



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DIEF
DIPARTIMENTO
DI INGEGNERIA
INDUSTRIALE



COSTRUZIONE GEOMETRICA DELLA CUPOLA CATENARIA
INSCRITTA NEL PROFILO DELLA CUPOLA

ADM 2023 INTERNATIONAL CONFERENCE

SEPTEMBER 06TH - 08TH, 2023 - FLORENCE

SCIENTIFIC PROGRAM - DAY 1 - 06/09/2023

9.00-10.30

CONFERENCE REGISTRATION AND WELCOME COFFEE

AUDITORIUM B

10.30 - 11.30

CONFERENCE OPENING

Prof. Monica **Carfagni**, General Chair, Department of Industrial Engineering of Florence (DIEF)
 Prof. Alessandra **Petrucci**, Rector of University of Florence
 Prof. Bruno **Facchini**, Director of the Department of Industrial Engineering of Florence (DIEF)
 Prof. Rocco **Furferi**, ADM 2023, Department of Industrial Engineering of Florence (DIEF)

11.30 - 12.30

KEYNOTE SPEECHES

11.30 – 12.00 Prof. Bruno **Siciliano**, Università Federico II di Napoli
 12.00 – 12.30 Dott. Maurizio **Scoranz**, AOU Careggi
 12.30 – 13.00 Dott. Giovan Battista **Semplici**, Bio3DModel

13.00 - 14.30

LUNCH

14.30 - 16.40

SESSION 1 - COMPUTER AIDED GEOMETRIC MODELLING AND DESIGN - CHAIRMAN: GIANMARIA CONCHERI

14.30 – 14.50 **Iannucci Luigi**, Patalano Stanislao, Vitolo Ferdinando, Capasso Clemente, Veneri Ottorino, *CAD model integration within multidisciplinary modelling of electric vehicle energy storage system.*
 14.50 – 15.10 **Mandolini Marco**, Senesi Paolo, Lonzi Barbara, Papetti Alessandra, Germani Michele, *A Shrinkwrap Method for Quickly Generating Virtual Prototypes For Extended Reality*
 15.10 – 15.30 Iacubino Severo Pio, Barbieri Marco, **Vergnano Alberto**, *Design and Optimization of an Innovative and Compact Gearbox Synchronizer*
 15.30-15.50 **Dal Fabbro Pierandrea**, Maltauro Mattia, Grigolato Luca, Rosso Stefano, Meneghello Roberto, Concheri Gianmaria, Savio Gianpaolo, *Representative volume element analysis in material coextrusion*
 15.50-16.10 **Puggelli Luca**, Giansanti Fabrizio, Volpe Yary, Buonamici Francesco, *Designing a 3D Printed Personal Protective Equipment for a Binocular Indirect Ophthalmoscopy*

16.10-16.40

COFFEE BREAK

16.40-18.00

SESSION 2 - HUMAN-RELATED AND USER-CENTERED DESIGN - CHAIRMAN: VALERIO VILLA

16.40-17.00 **Spadoni Elena**, Giussani Riccardo, Carulli Marina, Dozio Nicolò, Ferrise Francesco, Bordegoni Monica, *A personalized expert guide for the hybrid museums of the future*

- 17.00-17.20 **Cormio Laura** Agostinelli Thomas, Ceccacci Silvia, Mengoni Maura, *A Cataloging Matrix-based Approach to Unify the Classification of Digital Games*
- 17.20-17.40 **Motyl Barbara**, Bodini Ileana, Filippi Stefano, Girotto Alberto, Paderno Diego, Uberti Stefano, Villa Valerio, Baronio Gabriele, *Assistive products for accessible tourism: focus on beach wheelchairs*
- 17.40-18.00 **Buttarazzi Massimo Generoso**, Borchini Francesco, Mambelli Alessandro, Carfagni Monica, Governi Lapo, Puggelli Luca, *An active noise control system for reducing siren noise inside the ambulance*

ROOM 103

14.30 - 16.40 SESSION 3A - DESIGN FOR ADDITIVE MANUFACTURING - CHAIRMAN: CERUTI ALESSANDRO

- 14.30 -14.50 **Bacciaglia Antonio**, Ceruti Alessandro, Ciccone Francesco, Liverani Alfredo, *FDM Printing Time Prediction Tuning Through a DOE Approach*
- 14.50-15.10 **Zanini Alessio**, Marconi Marco, Mandolini Marco, *Comparative assessment of simulation tools in Design for Additive Manufacturing process*
- 15.10-15.30 **De Crescenzo Chiara**, Richetta Maria, Papallo Ida, Fucile Pierpaolo, Martorelli Massimo, Gloria Antonio, Lanzotti Antonio, *Surface Roughness Prediction in Fused Deposition Modeling: An Engineered Model*
- 15.30-15.50 **Tumino Davide**, Mantegna Giuseppe, Vindigni Carmelo Rosario, Orlando Calogero, Alaimo Andrea, *Additively Manufactured Lattice-Based Structures for Aeronautical Applications*

16.10-16.40 COFFEE BREAK

16.40-18.00 SESSION 3B - DESIGN FOR ADDITIVE MANUFACTURING - CHAIRMAN: MARTORELLI MASSIMO

- 16.40-17.00 **Papallo Ida**, Gloria Antonio, Martorelli Massimo, *Design of Additive Manufactured Devices with Tailored Properties: Tackling Biomedical Challenges*
- 17.00-17.20 **Greco Alessandro**, Sepe Raffaele, Gerbino Salvatore, *Investigation about the impact of nozzle and chamber temperatures and infill orientation on the mechanical behavior of 3D printed PEEK specimens*
- 17.20-17.40 **Zago Marco**, Cristofolini Ilaria, *Assessment of the achievable dimensional Tolerances in 17-4PH stainless Steel Parts fabricated by Metal Binder Jetting*
- 17.40-18.00 **Tamburrino Francesco**, Aruanno Beatrice, Paoli Alessandro, Razonale Armando V., *Effects of Printing Speed and Thermal Post-processing Treatments on the Mechanical Properties of PEEK Processed by Fused Deposition Modeling*

ROOM 102

14.30 - 16.40 **SESSION 4A - INTEGRATED METHODS FOR PRODUCT AND PROCESS DESIGN, SIMULATION, ANALYSIS AND OPTIMIZATION**
- CHAIRMAN: PATALANO STANISLAO

- 14.30 -14.50 **Aiazzi, Tommaso**, Neri Paolo, Bucchi Francesco, Passarelli Donato, *Numerical Modelling of Cryomodule Transportation With Nonlinear Wire Rope Isolators*
- 14.50-15.10 Di Marino Castrese, **Pasquariello Agnese**, Di Fede Flavio, Patalano Stanislao, *MBSE for performance analysis and tracing in preliminary design through SysML diagrams*
- 15.10-15.30 Rega Andrea, **Genua Alessandro**, Vitolo Ferdinando, Patalano Stanislao, Giuseppe Sanseverino, Penter Lars, Arnold Frank, Ihlenfeldt Steffen, Lanzotti Antonio, *Digital Modelling for Virtual Testing of Complex Machine Tools*
- 15.30-15.50 **Polensig Giulia**, Marzullo Domenico, Bodini Iacopo, Padoano Elio, Tolazzi Massimo, *A structured methodology for new product development combining QFD and MCDM: case study on router bits*
- 15.50-16.10 **Scarfone Luigi**, Lagudi Antonio, Severino Umberto, Caffaz Andrea, Bruno Fabio, *A Methodology for Payload Design and Optimization of Autonomous Underwater Vehicles*
- 16.10-16.40 Bertoncelli Paolo, **Gherardini Francesco**, Dalpadulo Enrico, Lorient Amaury, Vergnano Alberto, Francesco Leali, *Computer-based design and manufacturing for the reproduction of classic car spare parts*

16.10-16.40 **COFFEE BREAK**

16.40-18.00 **SESSION 4B - INTEGRATED METHODS FOR PRODUCT AND PROCESS DESIGN, SIMULATION, ANALYSIS AND OPTIMIZATION**
- CHAIRMAN: ANTONIO EMMANUELE UVA

- 16.40-17.00 **Vaiani Lorenzo**, Uva Antonio Emmanuele, Fiorentino Michele, Boccaccio Antonio, *Modelling and Simulation of Conformal Biomimetic Scaffolds for Bone Tissue Engineering*
- 17.00-17.20 **Fiorineschi Lorenzo**, Rotini Federico, Barsanti Roberta, *Leonardo da Vinci's Pendular Mill: Towards a Physical model for Museum's Exhibits*
- 17.20-17.40 **Chillemi, Massimiliano**, Cucinotta Filippo, Passeri Domenico, Scappaticci Lorenzo, Sfravara Felice, *CFD-Driven Shape Optimization of a Racing Motorcycle*
- 17.40-18.00 **Beltrami Daniele**, Ferrari Marco, Iora Paolo, Uberti Stefano, *Application of Physics-Based Modeling Techniques as a Tool to Help the Development of More Electrified Off-Highway Machinery*

ROOM 106

14.30 - 16.40	SESSION 5A - ENGINEERING METHODS IN MEDICINE - CHAIRMAN: TOMMASO INGRASSIA
14.30 -14.50	Santoro Lorenzo , Lamberti Luciano, Vaiani Lorenzo, Uva Antonio Emmanuele, Boccaccio Antonio, <i>Guidelines for Finite Element Modeling of Cell Adhesion Process</i>
14.50-15.10	Ingrassia Tommaso, Nigrelli Vincenzo, Ricotta Vito, Tantillo Micol , <i>A New Tool for Preoperative Planning of Reverse Total Shoulder Arthroplasty</i>
15.10-15.30	Ingrassia Tommaso, Marannano Giuseppe Vincenzo, Mirulla Agostino Igor, Nigrelli Vincenzo, Valenti Andrea , <i>Study of stress distribution in press-fit transfemoral implants: standard versus patient-specific design</i>
15.30-15.50	Cattaneo Andrea , Zanni Alessia, Regazzoni Daniele, <i>CNN-based Pose Estimation to Assist Medical Imaging</i>
15.50-16.10	Savoldelli Anna , Landi Daniele, Rizzi Caterina, <i>Environmental Sustainability of a Televisit Process: Definition of Parameters and Preliminary Results</i>
16.10-16.40	COFFEE BREAK
16.40-18.00	SESSION 5B - ENGINEERING METHODS IN MEDICINE - CHAIRMAN: MICHAELA SERVI
16.40-17.00	Servi Michaela, Mussi Elisa , Carfagni Monica, Mcgreevy Kathleen, Facchini Flavio, <i>Manufacturing of multilayer replicas of human costal cartilage for realistic medical planning</i>
17.00-17.20	Sciortino Vincenza , Ingrassia Tommaso, Cerniglia Donatella, Pasta Salvatore, <i>Statistical shape modelling as a tool for Medical Reverse Engineering</i>
17.20-17.40	Favi Claudio , Riva Enrica, Fortese Giovanni, Varazzani Andrea, <i>Design and development of patient-specific medical devices for maxillofacial surgery through 3D modeling, topology optimization, and additive manufacturing</i>
17.40-18.00	Salerno Federico , Moos Sandro, Ulrich Luca, Novaresio Andrea, Vezzetti Enrico, <i>A Methodology for the Dimensional and Mechanical Analysis of Surgical Guides</i>

SCIENTIFIC PROGRAM - DAY 2- 07/09/2023

AUDITORIUM B

09.00-11.00	SPECIAL SESSION 1A - DESIGN METHODS IN FUSION ENGINEERING - SS ORGANIZERS: GIUSEPPE DI GIRONIMO, DOMENICO MARZULLO, ROCCO MOZZILLO, ANDREA TARALLO
09.00-10.00	Invited Lecture - Gabriele D'Amico , Fusion 4 Energy, Javier Francisco Fuentes , ITER Organization, Francesca Giovanna Lanzotti , University of Naples Federico II, <i>Geometrical Requirements Management during ITER lifecycle</i>
10.00-10.20	Kamendje Richard , Bachmann Christian, Claps Vincenzo, Janeschitz Günter, Pan Hungtao, Cheng Yong, Gliss Curt, Steinbacher Thomas, Haertl Thomas, Marzullo Domenico, Yang Yang, Mozzillo Rocco, <i>Fusion Energy: Towards Feasible Power Plant Designs</i>
10.20-10.40	Zoppoli Andrea, Dalla Palma Mauro , Di Gironimo Giuseppe, <i>From Design to Procurement of Tokamak Mechanical Structures</i>
10.40-11.00	Zoppoli Andrea, Buonocore Sara, Miccichè Gioacchino , Di Gironimo Giuseppe, <i>The role of a Remote Handling Facility in the Design Process of a Fusion Reactor</i>
11.00-11.30	COFFEE BREAK
11.30-13.00	SPECIAL SESSION 1B - DESIGN METHODS IN FUSION ENGINEERING - SS ORGANIZERS: GIUSEPPE DI GIRONIMO, DOMENICO MARZULLO, ROCCO MOZZILLO, ANDREA TARALLO
11.30-11.50	Petti Luigi, Cricri Gabriele, Zollo Alessio , Giannella Venanzio, Mantel Nicolas, Citarella Roberto, You Jeong-Ha, <i>Structural response of DEMO divertor under electromagnetic loading</i>
11.50-12.10	Fusco Salvatore , Sofia Alessandro, Grazioso Stanislao, Fontanelli Giuseppe Andrea, Di Gironimo Giuseppe, <i>Design and Control of Long Reach Manipulators for Remote Maintenance in Fusion Reactors: a Brief Review</i>
12.10-12.30	Lanzotti Francesca Giovanna , Di Gironimo Giuseppe, Marzullo Domenico, <i>RFLP approach to DTT divertor fixation system design using the 3DExperience platform</i>
13.00-14.30	LUNCH
14.30-15.30	SPECIAL SESSION 1C - DESIGN METHODS IN FUSION ENGINEERING - SS ORGANIZERS: GIUSEPPE DI GIRONIMO, DOMENICO MARZULLO, ROCCO MOZZILLO, ANDREA TARALLO
14.30 -14.50	Occhiuto Enrico , Imbriani Vito, Massanova Nicola, Mazzone Giuseppe, You Jeong-Ha, Marzullo Domenico, <i>Multiphysics FEM Integration Issues – A Case Study In Nuclear Fusion Research Activities</i>
14.50-15.10	Bonavolontà Ugo , Giacomel Jacopo, Marzullo Domenico, <i>Maintenance procedure on WCLL ancillary system – virtual reality application</i>

15.10 – 15.30 **Massanova Nicola**, Imbriani Vito, Di Gironimo Giuseppe, Occhiuto Enrico, Roccella Selanna, Zoppoli Andrea, Marzullo Domenico, *Systems Engineering and Multi-Criteria Decision Making Technique for Concept Design of DTT Divertor Fixation System*

15.30 - 16.00 COFFEE BREAK

15.30 - 17.00 ADM MEETING

ROOM 103

09.00-11.00 **SESSION 3C - DESIGN FOR ADDITIVE MANUFACTURING + DESIGN FOR MANUFACTURING AND ASSEMBLY - CHAIRMAN: FRANCESCO BUONAMICI**

09.00-09.20 **Girotto Alberto**, Leccia Federico, Sibilìa Lorenzo, Bodini Ileana, Paderno Diego, Ballan Michele, Rebesan Pietro, Uberti Stefano, Baronio Gabriele, Manzolaro Mattia, Villa Valerio, *Development of an assembly procedure to reduce the uncertainty propagation by geometric tolerance stack-up analysis of a complex ion source for nuclear physics applications*

09.20-09.40 Donnici Giampiero, Ferretti Patrich, **Montalti Andrea**, Francia Daniela, Liverani Alfredo, *FDM Technology: Overhangs versus Layer Height printability performance correlation*

09.40-10.00 **Dalpadulo Enrico**, Pini Fabio, Leali Francesco, *Concurrent Product and Process Design of an additively manufactured engine piston*

10.00-10.20 Antinozzi Sara, Di Filippo Andrea, Morena Sara, Sanseverino Anna, **Villecco Francesco**, *Prototyping a mechanical mounting system for the photogrammetric use of USB microscopes*

10.20-10.40 **Trovato Michele**, Belluomo Luca, Bici Michele, Campana Francesca, Cicconi Paolo, *Machine Learning Trends in Design for Additive Manufacturing*

10.40-11.00 **Grigolato Luca**, Martelletto Francesca, Rosso Stefano, Dal Fabbro Pierandrea, Meneghello Roberto, Concheri Gianmaria, Savio Gianpaolo, *A Bioinspired Geometric Modeling Approach based on Curve Differential Growth*

11.00-11.30 COFFEE BREAK

11.30-13.00 **SPECIAL SESSION 5A - ADVANCED HUMAN BODY ACQUISITION AND MODELLING TECHNIQUES - SS ORGANIZERS: MICHELE CALÌ, GIULIA PASCOLETTI**

11.30-11.50 Invited Lecture - Prof. **Elisabetta Zanetti**, Università di Perugia, *The regulatory pathway for custom-made medical devices*

12.00-12.15 Calì Michele, Zanetti Elisabetta M., Bianconi Francesco, **Pascoletti Giulia**, *From real-time acquisition to mesh morphing of foot at different positions*

12.15-12.30 Baiamonte Giuliana, Aciri Alberto, Laudani Giuseppe, Calì Michele, **Ambu Rita**, *Development of a methodology to model an average neck shape from 3D optical scanning*

- 12.30-12.45 Acri Alberto, Baiamonte Giuliana, Laudani Giuseppe, Oliveri Salvatore Massimo, **Cali Michele**, *Development of a Real-Time Acquisition Method for the Wrist Movements Rehabilitation*
- 12.45-13.00 **Caragiuli Manila**, Mandolini Marco, Candelari Mara, Brunzini Agnese, Mazzoli Alida, Bruno Giovanni, De Stefani Alberto, Zalunardo Francesca, Gracco Antonio, *A numerical simulation approach to study the effects of MADs embedded with elastic bands in OSA treatment*

13.00-14.30 LUNCH

14.30-15.30 SPECIAL SESSION 5B - ADVANCED HUMAN BODY ACQUISITION AND MODELLING TECHNIQUES -SS ORGANIZERS: MICHELE CALI, GIULIA PASCOLETTI

- 14.30 -14.50 Di Angelo Luca, Di Stefano Paolo, Guardiani Emanuele, **Morabito Anna Eva**, *Spine line identification from human back discretized models by geometric differential properties analysis*
- 14.50-15.10 **Fontana Carlotta**, D'inverno Giuseppe Alessio, Cappetti Nicola, *Diagnostic Enface Imaging of Retinal Vascularization: Topological Reconstruction and Intersection Identification*
- 15.10-15.30 Cappetti Nicola, **Fontana Carlotta**, *Cerebral Vessel Diagnostic Investigation: Vessel Classification from Medial Axis Evaluation*

15.30-16.00 COFFEE BREAK

ROOM 102

09.00-11.00 SESSION 8A - REVERSE ENGINEERING, DIGITAL ACQUISITION, IMAGE PROCESSING AND INSPECTION + SESSION 9 - EXPERIMENTAL METHODS IN PRODUCT DEVELOPMENT - CHAIRMAN: FRANCESCO BIANCONI

- 09.00-09.20 **Bianconi Francesco**, Buratti Cinzia, Pascoletti Giulia, *Relationship between colour themes and perceived aesthetic quality in colour images: an exploratory study*
- 09.20-09.40 **Dalle Mura Francesco**, Servi Michaela, Puggelli Luca, Furferi Rocco, *Automatic Strategy for Objective Evaluation of Burn Scars Roughness on 3D Scans*
- 09.40-10.00 **Severino Umberto**, Lagudi Antonio, Barbieri Loris, Scarfone Luigi, Bruno Fabio, *A SLAM-based Solution to Support ROV Pilots in Underwater Photogrammetric Survey*
- 10.00-10.20 **Donetti Luca**, Sitta, Alessandro Calabretta, Michele Torrisi, Marco Mauro, Stefano Sequenzia Gaetano, *Directly Cooled Silicon Carbide Power Module: Pin-fins Roughness SMIT Power Module*
- 10.20-10.40 **Amoroso Davide Maria**, Schifano Biagio, Calabretta Michele, Mauromicale Giuseppe, Sequenzia Gaetano, *Experimental Reliability Assessment of ACEPACK SMIT Power Module*
- 10.40-11.00 **Profili Andrea**, Di Iorio Francesco, Aasmul Søren, Governi Lapo, *Design and Development of a Liquid Crystal Elastomers Infiltration Prototype*

11.00-11.30 COFFEE BREAK

11.30-13.00	SESSION 8B - REVERSE ENGINEERING, DIGITAL ACQUISITION, IMAGE PROCESSING AND INSPECTION + SESSION 9 - EXPERIMENTAL METHODS IN PRODUCT DEVELOPMENT - CHAIRMAN: LUCA DI ANGELO
11.30-11.50	Dalle Mura Francesco , Puggelli Luca, Furferi Rocco, Governi Lapo, <i>Clearances Assessment in the Volkswagen Crafter Chassis by means of the 3D Scan</i>
11.50-12.10	Barberi Emmanuele , Cucinotta Filippo, Guglielmino Eugenio, Salici Angelo, Sfravara Felice, <i>A new method of point clouds processing for forensic comparison of cartridge cases</i>
12.10-12.30	Barberi Emmanuele , Cucinotta, Filippo Forssén Per-Erik, Raffaele Marcello, Salmeri Fabio, <i>A differential entropy-based method for reverse engineering quality assessment</i>
12.30-12.50	Di Angelo Luca, Di Stefano Paolo, Guardiani Emanuele , <i>An accuracy and repeatability analysis on the approximation of non-ideal roof features by ideal planes</i>
13.00-14.30	LUNCH
14.30-15.30	SESSION 6 - DIGITAL TWIN AND DIGITAL FACTORY - CHAIRMAN: MARGHERITA PERUZZINI
14.30 -14.50	Dammacco Lucilla , Carli Raffaele, Lazizzera Vito, Fiorentino Michele, Dotoli Mariagrazia, <i>Virtual Design of Complex Manufacturing Systems by Digital Technologies: the Case of an Italian Automotive Company</i>
14.50-15.10	Raffaelli Roberto , Bilancia Pietro, Peruzzini Margherita, Pisu Simona, Berselli Giovanni, Pellicciari Marcello, <i>Virtual prototyping and commissioning of manufacturing cycles in robotic cells</i>
15.10-15.30	Giancamilli Giovanni , Generosi Andrea, Agostinelli Thomas, Mazzuto Giovanni, Mengoni Maura, <i>Methodological Framework to Define Connected Machines' Specifications for Smart Factories</i>
15.30-16.00	COFFEE BREAK

ROOM 106

09.00-11.00	SESSION 5C - ENGINEERING METHODS IN MEDICINE - CHAIRMAN: ANTONIO GLORIA
09.00-09.20	Mussi Elisa, Servi Michaela , Facchini Flavio, <i>A Fully Automated Procedure for the Creation of Digital Patient-Specific Surgical Guides for Ear Reconstruction</i>
09.20-09.40	Alessandri Giulia , Santi Gian Maria, Frizziero Leonardo, Liverani Alfredo, <i>3D Printing Methods in Medicine: the Case of an Aortic Section</i>
09.40-10.00	Mencarelli Marta , Puggelli Luca, Furferi Rocco, Marzola Antonio, <i>Preliminary study of a 3D-printed high-fidelity simulator for the training on the EBUS TBNA procedure</i>
10.00-10.20	Maltauro Mattia , Menarini Lorenzo, Meneghello Roberto, Ciocca Leonardo, <i>Metrological Protocol for Comparison of digital and analogic Articulators for complete Dentures</i>
10.20-10.40	Stomaci Tommaso , Buonamici Francesco, <i>Short Overview on Trans-Septal Puncture Phantoms Materials and Manufacturing Technologies</i>

10.40-11.00 **Ghidotti Anna**, Cattaneo Andrea, Vitali Andrea, Regazzoni Daniele, Rizzi Caterina, Fiorentino Gennaro, *Towards Kinematic Assessment of Trendelenburg Gait after Total Hip Arthroplasty using Mocap systems*

11.00-11.30 COFFEE BREAK

11.30-13.00 SESSION 7- INDUSTRIAL DESIGN AND ERGONOMICS - CHAIRMAN: ROSARIA CALIFANO

11.30-11.50 **Galiè Giulio**, Freddi Marco, Pignatelli Edoardo, Donnici Giampiero, Frizziero Leonardo, *Virtual Reality in Design Methods: Case Study of an Automotive Design Product*

11.50-12.10 Evangelista Alessandro, **Manghisi Vito Modesto**, De Giglio Vito, Martellotta Francesco, Giliberti Claudia, Mariconte Raffaele, Uva Antonio Emmanuele, *Exploiting Immersive Virtual Reality for Investigating the Effects of Industrial Noise on Cognitive Performance and Perceived Workload*

12.10-12.30 **Lanzoni Daniel**, Vitali Andrea, Regazzoni Daniele, Rizzi Caterina, *Semi-immersive virtual environment to evaluate working conditions in logistic tasks using NIOSH method*

12.30-12.50 Grandi Fabio, **Peruzzini Margherita**, Raffaelli Roberto, Bilancia Pietro, Pellicciari Marcello, *An approach to build Virtual Training applications in industry using low-cost equipment*

13.00-14.30 LUNCH

ROOM 107

09.00-11.00 SPECIAL SESSION 3A - DESIGN FOR SPORTS ENGINEERING - SS ORGANIZERS: STEPHAN ODENWALD, ANTONIO LANZOTTI, TEODORICO CAPORASO, GIUSEPPE SANSEVERINO -CHAIR: ANTONIO LANZOTTI

09.00-09.40 Invited Lecture: Prof. **Thomas Allen**, Manchester Metropolitan University, *Metamaterials for sports*

09.40-10.00 **Schwanitz Stefan**, Amodeo Giuseppe, Odenwald Stephan, *Development of environmentally friendly Protective Mats for Climbing Gyms - Analysis of traditional Mat Systems and Determination of their Impact*

10.00-10.20 Dotti Francesca, Bianca Eleonora, Genitrini Matteo, **Ferri Ada**, *Ergonomic comfort of trekking backpacks: Measurements of pressure exerted by shoulder straps and hip belt in female users*

10.20-10.40 **Haid Daniel**, Duncan Olly, Hart John, Foster Leon, *Proof-of-Concept of an adaptable mechanical Metamaterial for Ice Hockey Helmet Liners*

10.40-11.00 **Rossoni Marco**, Antenucci Giacomo, Somaschini Claudio, Grassi Donato, Colombo Giorgio, Schito Paolo, *A Novel Approach Combining Rigging Animation Technique and CFD to Assess Aerodynamic Performances of Professional Cyclists*

11.00-11.30 COFFEE BREAK

11.30-13.00 SPECIAL SESSION 3B - DESIGN FOR SPORTS ENGINEERING - SS ORGANIZERS: STEPHAN ODENWALD, ANTONIO LANZOTTI, TEODORICO CAPORASO, GIUSEPPE SANSEVERINO -CHAIR: TEODORICO CAPORASO

11.30-11.50 **Sanseverino Giuseppe**, Genua Alessandro, Krumm Dominik, Odenwald Stephan, *Inverse Kinematics to Simulate Sport Movements in Virtual Environment*

11.50-12.10 Parisi Mariafederica, **Colombo Daniel**, La Fauci Giuseppe, Ferri Ada, Dotti Francesca, Bianca Eleonora, Crosetta Lorenzo, Pugno Nicola, Colonna Martino, *Development and testing of auxetic shoulder straps for sport backpacks*

12.10-12.30 **La Fauci Giuseppe**, Parisi Mariafederica, Nanni Alessandro, Crosetta Lorenzo, Pugno Nicola M, Colonna Martino, *Design and Proof Of Concept Of An Advanced Protective System For The Dissipation Of Tangential Impact Energy In Helmets, Based On Non-Newtonian Fluids*

12.30-12.50 **Dawber Will**, Foster Leon, Senior Terry, Hart John, *Design Development of a Repeatable Helmet Test System for Public Order Threat Recreations*

13.00-14.30 LUNCH

14.30-15.30 SPECIAL SESSION 3C- DESIGN FOR SPORTS ENGINEERING - SS ORGANIZERS: STEPHAN ODENWALD, ANTONIO LANZOTTI, TEODORICO CAPORASO, GIUSEPPE SANSEVERINO -CHAIR: GIUSEPPE SANSEVERINO

14.30 -14.50 Caporaso Teodorico, **Megna Alessia**, *Robust design method applied to the development of smart shorts for muscle activity analysis*

14.50-15.10 **Nickel Loni**, Haid Daniel, Duncan Olly, Hart John, Foster Leon, *Reliability of a Test Method to Assess Ice Hockey Head Impacts*

15.10 – 15.30 Bertolini Michele, **Piazzolla Pietro**, Dei Cas Jacopo, Redaelli Davide Felice, Colombo Giorgio, *Towards parametric Modelling of human bronchial Tree for computational Fluid Dynamics*

15.30-16.00 COFFEE BREAK

19.30 GALA DINNER

SCIENTIFIC PROGRAM - DAY 3- 08/09/2023

AUDITORIUM B

09.00-11.00	SESSION 10A - X-REALITY FOR INTERACTIVE DESIGN - CHAIRMAN: ROBERTO RAFFAELI
09.00-09.20	Marino Emanuele , Barbieri Loris, Bruno Fabio, Muzzupappa Maurizio, <i>Context-aware recoloring approach for AR-assisted maintenance applications</i>
09.20-09.40	Dastan Mine , Uva Antonio Emmanuele, Boccaccio Antonio, Fiorentino Michele, <i>Virtual Stigmometer Widget (ViSti) for Precise 5DOF Dental Drill Tool Positioning with Augmented Reality</i>
09.40-10.00	Evangelista Alessandro , De Giglio Vito, Cipriani Lorenzo, Manghisi Vito Modesto, <i>Evaluating the Effectiveness of Cinematic Virtual Reality as a Tool to Improve Drivers' Attitudes Toward Traffic Safety</i>
10.00-10.20	Cardilicchio Antimo , Greco Alessandro, Gerbino Salvatore, <i>Making Ionizing Radiation Visible: an X-Reality Application for Risk Assessment of Ionizing Radiation During Surgery</i>
10.20-10.40	Brunzini Agnese , Danieli Andrea, Caragiuli Manila, Mazzoli Alida, Pagnoni Mario, Mandolini, Marco, <i>Mixed Reality and maxillofacial Surgery: an interactive twofold-modality Application</i>
10.40-11.00	Laviola Enricoandrea , Romano Sara, Gattullo Michele, Uva Antonio Emmanuele, <i>Virtual Mirror for Maintenance: an Augmented Reality Support Tool</i>
11.00-11.30	COFFEE BREAK
11.30-13.30	SESSION 10B- X-REALITY FOR INTERACTIVE DESIGN CHAIRMAN: MICHELE GERMANI
11.30-11.50	Romano Sara , Laviola Enricoandrea, Gattullo Michele, <i>ADAM: Automatic Development of Auxiliary Models. An Authoring Tool for Augmented Reality Technical Documentation</i>
11.50-12.10	Buonocore Sara , Guerra Alessandro, De Amicis Raffaele, Benincasa Marcello, Minopoli Valerio, Di Gironimo Giuseppe, <i>A User-centered Study on Virtual Reality Training Systems' Design Features</i>
12.10-12.30	Ciccarelli Marianna , Papetti Alessandra, Senesi Paolo, Lonzi Barbara, Germani Michele, <i>User-Centered Design of Co-Design Experience based on X-Reality and Virtual Simulation</i>
12.30-12.50	Vangi Fabio , Ricci Marina, Diroma Annalisa, Fiorentino Michele, <i>Designing a Business-To-Business Virtual Fashion Showroom in the Metaverse: A Padded Jacket Case Study</i>
12.50-13.10	Calzone Nicolas, Carriero Graziano, Basso Simone, Sileo Monica, Mozzillo Rocco , Pierri Francesco, Caccavale Fabrizio, <i>Mixed Reality Platform to Support Human-Robot Bi-Directional Interaction</i>
13.30-14.30	GOODBYE LUNCH

ROOM 103

09.00-11.00	SPECIAL SESSION 2 – HUMAN CENTERED DESIGN IN TRANSPORTATION DOMAIN - SS ORGANIZERS: FRANCESCA DE CRESCENZIO, ALESSANDRO NADDEO, SANDHYA SANTHOSH, ROSARIA CALIFANO
09.00-09.20	Califano Rosaria , Mosaferchi Saeedeh, Naddeo Alessandro, <i>Shed light on the path of human-machine interaction in autonomous vehicles: Where did we come from, where we are going? Part I, State of the art</i>
09.20-09.40	Califano Rosaria , Mosaferchi Saeedeh, Naddeo Alessandro, <i>Shed light on the path of human-machine interaction in autonomous vehicles: Where did we come from? Part II, Search strategy, Findings and Perspectives</i>
09.40-10.00	Santhosh Sandhya , De Crescenzo Francesca, <i>A New Approach for Assessing the Living Space of Narrow Environments: Integration of Digital Human Model Simulations in Virtual Reality</i>
10.00-10.20	Dettmann Andre , Heinz Adelina, Felbel Konstantin, Bullinger Angelika C., <i>Investigation of Implicit and Contextual Cues for the Facilitation of Cooperative Automated Driving: a qualitative analysis</i>
11.00-11.30	COFFEE BREAK
11.30-13.30	SPECIAL SESSION 4 – ARTIFICIAL INTELLIGENCE IN DESIGN FOR SUSTAINABILITY – SS ORGANIZERS: LUCA MANUGUERRA, FEDERICA CAPPELLETTI – CHAIRMAN: LUCA MANUGUERRA
11.30-11.50	Mandolini Marco , Manuguerra Luca Sartini, Mikhailo Pescatori, Francesco Lo Presti Giulio Marcello, GERMANI Michele, <i>Machine learning for costing gas-turbine components</i>
11.50-12.10	Gianvincenzi Mattia , Marconi Marco, Mosconi Enrico Maria, Tola Francesco, <i>Eco-design Framework for a Battery Sustainable Lifecycle Management</i>
12.10-12.30	Manuguerra Luca , Cappelletti Federica, Rossi Marta, Germani Michele, <i>A method based on machine learning techniques for the development of a parametric environmental impact model for industrial electric vehicles</i>
12.30-12.50	Ciccione Francesco , Ceruti Alessandro, Bacciaglia Antonio, Meisina Claudia, <i>Automating Landslips Segmentation for Damage Assessment: a Comparison Between Deep Learning and Classical Models</i>
12.50 – 13.10	Boix Rodríguez Núria , Favi Claudio, <i>Life cycle impact assessment of mechatronic products: towards engineering eco-design for hobs technologies</i>
13.30-14.30	GOODBYE LUNCH

ROOM 102

09.00-11.00	SESSION 11 - ENGINEERING EDUCATION - CHAIRMAN: ARMANDO VIVIANO RAZIONALE
09.00-09.20	Neri Paolo , Paoli Alessandro, Razionale Armando Viviano, Barone Sandro, <i>Educational Test Bench for Full Field Vibration Measurements</i>
09.20-09.40	Morosi Federico , Cascini Gaetano, <i>Virtual Reality Workshop for Massive Laboratory Learning Experience of Engineering Students</i>
09.40-10.00	Aruanno Beatrice , Tamburrino Francesco, Neri Paolo, Barone Sandro, <i>VR Lab: an Engaging Way for Learning Engineering and Material Science</i>
10.00-10.20	Neri Paolo , <i>VQR Scores Estimation Based on PCA Analysis</i>
10.20-10.40	Rangarajan Vaishnavi, Shahbaz Badr Arash, Sanchez Christopher, De Amicis Raffaele , <i>A Study on Educators' Requirements for Integrating VR in Post-Secondary Classes</i>
10.40-11.00	Vigano Roberto, Rovida Edoardo , <i>Holistic Scientific-Technical Communication: a Teaching Proposal</i>
11.00-11.30	COFFEE BREAK
11.30-13.30	SESSION 12 - KNOWLEDGE AND PRODUCT DATA MANAGEMENT & GEOMETRICAL PRODUCT SPECIFICATION, GEOMETRIC AND FUNCTIONAL CHARACTERIZATION OF PRODUCTS - CHAIRMAN: ROBERTO MENEGHELLO
11.30-11.50	Marino Emanuele , Barbieri Loris, Bruno Fabio, Mangeruga Marino, Muzzupappa Maurizio, <i>Interoperability between AR and CAD systems for industrial applications</i>
11.50-12.10	Henstrom Jordan Alexander, De Amicis Raffaele , Sanchez Christopher A, Demirel Onan, <i>VR Technical Drawing Learning Activity for College Engineering Students: Design, Development and Evaluation</i>
12.10-12.30	Di Angelo Luca, Di Stefano Paolo, Guardiani Emanuele, Mancuso Antonio, Marannano Giuseppe , <i>Data handling of 3d geometric model with augmented information for Cultural Heritage</i>
12.30-12.50	Maltauro Mattia , Meneghello Roberto, Concheri Gianmaria, <i>A tool for ISO GPS diffusion and knowledge assessment in industry and academia</i>
12.50-13.10	Maltauro Mattia , Carraro Marco, Meneghello Roberto, Concheri Gianmaria, <i>Geometric functional Specification for a lifting Airfoil</i>
13.30-14.30	GOODBYE LUNCH

ROOM 106

09.00-11.00	SESSION 13 – DESIGN FOR SUSTAINABILITY AND ECODESIGN - CHAIRMAN: DOMENICO SPERANZA
09.00-09.20	Spreafico Christian , Landi Daniele, Russo Davide, <i>Prospective Life Cycle Assessment based on patent analysis to support eco-design</i>
09.20-09.40	Speranza Domenico, Papa Stefano, Pensa Claudio, Di Bernardo Romolo , <i>Hydrofoil technology: current applications and future developments for sustainable boating.</i>
09.40-10.00	Manuguerra Luca , Cappelletti Federica, Rossi Marta, Germani Michele, <i>Improving Eco-Design efficacy by a simplified tool for product environmental impacts calculation</i>
10.00-10.20	Rossi Marta , Cappelletti Federica, Manuguerra Luca, Germani Michele, <i>Customization in inventory datasets: effects on Life Cycle Assessment results</i>
10.20-10.40	Cappelletti Federica , Manuguerra Luca, Germani Michele, <i>An analytical tool to support decision-making in the design phase</i>
10.40-11.00	Cappelletti Federica , Manuguerra Luca, Rossi Marta, Germani Michele, <i>The Application of Circular Economy Principles through Re-design, Scraps De-manufacturing, and value Chains merge</i>
11.00-11.30	COFFEE BREAK
11.30-13.30	SPECIAL SESSION 6 – DESIGN OF BIOINSPIRED SOFT ROBOTICS – SS ORGANIZERS: STANISLAO GRAZIOSO, GIUSEPPE DI GIRONIMO, ANTONIO LANZOTTI, CHAIRMAN: STANISLAO GRAZIOSO
11.30-11.50	Invited Lecture – Prof. Cosimo della Santina, TU Delft, <i>Towards Intelligent Soft Robotics</i>
11.50-12.10	Heinrich Malte, Jerke Philip , Marwitz Johann, Hellmich Arvid, Schenke Christer; Ihlenfeldt Steffen, <i>Virtual Commissioning for a Multi-Stage Characterisation-Process of a Dual-Arm Robot Control System</i>
12.10-12.30	Kranz Burkhard , Hase Alexander, Boxberger Lukas, Weisheit Linda, <i>Using Discrete Element Method for simulating robotic Structures with Particle jamming Characteristics</i>
12.30-12.50	Ostuni Benedetta Maria Vita , Grazioso Stanislao, Caporaso Teodorico, Lanzotti Antonio, <i>Comparison of silicone-based pneumatic soft bending actuators with stiffening capabilities in terms of performances and sustainability</i>
12.50-13.10	Sabella Roberto , Ostuni Benedetta Maria Vita, Caporaso Teodorico, Grazioso Stanislao, Lanzotti Antonio, <i>Indices for Environmental Sustainability in Pneumatic Soft Robotic Actuators: a Systematic Review</i>
13.10-13.30	Crispino Raffaele , Corrado Brunella, Vecchione Raffaele, Netti Paolo Antonio, <i>Polymeric soft micro-robots propelled into a microfluidic device for gut target delivery studies</i>
13.30-14.30	GOODBYE LUNCH

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