

VII

Gruppo Nazionale di Bioingegneria

**SEVENTH NATIONAL
CONGRESS OF
BIOENGINEERING
Proceedings**

Organizers

Agostino Accardo

Francesco Brun

Sara Marceglia

Gianni Pedrizzetti

Pàtron editore

ISSN 2724-2129

9 - 11 June 2021 | Trieste, Italy



VII Congress of the National Group of Bioengineering (GNB)



UNIVERSITÀ
DEGLI STUDI DI TRIESTE



comune di trieste



REGIONE AUTONOMA
FRIULI VENEZIA GIULIA



biovalley
investments





GNB 2020

Conference Chairs

Agostino Accardo, *Università di Trieste*
Francesco Brun, *Università di Trieste*
Sara Marceglia, *Università di Trieste*
Gianni Pedrizzetti, *Università di Trieste*

Scientific Committee

Agostino Accardo, *University of Trieste*
Valentina Agostini, *Polytechnic of Turin*
Francesco Amato, *University of Catanzaro "Magna Graecia"*
Vitoantonio Bevilacqua, *Polytechnic of Bari*
Luigi Bianchi, *University of Roma "Tor Vergata" (Roma2)*
Silvio Bicciato, *University of Modena and Reggio Emilia*
Leonardo Bocchi, *University of Firenze*
Laura Burattini, *Polytechnic University of Marche*
Emanuele Luigi Carniel, *University of Padova*
Federico Carpi, *University of Firenze*
Federica Caselli, *University of Roma "Tor Vergata" (Roma2)*
Mario Cesarelli, *University of Napoli "Federico II"*
Silvia Conforto, *University of Roma Tre (Roma3)*
Michele Conti, *University of Pavia*
Luca Crisofolini, *University of Bologna*
Marco Deriu, *Polytechnic of Turin*
Stefano Diciotti, *University of Bologna*
Gabriele Angelo Dubini, *Polytechnic of Milano*
Andrea Facchinetti, *University of Padova*
Luca Faes, *University of Palermo*
Giancarlo Ferrigno, *Polytechnic of Milano*
Gionata Fragomeni, *University of Catanzaro "Magna Graecia"*
Giordano Franceschini, *University of Perugia*
Simone Furini, *University of Siena*
Eugenio Guglielmelli, *University Campus Bio-Medico - Roma*
Nicola Lopomo, *University of Brescia*
Paolo Massobrio, *University of Genova*
Arianna Menciacchi, *Sant'Anna School of Advanced Studies*
Silvestro Micera, *Sant'Anna School of Advanced Studies*
Antonella Motta, *University of Trento*
Giandomenico Nollo, *University of Trento*
Danilo Pani, *University of Cagliari*
Paolo Pascolo, *University of Udine*
Laura Pastorino, *University of Genova*
Gianni Pedrizzetti, *University of Trieste*
Stefano Ramat, *University of Pavia*
Andrea Remuzzi, *University of Bergamo*
Alessandro Tognetti, *University of Pisa*

Review Committee

Valentina Agostini, *Polytechnic of Turin*
Francesco Amato, *University of Catanzaro "Magna Graecia"*
Riccardo Barbieri, *Polytechnic of Milano*
Vitoantonio Bevilacqua, *Polytechnic of Bari*
Luigi Bianchi, *University of Roma "Tor Vergata" (Roma2)*
Silvio Bicciato, *University of Modena & Reggio Emilia*
Leonardo Bocchi, *University of Firenze*
Francesco Brun, *University of Trieste*
Laura Burattini, *Polytechnic University of Marche*
Emanuele Luigi Carniel, *University of Padova*
Federico Carpi, *University of Firenze*
Federica Caselli, *University of Roma "Tor Vergata" (Roma2)*
Mario Cesarelli, *University of Napoli "Federico II"*
Michele Conti, *University of Pavia*
Luca Crisofolini, *University of Bologna*
Cristiano De Marchis, *University of Roma Tre (Roma3)*
Marco Deriu, *Polytechnic of Turin*
Stefano Diciotti, *University of Bologna*
Andrea Facchinetti, *University of Padova*
Luca Faes, *University of Palermo*
Gionata Fragomeni, *University of Catanzaro "Magna Graecia"*
Giordano Franceschini, *University of Perugia*
Simone Furini, *University of Siena*
Eugenio Guglielmelli, *University Campus Bio-Medico - Roma*
Stefano Lai, *University of Cagliari*
Cecilia Laschi, *Sant'Anna School of Advanced Studies*
Nicola Lopomo, *University of Brescia*
Sara Marceglia, *University of Trieste*
Paolo Massobrio, *University of Genova*
Antonella Motta, *University of Trento*
Giandomenico Nollo, *University of Trento*
Danilo Pani, *University of Cagliari*
Paolo Pascolo, *University of Udine*
Laura Pastorino, *University of Genova*
Gianni Pedrizzetti, *University of Trieste*
Stefano Ramat, *University of Pavia*
Andrea Remuzzi, *University of Bergamo*
Leonardo Ricotti, *Sant'Anna School of Advanced Studies*
Silvia Storti, *University of Verona*
Alessandro Tognetti, *University of Pisa*
Pasquale Vena, *Polytechnic of Milano*
Christian Vergara, *Polytechnic of Milano*
Loredana Zollo, *University Campus Bio-Medico - Roma*

Tracks & Chairs

Theme 1 - Informatics and Electronics

1.1 - E-Health and clinical engineering

Mario Cesarelli, *Università di Napoli*

Giovanni D'Addio, *Istituti Clinici Scientifici Maugeri Spa*

1.2 - Biomedical signals, images, and Bioinformatics

Giuseppe Baselli, *Politecnico di Milano*

Maria Gabriella Signorini, *Politecnico di Milano*

Theme 2 - Clinical Biomechanics

2.1 - Biomechanics and mechanobiology

Francesco Migliavacca, *Politecnico di Milano*

Umberto Morbiducci, *Politecnico di Torino*

2.2 - Biomaterials, tissue engineering and regenerative medicine

Luca Cristofolini, *Università di Bologna*

Alberto Audenino, *Politecnico di Torino*

Theme 3 - Applied Bioengineering

3.1 - Artificial Organs, Medical and assistive robotics

Cecilia Laschi, *Scuola Superiore Sant'Anna di Pisa*

Leonardo Ricotti, *Scuola Superiore Sant'Anna di Pisa*

3.2 - Neural and rehabilitation engineering

Eugenio Guglielmelli, *Università Campus Bio-Medico di Roma*

Loredana Zollo, *Università Campus Bio-Medico di Roma*



Day 1: Informatics and electronics

Podium session:

[A Stochastic Language Model of Italian Applied to Functional MRI during Narrative Listening](#)

Andrea Gerardo Russo, Maria De Martino, Azzurra Mancuso, Francesco Di Salle, Alessandro Laudanna and Fabrizio Esposito

[Automated Detection and Counting of Acne Lesions for Evaluation of Acne Severity](#)

Antonella Melina, Pietro Salvagnini, Carlo Cosentino, Francesco Amato and Andrea Cherubini

[3D Printing open source non-critical spare parts of medical devices: the oxygen concentrator as a case study](#)

Licia Di Pietro, Carmelo De Maria, Giuseppe Gallone and Arti Devi Ahluwalia

[Towards classification of ovarian cancer via micro-arrays data analysis](#)

Diego Liberati

[Radiomics-based prediction of head and neck cancer recurrence: a multi-centric MRI study](#)

Marco Bologna, Valentina Corino, Giuseppina Calareso, Salvatore Alfieri, Rebecca Romanò, Laura Locati, Lisa Licitra and Luca Mainardi

[Does a medical device nomenclature suitable for all purposes exist? Twenty years of Italian experience with the CND and its adoption in EUDAMED at European level](#)

Michela Franzo', Federico D'Agostino, Catello Chierchia, Katuscia Cucchiara, Eugenio Carrani, Letizia Sampaolo, Elisabetta Stella, Marina Torre and Mauro Asaro

[Resting State Networks spatio-spectral fingerprints: the Default Mode Network case study](#)

Ilaria Mazzonetto, Ettore Ambrosini, Antonino Vallesi and Alessandra Bertoldo

[Comparison of different CNNs for breast tumor classification from ultrasound images](#)

Jorge Lazo, Elena De Momi and Sara Moccia

[Predicting the Onset of Chronic Obstructive Pulmonary Disease in the English Longitudinal Study of Ageing](#)

Martina Vettoretti, Andrea Facchinetti and Barbara Di Camillo

Poster session:

[Human exposure to electromagnetic fields generated in smart vehicle communications](#)

Gabriella Tognola, Silvia Gallucci, Marta Bonato, Serena Fiocchi, Emma Chiamarello, Laura Dossi, Marta Parazzini and Paolo Ravazzani

[CT-based FFR: paving the way to future hearts](#)

Clarissa Bargellini, Quan Long and Tarun Mittal

[A 3D CNN for preterm-infants' movement detection in NICUs from depth streams](#)

Lucia Migliorelli, Sara Moccia, Giuseppe Pio Cannata, Alessia Galli, Ilaria Ercoli, Luigi Mandolini, Virgilio Carnielli and Emanuele Frontoni

[Single-subject analysis of the variability of the latency of heart sounds over 25-day period](#)

Noemi Giordano and Marco Knaflitz

[A Machine Learning Approach for Muscle Activity Detection](#)

Marco Ghislieri, Elisa Pavanelli, Samanta Rosati, Gabriella Balestra, Marco Knaflitz and Valentina Agostini

[Detection of the N2/N2pc event-related potential \(ERP\) components buried in the EEG using phase angle distribution across sweeps](#)

Francesca Marturano, Sabrina Brigadoi, Mattia Doro, Roberto Dell'Acqua and Giovanni Sparacino

[Automatic estimation of nerve tortuosity in corneal images](#)

Alessia Colonna, Fabio Scarpa and Alfredo Ruggeri

[Detecting the neural processes of lie generation with low-cost EEG: a preliminary study](#)

Davide Garofalo, Francesco David Nota, Fabrizio Zoleo, Francesco Bardozzo, Mattia Delli Priscoli, Roberto Tagliaferri and Fabrizio Esposito

[Model-based assessment of incretin effect from OGTT data in healthy subjects](#)

Micaela Morettini, Elisea Creato, Jessica Di Monte, Ludovica Ilari and Laura Burattini

[Electrocardiographic Alternans in Hemodialysis: A Case Report](#)

Ilaria Marcantoni, Jessica Di Monte, Chiara Leoni, Zahara Mansour, Agnese Sbröllini, Micaela Morettini and Laura Burattini

[Novel recurrence features for prefall and fall detection in backward and forward fall types](#)

Amnah Nasim, David Chukwudi Nchekwube, Elnaz Khorasani, Nina E Van der Maaden, Micaela Morettini and Laura Burattini

[Boosting automated palynology via microfluidics and machine learning](#)

Michele D'orazio, Riccardo Reale, Adele De Ninno, Maria Antonia Brighetti, Arianna Mencattini, Luca Businaro, Eugenio Martinelli, Paolo Bisegna, Alessandro Travaglini and Federica Caselli

[Personalized Linear Data-Driven Algorithms for Real-Time Glucose Forecasting in Type 1 Diabetes](#)

Francesco Prendin, Simone Del Favero, Giovanni Sparacino and Andrea Facchinetti

[Sensitivity to carb-counting error in T1D management](#)

Chiara Roversi, Martina Vettoretti, Simone Del Favero, Andrea Facchinetti and Giovanni Sparacino

[Filtering techniques for whole body vibration artefact removal from low-SNR sEMG signals](#)

Simone Ranaldi, Carmen D'Anna, Fabio Botta, Andrea Scorza, Andrea Rossi, Calogero Foti, Stefano Faraci, Salvatore Andrea Sciuto, Maurizio Schmid and Silvia Conforto

[Mapping the sEMG distribution over the forearm for grip myotonia characterization: methodological aspects](#)

Enrica Tricomi, Alberto Botter, Peppino Tropea, Giacinto Luigi Cerone, Elda Judica, Barbara Fossati, Massimo Corbo and Marco Gazzoni

[Poincaré Image-Based Atrial Fibrillation Detection for Photoplethysmography Signals](#)

Guadalupe García Isla, Valetina Corino and Luca Mainardi

[Smoking effect on the circadian rhythm of blood pressure in hypertensive subjects](#)

Giulia Silveri, Lorenzo Pascazio, Aleksandar Miladinovic, Milos Ajcevic and Agostino Accardo

[Modelling the Meal Variability of Individuals with Type 1 Diabetes under Free-Living Conditions](#)

Nunzio Camerlingo, Martina Vettoretti, Simone Del Favero, Andrea Facchinetti, Giorgio Maria Di Nunzio and Giovanni Sparacino

[Performance of Dual-Augmented Lagrangian Method and Common Spatial Patterns applied in classification of Motor-Imagery BCI](#)

Aleksandar Miladinovic, Milos Ajcevic, Giulia Silveri and Agostino Accardo

[Human Activity Recognition through Wearable Sensors: a Deep Learning Approach](#)

Daniele Fortunato, Marco Ghislieri, Samanta Rosati, Gabriella Balestra, Marco Knafnitz and Valentina Agostini

[An Augmented-Reality App to communicate through the eye-gaze](#)

Mirko Rossi, Giuseppe D'Avenio, Febo Cincotti and Mauro Grigioni

[An application of DMAIC methodology for reducing voluntary departures from an Emergency Department](#)

Giovanni Improta, Maria Romano, Carlo Ricciardi, Carlo Cosentino and Francesco Amato

[Unobtrusive monitoring of stress indicators: a preliminary evaluation at rest](#)

Veronica Chiara Zuccalà, Riccardo Favilla and Giuseppe Coppini

[No-reference evaluation of the reconstructed images in single-shot K-Edge Subtraction X-ray Computed Tomography](#)

Giulia Saccomano, Vittorio Di Trapani, Pasquale Delogu and Francesco Brun

[Detecting low-to-moderate isometric muscle activity through a generalized CWT-based technique](#)

Tiwana Varrecchia, Carmen D'Anna, Daniele Bibbo, Maurizio Schmid and Silvia Conforto

[Preventive Healthcare through Air Pollution Exposure Modeling: the example of PULSE in Pavia](#)

Daniele Pala, Luigi Zurlo, Marica Franzini, Riccardo Bellazzi, Vittorio Casella, Domenico Vito and Cristiana Larizza

[Harmonisation of medical devices classification systems: development of a generalised approach starting from hip prostheses. A first example of an international and standardised nomenclature to be integrated within the European Medical Device Nomenclature](#)

Michela Franzo', Eugenio Carrani, Mauro Asaro, Edward Caton, John Keith Tucker, Richard Armstrong, Elaine Young, Letizia Sampaolo, Fabiano Bini, Franco Marinozzi and Marina Torre

[Deep learning for improving in room imaging in radiotherapy: CBCT to synthetic CT conversion](#)

Paolo Zaffino, Roberta Raso, Maria Chiara Angiocchi, Monica Merola, Sergio Canino, Matteo Nonnis, Antonella Bavasso, Caterina Mezzotero, Rosa Antonella Anoja, Elvira Mazzei and Maria Francesca Spadea

[Five years of Lean Six Sigma in the healthcare: an overview of main tools and results](#)

Giovanni Improta, Alfonso Maria Ponsiglione, Arianna Scala, Danilo Di Laura, Lucia Sara D'Angiolella and Giuseppe Cesarelli

[Play-Draw-Write: usability and acceptance of a tablet app for the early screening of handwriting difficulties in kindergartners](#)

Linda Greta Dui, Francesca Lunardini, Cristiano Termine, Matteo Matteucci and Simona Ferrante

[Geometric alterations of capillary network in hypertension: preliminary results](#)

Virginia Altamore, Francesco Giardini, Camilla Olianti, Irene Costantini, Leonardo Sacconi and Leonardo Bocchi

[Linear Regression Models to Improve the Estimation of Insulin Boluses in Type 1 Diabetes Therapy](#)

Giulia Noaro, Giacomo Cappon, Simone Del Favero, Giovanni Sparacino and Andrea Facchinetti

[A Heuristic-Sliding-Window-based RRT Path Planning for Endovascular Catheterization](#)

Zhen Li, Alice Segato, Alberto Favaro, Jenny Dankelman and Elena De Momi

[Correlation between hyper-acute EEG alterations and 7-Day NIHSS score in thrombolysis treated ischemic stroke patients](#)

Milos Ajcevic, Giovanni Furlanis, Aleksandar Miladinovic, Lara Stragapede, Giulia Silveri, Paola Caruso, Marcello Naccarato, Paolo Manganotti and Agostino Accardo

[Assessment of Indoor Exposure Scenario by an 8x8 Planar Array Antenna at 3.7 GHz](#)

Marta Bonato, Laura Dossi, Emma Chiaramello, Serena Fiocchi, Silvia Gallucci, Gabriella Tognola, Paolo Ravazzani and Marta Parazzini

[Blood glucose prediction from Flash Glucose Monitoring and Fitbit data: a deep learning approach](#)

Pietro Bosoni, Marco Meccariello, Valeria Calcaterra, Cristiana Larizza, Lucia Sacchi and Riccardo Bellazzi

[IoT ink pen for the ecological study of age-related changes in handwriting](#)

Davide Di Febbo, Francesca Lunardini, Milad Malavolti, Alessandra Pedrocchi, Alberto Borghese and Simona Ferrante

[Comparison of Parametric Linear Techniques for Glucose Prediction in Type-1 Diabetes](#)

Simone Faccioli, Andrea Facchinetti, Giovanni Sparacino and Simone Del Favero

[A markerless gait analysis protocol based on a single RGB-Depth camera: sensitivity to background changes](#)

Diletta Balta, Massimo Salvi, Filippo Molinari, Giulio Figari, Gabriele Paolini, Ugo Della Croce and Andrea Cereatti

[Quantification and reduction of crosstalk in surface electromyogram by inverse modelling](#)

Luca Mesin

[Combining autoencoder and artificial neural network for classifying colorectal cancer stages](#)

Antonio Brunetti, Maria Pia Caputo, Tommaso Maria Marvulli, Giacomo Donato Cascarano, Nicola Altini, Simona De Summa and Vitoantonio Bevilacqua

[Correlation analysis of PRSA-based parameters during labor: a simulation study](#)

Maira Barbieri, Tamara Stampalija, Massimo Walter Rivolta and Roberto Sassi

[Analysis of heart rate variability as evaluation method for the risk of sepsis in the low-weight preterm infant](#)

Fabio Tarricone, Viviana Bernocco, Domenico Buongiorno, Antonio Brunetti, Antonella D'Orazio, Antonio Del Vecchio, Vitoantonio Bevilacqua and Flavia Petrillo

[Connectivity in Parkinson's disease patients with cognitive impairment: a simultaneous PET/MRI study](#)

Erica Silvestri, Angelo Antonini, Marco Castellaro, Roberta Biundo, Diego Cecchin and Alessandra Bertoldo

[Improving the assessment of vascular complexity in peripheral artery occlusive disease](#)

Pierangela Bruno, Paolo Zaffino, Francesco Calimeri, Salvatore Scaramuzzino, Ciro Indolfi, Salvatore De Rosa and Maria Francesca Spadea



[Modeling Intraperitoneal Insulin Kinetics in Patients with Type 1 Diabetes](#)

Filippo Moret, Michele Schiavon, Claudio Cobelli and Chiara Dalla Man

[Human papillomavirus early promoter: Sensitivity analysis and biological behaviour](#)

Alberto Giaretta

[Experimental Validation of an E-Textile T-Shirt for ECG Monitoring](#)

Federica Amitrano, Armando Coccia, Leandro Donisi, Arcangelo Biancardi, Gaetano Pagano and Gianni D'Addio

[Benchmarking between a Sensorized E-textile Sock for Remote Monitoring and a Stereophotogrammetric System](#)

Leandro Donisi, Armando Coccia, Federica Amitrano, Carlo Ricciardi, Giuseppe Cesarelli and Gianni D'Addio

Day 2: Clinical Biomechanics

Podium session:

Cardiac fluid dynamics of patient-specific geometries in Pre and Post Mitral Valve Repair by Direct Numerical Simulation

Dario Collia and Gianni Pedrizzetti

Biomechanical implications of leg bending in popliteal stenting

Michele Conti, Alice Finotello, Anna Ferrarini, Giancarlo Salsano, Auricchio, Palombo, Spinella and Pane

Computational investigation of the male lower urinary tract in health and disease

Chiara Giulia Fontanella, Ilaria Toniolo, Alessandro Arduino, Joseph Vannel Fotso Fogang, Arturo Natali and Emanuele Luigi Carniel

Eulerian-based wall shear stress topological skeleton analysis and near-wall transport in aortic flow

Giuseppe De Nisco, Valentina Mazzi, Karol Calò, Raffaele Ponzini, Giovanna Rizzo, David A. Steinman, Diego Gallo and Umberto Morbiducci

3D nichoid substrates affect mesenchymal stem cell morphology and euchromatin organization

Emanuela Jacchetti, Emanuele Colombo, Tommaso Zandrini, Roberto Osellame, Giulio Cerullo, Davide Mazza and Manuela Raimondi

Advanced Firmware and Hardware for Multiscale and Multimaterial Bioprinting

Amedeo Franco Bonatti, Gabriele Maria Fortunato, Anna Lapomarda, Aurora De Acutis, Carmelo De Maria, Chiara Vitale Brovarone and Giovanni Vozzi

Are your cells alive?

Adele De Ninno, Riccardo Reale, Alessandro Giovinazzo, Francesca Romana Bertani, Luca Businaro, Paolo Bisegna, Claudia Matteucci and Federica Caselli

Ultrasound-triggered permeabilization of polyelectrolyte microcapsules

Marietta Pisano, Marta Clerici, Donatella Di Lisa, Roberto Raiteri and Laura Pastorino

Development of a compliance-matching biohybrid vascular graft through an integrated approach.

Elia Pederzani, Alessandro Caimi, Marco Pezzotta, Alice Caldiroli, Mattia Lupacchini, Matteo Tironi, Fabio Sangalli, Marina Figliuzzi, Nadia Azzollini, Sonia Fiori, Francesco G. Greco, Emiliano Votta, Gianfranco B. Fiore, Andrea Remuzzi, Stefania A. Riboldi, Monica Soncini and Alberto Redaelli

Poster session:

Abdominal visceral and subcutaneous adipose tissues in obese patients: mechanical behaviour

Chiara Giulia Fontanella, Mirto Foletto, Livio Corain and Emanuele Luigi Carniel

Computational tools for the evaluation of surgical parameters after LSG

Ilaria Toniolo, Chiara Giulia Fontanella, Mirto Foletto and Emanuele Luigi Carniel

[A novel step counting algorithm using a head-mounted sensor](#)

Alessia Cristiano, Alberto Sanna and Diana Trojaniello

[Hybrid membranes for blood-contacting surfaces: preliminary characterization](#)

Martina Todesco, Giorgia Merigliano, Valentina Candela, Laura Iop, Tiziana Palmosi, Gino Gerosa and Andrea Bagno

[Single cell fluid dynamics: a VOF model of a red blood cell vs a leukocyte](#)

Monica Piergiovanni, Elena Bianchi, Paola De Stefano and Gabriele Dubini

[Mechanical properties of oxidized polyvinyl alcohol hydrogel scaffolds for tissue engineering](#)

Silvia Todros, Silvia Barbon, Martina Favaron, Elena Stocco, Daniele Dalzoppo, Rafael Boscolo-Berto, Veronica Macchi, Claudio Grandi, Andrea Porzionato, Raffaele De Caro and Piero Pavan

[Biofabrication and characterization of a biphasic construct to study osteochondral tissue in vitro](#)

Irene Chiesa, Carmelo De Maria, Anna Lapomarda, Gabriele Maria Fortunato, Francesca Montemurro, Roberto Di Gesù, Rocky S Tuan, Giovanni Vozzi and Riccardo Gottardi

[Electrospun ultrathin scaffold for Bruch's membrane regeneration in retinal tissue engineering](#)

Beatrice Belgio, Gabriele Dubini, Federica Boschetti and Sara Mantero

[Surface coated chitosan microbeads for the sustained release of drugs](#)

Pietro Arnaldi, Orietta Monticelli and Laura Pastorino

[Balance control after tripping: Margin of Stability and Limb Support Quotient](#)

Alberto Finazzi, Adele Panarese Macrì, Paolo Gallina, Silvestro Micera and Vito Monaco

[Impact of the shear stress on cultured human gut microbiota](#)

Francesco Biagini, Marco Calvigioni, Ermes Botte, Alessandra Vecchione, Carmelo De Maria, Francesca Montemurro, Chiara Magliaro, Francesco Celandroni, Emilia Ghelardi and Giovanni Vozzi

[Pectin-based biomaterial ink for Green Tissue Engineering applications](#)

Anna Lapomarda, Aurora De Acutis, Irene Chiesa, Gabriele Maria Fortunato, Francesca Montemurro, Carmelo De Maria, Monica Mattioli Belmonte, Riccardo Gottardi and Giovanni Vozzi

[Polymeric microchambers arrays for cargo protection](#)

Stefania Boi, Valeriya Kudryavtseva, Jiaxin Zhang, Andrey Udalov, Evgeniy Shesterikov, Sergei Tverdokhlebov, Laura Pastorino and Gleb Sukhorukov

[A hydrogel channel-based system to model the blood flow dynamic stimuli](#)

Chiara Vitale, Arianna Fedi, Gabriele Varani, Alessandra Marrella, Marco Fato and Silvia Scaglione

[Rapid and affordable prototyping of bioinspired microfluidic networks for Tissue Engineering](#)

Guglielmo Pacetta, Aurora De Acutis, Francesca Montemurro, Carmelo De Maria and Giovanni Vozzi

[Tensile properties of porcine retina](#)

Beatrice Belgio, Sara Ragazzini, Paolo Arpa, Vito De Molfetta, Sara Mantero and Federica Boschetti

[SensRing, a wearable ring-shaped device for measuring kinematics in reach-to-grasp tasks](#)

Guenda Galperti, Erika Rovini, Laura Fiorini, Gianmaria Mancioffi, Radia Zeghari, Auriane Gros, Valeria Manera and Filippo Cavallo

[Driving neuronal network connectivity with a modular alginate mask](#)

Martina Brofiga, Elena Dellacasa, Enrica Vitali, Donatella Di Lisa, Paolo Massobrio and Laura Pastorino

Bioactive silica-based glass nanoparticles containing boron and copper

Elisa Piatti, Marta Miola and Enrica Vernè

Strategies to speed up the standardized bone plates mechanical testing for regulatory purposes

Mara Terzini, Gianpaolo Serino, Andrea Tancredi Lugas, Giancarlo Dichio, Piero Costa and Alberto L. Audenino

DXA-based Finite Element models to improve hip fracture risk prediction: a comparison with CT-based models

Alessandra Aldieri, Mara Terzini, Cristina Bignardi and Alberto Audenino

A Multibody Model for Ligament Balancing Assessment in Total Knee Arthroplasty

Giovanni Putame, Mara Terzini, Simone Borrelli, Cristina Bignardi and Alberto Audenino

Influence of cartilage thickness on Human Femur Neck: a 3D Stress-Strain Analysis

Andrada Pica, Fabiano Bini, Andrea Marinozzi and Franco Marinozzi

Image processing for rheological characterization of blood under flow

Giuseppe D'Avenio, Patrizia Caprari, Carla Daniele and Mauro Grigioni

Fontan Computational Hemodynamics: Impact of Inlet Velocity Profile Features with Implications on Clinically Relevant Parameters

Maurizio Lodi Rizzini, Paola Tasso, Diego Gallo, Giuseppe D'Avenio, Antonio Amodeo, Umberto Morbiducci and Mauro Grigioni

From Mocap data to inertial data through a biomechanical model to classify countermeasure exercises performed on ISS

Martina Ravizza, Alessandra Pedrocchi, John DeWitt and Giancarlo Ferrigno

Thermosensitive hydrogels for the encapsulation of primary and human derived neuronal cells

Donatella Di Lisa, Elena Dellacasa, Lorenzo Muzzi, Alberto Lagazzo, Monica Frega, Sergio Martinoia and Laura Pastorino

Transcatheter Aortic Valve with Embolic Filter: Experiments and Simulations

Dario Carbonaro, Claudio Chiastra, Umberto Morbiducci and Alberto Audenino

Use of an optimized automatic procedure for measuring the hydraulic permeability of articular cartilage

Naomi Giuliani, Arianna B Lovati, Marco Ferroni, Laura Ferrari, Laura Mangiavini, Giuseppe M Peretti and Federica Boschetti

Design and validation of a novel low cost-bicompartmental platform for cell and tissue cultures

Lorenzo Coppadoro, Chiara Foglieni, Gianfranco Fiore and Monica Soncini

The eccentric phase of countermovement jump: comparing motion capture and inertial sensors

Luigi Truppa, Michelangelo Guitolini, Carlo Castagna and Andrea Mannini

Development of a novel bioreactor for the generation of controlled hydrodynamic stimuli on vascular planar tissue samples

Elia Pederzani, Lorenzo Pietro Coppadoro, Aldo Josè Suria Roldan, Chiara Foglieni, Monica Soncini and Gianfranco Beniamino Fiore



[Versatile perfusion and electrical stimulation bioreactor for bone tissue engineering](#)

Diana Massai, Stefano Gabetti, Giovanni Putame, Ileana Armando, Elisa Fiume, Alessandro Sanginario, Dario Carbonaro, Francesco Baino, Alberto Audenino, Enrica Vernè and Cristina Bignardi

[Application of deer hearts for ex-vivo modelling of mitral valve pathology – preliminary results](#)

Michal Jaworek, Edoardo Maroncelli, Federico Lucherini, Guido Gelpi, Claudia Romagnoni, Rubina Rosa, Cristina Manenti, Carlo Antona, Gianfranco Beniamino Fiore and Riccardo Vismara

[Thrombogenicity of cardiovascular devices: mutual and relative effect of biomaterial and shear stress](#)

Silvia Bozzi, Federica Vercellino, Filippo Consolo, Yana Roka Moia, Tatiana Mencarini, Marvin Slepian and Alberto Redaelli

[Gellan gum-based hydrogels as injectable materials for cartilage tissue engineering](#)

Laura Riacci, Lorenzo Vannozzi, Lorena Garcia Hevia and Leonardo Ricotti

[The influence of turbulence modelling on thrombosis in cardiovascular devices](#)

Giuseppe Passoni, Silvia Bozzi, Alberto Redaelli and Davide Dominissini

[Internal fixation of femour fractures: a new wireless electromechanical dynamization system](#)

Giancarlo Dichio, Giovanni Putame, Mara Terzini, Sergio Cannata, Piero Costa, Eros Gian Alessandro Pasero and Alberto Audenino



Day 3: Applied Bioengineering

Podium session:

[Somatotopical feedback restoration in the lower limb through TENS: a feasibility study](#)

Andrea Demofonti, Alessia Scarpelli, Valentina Iannelli, Anna Lisa Ciancio, Francesca Cordella and Loredana Zollo

[An Innovative High-Fidelity Neonatal Pneumothorax Simulator](#)

Sabina Maglio, Selene Tognarelli , Arianna Menciassi

[An innovative High-Fidelity simulator of cervical changes during labour](#)

Carlotta Luchini, Selene Tognarelli , Arianna Menciassi

[Preliminary Design and Validation of an Implantable Artificial Bladder](#)

Stefano Pane, Veronica Iacovacci, Tommaso Mazzocchi, Arianna Menciassi , Leonardo Ricotti

[A new motor-driven smart prosthetic socket](#)

Linda Paternò, Claudio Quaglia, Michele Ibrahimi, Emanuele Gruppioni, Leonardo Ricotti , Arianna Menciassi

[A Dual-Branched Convolutional Neural Network for P300 detection and feature interpretation](#)

Davide Borra, Silvia Fantozzi and Elisa Magosso

[A neuromorphic haptic feedback for lower limb sensory substitution](#)

Jessica D'Abbraccio, Sahana Prasanna, Ilaria Cesini, Filippo Dell'Agnello, Simona Crea, Nicola Vitiello, Alberto Mazzoni and Calogero Maria Oddo

[Estimation of the base of support during gait with an unobtrusive wearable system](#)

Rachele Rossanigo, Stefano Bertuletti, Marco Caruso, Marco Knafnitz, Ugo Della Croce and Andrea Cereatti

Poster session:

[Portable Normothermic Perfusion System for Laboratory test of Microwave Devices](#)

Mattia Dimitri, Lucrezia Mazzantini, Sara Aquino, Fabio Staderini, Fabio Cianchi , Andrea Corvi

[Ultrasonic neural stimulation of zebrafish larvae reveals region-specific calcium imaging activation patterns](#)

Nicolò Meneghetti, Francesca Dedola, Vladislav Gavryusev, Giuseppe Sancataldo, Lapo Turrini, Giuseppe de Vito, Francesco Vanzi, Jacopo Carpaneto, Annarita Cutrone, Francesco Saverio Pavone, Alberto Mazzoni and Silvestro Micera

[Biomarkers of Impulse Control Disorder in firing patterns of parkinsonian subthalamic nucleus](#)

Federico Micheli, Matteo Vissani, Guido Pecchioli, Federica Terenzi, Silvia Ramat and Alberto Mazzoni

[Muscle forces and activations in Parkinson's disease: a model-based approach](#)

Marco Romanato, Daniele Volpe, Massimo Sartori and Zimi Sawacha

[A neural electrode for closed-loop vagus nerve recording and stimulation to control autonomic reflexes](#)

Alice Giannotti, Ivo Strauss and Silvestro Micera

[Assessing Transfer Entropy as a functional connectivity measure via a Neural Mass Model](#)

Giulia Ricci, Elisa Magosso and Mauro Ursino

[A Dataset of DMPs for robot motion planning](#)

Christian Tamantini, Clemente Lauretti, Francesca Cordella and Loredana Zollo

[MVAR estimation of source-level EEG connectivity in Parkinson's disease](#)

Emanuela Formaggio, Maria Rubega, Jessica Rupil, Stefano Masiero, Alessandra Del Felice and Gianna Maria Toffolo

[Design of novel ventricular chambers: comparison of three different models](#)

Valentina Candela, Martina Todesco, Giovanni Meneghetti, Gino Gerosa , Andrea Bagno

[Neural response to acoustic stimulation mediated by piezoelectric nanoparticles](#)

Marietta Pisano, Mariateresa Tedesco, Martina Brofiga, Paolo Massobrio, Attilio Marino, Gianni Ciofani and Roberto Raiteri

[The suitability of Gait Variable Scores for Myotonic Dystrophy types classification](#)

Margherita Lofrumento, Elda Judica, Barbara Fossati, Massimo Corbo and Peppino Tropea

[Neuroimaging biomarkers toward an optimized and personalized AOT](#)

Marco Ottaviani, Paola Romano, Sanaz Pournajaf, Michela Goffredo, Fabiano Bini, Franco Marinozzi, Marco Franceschini and Francesco Infarinato

[Design and development of an origami-based pump for soft robotics wearable applications](#)

Giorgio Bondi, Debora Zrinscak , Matteo Cianchetti

[Stereo-PIV study of the flow across an axial pump for circulatory support](#)

Giuseppe D'Avenio, Umberto Morbiducci, Costantino Del Gaudio , Mauro Grigioni

[Clinical and technology-based assessment of an innovative integrated rehabilitation programme for persons affected by Parkinson's disease](#)

Gian Pietro Salvi, Annamaria Quarenghi, Eleonora Sigismondi, Emanuele Mion, Marcello Simonini and Stefano Mazzoleni

[Development of a capnometer for extracorporeal life support devices: compensation of the temperature effect on the mid-IR LED](#)

Michele Bellancini, Laura Cercenelli, Stefano Severi , Emanuela Marcelli

[Unassisted in-vitro simulation of superior cavo pulmonary shunt for evaluation of pathophysiological issue](#)

Francesco De Gaetano, Massimo Griselli , Maria Laura Costantino

[Comparison of the performances of six magneto-inertial sensor fusion filters for orientation estimation in movement analysis](#)

Marco Caruso, Daniel Laidig, Angelo Maria Sabatini, Marco Knafnitz, Ugo Della Croce, Thomas Seel and Andrea Cereatti

[A novel multi-sensor system for gait assessment in real-world conditions: preliminary results](#)

Francesca Salis, Stefano Bertuletti, Marco Caruso, Tecla Bonci, Kirsty Scott, Rachele Rossanigo, Ugo Della Croce, Claudia Mazzà and Andrea Cereatti

[A patient-specific approach for the IDH risk evaluation in the early stage of Haemodialysis](#)

Giustina Casagrande , Maria Laura Costantino

[A simulation study on safety and efficacy of tFUS](#)

Mattia Stefano, Alessia Scarpelli, Francesca Cordella and Loredana Zollo

[Falls and prostheses in patients with transfemoral amputation](#)

Pierpaolo Palumbo, Serena Moscato, Francesca Caterini, Antonella Miccio, Luca Casagli, Angelo Davalli, Pericle Randi and Lorenzo Chiari

[Evaluation of robotic endoscopic neurosurgery through kinematic analysis of surgical gesture](#)

Salih Ertug Ovrur, Elena De Momi, Enrico Karim Siena, Amy Wynn, Leandro Lucangeli, Alessandro De Benedictis, Carlo Efisio Marras, Giancarlo Ferrigno, Valentina Camomilla

[Integration of 3D Action Observation Therapy and Rehabilitation Exercises in Mixed Reality: A Feasibility Study on Post-Stroke Patients](#)

Stefano Elio Lenzi, Paolo Mosna, Stefano Lazzarini, Massimiliano Gobbo, Monica Angelini, Riccardo Buraschi, Stefano Negrini, Maddalena Fabbri Destro, Pietro Avanzini, Giacomo Rizzolatti and Nicola Francesco Lopomo

[Stretchable polymer-based biopotential electrodes for unobtrusive EMG detection](#)

Andrea Spanu, Annalisa Bonfiglio and Danilo Pani

[DoMoMEA: a home neuromotor telerehabilitation system for stroke patients](#)

Andrea Zedda, Elisa Gusai, Marco Caruso, Stefano Bertuletti, Salvatore Spanu, Giulia Baldazzi, Krizia Masciavé, Andrea Pibiri, Marco Monticone, Andrea Cereatti, Luigi Raffo and Danilo Pani