dawn Walker (The University of Sheffield, United Kingdom (Great Britain))
> Keith Hunter (The Unviersity of Liverpool, United Kingdom (Great Britain))

14:30 – 16:10

Special Session 5.1: Sensors, Electronic Interfaces and Biosignal Processing for Healthcare Applications

Room: Ora Hall

Session Chair: Salvatore Andrea Pullano(University Magna Graecia of Catanzaro, Italy)
        Chiara Romano (Università Campus Bio-Medico di Roma, Italy)

14:30

EMG Based Clinical Evaluation of an Unpowered Exoskeleton Device

> Rajat Suvra Halder (Indian Institute of Technology Ropar, India)
> Bijit Basumatary (Indian Institute of Technology Ropar, India)
> Aalok Pandya (Indira Gandhi National Tribal University Amarkantak, India)
> Ganesh Ram Jangir (Newndra Innovations Pvt Ltd, India)
> Anil Kumar Jain (Santokba Durlabhji Memorial Hospital, India)
> Ashish Kumar Sahani (Indian Institute of Technology Ropar, India)

14:50

Real-time bioaerosol detecting via combination of cyclone based collecting system and SiNW biosensor

> Gunhoo Woo (SKKU Advanced Institute of Nanotechnology (SAINT), Korea)
> Taesung Kim (Sungkyunkwan University, Korea)
> B. Lee (Korea University, Korea)
> Do Hoon Lee (Korea University, Korea)

15:10

Tomographic tactile sensor-based finger motion analysis system to identify number of grasping fingers for evaluating fine motor skills

> Ryunosuke Asahi (Shibaura Institute of Technology, Japan)
> Shunsuke Yoshimoto (The University of Tokyo, Japan)
> Hiroki Sato (Shibaura Institute of Technology, Japan)

15:30

Preventing, Monitoring and Treating Foot Conditions in Medical Robotic Rehabilitation

> Aime' Lay-Ekuakille (University of Salento, Italy)
> Ricardo Tachiquin Gutierrez (University of Salento, Italy)
> Cosimo Chiffi (Roam 2000 Srl, Italy)

15:50

Investigation of mmWave Radar Technology For Non-contact Vital Sign Monitoring

        Steven Marty (ETH, Switzerland)
        Federico Pantanella (ETH, Switzerland)
        Andrea Ronco (ETH Zurich, Switzerland)
        Kanika Dheman (ETH Zurich, Switzerland)
        Michele Magno (ETH Zurich, Switzerland)

14:30 – 16:10
Special Session 6.1: Wearable Sensors and Devices for (Bio)medical Applications
Room: Halla Hall
Session Chair: Lorenzo Scalise (Università Politecnica delle Marche, Italy)
                    Daniela Lo Presti (Università Campus Bio-Medico di Roma, Italy)

14:30

Normative Values of Heart Rate Variability During Sleep in Indian Population

        Aishwarya Rajendra Ranbhor (IIT Madras, India)
        Preejith Sreelatha Premkumar (HTIC-IITMadras, India)
        Mohanasankar Sivaprakasam (IIT Madras, India)

14:50

Development of a flexible sensor based on fiber Bragg grating technology for simultaneous respiratory and hearbeat measurements

        Daniela Lo Presti (Università Campus Bio-Medico di Roma, Italy)
        Carlo Massaroni (Università Campus Bio-Medico di Roma, Italy)
        Daniele Bianchi (Università Campus Bio-Medico di Roma, Italy)
        Michele Arturo Caponero (ENEA Frascati Research Centre, Italy)
        Alessio Gizzi (Università Campus Bio-Medico di Roma, Italy)
        Emiliano Schena (University Campus Bio-Medico of Rome, Italy)

15:10

The Indirect Estimation of Breathing Rate through Wearables: Experimental Study and Uncertainty Analysis through Monte Carlo Simulation

        Gloria Cosoli (Università Politecnica delle Marche, Italy)
        Luca Antognoli (Università Politecnica Delle Marche, Italy)
        Luna Panni (Università Politecnica Delle Marche, Italy)
        Lorenzo Scalise (Università Politecnica delle Marche, Italy

15:30

Acceleration Plethysmography for Ambulatory Vascular Monitoring: A Pilot Study

        V V Girish (Indian Institute of Technology Madras, India)
        Raj Kiran V (IIT Madras, India)
        Nabeel PM (HTIC-IIT Madras Research Park, India)
        Mohanasankar Sivaprakasam (IIT Madras, India)
        Jayaraj Joseph (Indian Institute of Technology Madras, India)

15:50

FBG-Based Mattress for Continuous Respiratory Rate Estimation: Influence of Positioning Over and Under the Bed

        Francesca De Tommasi (Università Campus Bio-Medico di Roma, Italy)
        Daniela Lo Presti (Università Campus Bio-Medico di Roma, Italy)
        Michele Arturo Caponero (ENEA Frascati Research Centre, Italy)
        Massimiliano Carassiti (Università Campus Bio-Medico di Roma, Italy)
        Emiliano Schena (University Campus Bio-Medico of Rome, Italy)
        Carlo Massaroni (Università Campus Bio-Medico di Roma, Italy)

16:10 – 16:30
PM Break
Room: Banquet Lobby

16:30 – 18:10
Regular Session 3: Machine Learning in Medicine
Room: Tamna Hall
Session Chair: Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)
                           Lorenzo Scalise (Università Politecnica delle Marche, Italy)

16:30
Wearable-based Frozen Shoulder Rehabilitation Exercise Recognition using Machine Learning Approaches
> Chien-Pin Liu (National Yang Ming Chiao Tung University, Taiwan)
> Chih-Chun Lai (National Yang Ming Chiao Tung University, Taiwan)
> Kai-Chun Liu (Academia Sinica, Taiwan)
> Chia-Yeh Hsieh (Fu Jen Catholic University, Taiwan)
> Chia-Tai Chan (National Yang Ming Chiao Tung University, Taiwan)

16:50
Deep Learning-based Fall Detection Algorithm Using Ensemble Model of Coarse-fine CNN and GRU Networks
> Chien-Pin Liu (National Yang Ming Chiao Tung University, Taiwan)
> Ju-Hsuan Li (National Yang Ming Chiao Tung University, Taiwan)
> En-Ping Chu (National Yang Ming Chiao Tung University, Taiwan)
> Chia-Yeh Hsieh (Fu Jen Catholic University, Taiwan)
> Kai-Chun Liu (Academia Sinica, Taiwan)
> Chia-Tai Chan (National Yang Ming Chiao Tung University, Taiwan)
> Yu Tsao (Academia Sinica, Taiwan)

17:10
Performance of Speech Recognition Algorithms in Musical Speech used for Speech-Language Pathology Rehabilitation
> Pedram Aliniaye Asli (University of Ottawa, Canada)
> Anna Zumbansen (University of Ottawa, Canada)

17:30
Machine Learning-based Feature Extraction Method for Sleep Stage Classification
> Henry Tagimae (The University of the South Pacific, Fiji)
> Joeli Rakaria (The University of the South Pacific, Fiji)
> Rahul Ranjeev Kumar (University of the South Pacific, Fiji)
> Shiu Kumar (Fiji National University, Fiji)
> Mansour H Assaf (University of South Pacific, Fiji)
> Voicu Groza (University of Ottawa, Canada)
> Emil M. Petriu (University of Ottawa, Canada)

17:50
U-Net convolutional neural network for multisource heterogeneous iris segmentation
> Vito Ivano D'Alessandro (Polytechnic University of Bari, Italy)
> Luisa De Palma (Polytechnic University of Bari, Italy)
> Filippo Attivissimo (Politecnico of Bari, Italy)
> Attilio Di Nisio (Politecnico di Bari, Italy)
> Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)

16:30 – 18:10
Special Session 5.2: Sensors, Electronic Interfaces and Biosignal Processing for Healthcare Applications
Room: Ora Hall
Session Chair: Salvatore Andrea Pullano (University Magna Graecia of Catanzaro, Italy)
Chiara Romano (Università Campus Bio-Medico di Roma, Italy)

16:30

Exploring respiratory parameters related to psychophysiological indexes of mental health
Miyu Suzuki (Shibaura Institute of Technology, Japan)
Hiroki Sato (Shibaura Institute of Technology, Japan)

16:50

Portable Non-Invasive Ventilator for Homecare and Patients Monitoring System
Michele Menniti (University Magna Graecia of Catanzaro, Italy)
Giuseppe Oliva (University Magna Graecia of Catanzaro, Italy)
Filippo Laganà (Magna Graecia University of Catanzaro, Italy)
Maria Giovanna Bianco (Magna Graecia University, Italy)
Antonino S. Fiorillo (University of Magna Græcia, Italy)
Salvatore Andrea Pullano (University Magna Graecia of Catanzaro, Italy)

17:10

Assessment of Local Venous Pulse Wave Velocity: A Pilot Feasibility Study
Navya Rose George (Indian Institute of Technology Madras, India)
Raj Kiran V (IIT Madras, India)
Nabeel PM (HTIC-IIT Madras Research Park, India)
Jayaraj Joseph (Indian Institute of Technology Madras, India)
Mohanasankar Sivaprakasam (IIT Madras, India)

17:30

Assessment of Endothelial Reactivity using Brachial Pulse Wave Velocity Response to Shear
Nimmi Sudarsan (IIT Madras, India)
Rahul Manoj (IIT Madras, India)
Raj Kiran V (IIT Madras, India)
Nabeel PM (IIT Madras, India)
Jayaraj Joseph (IIT Madras, India)
Dinu S Chandran (All India Institute of Medical Sciences, India)

17:50

Genetic Variant Detection Over Generations: Sparsity-Constrained Optimization Using Block-Coordinate Descent
Mohammed Aburidi (University of California, Merced, USA)
Suzanne Sindi (University of California, Merced, USA)
Roummel Marcia (University of California, Merced, USA)
Mario Banuelos (California State University, Fresno, USA)

16:30 – 18:10
Special Session 6.2: Wearable Sensors and Devices for (Bio)medical Applications
Room: Halla Hall
Session Chair: Carlo Massaroni & Alessia Noccaro

16:30
Enhancing remote monitoring and classification of motor state in Parkinson's disease using Wearable Technology and Machine Learning

> Chiara Carissimo (University of Cassino and Southern Lazio, Italy)
> Luigi Ferrigno (University of Cassino and Southern Lazio, Italy)
> Alessandro Marino (University of Cassino and Southern Lazio, Italy)
> Tommaso Di Libero (University of Cassino and Southern Lazio, Italy)
> Gianni Cerro (University of Molise, Italy)
> Heloise Debelle (Newcastle University, United Kingdom (Great Britain))
> Emma Packer (Newcastle University, United Kingdom (Great Britain))
> Alison Yarnall (Newcastle University, United Kingdom (Great Britain))
> Lynn Rochester (Newcastle University, United Kingdom (Great Britain))
> Lisa Alcock (Newcastle University, United Kingdom (Great Britain))
> Silvia Del Din (Newcastle University, United Kingdom (Great Britain))

16:50
Validation of vibrotactile feedback to improve selective motor units recruitment

> Davide Deiana (Università Campus Bio-Medico di Roma, Italy)
> Mattia Pinardi (Università Campus Bio-Medico di Roma, Italy)
> Michela Iandoli (Università Campus Bio-Medico di Roma, Italy)
> Giovanni Di Pino (Università Campus Bio-Medico di Roma, Italy)
> Alessia Noccaro (Newcastle University, United Kingdom (Great Britain))
> Domenico Formica (Newcastle University, United Kingdom (Great Britain))

17:10
Design and validation of 3D printed hand interfaces for wrist stiffness assessment

> Giorgia Giovannetti (Newcastle University, United Kingdom (Great Britain))
> Silvia Buscaglione (Newcastle University, United Kingdom (Great Britain))
> Alessia Noccaro (Newcastle University, United Kingdom (Great Britain))
> Domenico Formica (Newcastle University, United Kingdom (Great Britain))

17:30
Motor abilities analysis using a standardized tapping test enhanced by a detailed processing stage: gender and age comparison

> Tommaso Di Libero (University of Cassino and Southern Lazio, Italy)
> Chiara Carissimo (University of Cassino and Southern Lazio, Italy)
> Gianni Cerro (University of Cassino and Southern Lazio, Italy)
> Angela Marie Abbatecola (University of Cassino and Southern Lazio, Italy)
> Alessandro Marino (University of Cassino and Southern Lazio, Italy)
> Gianfranco Miele (University of Cassino and Southern Lazio, Italy)
> Luigi Ferrigno(University of Cassino and Southern Lazio, Italy)
> Angelo Rodio (University of Cassino and Southern Lazio, Italy)

17:50

Assessment of the visual noise influence on muscle activation during a tracking task

Silvia Buscaglione (Newcastle University, United Kingdom (Great Britain))
Alessia Noccaro (Newcastle University, United Kingdom (Great Britain))
Giovanni Di Pino (Newcastle University, United Kingdom (Great Britain))
Domenico Formica (Newcastle University, United Kingdom (Great Britain))

18:30 – 21:00
Gala Dinner
Room: Tamna Hall

Friday, June 16, 2023

9:00 – 9:45
Keynote 3: 3D Microfluidic cell culture device recapitulating the acceleration of drug resistance in tumor and spreading of virus infection in a human society
Room: Tamna Hall
Speaker: Sungsu Park

9:45 – 11:25
Regular Session 6: Sensors and Medical Devices
Room: Tamna Hall
Session Chair: Sandro Carrara & Marco Tarabin

9:45

An automated system for the design of orthopaedic insoles
        Marco Tarabini (Politecnico di Milano, Italy);
        Flavia Marrone (Politecnico di Milano, Italy);
        Davide Maria Fabris (Politecnico di Milano, Italy);
        Manuela Galli (Politecnico di Milano, Italy);
        Hermes Giberti (Università di Pavia, Italy);
        Mariano Di Martino and Giovanni Di Martino (Ortopedie Di Martino, Italy)

10:05

A sensorized FES-cycling system to quantify training performance and optimize stimulation strategies
        Nicole Sanna (Politecnico di Milano, Italy)
        Federica Ferrari (Politecnico di Milano, Italy)
        Emilia Ambrosini (Politecnico di Milano, Italy)
        Alessandra Pedrocchi (Politecnico di Milano, Italy)
        Marco Tarabini (Politecnico di Milano, Italy)

10:25

Developing an Instrumentation Package to Measure Noise and Vibration in Neonatal Patient Transport
        Keely Gibb (Carleton University, Canada)
        Nikita Yovchev (Carleton University, Canada)
        Adrian D.C. Chan (Carleton University, Canada)
        James R Green (Carleton University, Canada)
        Robert Langlois (Carleton University, Canada)
        Cheryl Aubertin (Children's Hospital of Eastern Ontario, Canada)
        Kim Greenwood (Children's Hospital of Eastern Ontario, Canada)
        Stephanie Redpath (Children's Hospital of Eastern Ontario, Canada)
        Andrew AM Ibey (Children's Hospital of Eastern Ontario, Canada)

10:45

Characterization of Implantable Capacitive Intrabody Communication Channel between In-body and On-body Devices on a Liquid Phantom
        Matija Roglić (University of Zagreb, Croatia)
        Ivana Artić (University of Zagreb, Croatia)
        Željka Lučev Vasić (University of Zagreb, Croatia)
        Yueming Gao (Fuzhou University, China)

11:05

Design and characterization of a flow silicone chamber for combined cell stimulation: a computational fluid dynamic analysiss

Ludovica Apa (Sapienza, University of Rome, Italy)
Livio D'Alvia (Sapienza, University of Rome, Italy)
Emanuele Rizzuto (Sapienza, University of Rome, Italy)
Zaccaria Del Prete (Sapienza, University of Rome, Italy)
Barbara Peruzzi (Bambino Gesù Children's Hospital, Italy)

9:45 – 11:25
Special Session 3: Advances in Healthcare 4.0 and Internet of Medical Things
Room: Ora Hall
Session Chair: Zaccaria Del Prete

9:45

A Novel Duo-Stage driven Deep Neural Network Approach for Mitigating Electrode Shift Impact on Myoelectric Pattern Recognition Systems

Frank Kulwa (SIAT, China)
Samuel W. Oluwarotimi (SIAT, China)
Mojisola Asogbon (SIAT, China)
Tolulope Tofunmi Oyemakinde (SIAT, China)
Obe O Olumide (SIAT, China)
Guanglin Li (SIAT, China)

10:05

A Novel CNN-LSTM-GRU Approach for EEG Epileptic Seizure Detection

Ijaz Ahmad (SIAT, China)
Xin Wang (SIAT, China)
Junyu Ji (SIAT, China)
Oluwarotimi Williams Samuel (SIAT, China)
Mingxing Zhu (SIAT, China)
Lina Men (SIAT, China)
Yuan Tao (SIAT, China)
Shixiong Chen (SIAT, China)
Guanglin Li (SIAT, China)

10:25

Portable, wireless and easy to use device for Negative Pressure Wound Therapy

Rahul Shukla (Indian Institute of Technology Ropar, India)
Aashima A (Indian Institute of Technology Ropar, India)
Vibham Kumar Dubey (Indian Institute of Technology Ropar, India)
Bijit Basumatary (Indian Institute of Technology Ropar, India)
Ashish Kumar Sahanil (Indian Institute of Technology Ropar, India)

10:45

Application of process mining in the management of inpatient analysis

Onorato d Angelis (Campus Bio-Medico University of Rome, Italy)
Valerio Lapadula (Campus Bio-Medico University of Rome, Italy)
Manuel Iacuitto (Campus Bio-Medico University of Rome, Italy)
Dhurata Ivziku (Campus Bio-Medico University of Rome, Italy)
Anna Sabatini (Campus Bio-Medico University of Rome, Italy)
Luca Vollero (Campus Bio-Medico University of Rome, Italy)
Mario Merone (Campus Bio-Medico University of Rome, Italy)

11:05

A Personal Home Office Helper

  Balazs Tusor (Óbuda University, Hungary &)

  Annamária R. Várkonyi-Kóczy (Óbuda University, Hungary &)

  Stefan Gubo (J Selye University, Slovakia)

9:45 – 11:25

Special Session: Advances in Measurement-based Diagnostic Models and Processing Algorithms

Room: Halla Hall

Session Chair: Anna Maria Lucia Lanzolla

9:45

A convolutional neural network model for T-stage prediction of rectal cancer using CT image

  Mingye Han (Southwest University, China)

  Tingwei Xiong (Southwest University, China)

  Peng Liu(Southwest University, China)

  Jia Yan (Southwest University, China)

  Qingzhu Jia (Army Medical University, China)

  Yixing Gao (Army Medical University, China)

10:05

Efficient Diagnosis of Liver Disease using Deep Learning Technique

  Nosheen Jillani (Gomal University, Pakistan)

  Muhammad Zubair Asghar (Gomal University, Pakistan)

  Hayyat Ullah (Gomal University, Pakistan)

  Asad Khattak (Zayed University, United Arab Emirates)

10:25

Statistical Analysis of Multispectral NIR Images for Vein Detection

  Janak Y Dave (Indian Institute of Technology, Madras, India)

  Sneha Chand (Indian Institute of Technology, Madras, India)

  Rahul G S (Indian Institute of Technology, Madras, India)

  Antony Raj (Indian Institute of Technology, Madras, India)

  Preejith Sreelatha Premkumar (Indian Institute of Technology, Madras, India)

  Mohanasankar Sivaprakasam (Indian Institute of Technology, Madras, India)

10:45

Low-frequency respiratory oscillometric measurements during mechanical ventilation

  Andy Keymolen (Vrije Universiteit Brussel, Belgium)

  Antoine Marchal (Vrije Universiteit Brussel, Belgium)

  Frank Heck (Vrije Universiteit Brussel, Belgium)

  Ben Van Den Elshout (Vrije Universiteit Brussel, Belgium)

  Gerd Vandersteen (Vrije Universiteit Brussel, Belgium)

  Joop Jonckheer (Vrije Universiteit Brussel, Belgium)

  John Lataire (Vrije Universiteit Brussel, Belgium)

11:05

Understanding the Effects of a Real-time Motion Capture System with Voice Feedback for Tennis Toss Training

  Dhinesh R (IIT Madras, India)

  Preejith Sreelatha Premkumar (IIT Madras, India)

  Mohanasankar Sivaprakasam (IIT Madras, India)

11:25 – 11:45
AM Break
Banquet Lobby

11:45 – 13:25
Regular Session 5: Biomedical Processing
Room: Tamna Hall
Session Chair: Pasquale Daponte

11:45

Assessing Driver Engagement Through Machine Learning Classification of Physiological Measures

Aidan Lochbihler (Carleton University, Canada)
Bruce Wallace (Carleton University, Canada)
Kathleen Van Benthem (Carleton University, Canada)
Chris Herdman (Carleton University, Canada)
Will Sloan (Carleton University, Canada)
Kirsten Brightman (Carleton University, Canada)
Josh Goheen (Carleton University, Canada)
Frank Knoefel (Bruyere Continuing Care, Canada)
Shawn Marshall (Ottawa Hospital, Canada)

12:05

Gait-based Biometric System Using Pressure Sensing Mats and Machine Learning Algorithms

Jin-Chern Chiou (National Yang Ming Chiao Tung University, Taiwan)
Ching Yen (National Yang Ming Chiao Tung University, Taiwan)
Fei-En Wu (National Yang Ming Chiao Tung University, Taiwan)

12:25

Exploratory study on Evolutionary Random Forests for Classification in Medical Datasets

Susanne Blotwijk (Vrije Universiteit Brussel, Belgium)
Camille Raets (Vrije Universiteit Brussel, Belgium)
Kurt Barbé (Vrije Universiteit Brussel, Belgium)

12:45

Improving Classification Performance on Rare Events in Data Starved Medical Applications

Wan D Bae (Seattle University, USA)
Angelo Alfonso (Seattle University, USA)
David Stanko (Seattle University, USA)
Lili Hao (Seattle University, USA)
Linh Le (Seattle University, USA)
Matthew Horak (Amazon, USA)

13:05

Algorithm Development for Contact Identification during wheelchair tennis propulsion using marker-less vision system

Enrico Ferlinghetti (University of Gronigen, The Netherlands);
Inge Salzmann (University Medical Center Groningen, The Netherlands)
Riemer Vegter (University Medical Center Groningen, The Netherlands)
Marco Ghidelli (University of Brescia, Italy)
Matteo Lancini (University of Brescia, Italy)
Thomas Rietveld (Loughborough University, United Kingdom (Great Britain))

Special Session 6.3: Wearable Sensors and Devices for (Bio)medical Applications
Room: Ora Hall
Session Chair: Emiliano Schena (Università Campus Bio-Medico di Roma, Italy)

11:45

Electrochemical characterization of flexible interdigitated electrodes for hydration monitoring

Leonardo Iannucci (Politecnico di Torino, Italy)
Sofia Rita Longombardo (Politecnico di Torino, Italy)
Luca Lombardo (Politecnico di Torino, Italy)
Marco Parvis (Politecnico di Torino, Italy)
Sabrina Grassini (Politecnico di Torino, Italy)
Sarah Tonello (University of Padova, Italy)
Alessandra Galli (University of Padova, Italy)

12:05

Smart Vest And Adaptive Algorithm For Vital Signs And Physical Activity Monitoring: A Feasibility Study

Chiara Romano (Università Campus Bio-Medico di Roma, Italy)
Domenico Formica (Università Campus Bio-Medico di Roma, Italy)
Marco Bravi (Università Campus Bio-Medico di Roma, Italy)
Sandra Miccinilli (Università Campus Bio-Medico di Roma, Italy)
Silvia Sterzi (Università Campus Bio-Medico di Roma, Italy)
Emiliano Schena (Università Campus Bio-Medico di Roma, Italy)
Carlo Massaroni (Università Campus Bio-Medico di Roma, Italy)

12:25

Effects of Caffeine Supplementation on Short-term Heart Rate Variability

Svasti Seetharam (Netrin Sports Technologies, India)
Upadhyaya, Preejith Sreelatha Premkumar
Mohanasankar Sivaprakasam (HTIC-IITMadras, India)

12:45

A Hybrid Deep Learning Model for Human Activity Recognition and Fall Detection for the Elderly

Farah Kharrat, Wail Gueaieb, Fakhri Karray and Abdulmotaleb El Saddik (University of Ottawa, Canada & Mohamed Bin Zayed University of Artificial Intelligence, United Arab Emirates)

13:05

Development of a Heating and Cooling Therapy Matrix-based Pad to relieve body pain

Siddhant Shrivastava (Indian Institute of Technology Kanpur, India)
Janakarajan Ramkumar (Indian Institute of Technology Kanpur, India)

11:45 – 13:25
Special Session 4.2: Advances in Measurement-based Diagnostic Models and Processing Algorithms
Room: Halla Hall
Session Chair: Annamária Várkonyi-Kóczy & Sandro Carrara

11:45
Investigating Effective Spectral Bands for Tissue Visualization in Oral Mucosa
> Sneha Chand (IIT-Madras, India)
> Antony Raj (IIT-Madras, India)
> Preejith Sreelatha Premkumar (IIT-Madras, India)
> Mohanasankar Sivaprakasam (IIT-Madras, India)

12:10
Impedance measurements for demineralized tooth lesions assessment
> Isabella Sannino (Polytechnic of Turin, Italy)
> Leonardo Iannucci (Polytechnic of Turin, Italy)
> Luca Lombardo (Polytechnic of Turin, Italy)
> Marco Parvis (Polytechnic of Turin, Italy)
> Allegra Comba (Polytechnic of Turin, Italy)

12:35
ECG wave segmentation algorithm for complete P-QRS-T detection
> Luisa De Palma (Polytechnic University of Bari, Italy)
> Vito Ivano D'Alessandro (Polytechnic University of Bari, Italy)
> Filippo Attivissimo (Polytechnic University of Bari, Italy)
> Attilio Di Nisio (Polytechnic University of Bari, Italy)
> Anna Maria Lucia Lanzolla (Polytechnic University of Bari, Italy)

13:00
A Method Based on Ellipse Fitting for Automatic Morphometric Parameter Measurements of Fish Blood Cells
> Riandini (ITS, Indonesia)
> Tri Sardjono (ITS, Indonesia)
> Ketut Purnama (ITS, Indonesia)
> Eko Mulyanto Yuniarno (ITS, Indonesia)
> Mauridhi Hery Purnomo (ITS, Indonesia)

13:25
Eliminating Vertical Fixed Pattern Noise in CMOS-Based Endoscopic Images using Modified Dark Frame Subtraction
> Eulalia Balestrieri (University of Sannio, Italy)
> Pasquale Daponte (University of Sannio, Italy)
> Imran Ahmed (University of Sannio, Italy)
> Francesco Lamonaca (University of Calabria, Italy)

13:25 – 14:55
Lunch
Room: Tammora (Deli shop on the 1st Floor)

14:55 – 16:35
Regular Session 4: Cardiovascular and Respiratory Methods
Room: Tamna Hall
Session Chair: Carlo Massaroni

14:55

AsTFSONN: A Unified Framework Based on Time-Frequency Domain Self-Operational Neural Network for Asthmatic Lung Sound Classification

Arka Roy (Indian Institute of Technology Patna, India)
Udit Satija (Indian Institute of Technology Patna, India)

15:09

Visualization of Heart Rate Abnormality and Its Application for Detection of Possible False-positive Neonatal Sepsis

Kun-chan Lan (National Cheng Kung University, Taiwan)

15:23

A Photoplethysmography-Based Device for Carotid Femoral Pulse Wave Velocity Measurement: Inter and Intra-operator Study

S Ishwarya (Indian Institute of Technology Madras, India)
Shankar M (Indian Institute of Technology Madras, India)
Raj Kiran V (Indian Institute of Technology Madras, India)
Nabeel PM (Indian Institute of Technology Madras, India)
Jayaraj Joseph (Indian Institute of Technology Madras, India)

15:37

Two-Dimensional Oxygen Saturation Imagery for Determining Microcirculation Promotion by Nerve Conduction Testingis

Hsin-Yi Tsai (Taiwan Instrument Research Institute, Taiwan)
Liang-Chieh Chao (Taiwan Instrument Research Institute, Taiwan)
Yu-Hsuan Lin (Taiwan Instrument Research Institute, Taiwan)
Kuo-Cheng Huang (Taiwan Instrument Research Institute, Taiwan)
Chun-Han Chou (Taiwan Instrument Research Institute, Taiwan)
Donyau Chiang (Taiwan Instrument Research Institute, Taiwan)
Hung-Chih Hsu (Department of Physical Medicine and Rehabilitation, Chang Gung Memorial Hospital Chiayi, Taiwan);

15:52

Repeatability and Reproducibility of Flow Mediated Dilation Measured using ARTSENSI

Raj Kiran V (IIT Madras, India)
Nimmi Sudarsan (IIT Madras, India)
Nabeel PM (IIT Madras, India)
Jayaraj Joseph (IIT Madras, India)

16:06

Effect of Fiduciary Point Choice on Pulse Wave Velocity-based Cuffless Pulse Pressure Estimation: Ex-vivo Study

Raj Kiran V (IIT Madras, India)
Rahul Manoj (IIT Madras, India)
S Ponkalaivani (IIT Madras, India)
Nabeel PM (IIT Madras, India)
Jayaraj Joseph (IIT Madras, India)

16:20
Measurement of Local Pulse Wave Velocity: Agreement Among Various Methodologies

Rahul Manoj (IIT Madras, India)
Raj Kiran V (IIT Madras, India)
S Ponkalaivani (IIT Madras, India)
Nabeel PM (IIT Madras, India)
Mohanasankar Sivaprakasam (IIT Madras, India)
Jayaraj Joseph (IIT Madras, India)

14:55 – 16:35
Special Session 6.4: Wearable Sensors and Devices for (Bio)medical Applications
Room: Ora Hall
Session Chair: Emiliano Schena & Alessia Noccaro

14:55
Measurement system for Operator 5.0: a learning fatigue recognition based on sEMG signals

Luca De Vito (University of Sannio, Italy)
Enrico Picariello (University of Sannio, Italy)
Francesco Picariello (University of Sannio, Italy)
Ioan Tudosa (University of Sannio, Italy)
Andrea Sbaragli (University of Trento, Italy)
Gastone Pietro Rosati Papini (University of Trento, Italy)
Francesco Pilati (University of Trento, Italy)

15:20
Breakthrough in Occupational Therapy with Mixed-Reality exergaming for cerebellar ataxia patients

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

15:45
Conductive ink vs force sensing resistors in plantar pressure soles: WalkinSense, MyCareShoe and DIAPODAL

Pedro Martins (INEGI, Portugal)
Carolina Silva (INEGI, Portugal)
Maria Arcelina (INEGI, Portugal)
Marques Joaquim Mendes (INEGI, Portugal)
Isabel Morales(Universidad de La Republica, Uruguay)
Franco Simini (Universidad de La Republica, Uruguay)

16:10
Monitoring the exposure to magnetic fields of MRI workers using goggles integrating magnetometers

Dominic Jeker (University of Applied Sciences and Arts Northwestern Switzerland, Switzerland)
Thomas Quirin (University of Applied Sciences and Arts Northwestern Switzerland, Switzerland)
Joris Pascal (University of Applied Sciences and Arts Northwestern Switzerland, Switzerland)

14:55 – 16:35
Regular Session 7: Assessment of sensor and medical device performances
Room: Halla Hall

Session Chair: Taesung Kim & Marco Parvis

14:55

DDNet: Diabetic Retinopathy Detection System Using Skip Connection-based Upgraded Feature Block

Ufaq Khan (University of Ottawa, Canada & Mohamed Bin Zayed University of Artificial Intelligence, United Arab Emirates)

Mustaqeem Khan (University of Ottawa, Canada & Mohamed Bin Zayed University of Artificial Intelligence, United Arab Emirates)

Abdulmotaleb El Saddik (University of Ottawa, Canada & Mohamed Bin Zayed University of Artificial Intelligence, United Arab Emirates)

Wail Gueaieb (University of Ottawa, Canada & Mohamed Bin Zayed University of Artificial Intelligence, United Arab Emirates)

15:15

Sources of error during inertial sensing of human movement: a critical review of the fundamentals

Kristen H.E. Beange (Carleton University, Canada)

Adrian D.C. Chan (Carleton University, Canada)

Ryan B Graham (University of Ottawa, Canada)

15:35

The effect of elastic backboards on kinematic and neuromuscular parameters in Para-alpine sit skiers with severe disabilities

Kaiqi Liu (Tsinghua University, China)

Yijia Lu (Tsinghua University, China)

Linhong Ji (Tsinghua University, China)

Wei Li (Tsinghua University, China)

Shanshan Wei (Tsinghua University, China)

15:55

Effects of Trial-Adjusted Neurofeedback Training on Motor-Imagery Based Brain-Computer Interface Performance

Akima Connelly (Tokyo Institute of Technology, Japan)

Pengcheng Li (Tokyo Institute of Technology, Japan)

Phurin Rangpong (Tokyo Institute of Technology, Japan)

Tohru Yagi (Tokyo Institute of Technology, Japan)

Theerawit Wilaiprasitporn (Vidyasirimedhi Institute of Science and Technology (VISTEC), Thailand)

16:15

Image Quality Assessment of large tissue samples stained using a customized Automated Slide Stainer

Prabhakar Sithambaram (IIT Madras, India)

Ramdayalan Kumarasami (IIT Madras, India)

Mohanasankar Sivaprakasam (IIT Madras, India)

Jayaraj Joseph (IIT Madras, India)

16:55 – 17:15
Closing Ceremony & Award Ceremony
Room: Tamna Hall

IEEE Medical Measurements & Applications

**Eindhoven, The Netherlands
June 19-21, 2024**

CALL FOR PAPERS

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The 19th edition of the IEEE International Symposium on Medical Measurements and Applications will take place in Eindhoven, the Netherlands.

The symposium focuses on all aspects of interactions relating to instrumentation and measurement, bio-engineering, material science, chemical and biological measurements, and leveraging Signal/Data Processing and Artificial Intelligence for accelerating solutions in the medical field. The symposium enables researchers, healthcare professionals, technicians, and engineers to exchange ideas and information and make connections and collaborations towards advancing innovation on health care systems and diagnostics in medicine.

SYMPOSIUM TOPICS

» Bioengineering and rehabilitation
» Biomedical robotic methods
» Optical and photonic biosensing
» Hearing, acoustics, infrasonics and ultrasonics
» Internet of Things (IoT) in Medicine
» Metrology for medical measurements and instrumentation calibration
» Sensors and devices for medical measurements
» Biosignal processing
» Medical Image Formation and Analysis

» Measurement and quality control in medical preparations
» Patient safety
» Standards for medical applications
» Embedded systems
» Environmental Medicine & Home automation for disability, disease and active aging living
» Artificial Intelligence for Biosignal Processing and Analysis
» Wearable solutions for patient monitoring
» Physiological modeling and monitoring

SUBMISSION

Authors are invited to submit an original full paper (5-6 pages) reporting original researches of theoretical or applied nature using the on-line submission system. The submission should explain the significance of the contribution and contain a list of key references. The manuscripts must be written in English according to the guidelines provided on the web site: **memea2024.ieee-ims.org**.

Conference content will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.

Attending people are encouraged to propose Special Sessions on topics of interest, specifying the focus for the session before **November 30, 2023**.

SPECIAL ISSUE OF IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT

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