

XXII International Conference on Mechanics in Medicine and Biology

19-20-21 September 2022 University of Bologna Bologna, Italy

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Congress Chair: Ivan Corazza

ICMMB President: Prof. Fong-Chin Su

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Laura Cercenelli Ivan Corazza Elena Nardi Pier Luca Rossi

Organizing Secretariat:



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Congress location:

<u>Scientific sessions</u> "Murri", "Didattica" and "Linguistica" Rooms (Pav. 25-27-28), first floor <u>Coffee breaks and light lunch</u> Coordination Center for Medical Physics Activities (Pav. 29)

S. Orsola-Malpighi Hospital

Main entrance: Via Massarenti, 9 *Suggested entrance*: Viale Giambattista Ercolani, 8

40138, Bologna, Italy

Travel information

How to get to the conference venue if you travel:

- By AIRPLANE: G. Marconi Airport is only 6 km far from the City Centre and Sant'Orsola-Malpighi Hospital. The airport is connected to the City Centre via AEROBUS or SHUTTLE and to the Central Station via MARCONI EXPRESS
- By TRAIN: Central Train Station is only 3 km far from Sant'Orsola-Malpighi Hospital. From the station, you can use city-buses to come to Sant'Orsola-Malpighi Hospital – to find timetable and lines please visit https://www.tper.it/
- By BUS: Starting from different location inside the historical Centre of Bologna, a lot of bus lines arrive or stop at Sant'Orsola-Malpighi Hospital. You can find path, timetable and lines at https://www.tper.it/



	Murri Room	Didattica Room	Linguistica Room
8.30-9.30		Registration	
9.30-10.00	Opening Ceremony Dr. Ivan Corazza (Conference Chair) Prof. Fong-Chin Su (ICMMB President, National Cheng Kung University, Taiwan) Prof. Mario Lima (Dean of the Medical School, University of Bologna) Prof. Gianandrea Pasquinelli (Head of Dept. of Experimental, Diagnostic and Specialty Medicine -DIMES, University of Bologna)		
10.00-10.30	Plenary: Hand Biomechanics and Rehabilitation Prof. Fong-Chin Su		
10.30-11.00	Coffee break		
11.00-12.15	S1M: ORTHOPEDICS - BIOMECHANICS	S1D: ADVANCES IN CARDIOVASCULAR	S1L: ADVANCED METHODS in NEUROSCIENCE - BIOSIGNAL
12.20-13.20	S2M: MACHINE LEARNING AND ARTIFICAL INTELLIGENCE	S2D: WEARABLE AND eHEALTH	S2L: CO ₂ ANGIOGRAPHY
13.20-14.20	Lunch		
14.20-15.35	S3M: MACHINE LEARNING AND ARTIFICAL INTELLIGENCE	S3D: DETECTORS and DOSIMETRY	S3L: BIOMATERIAL and PROSTHESIS
15.40-16.55	S4M: ORTHOPEDICS - BIOMECHANICS	S4D: PET and NUCLEAR MEDICINE	S4L: ADVANCED METHODS in NEUROSCIENCE - BIOSIGNAL

	Murri Room	Didattica Room	Linguistica Room
8.30-9.00	Plenary: Emerging methods in Biosignal Processing Prof. Mohamed Yacin Sikkandar		
9.05-10.20	S5M: BIOSIGNAL PROCESSING	S5D: ORTHOPEDICS - DEVICES AND TECHNOLOGY	S5L: SPORT SCIENCE
10.20-10.50		Coffee break	
10.50-12.20	S6M: Virtual modeling and 3D printing	S6D: CELL and MOLECULAR BIOPHYSICS, BIOMECHANICS and IMAGING	S6L: BIOSIGNAL PROCESSING
12.25-13.25	S7M: MRI	S7D: WEARABLE AND eHEALTH	S7L: SPORT SCIENCE
13.25-14.25		Lunch	
14.25-15.55	S8M: CELL and MOLECULAR BIOPHYSICS and BIOMECHANICS	S8D: WEARABLE AND eHEALTH	S8L: ADVANCES IN CARDIOVASCULAR
16.00-17.00	S9M: ORTHOPEDICS - DEVICES AND TECHNOLOGY	S9D: MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE	S9L: CONVENTIONAL RADIOLOGY and CT
20.00	Social Dinner		

	Murri Room	Didattica Room
8.30-9.00	Plenary: AI and imaging frontiers applied to human biological system in medical physics Dr. Gabriele Guidi	
9.05-10.20	S10M: COMPUTER METHODS IN RADIOTHERAPY	S10D: ADVANCED METHODS in NEUROSCIENCE - IMAGING
10.20-10.50	Coffee break	
10.50-11.20	Plenary Research in Total Knee Arthroplasty Biomechanics: to close the gap between surgeons and engineers Prof. Bernardo Innocenti	
11.20-12.00	Closing ceremony Dr. Ivan Corazza (Conference Chair) Prof. Fong-Chin Su (ICMMB President, National Cheng Kung University, Taiwan) Prof. Alberto Leardini (Director, Movement Analysis Laboratory; Centro di Ricerca Codivilla-Putti; Istituto Ortopedico Rizzoli; President of the International Society of Biomechanics) Prof. Bernardo Innocenti (EAMS Department, ULB (Universitè Libre de Bruxelles)	

8.30 – 9.30 Registration

Murri Room

9.30 - 10.00 Opening Ceremony Dr. Ivan Corazza (Conference Chair) Prof. Fong-Chin Su (ICMMB President, National Cheng Kung University, Taiwan) Prof. Mario Lima (Dean of the Medical School, University of Bologna) Prof. Gianandrea Pasquinelli (Head of Dept. of Experimental, Diagnostic and Specialty Medicine - DIMES, University of Bologna)

10.00 – 10.30 Plenary Talk (virtual)

Hand Biomechanics and Rehabilitation (Prof. Fong-Chin Su)

10.30 – 11.00 Coffee break

Murri Room

S1M: ORTHOPEDICS - BIOMECHANICS

CHAIRS: BERNARDO INNOCENTI, EDOARDO BORI			
11.00	Mohamed Yacin Sikkandar	Finite Element Analysis of Human Knee Joint for Futuristic	
	(Virtual)	Customized Knee Implants	
11.15	Shib Sundar Banerjee (Virtual)	Analysis of Variability in Active Muscle Stiffness with Myoelectric	
		Activity during Incremental Isometric Loading	
11.30	Laura Bragonzoni	Longitudinal functional assessment of a transfermoral amputee patient	
		treated with osseointegration surgery	
11.45	A gostino Igor Mirulla	Numerical study for primary stability assessment in osseointegrated	
11.45	Agostino igor wirtuna	transfemoral prostheses	
12.00	Marat Dosaev	Phenomenological approach to human chest modelling	
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S2M: MACHINE LEARNING AND ARTIFICAL INTELLIGENCE

CHAIRS: CLAUDIA SALA, DAVID BIANCHINI			
12.20	Xiaojun Chen (Virtual)	AI and AR-based image processing, navigation and robotics in computer assisted cranio-maxillofacial surgery	
12.35	C Sridevi (Virtual)	Recognition of abnormalities in gastrointestinal tract from endoscopic images using deep learning architectures	
12.50	Riccardo Biondi	Interactive visualization of biological network structures in Virtual Reality: a study experience	
13.05	Benedetta Santoro	A User-Friendly Tool to Compute the Infection Probability of COVID- 19 in Closed Environments	

13.20 – 14.20 Light lunch

CHAIRS. UADRIELE UUIDI, ERICA DALBONI			
14.20	Nicolas Derus	Synthetic Data Generation of Histopathological Images	
14.35	Ramakrishnan Swaminathan (Virtual)	Proposal of a Framework for the Analysis of Comorbid Conditions using Intelligent Extraction of Multiple Fluid Biomarkers	
14.50	Claudia Sala	Evaluation of Machine Learning models for the detection of Antimicrobial Resistance based on Synthetic Data	
15.05	Alagu Samyraj (Virtual)	Multi-class Twin SVM with deep features for classification of acute myeloid leukemia cells	
15.20	Matteo Botteghi	CYTOFastUrine: An Innovative Integrated Solution For Automated Urine Cytology AI supported Diagnostics	

S3M: MACHINE LEARNING AND ARTIFICAL INTELLIGENCE CHAIRS: GABRIELE GUIDI, ERICA BALBONI

S4M: ORTHOPEDICS - BIOMECHANICS

CHAIRS: NICOLA LOPOMO, AGOSTINO IGOR MIRULLA			
15 40	Edoardo Bori	Push-Pull Locking Plate VS Standard Locking Plate in Proximal	
15.40		Humeral fractures: a finite element study	
15 55	Claudia Dalvadara	Combination of functional and morphological data for the mechanics	
13.33	Claudio Belvedere	of high-tibial osteotomy	
16.10	Bernardo Innocenti	Biomechanical analysis of the knee joint during flexion in healthy,	
		cruciate deficient and cruciate substitute conditions	
16.25		Mapping the Young's modulus of cortical bone via atomic force	
10.23	Alessandro Gambardena	microscopy	
16.40	Sathya Bharathy (Virtual)	Design and Biomechanical Analysis of Stand-Alone Posterior Lumbar	
		Cage Implant for Interbody Fusion	

Didattica Room

<u>SID: ADVANCES IN CARDIOVASCULAR RESEARCH</u>			
CHAIRS: ROMANO ZANNOLI, GIORGIO CATTANEO			
11.00	Liang Zhong (Virtual)	Coronary Physiology Based Diagnosis of Ischemia-Inducing Stenoses: Basics and Clinical Applications	
11.15	Stefano Spagni	<i>Pilot study on photopletysmographic and electroencephalographic monitoring of candidates to atrial fibrillation electrical cardioversion.</i>	
11.30	Giulia Massaro	Personalized configuration for atrial fibrillation external electrical cardioversion to improve acute efficacy	
11.45	Mehtap Lafci Büyükkahraman	Mathematical Modeling of Myocardial Infarction Treatment with Stem Cells	
12.00	Omkar Sunil Pande	Influence of discordancy in umbilical arteries on the stress distribution in Wharton's jelly	

S1D: ADVANCES IN CARDIOVASCUI AR RESEARCH

S2D: WEARABLE AND eHEALTH

CHAIRS:	BEATRICE	FRABONI,	MATTEO	BOTTEGHI
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12.20	Elias Premi	Telemonitoring in ophthalmology, database and eHealth softwares
12.35	Antonio Augello (virtual)	Design, implementation and production of the microcontroller unit for signal processing of Youcare wearable technology
12.50	Mehdi Mouton	<i>Optimization and Industrialization of a Metabolic Holter device and</i> <i>Software development</i>
13.05	Alberto Spadotto (Virtual)	Wearable Multiparametric Remote Monitoring: MySIGN

13.20 – 14.20 Light lunch

S3D: DETECTORS AND DOSIMETRY

Chairs: LORENZO ISOLAN, EDOARDO MASTELLA

14.20	Kumar Nandan Sinha	Sensitivity Analysis of Temperature Distribution Profiles of Breast with Tumors for varied Fat Layer Thickness
14.35	Andrea Ciavatti	Medical Applications of Flexible and Large area X- and gamma-Ray Detectors
14.50	Beatrice Fraboni	Organic thin films as flexible, large area X-ray and proton detectors for medical therapy
15.05	Aboma Negasa Guracho	Target Effects vs. Non-Target Effects in Estimating the Carcinogenic risk due to Galactic Cosmic Rays in Exploratory Space Missions
15.20	Pier Luca Rossi	Pediatric vs adult dosimetry in CBCT: a challenge?

S4D: PET AND NUCLEAR MEDICINE

CHAIRS: LIDIA STRIGARI, NICOLA MAFFEI			
15.40	Maria Francesca Morrone	Role of 99mTc-DPD scintigraphy in quantification of myocardial uptake of Hereditary Transthyretin-Related Cardiac Amyloidosis	
15.55	Luigi Manco	PET-derived radiomic applications in breast cancer: State of Art	
16.10	Giulia Paolani	A novel tool for predicting dose distribution of non-sealed 188Re resin in NMSC patients.	
16.25	Miriam Santoro	Optimal parameters of a Bayesian-Penalised-Likelihood algorithm for improving the accuracy of activity distribution in 90Y trans-arterial radioembolization	
16.40	Mattia Taroni o Giacomo Zambelli	Development and its application of an innovative technique for the impurities identification of 177mLu in hospital waste and radiopharmacy residues	

Linguistica Room

S1L: ADVANCED METHODS IN NEUROSCIENCES CHAIRS: LAURA CERCENELLI IVAN CORAZZA

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11.00	Aditi Bhattacharya (Virtual)	Evaluation of Zernike moments of corpus callosum for discrimination of autism using Random Forest
11.15	Chetan Tanaji Rakshe (Virtual)	Investigation of brain networks in autism using fractal, non-fractal and pearson correlation method
11.30	Loganathan Selvarasu (Virtual)	Detection of Schizophrenia using 4-Dimensional attention based Deep Learning Model
11.45	Kavitha Anandan	Optimization of preprocessing routines in Speech Imagery based EEG Signals
12.00	Ramesh Munirathinam (Virtual)	Entropy analysis of EEG patterns for effective classification of Huntington's Disease

S2L: CO₂ ANGIOGRAPHY

CHAIRS: PIER LUCA ROSSI, IVAN CORAZZA		
12.20	Romano Zannoli	Biomechanical aspects involved in CO2 Angiography
12.35	Lorenzo Casadei	Radioprotection in CO2 Angiography
12.50	Luca Monti	Optimization of gas injection in CO2 Angiography
13.05	Luca Neri (Virtual)	CO2 Computed Tomography

13.20 – 14.20 Light lunch

S3L: BIOMATERIALS AND PROSTHESIS

CHAIRS: SALAH RAMTANI, NADIA ANTONOVA

14.20	Kheng-Lim Goh (Virtual)	Emerging technologies in Green biocomposites for orthoses and external prostheses
14.35	Celine Falentin-Daudre	Bioactive polymer grafting impacts on silicone breast implants' mechanical properties and cell responses.
14.50	Caroline Pereira	Grafting phosphonic acid polymers onto titanium implant for craniofacial prostheses
15.05	Gregorio Marchiori	Micro-CT and uniaxial loading to reveal the 3D microstructure under increasing strain of tendon-ligament scaffolds
15.20	Miglena Doneva	The choice of hernia meshes according to age of the patients

S4L: ADVANCED METHODS IN NEUROSCIENCES

CHAIRS:, IVAN CORAZZA, ELENA NARDI

15.40	Praveen K. Govarthan (Virtual)	Deep-learning framework for ECG based categorical emotional states assessment
15.55	Abirami Selvaraj (Virtual)	Characterization of seizure subtypes using time-frequency features from scalp EEG signals
16.10	Sriram Kumar Peedapalli (Virtual)	Classification of emotional states using electrodermal activity and random forest
16.25	Joseph Mathew (Virtual)	Detection of Seizure Types using EMD-based Feature Fusion of Scalp EEG
16.40	Kavitha Anandan	Evaluation of fractality of brain cognition in young children using task-based EEG signals

Murri Room

8.30 – 9.00 Plenary Talk (Virtual)

Emerging methods in Biosignal Processing (Mohamed Yacin Sikkandar)

S5M: BIOSIGNAL PROCESSING

CHAIRS:, KAVITHA ANANDAN, MEHTAP LAFCI BUYUKKAHRAMAN		
9.05	Divya Sasidharan (Virtual)	Analysis of surface electromyography signals under fatiguing conditions using fuzzy recurrence plot and GLCM features
9.20	Sidharth Narayan (Virtual)	Surface electromyography based analysis of muscle fiber type characteristics during fatigue using frequency domain features
9.35	Divya Sasidharan (Virtual)	Complexity Analysis of Surface Electromyography Signals Under Fatigue Using Hjorth Parameters and Bubble Entropy
9.50	Nithya Rajagopalan (Virtual)	Design of Biosignal Controlled Hand Exoskeleton for Assistive Purposes
10.05	Lakshmi M Hari	Comparison of Machine Learning Tools for the Differentiation of Fatiguing Contractions in Biceps Brachii Muscle using Time Frequency Decomposed sEMG Signals

10.20 – 10.50 Coffee break

S6M: VIRTUAL MODELING AND 3D PRINTING CHAIRS: LAURA CERCENELLI, EMANUELA MARCELLI

10.50	Gabriele Camillo Concordia	3D Printing in Hospitals
11.05	Mattia Mele	Additive Manufacturing of a cranial implant with bioactive energy- absorbing polymer via Arburg Plastic Freeforming
11.20	Nicolas Emiliani	Fabrication of a patient-specific 3D printed multi-material simulator for Endoscopic Sinus Surgery
11.35	Agostino Igor Mirulla	Analysis of different geometrical features to achieve close-to-bone stiffness material in medical device: a feasibility numerical study
11.50	Lorenzo Tartarini	Design and development of an augmented reality intraoperative guide system with stereoscopic visualization for robotic surgery
12.05	Doris Laurent	How Additive Manufacturing can improve Healthcare

S7M: MAGNETIC RESONANCE IMAGING CHAIRS: DAVID BIANCHINI, LUIGI MANCO

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12.20	Priscilla Dinkar Moyya	Static and Dynamic breast DCE-MRI radiomics in quantifying the
	(Virtual)	neoadjuvant chemotherapy treatment response
12.40	Flavia Liporace	Implementation of patient-specific dielectric models from MR
		acquisitions
12.55	Stefano Orsolini (Virtual)	A web-based TableTop MRI scanner for remote and automated
		acquisitions
13.10	Erica Balboni	Radiomics from DCE MRI and BRCA1/2 mutations in triple-negative
		invasive ductal carcinoma of the breast

13.25 – 14.25 Light lunch

Chairs: Nadia Antonova, Ali Salehi		
14.25	Valerii Orel (Virtual)	Mechanoluminescence of Walker-256 carcinosarcoma cells in vitro by magneto-mechanochemical effects
14.40	Francesco Decataldo	PEDOT:PSS OECTs as versatile devices for real-time monitoring cytotoxicity and viral infection
14.55	Filippo Piccinini	CometAnalyser: a user-friendly, open-source deep-learning microscopy tool for quantitative comet assay analysis
15.10	Dikshitha CM	Ratiometric Analysis of Structural Changes in Microscopic Cellular Images for Drug-Induced Cytotoxic Assessment
15.25	Sreelekshmi P. Sreekumar	Analysis of Phenotypic Changes in Cell Painted Suborganalles Using Cell Ratiometric
15.40	Francesco Trisolini	Hospitex International: The Cytology Company

S8M: CELL AND MOLECULAR BIOPHYSICS AND BIOMECHANICS

<u>S9M: ORTHOPEDICS – DEVICES AND TECHNOLOGIES</u> CHAIRS: AGOSTINO IGOR MIRULLA GREGORIO MARCHIORI

CHAIRS. AGOSTINO IGOR MIROLLA, GREGORIO MARCHIORI		
16.00	Harikrishna Makaram (Virtual)	Influence of pedicle screw thread depth on skeletal anchorage in osteoporotic and normal bones – Finite element study
16.15	Tullio Andrea Revetria	Biomechanical analysis of femoral stem-design features in physiological and osteoporotic bone during static loading conditions
16.30	Hsiao-Feng Chieh	Effects of Finger Fine Motor Training with Various Music on Brain Activation of the Elderly
16.45	Edoardo Bori	Experimental Analysis of Knee Joint Kinematics and Kinetics under Different Boundary Conditions

20.00 Social dinner

Didattica Room

S5D: ORTHOPEDICS – DEVICES AND TECHNOLO	OGIES
CUAIDS. NICOLA LODOMO CLAUDIO RELVEDEDE	

CHAIRS: NICOLA LOPOMO, CLAUDIO BELVEDERE			
9.05	Anita Broshka	Dynamic Finite element analysis of malposition in mobile and fixed bearing UKA prosthesis during gait	
9.20	Rachele Saldari	Dynamic Analysis of different levels of constraint in Total Knee Arthroplasty during Gait and Squat	
9.35	Vittoria Attolini	Development and Validation of a Device for the Acquisition of Kinematics of Barbell during Training	
9.50	Marika Padalino	Biomechanical analysis of use of porous meta-diaphyseal custom-made cones in knee revision surgery	
10.05			

10.20 – 10.50 Coffee break

S6D: CELL AND MOLECULAR BIOPHYSICS AND BIOMECHANICS

CHAIRS: SALAH RAMTANI, ANDREA CIAVATTI		
10.50	Filippo Bonafè	AC amplification gain in organic electrochemical transistors (OECTs)
	**	for impedance-based single cell sensors
		Relationship between blood and blood cells microrheological and
11.05	Nadia Antonova	micromechanical characteristics and flow and oxygen transport
		parameters
11.20	Francesco Casadei	Nanopore long read DNA sequencing allows for higher accuracy in
11.20		brain cancer analysis
11.25	Khaoula Benabdderrahmane	Development of an electrospun patch for the treatment of
11.33		myelomeningocele
11.50	Ali Salehi	Applications of tissue-engineered plant scaffolds and introduction of a
11.50		novel model for cardiovascular research
12.05	Filippo Piccinini	Deep learning models for segmenting brightfield images of cancer
		multicellular spheroids used for radiomics analysis

S7D: WEARABLE AND eHEALTH

CHAIRS: IGOR DIEMBERGER, ELENA NARDI		
12.25	Ng Yin Kwee Eddie (Virtual)	Blood Pressure Prediction using Real-world ambulatory Photoplethysmography (PPG)
12.40	Beatrice Fraboni	Smart bandage with textile chemical sensors for wearable healthcare
12.55	Giuseppe Walter Antonucci	Building a framework for handless Hw/Sw open modular data assistant
13.10	Stefano De Nigris	Latest developments in EMG and IMU hardware integration, signal transmission and processing

13.25 – 14.25 Light lunch

S8D: WEARABLE AND eHEALTH

CHAIRS: MATTEO BOTTEGHI, FRANCESCO BASILICO			
14.25	Arnaldo Usai	Revolutionary Wearable Technologies - The YOUCARE textile system	
		by Accyourate Group Spa	
14 40	Luca Neri (Virtual)	Wearable Devices: Challenges and Opportunities in Disease	
14.40		Monitoring	
14 55	Serena Moscato (Virtual)	Agreement between ECG and PPG in HRV analysis during	
14.33		provocative tests in healthy adults	
15.10	Aalan Natarajan (Virtual)	Vision-guided autonomous robotic system for pick and place tasks in	
13.10		healthcare settings	
15.25	Deodato Assanelli	HOWDY SENIOR: Single lead ECG recording and long term	
13.23		monitoring during medium-high intensitity exercise	
15.40	Jacopo Tasca	HOWDY SENIOR: A comfortable, user-friendly and accurate ECG	
		monitoring wearable device	

S9D: MACHINE LEARNING AND ARTIFICAL INTELLIGENCE CHAIRS: GASTONE CASTELLANI, FILIPPO PICCININI

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16.00	Nico Curti	Semi-supervised active learning in automated wound image segmentation via smartphone mobile App	
16.15	Gianluca Carlini	Fully automated estimation of glomerular basement membrane thickness via active semi-supervised learning model	
16.30	Padmavathi V. (Virtual)	Preliminary Detection of COVID-19 using Hybrid Deep Learning Approach	
16.45	Riccardo Scheda	Explainable Machine Learning Framework for Age Prediction using Brain Complexity Features	

20.00 Social dinner

Linguistica Room

S5L: SPORT SCIENCE

CHAIRS: LAURA BRAGONZONI, EDOARDO BORI

9.05	Sofia Marini	Effects of a 3-month outdoor training program on physical performance and quality of life
9.20	Sofia Marini	A 3-month exercise program performed in a green-blue space: the "Parco del Mare" pilot study
9.35	Remya R Nair (Virtual)	SURFACE ELECTROMYOGRAPHY BASED ANALYSIS OF FIBER TYPE CHARACTERISTICS USING REASSIGNED MORLET SCALOGRAM
9.50	Pui Wah Kong (Virtual)	Electromyography investigation of the upper extremity muscles in 9- ball break shot between skilled and less-skilled players
10.05	Ban Chuan Loh (Virtual)	Reliability of Video-Based Running Gait Analysis in Recreational Runners

10.20 – 10.50 Coffee break

<u>S6L: BIOSIGNAL PROCESSING</u>

CHAIRS: KAVIIHA ANANDAN, MEHIAP LAFCI BUYUKKAHRAMAN			
10.50	Vinothini Selvaraju (Virtual)	Preterm Birth Detection based on Decision Fusion and Stationary	
	• • •	Segments of Multichannel Oterine EMG signals	
11.05	J.V.Alamelu (Virtual)	Prediction of lag time for multiple infusion environments using	
11.05		regression methods	
11.20	Avanish Kumar Singh (Virtual)	EEG-EMG wavelet coherence analysis between C1, C4, CZ AND TA	
11.20		muscle	
11.25	Avanish Kumar Singh (Virtual)	EEG-EMG wavelet coherence analysis during ramp descent, level	
11.33		walking, stair ascent, no movement, stair descent, ramp ascent	
11.50	Yedukondala Rao Veeranki	Assessment of emotional states using Electrodermal activity signals	
	(Virtual)	and variable frequency spectral estimation	
12.05			

S7L: SPORT SCIENCE

CHAIRS: ROMANO ZANNOLI, CLAUDIO BELVEDERE

12.20	Melody Jiale Chiam (Virtual)	Effects of muscle rub application on physical performance in athletes
12.40	Jing Wen Pan (Virtual)	Simulation of the upper-limb cueing movement in 9-ball
12.55	Gianluca Rossetto	Anterior cruciate ligament force during landing from different block jumps techniques in volleyball players
13.10		

13.25 – 14.25 Light lunch

S8L: ADVANCES IN CARDIOVASCULAR

CHAIRS: IGOR DIEMBERGER, EMANUELA MARCELLI		
14.25	Camilla Gironi	Feasibility of the novel IntraValvular Impedance sensing applied to biological heart valves: design and in vitro evaluation
14.40	Douhou Abdelmalek	The use of mixture theory to potentially help in the understanding arterial wall de-stiffening therapy
14.55	Laura Cercenelli	A pneumatic simulator of the venous system of a human arm for testing and tuning a novel noninvasive device for home monitoring of venous pressure
15.10	Jenny Schaefer	In vitro modelling of respiration-induced movements of the renal arteries for implant investigation in EVAR
15.25	Ashkan Shiravand	Fabrication of compliant vascular models for in-vitro implant investigation
15.40		

<u>S9L: CONVENTIONAL RADIOLOGY AND COMPUTED TOMOGRAPHY</u> CHAIRS: PIER LUCA ROSSI, ANDREA CIAVATTI

CHIMRS. THER EPOCH ROSSI, MICHEN CHIVITH		
16.00	Fatehia Bushara	MicroCT Contrast and Imaging Protocol Optimization for Analysis of Microstructure in Ligaments and Tendons
16.15	Lorenzo Isolan	A Monte Carlo calibration approach for a dual-energy CT system
16.30	Giuseppe Walter Antonucci	<i>Avio-TC: a suite to provide diagnostic examinations by state-of-the-art equipment in remote African areas</i>
16.45	Sukanta Kumar Tulo	Association of Chest Radiographic Geometric Changes in Mediastinum with COVID-19 Conditions

20.00 Social dinner

Murri Room

8.30 - 9.00**Plenary Talk**

AI and imaging frontiers applied to human biological system in medical physics (Gabriele Guidi)

S10M: COMPUTERS METHODS IN RADIOTHERAPY

Chairs: Lidia Strigari, Gabriele Guidi		
9.05	Edoardo Mastella	Dosimetric characterization of a mobile accelerator for Intraoperative Radiation Therapy
9.20	Francesca Itta	Finite element biomechanical modeling of parotid glands morphing for H&N adaptive radiotherapy
9.35	Giada Sceni	New techniques of radiotherapy treatment plan verifications: Radcalc 3D Monte Carlo and dosimetric ML tools
9.50	Nicola Maffei	Heartbeat cardiac motion model to evaluate intra-fraction dosimetric variations in radiotherapy treatments
10.05	Domenico Finocchiaro	An automatic tool for LATTICE radiotherapy treatment optimization

10.20 - 10.50 Coffee break

Didattica Room

S10D: ADVANCED METHODS IN NEUROSCIENCE ⁷ΗΛΙΡΩ· GASTONE CASTELLANIL GLODGIO CATTANEC

_	CHAIRS: GASTONE CASTELLANI, GIORGIO CATTANEO		
	0.05	Martina Tarozzi	Comparative analysis of the three-dimensional chromatin
9.	9.05		conformation changes occurring in patients affected by prion disease
	0.20	Sreelakshmi Shaji	Analysis of 3D Morphometric Alterations in Ventricular Brain
	9.20		Structures for Differentiation of MCI Subtypes in MR Images
	0.25	Abinaya Sundari Ravi (Virtual)	Classification of Schizophrenia using Voxel based Morphometry and
	9.55		Recurrent Neural Network
9.50	0.50	Ahana Priyanka Chellian	Diagnosis of Neurodegenerative Disorder in Brain Images using
	9.50	(Virtual)	Hybrid Machine Learning Methods
	10.05	Joseph Mathew (Virtual)	Detection of Tonic-clonic seizures from the band power ratio of Scalp
	10.05		EEG

10.20 – 10.50 Coffee break

Closing ceremony

Murri Room

10.50 – 11.20 **Plenary Talk**

Research in Total Knee Arthroplasty Biomechanics: to close the gap between surgeons and engineers (Bernardo Innocenti)

11.20 - 12.00 **Conclusion**

Dr. Ivan Corazza (Conference Chair) Prof. Fong-Chin Su (ICMMB President, National Cheng Kung University, Taiwan) Prof. Alberto Leardini (Director, Movement Analysis Laboratory; Centro di Ricerca Codivilla-Putti; Istituto Ortopedico Rizzoli; President of the International Society of Biomechanics)

Prof. Bernardo Innocenti (EAMS Department, ULB (Universitè Libre de Bruxelles)