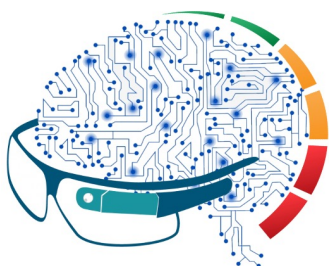




CONFERENCE PROCEEDINGS

2025 IEEE INTERNATIONAL CONFERENCE ON
METROLOGY FOR
EXTENDED REALITY,
ARTIFICIAL INTELLIGENCE AND
NEURAL ENGINEERING

ANCONA, ITALY OCTOBER 22-24, 2025



 **IEEE**
METROXRaine
ANCONA2025

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Proceedings of 2025 IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering

IEEE MetroXRaine 2025

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IEEE Catalog Number: CFP25BQ1-ART

ISBN: 979-8-3315-0279-9

WORKSHOP PROGRAM

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Carmine Gelormini (Reykjavik University, Iceland); Federica Pescaglia (Institute of Biomedical and Neural Engineering, Iceland); Lorena Guerrini (Reykjavik University, Iceland & University of Campania L. Vanvitelli, Italy); Halldór Jónsson jr (Reykjavik University, Iceland); Hannes Petersen (Akureyri Hospital, Iceland); Riccardo Brun (University of Padova, Italy); Giorgio Di Lorenzo (Università di Roma Tor Vergata, Italy); Paolo Gargiulo (Reykjavik University, Iceland)

447 A Neuroradiomic Approach for Age-Group Classification of Healthy Human Brains

Noemi Pisani (University of Naples Federico II, Italy); Maria Agnese Pirozzi, Federica Franza and Alessandro Pasquale De Rosa (University of Campania Luigi Vanvitelli, Italy); Francesco Amato (University of Naples Federico II, Italy); Antonio Gallo, Mario Cirillo, Leandro Donisi and Fabrizio Esposito (University of Campania Luigi Vanvitelli, Italy)

Session 3.3 - WORKSHOP - Shaping the Future of Interaction: Integrating AI, Human Factors, and Immersive Technologies in HCI - PART I

Room: Room T3

453 Affect Adaptation for Virtual Reality: a Review of Efforts in Affective Computing

Oliver Guy, Markos Mentzelopoulos, Christina Moutsiana and Alexandra Psarrou (University of Westminster, United Kingdom)

459 The Way Mood Shapes Emotions: from Experiments to a Mood Assessment Application

Claudia Rabaioli (University of Milano-Bicocca, Italy); Nicolo Dozio and Riccardo Giussani (Politecnico di Milano, Italy); Aurora Saibene and Daniele Luigi Romano (University of Milano-Bicocca, Italy); Francesco Ferrise (Politecnico di Milano, Italy); Francesca Gasparini (University of Milano-Bicocca, Italy)

465 The Uncanny Valley: is It the Body or the Mind?

Clara Gangemi (IMT School for Advanced Studies Lucca, Italy); Francesco Bossi (University of Pisa, Italy); Caterina Vannucci (IMT School for Advanced Studies Lucca, Italy); Lorenzo Cominelli and Enzo Pasquale Scilingo (University of Pisa, Italy); Pietro Pietrini (IMT School for Advanced Studies Lucca, Italy)

471 Neuro-Physiological and Subjective Measures of Presence Experience in Virtual Reality: Insights from a Scoping Review

Aurelio Sepe, Andrea Antonio Cantone, Simone Spera, Otino Pio Santosuosso, Giuliana Vitiello and Alireza Morteza Pour (University of Salerno, Italy)

477 Ensuring Equitable Guidance: a Context-Based Approach to Bias Detection in AI Advisors

Agnese Augello and Luca Sabatucci (National Research Council, Italy); Pietro Neroni (Cognitive Systems Lab, Italy); Luigi Casoria and Giuseppe Caggianese (National Research Council, Italy)

Session 3.5.1 - SPECIAL EVENT - AIRevEdu - Advanced Education and Training: Navigating the AI Revolution - PART I

Room: Room T36

483 An Immersive Hazelnut Tree Pruning Simulator for Agricultural Operator Training

Davide Fabiocchi, Marco Carnevale, Hermes Giberti, Silvia La Placa, Carol Sergenti (University of Pavia, Italy)

489 Real Versus Metaverse Experiences: a Pilot Study

Eleonora Diletta Sarcinella (Università Cattolica del Sacro Cuore, Italy & The Way, Italy); Katusha Gerardini, Sabrina Bartolotta, Andrea Ubaldi, Andrea Gaggioli and Alice Chirico (Università Cattolica del Sacro Cuore, Italy)

495 Toward Context-Aware, Immersive Testing for Innovative Formative Assessment

Federica Morleo and Pasquale Anselmi (University of Padua, Italy); Alessandra Vitanza (Institute of Cognitive Sciences and Technologies - CNR, Italy)

500 MetaHumanTutor: a Realistic AI-Based Virtual Assistant for Physics in Higher Education

Leonardo Mogianesi (Unimore, Italy & Unicam, Italy); Giulia Paludo (University of Trento, Italy); Francesco Rasponi, Daniela Amendola and Andrea Perali (Unicam, Italy)

506 Embodiment in Nature: How Avatar Choice Shapes an Underwater Virtual Reality Experience

Antonella Giangualano (Mind and Behavior Technological Center, Italy & University of Milan-Bicocca, Italy); Paolo Boffi (Polytechnic University of Milan & University of Milan-Bicocca, Italy); Sofia Adelaide Osimo, Mona Yavari and Alessandro Gabbiadini (Mind and Behavior Technological Center & University of Milan-Bicocca, Italy); Pier Luca Lanzi (Politecnico di Milano, Italy); Alberto Gallace (Mind and Behavior Technological Center & University of Milan-Bicocca, Italy)

- 512 Higher Education Students' Perception of AI for Self-Learning: a Preliminary Study**
Daniele Spoladore and Sara Arlati (National Research Council, Italy); Alberto Trombetta (University of Insubria, Italy)
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Poster Session 2

Room: Università Politecnica delle Marche - Faculty of Economics

- 518 AI-Based Emotion Recognition in Education: Identifying Dyslexic and Non-Dyslexic Learners**
Michele Materazzini (University of Tuscia, Italy); Pilar Aparicio-Martínez (University of Córdoba, Spain); Alessia Melis and Daniele Baldacci (Blue Cinema TV srl, Italy); Enrique Yeguas-Bolívar (University of Córdoba, Spain); Giuseppe Calabrò and Juri Taborri (University of Tuscia, Italy)
- 524 Digital Interventions for Social Isolation: Virtual Reality and Educational Programs for Older Adults**
Barbara Gomez-Peña (University of Cordoba, Spain); José M Alcalde-Llargo (University of Tuscia & University of Córdoba, Spain); María Álvarez Cantos, Alessia Bisio, Mariana Buenestado-Fernández, Pilar Aparicio-Martínez (University of Córdoba, Spain); Juri Taborri (University of Tuscia, Viterbo, Italy); Enrique Yeguas-Bolívar (University of Córdoba, Spain)
- 530 Enhancing Accessibility and Learning: the History of Nursing Through Virtual Reality**
Alessia Bisio and Pilar Aparicio-Martínez (University of Córdoba, Spain); Ibrahim Ramadan (University of Testing, Palestine); José M Alcalde-Llargo (University of Tuscia & University of Córdoba, Spain); Andrea Zingoni (University of Tuscia, Italy); Enrique Yeguas-Bolívar (University of Córdoba, Spain)
- 536 Adopting Post-Hoc Explainable Reinforcement Learning in Healthcare Scenarios**
Daniele Melloni and Andrea Zingoni (University of Tuscia, Italy)
- 542 eStudy: a Novel Human-Centric AI-Based Platform to Customize Educational Contents on the Scholars' Needs**
Daniele Melloni (University of Tuscia, Italy); Sofia Cramerotti, Francesco Zambotti, Nicoletta Rivelli and Daniele De Martin (Erickson S.p.A., Italy); Enrique Yeguas-Bolívar (University of Córdoba, Spain); Giuseppe Calabrò (University of Tuscia, Italy); José M Alcalde-Llargo (University of Tuscia & University of Córdoba, Spain); Andrea Zingoni (University of Tuscia, Italy)
- 547 A Survey on Extended Reality in Disaster Management: Integrating XR, IoT, and Machine Learning for Enhanced Situational Awareness**
Edona Krasniqi and Visar Shehu (South East European University, Macedonia, the former Yugoslav Republic of)
- 553 Navigation Assistance Feature for Visually Impaired Visitors in a Personalized Museum Experience**
Brigida Bonino, Franca Giannini and Katia Lupinetti (CNR-IMATI, Italy)
- 559 A Dual VR-Physical Climbing System for Cognitive Support in Young Adults with Disabilities**
Mario Covarrubias (Politecnico di Milano, Italy); Emma Mencaci (Aspoc Lab Ets, Italy); Marco Tarabini, Carlalberto Francia and Manuela Galli (Politecnico di Milano, Italy)
- 565 Virtual Reality and Biosignals for Labor Pain Relief: A Pilot Study**
Vittorio Santoriello, Alfonso M Ponsiglione, Carmine Giugliano and Carmen Buonaguro (University of Naples Federico II, Italy); Luigi Gallo (Pegaso University, Italy & National Research Council, Italy); Giuseppe Caggianese (National Research Council of Italy, Italy); Marco Cascella (University of Salerno, Italy); Giuseppe De Pietro (Pegaso Telematic University, Italy); Andrea Chirico (Sapienza University of Rome, Italy); Antonio Giordano (Temple University, USA); Francesco Amato, Maria Romano and Maurizio Guida (University of Naples, Federcio II, Italy)
- 570 The Role of Gender in Conflict Prediction**
Sylvie Cerise, Consuelo Rubina Nava and Stefano Tedeschi (Università della Valle d'Aosta, Italy); Paola Pisano (Università degli Studi di Torino, Italy)
- 576 Sport DB 3.0: Use of Wearables for Cardiac Self-Monitoring During Sport**
Agnese Sbrillini (Università Politecnica Delle Marche, Italy); Sofia Romagnoli (Aragon Institute of Engineering Research (I3A) Zaragoza University, Spain); Antonio Nocera, Micaela Morettini, Ennio Gambi and Laura Burattini (Università Politecnica delle Marche, Italy)

- 581 Enhancing Awareness in the Design of Dissemination and Teaching Activities: Using Context for Integrating Knowledge Sharing and Technology**
Andrea Zingoni (University of Tuscia, Italy); Chiara Tagliaferri (Consiglio Nazionale delle Ricerche, Italy); Pasquale Arpaia (University of Naples Federico II, Italy); Valentina Bello (University of Pavia, Italy); Loredana Cristaldi (Politecnico di Milano, Italy); Valentina Elisabetta Ferrara (Università degli Studi di Milano-Bicocca Milano, Italy); Nicola Moccaldi (University of Naples Federico II, Italy); Antonio Moschitta (University of Perugia, Italy); Marisa Pesola (University of Naples Federico II, Italy); Fabio A. Schreiber, Letizia Tanca and Leila Es Sebar (Politecnico di Milano, Italy)
- 587 IM-MetaLAB: the First Digital Laboratory for Teaching the Fundamental Concepts of Instrumentation and Measurement in Metaverse**
Francesco Bonavolontà, Annalisa Liccardo and Rosario Schiano Lo Moriello (University of Naples Federico II, Italy); Enzo Caputo (Meditech Competence Center, Italy); Antonio Monaco (Gav Projects srl, Germany)
- 593 Enhancing Technical Maintenance Procedures Through VR and Haptic Devices**
Francesco de Pandi (University of Naples Federico II, Italy & Leonardo S.p.a, Italy); Nazaro Aversano and Salvatore Musto (Leonardo S.p.A., Italy); Francesco Bonavolontà, Annalisa Liccardo and Rosario Schiano Lo Moriello (University of Naples Federico II, Italy); Francesca Matarese (Leonardo S.p.A., Italy); Enzo Caputo (Meditech Competence Center, Italy); Giorgio de Alteriis (University of Naples Federico II, Italy)
- 599 Single-Trial EEG Classification of Semantic Visual Targets in a Novel Oddball Task**
Mian Kou, Daniel J Blackburn and Mahnaz Arvaneh (The University of Sheffield, United Kingdom)
- 605 Reproducible Physiological Features in Affective Computing: a Preliminary Analysis on Arousal Modeling**
Andrea Gargano (University of Pisa, Italy); Jasin Machkour (Technische Universität Darmstadt, Germany); Mimma Nardelli and Enzo Pasquale Scilingo (University of Pisa, Italy); Michael Muma (Technische Universität Darmstadt, Germany)
- 611 The Cost of Simplicity: How Reducing EEG Electrodes Affects Source Localization and BCI Accuracy**
Eva Guttmann-Flury (Shanghai Jiao Tong University, China & Westlake University, China); Wei Yanyan, Zhao Shan and Jian Zhao (Shanghai Jiao Tong University, China); Mohamad Sawan (Westlake University, China & Polytechnique Montréal, Canada)
- 617 Enhancing Explainability of Time Series Anomaly Detection for NVH Testing**
Lan Jia, Bram Cornelis and Claudio Colangeli (Siemens Industry Software NV, Belgium); Konstantinos Gryllias (KU Leuven & DMMS Group, Flanders Make, Belgium)
- 623 Distributed Sensor for Water Detection via Data-Driven TDR Inversion**
Marco Scarpetta, Alessandra Moretto, Maurizio Spadavecchia and Nicola Giaquinto (Politecnico di Bari, Italy)
- 628 Feasibility and Acceptability of P300-Based Brain-Computer Interface Neurofeedback Training for Cognitive Enhancement**
Jin Ni, Joshua Giles and Mahnaz Arvaneh (The University of Sheffield, United Kingdom)
- 634 Soft Tissue Radiodensitometric Longitudinal Differences are Associated with Cardiovascular Risks in Elderly Subjects**
Marco Recenti (Reykjavik University, Iceland); Alfonso M Ponsiglione, Carlo Ricciardi, Michela Russo and Francesco Amato (University of Naples Federico II, Italy); Magnús Kjartan Gíslason (Institute of Biomedical and Neural Engineering, Reykjavik University, Iceland); Milan Chang (Icelandic Gerontological Research Institute, Landspítali, Reykjavik, Iceland); Paolo Gargiulo (Reykjavik University, Iceland)
- 640 Telepalpation System for Stiffness Recognition of Tissue Digital Twins Through Neuromorphic Vibrotactile Feedback in Virtual Reality**
Alessandro Profili, Flaminia Piretta and Marton Csaba Mezei (Sant'Anna School of Advanced Studies, Italy); Muhammad Adnan Adnan Khalil (Sant'Anna School of Advanced Studies & National University of Sciences and Technology, NUST, Italy); Fabrizia Auletta, Mariangela Filosa and Calogero Maria Oddo (Scuola Superiore Sant'Anna, Italy)
- 645 Embodied Conversational Virtual Humans in 3D Environments: Towards Scalable and Immersive AI Interactions**
Alberto Altozano, Jose Roda Belles, Maria Eleonora Minissi, Mariano Alcaniz and Javier Marín-Morales (Universitat Politècnica de Valencia, Spain)
- 651 EEG Correlates of Vection: a Systematic Literature Review**
Gael Van der Lee, François Cabestaing and Hakim Mohammed (University of Lille, France)

- 657 Development of a Human-Inspired Long-Term Memory for Interactive Conversational Agents**
Angelo De Marco, Federico Galatolo, Lorenzo Cominelli, Marco Pardini, Mario Giovanni C.A. Cimino, Alberto Greco and Enzo Pasquale Scilingo (University of Pisa, Italy)
- 663 S-SMOTE: An Optimized Oversampling Approach for Knee Osteoarthritis Classification Using Secondary Label Analysis**
Ida Maruotto and Federica Kiyomi Ciliberti (Reykjavik University, Iceland); Davide Raineri (University of Piemonte Orientale, Italy); Halldór Jónsson Jr (Landspítali Hospital, Iceland); Paolo Gargiulo (Reykjavik University, Iceland)
- 669 Re-Engaging Driver Attention Using ChatGPT: a VR-EEG Study on Stress Impact and Driving Performance**
Alaa Zaki Elfiqi (The American University in Cairo, Egypt); Seif Eldawlatly (Ain Shams University, Egypt & The American University in Cairo, Egypt); Khalil I. Elkhodary (The American University in Cairo, Egypt)
- 675 Distinguishing Startle from Surprise Events Based on Physiological Signals**
Mansi Sharma (German Center for Artificial Intelligence, Germany & Saarland University, Germany); Alexandre Duchevet (Fédération ENAC ISAE-SUPAERO ONERA, Université de Toulouse, France); Florian Daiber (German Research Center for Artificial Intelligence (DFKI), Germany); Jean-Paul Imbert (Fédération ENAC ISAE-SUPAERO ONERA, Université de Toulouse, France); Maurice Rekrut (German Research Center for Artificial Intelligence (DFKI) & Saarland Informatics Campus, Germany)
- 681 Evaluation of Galvanic Skin Response from Subjective Quality Assessment Subject to Participants' Experience with 360 Videos on HMD**
Majed Elwardy and Yan Hu (Blekinge Institute of Technology, Sweden)
- 687 Deepfake Forensic Analysis: Source Dataset Attribution and Legal Implications of Synthetic Media Manipulation**
Massimiliano Cassia, Luca Guarnera, Mirko Casu, Ignazio Zangara and Sebastiano Battiato (University of Catania, Italy)
- 693 Comparative Study of Reinforcement Learning-Enhanced Control Strategies for Nonlinear Multidimensional Systems**
Patryk Bałazy (AGH University of Krakow, Poland)
- 699 Can Anatomical Information Guide the Performance of Convolutional Neural Networks for Classifying Neurodegenerative Diseases Using Brain MRI?**
Giulia Maria Mattia and Noura Osman (Univ Toulouse, Inserm, ToNIC, Toulouse, France); Lydia Chougar (Sorbonne Université, Paris Brain Institute, AP-HP, Hôpital de la Pitié Salpêtrière, France & The Neuro - Montreal Neurological Institute, McGill University, Canada); Pierre Todeschini (Univ Toulouse, Inserm, ToNIC, Toulouse, France); Wassilios G. Meissner (CHU Bordeaux, Service de Neurologie des Maladies Neurodégénératives, IMNc, France & New Zealand Brain Research Institute, Christchurch, New Zealand); Margherita Fabbri and Olivier Rascol (Univ Toulouse, Inserm, ToNIC, MSA French Reference Center, Univ. Hospital Toulouse, Toulouse, France); David Grabli (Sorbonne Université, Paris Brain Institute, AP-HP, Hôpital de la Pitié Salpêtrière, France); Bertrand Degos (Assistance Publique Hôpitaux de Paris, Service de Neurologie, Hôpital Avicenne, France); Marie Vidailhet (Sorbonne Université, Paris Brain Institute, AP-HP, Hôpital de la Pitié Salpêtrière, France); Alice Faucher (Assistance Publique Hôpitaux de Paris, Service de Neurologie, Hôpital Avicenne, France); Jean-Christophe Corvol and Stéphane Lehericy (Sorbonne Université, Paris Brain Institute, AP-HP, Hôpital de la Pitié Salpêtrière, France); Patrice Péran (Univ Toulouse, Inserm, ToNIC, Toulouse, France)
- 705 Self-Attentive Deep Fusion Framework with Transformer-Based Semantics for Emergency Head CT Reporting**
Selene Tomassini, Abdallah Zeggada, Carlo Cosimo Quattrocchi, Farid Melgani and Paolo Giorgini (University of Trento, Italy)
- 711 Personalized Multi-Agent Recommendation System for Monitoring and Coaching Through Wearable and Non-Invasive Sensors**
Nicola Davolio, Fiorenzo Colarusso and Selay Yüksel (Nivara, The Netherlands); Sara Casaccia (Università Politecnica delle Marche, Italy)
- 717 Emotional Matters: Psychometric Design of Response Formats for Assessing Emotional Awareness in Volumetric Contexts**
Gloria Simoncini and Francesca Borghesi (University of Turin, Italy); Eleonora Diletta Sarcinella (Università Cattolica del Sacro Cuore, Italy & The Way, Italy); Alice Chirico (Università Cattolica del Sacro Cuore, Italy); Pietro Cipresso (University of Turin, Italy)

723 When Emotions Move: Validating Virtual Environments for Affect Dynamics

Francesca Borghesi, Gloria Simoncini and Vittorio Murtas (University of Turin, Italy); Eleonora Diletta Sarcinella (Università Cattolica del Sacro Cuore, Italy & The Way, Italy); Alice Chirico (Università Cattolica del Sacro Cuore, Italy); Pietro Cipresso (University of Turin, Italy)

Session 4.1 - Distributed Learning and Hybrid AI: Bridging Technology, Society, and Ethics

Room: Aula Magna G. Conti

729 Explaining Federated Learning-Based Movie Recommendations

Ege Soyarrar and Reyhan Aydogan (Ozyegin University, Turkey); Berk Buzcu and Davide Calvaresi (HES-SO Valais-Wallis, Switzerland)

735 AI-Driven Multi-Agent Systems for Automated Regulatory Analysis of Crypto Projects

Mario Trerotola (Politecnico di Torino, Italy); Davide Calvaresi (HES-SO Valais-Wallis, Switzerland)

741 Beyond Technical Transparency: Explainability as a Safeguard Against Manipulative AI

Ermanno Petrocchi and Simona Tiribelli (University of Macerata, Italy); Berk Buzcu (HES-SO Valais-Wallis, Switzerland); Elia Pacioni (HES-SO Valais-Wallis, Switzerland & University of Extremadura, Spain); Davide Calvaresi (HES-SO Valais-Wallis, Switzerland)

747 Enhancing Blockchain Transaction Tracking: A Systematic Review of DLT-Based Financial Systems

Mario Trerotola (Politecnico di Torino, Italy); Davide Calvaresi (HES-SO Valais-Wallis, Switzerland)

753 Decentralized Optical Music Recognition Using YOLO and FedGP for Music Education

Andrea Marselletti (Universidad de Extremadura, Spain); Elia Pacioni (HES-SO Valais-Wallis, Switzerland & University of Extremadura, Spain); Francisco Fernández de Vega (University of Extremadura, Spain); Davide Calvaresi (HES-SO Valais-Wallis, Switzerland)

Session 4.2 - Advanced age-friendly sensors and technologies for prevention and health monitoring

Room: Room T37

759 Preventing Elderly Injuries: a Pose-Based Framework for Fall Detection

Lorenzo Longarini, Alessandro Rongoni, Aldo F. Dragoni (Università Politecnica delle Marche, Italy); Geremia Pompei (Institute for Chemical-Physical Processes National Research Council of Italy, Italy); Mariorosario Prist (Università Politecnica delle Marche, Italy)

765 Living Lab Assessment for the Development of a Non-Invasive Sensor Network for Measuring Activities and Comfort in Multi-Resident Contexts

Sara Casaccia, Sara Meletani, Gianluca Sartini and Gian Marco Revel (Università Politecnica delle Marche, Italy)

771 Edge AI-Based Fall Detection with Standard RGB Cameras

Melissa Proietti, Enrico Piergallini, Andrea Visi and Aldo F. Dragoni (Università Politecnica Delle Marche, Italy)

776 KneeFlex: A Soft Wearable Knee Joint Tele-Rehabilitation Robot

Tongyan Zhang (Queen Mary University of London, United Kingdom); Lian Zhou (Tongji University, China); Sarah Hussain Khuwaja (Queen Mary University of London, United Kingdom)

782 Fractal-Shaped Transmission-Based Microwave Sensor with Machine Learning Support for Glucose Detection

Sandra Costanzo, Antonio Curcio and Giovanni Buonanno (University of Calabria, Italy)

Session 4.3 - WORKSHOP - Shaping the Future of Interaction: Integrating AI, Human Factors, and Immersive Technologies in HCI - PART II

Room: Room T3

788 Integration and Evaluation of Head Mounted Display in a Dynamic Driving Simulator for Rehabilitation Therapies

Giuseppe Mangano, Francesco Bottino, Davide Zhou, Nicola Giulietti, Marco Carnevale, Hermes Giberti (University of Pavia, Italy)

- 794 **Immersive Virtual Reality Training for Smart Traffic Light Maintenance: a Serious Game Approach**
Marina Ricci (STIIMA CNR - Bari, Italy); Nicola Mosca (CNR, Italy); Maria di Summa (STIIMA CNR - Bari, Italy)
- 800 **Integrating Large Language Models into Extended Reality Environments for Enhanced User Experiences**
Luca Cordioli (Politecnico di Milano, Italy); Matteo Valoriani (Fifth Ingenium, Italy); Maristellaa Matera (Politecnico di Milano, Italy)
- 806 **Conceptual Design of a Personalized VR Furniture Arrangement System**
Nan Huang (Blekinge Tekniska Högskola, Sweden); Prashant Goswami, Yan Hu, Veronica Sundstedt and Abbas Cheddad (Blekinge Institute of Technology, Sweden); Muhammad Imran (IKEA of Sweden, Sweden)
- 812 **A Large Language Model-Driven Architecture for Intuitive Interaction in Virtual Reality Environments**
Valerio Colonnese, Gilda Manfredi, Nicola Felice Capece, Ugo Erra, Michele Rinaldi and Salvatore Ungaro (University of Basilicata, Italy)

Session 5.1 - Sensors, Extended Reality and Artificial Intelligence for Human Behavior Analysis

Room: Aula Magna G. Conti

- 818 **Markerless Upper Limb Motion Tracking: A Comparative Evaluation of Multi-View Approaches**
Albin Bajrami (Università Politecnica delle Marche, Italy & Università di Genova, Italy); Gloria Beraldo (National Research Council of Italy (CNR-ISTC), Italy); Matteo Claudio Palpacelli (Università Politecnica delle Marche, Italy); Tapio Heikkilä (Technical Research Centre of Finland, Finland); Gabriella Cortelessa (National Research Council of Italy (CNR-ISTC), Italy)
- 824 **Comparison of Machine Learning Algorithms for Recognizing Italian Sign Language Using a Wearable Measurement System**
Martina Spagna, Juri Taborri and Stefano Rossi (University of Tuscia, Italy)
- 830 **Leveraging Virtual Reality and Technological Tools to Enhance Sign Language Education in Healthcare Competences**
María Álvarez Cantos (University of Cordoba, Spain); José M Alcalde-Llengo (University of Tuscia, Italy & University of Córdoba, Spain); Barbara Gomez-Peña, Alessia Bisio, Pilar Aparicio-Martínez and María Del Mar Molina Herrera (University of Córdoba, Spain); Stefano Rossi (University of Tuscia, Italy); Enrique Yeguas-Bolívar (University of Córdoba, Spain)
- 836 **Characterizing Normotypical Developmental Patterns in Early Childhood: An Exploratory Unsupervised Learning Study**
Alberto Fernández-Merchán (University of Cordoba, Spain); José M Alcalde-Llengo (University of Tuscia, Italy & University of Córdoba, Spain); Andrea Zingoni (University of Tuscia, Italy); Araceli Sanchez Raya and Carolina Perez Dueñas (University of Cordoba, IMIBIC, CAIT, Spain); Enrique Yeguas-Bolívar (University of Córdoba, Spain)
- 842 **The "Viterbo2025-1.0" Dataset for Training AI Algorithms for Criminal Actions Detection and Recognition**
Andrea Zingoni (University of Tuscia, Italy); José M Alcalde-Llengo (University of Tuscia & University of Córdoba, Spain); Daniele Melloni, Riccardo Nervini (University of Tuscia, Italy); Matteo Sperandio and Nicola Fantasia (Architectures & Emerging Technologies Practice - AlmagivA, Italy); Enrique Yeguas (University of Cordoba, Spain)

Session 5.2 - Non-Contact Measurement Techniques and AI for Smart Industry

Room: Room T37

- 848 **Artificial Intelligence-Based Vision Systems for Automated Footwear Disassembly**
Vittoria Medici, Pietro Laureati and Nicola Paone (Università Politecnica delle Marche, Italy)
- 854 **Noise Injection Framework for Development of Noise-Robust Predictive Maintenance Solutions**
Urszula Jachymczyk, Paweł Knap, Adam Szulęcki (AGH University of Kraków, Poland)
- 860 **1D CNN-Based Domain Adaptation for Robust Fault Diagnosis**
Paweł Knap and Urszula Jachymczyk (AGH University of Krakow, Poland)

- 866 **Design and Validation of Low-Cost MEMS Sensor Networks for AI-Based Predictive Maintenance in Industry 4.0**
Julia Jeleńska, Paweł Knap, Urszula Jachymczyk and Maciej Wiszniewski (AGH University of Krakow, Poland)
- 871 **Comparative Study of Two Non-Contact Methods for 3D Reconstruction of Surface Defects for Industrial Purposes**
Davide Zhou, Fabio Spazzini, Valentina Furlan, Nicola Giulietti, Hermes Giberti (University of Pavia, Italy)

Session 5.3 - WORKSHOP - Shaping the Future of Interaction: Integrating AI, Human Factors, and Immersive Technologies in HCI - PART III

Room: Room T3

- 877 **An AI-Enhanced Virtual Reality Platform for Improving Well-Being and Emotional States of Neurological Patients: from Immersive Scenarios to Adaptive Clinical Pathways**
Raffaele Pugliese (Nemo Lab, Italy); Roberto Pierdicca (Università Politecnica delle Marche, Italy); Cecilia Vona, Sina Rahimzadeh and Flavio Tonetto (Deep Reality, Italy); Vera Colombo, Silvia Bolognini and Stefano Regondi (Nemo Lab, Italy)
- 883 **Enhancing Adaptive Sports Participation for Students with Disabilities Through Virtual Reality Kayaking Simulations**
Mario Covarrubias (Politecnico di Milano, Italy); Emma Mencaci (Aspoc Lab Ets, Italy); Marco Tarabini, Carlalberto Francia and Manuela Galli (Politecnico di Milano, Italy)
- 889 **Towards Real-Time Classification of Surface EMG Using Multi-Scale Time-Frequency Representation Fusion and Transfer Learning**
Sarah Hussain Khuwaja, Balvinder Dhillon, M Hasan Shaheed (Queen Mary, University of London, United Kingdom); Maham Mahnoor Mughal (Mehran University of Engineering & Technology, Pakistan); Siraj Hussain (Integrated Biomedical & Electrical Lab (IBEL Lab), United Kingdom)
- 895 **Tailored Immersive Environments: Advancing Neurodivergent Support Through Virtual Reality**
Elia Moscoso-Thompson and Katia Lupinetti (CNR-IMATI, Italy); Irene Capasso (University of Genoa, Italy); Fabrizio Ravicchio (CNR, Italy); Brigida Bonino and Franca Giannini (CNR-IMATI, Italy); Andrea Canessa and Silvio P. Sabatini (University of Genoa, Italy); Lucia Ferlino and Chiara Malagoli (CNR, Italy)
- 901 **Evaluation of Mental Workload and Stress While Driving with and Without Steering Aids in a Virtual City Scenario**
Sara Arlati (National Research Council, Italy); Simone Costantini (Politecnico di Milano, Italy); Camilla Zanco and Marta Mondellini (National Research Council, Italy); Vera Colombo (Nemo Lab, Italy); Marco Sacco (National Research Council, Italy); Giovanna Rizzo (CNR Istituto di Sistemi e Tecnologie Industriali Intelligenti per il Manifatturiero Avanzat, Italy); Fabio A. Storm (Scientific Institute IRCCS Eugenio Medea, Italy); Alfonso Mastropietro (National Research Council, Italy)

Friday, October 23

Session 6.1 - Generative Artificial Intelligence and Digital Twins for Empowering Health

Room: Aula Magna G. Conti

- 907 **Synthetic Data Generation for Addressing Class Imbalance in Medical Datasets: a Case Study on Mitral Regurgitation Post-NeoChord Procedure**
Federica Serra (University of Padova, Italy); Agnese Piersanti (Università Politecnica delle Marche, Italy); Florinda Mastro and Antonella Cecchetto (University of Padova, Italy); Andrea Tura (CNR Institute of Neuroscience, Italy); Gino Gerosa (University of Padova Medical School, Italy)
- 913 **Generating Synthetic Metabolic and Hormonal Data via Physiological in-Silico Modeling: Assessment of Reliability in Different Fitness Conditions**
Maria Concetta Palumbo (CNR Institute for Applied Computing, Italy); Micaela Morettini (Università Politecnica Delle Marche, Italy)

919 Enhancing the Physiological Plausibility of GAN-Generated Blood Glucose in Type 1 Diabetes with Monotonicity Constraints

Elisa Pellizzari (University of Padova, Italy); Omer Mujahid (University of Girona, Spain); Francesco Prendin (University of Padova, Italy); Oriol Bustos (University of Girona, Spain); Giacomo Cappon and Andrea Facchinetti (University of Padova, Italy); Josep Vehi (University of Girona, Spain)

925 Procedural Generation of 3D Models for the Virtual Representation of Accessible Apartments

Maximilian Putz and Sven Winkler (University of Technology Chemnitz, Germany); Manuel Heinzig (University of Applied Sciences Mittweida, Germany); Marc Ritter (University of Applied Sciences Mittweida & Chemnitz University of Technology, Germany); Franziska Klimant (University of Technology Chemnitz, Germany)

931 Single Hidden Layer Perceptron GAN for Mixed Meal Continuous Glucose Monitoring Data

Libera Lucia Del Giudice, Agnese Piersanti and Morgan Salotti (Università Politecnica delle Marche, Italy); Christian Göbl (Medical University of Vienna, Austria); Laura Burattini (Università Politecnica delle Marche, Italy); Andrea Tura (CNR Institute of Neuroscience, Italy); Micaela Morettini (Università Politecnica Delle Marche, Italy)

Session 6.2 - PSYCHOBIT - PART I

Room: Room T37

937 Digital Creativity and Self-Discovery: the Effects of the Use of New Technologies on the Young People Well-Being

Valeria Sarnelli (University of Naples Federico II, Italy); Luca Fusco (University of Naples Parthenope, Italy); Luigia Simona Sica (University of Naples Federico II, Italy)

943 From Laboratory to Real Life: Psychometric Properties of a VR-Based Ecological Memory Assessment Tool

Valentina Mancuso (eCampus University, Italy); Flaminia Franchini (IRCCS Fondazione Santa Lucia, Italy); Sara Arlati and Selen Naz Saritas (STIIMA National Research Council); Simona Gabriella Di Santo (Istituto di Tecnologie Biomediche, Consiglio Nazionale delle Ricerche, Italy); Marco Cavallo and Elisa Pedroli (eCampus University, Novedrate, Italy)

949 Spatial Memory Rehabilitation Using Low-Cost Virtual Reality in Patients with Mild Cognitive Impairment: Methodological Proposal

Chiara Stramba-Badiale (Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy); Cosimo Tuena (eCampus University, Italy); Diana Biondi (Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano, Milan, Italy); Karine Goulene (IRCCS Istituto Auxologico Italiano, Milan, Italy); Francesca Borghesi, Gloria Simoncini and Pietro Cipresso (University of Turin, Italy); Sandra Morelli, Mirko Rossi and Giuseppe D'Avenio (National Center for Innovative Technologies in Public Health, Istituto Superiore di Sanità, Italy); Marco Stramba-Badiale (Neurology and Rehabilitation, IRCCS Istituto Auxologico Italiano, Italy); Giuseppe Riva (Humane Technology Lab, Università Cattolica del Sacro Cuore, Milan, Italy)

955 AI-Driven Eye-Tracking: Enhancing Understanding and Diagnosis of Autism Spectrum Disorder

Valeria Formisano, Roberta Simeoli and Davide Marocco (University of Naples Federico II, Italy)

961 Effects of VR-Simulated Bus Drive Experiences on Physiological Arousal and Perceived Passenger Stress

Jan-Willem Van t Klooster, Max Friehs, Teodora Spirova and Rob Van Der Lubbe (University of Twente, The Netherlands)

Session 6.5.1 - SPECIAL EVENT - DHEAL-COM4MetroXRAI - PART I

Room: Room T36

- 966 Surface and Deep Signal Correlation in a Pediatric Dystonia Case with DBS**
Elisa Barbi and Chiara Rossi (Neuroscience and Human Genetics Department, Meyer Children's Hospital IRCCS, Italy); Edoardo Fino (Meyer Children's Hospital IRCCS Florence, Italy, University of Florence); Simone Peraio, Andrea Di Rita and Alice Noris (Department of Neurosurgery, Meyer Children's Hospital IRCCS, Florence, Italy); Sara Ciabattini (Neuroscience and Human Genetics Department, Meyer Children's Hospital IRCCS); Federico Melani (Neuroscience and Human Genetics Department, Meyer Children's Hospital IRCCS Florence, Italy); Luca Mesin (Politecnico di Torino, Italy); Renzo Guerrini and Flavio Giordano (Meyer Children's Hospital IRCCS, University of Firenze); Matteo Lenge (Meyer Children's Hospital IRCCS Florence, Italy)
- 972 Tracking Structural Patterns in Early Brain Growth: An Automated Pipeline for Longitudinal Fetal and Neonatal MRI**
Francesco Correnti, Simona Fiori, Renzo Guerrini, Matteo Lenge (Meyer Children's Hospital IRCCS, Italy)
- 978 DiaBeCo: a Decentralized FL Architecture for Diabetes Care with Personal Data Pods and DTs**
Luigi Fortino (Università degli Studi di Salerno, Italy); Simone De Vita and Michelangelo Esposito (I.T.Svil srl, Italy); Christian Esposito (University of Salerno, Italy)
- 983 Supervised Machine Learning for Brain Tumor Progression Prediction on Limited and Imbalanced Data: an Exploratory Study**
Pietro Cassieri, Franco Cirillo, Christian Esposito and Giuseppe Scanniello (University of Salerno, Italy)
- 989 Mining Community Health: Association Rules for the Design of Proximity Care Models**
Lerina Aversano (University of Foggia, Italy); Martina Iammarino (Pegaso University, Italy); Antonella Madau and Ilaria Mancino (University of Sannio, Italy); Debora Montano (University of Modena and Reggio Emilia, Italy & University of Foggia, Italy); Chiara Verdone (University of Foggia, Italy)

Session 6.5.2 - SPECIAL EVENT - DHEAL-COM4MetroXRAI - PART II

Room: Room T36

- 995 From Raw ECG to Classification: a Lightweight Approach to Paroxysmal AF Detection**
Ilaria Mancino (University of Sannio, Italy); Lerina Aversano and Chiara Verdone (University of Foggia, Italy); Martina Iammarino (Pegaso University, Italy)
- 1001 Latent Dirichlet Allocation with Positive/Negative Anomaly Splitting for Bilateral Cortical Analysis in Genetic Epilepsies**
Gianni Moretti, Francesco Correnti, Elisa Barbi, Simona Balestrini, Renzo Guerrini, Matteo Lenge (Meyer Children's Hospital IRCCS, Italy)
- 1007 AI-Based Modular Warning Machine for Risk Identification in Proximity Healthcare**
Chiara Razzetta (IRCCS Ospedale Policlinico San Martino, Italy); Shahryar Noei (Fondazione Bruno Kessler, Italy); Federico Barbarossa (IRCCS INRCA Scientific Direction, Italy); Edoardo Spairani (University of Pavia, Italy); Monica Roascio (Università di Genova, Italy); Elisa Barbi and Giulia Ciacci (Meyer Children's Hospital IRCCS, Italy); Sara Sommariva, Sabrina Guastavino, Michele Piana (University of Genoa, Italy); Matteo Lenge (Meyer Children's Hospital IRCCS, Italy); Gabriele Arnulfo (University Hospital Wuerzburg, Germany); Giovanni Magenes (University of Pavia, Italy); Elvira Maranesi and Giulio Amabili (IRCCS INRCA, Italy); Anna Maria Massone and Federico Benvenuto (University of Genoa, Italy); Giuseppe Jurman (Fondazione Bruno Kessler, Italy & Humanitas University, Italy); Diego Sona (Fondazione Bruno Kessler, Italy); Cristina Campi (Università di Genova & IRCCS Ospedale Policlinico San Martino, Italy)

Poster Session 3

Room: Università Politecnica delle Marche - Faculty of Economics

- 1013 EEG Complexity Measures and Their Applications in Alzheimer's Disease Detection**
Pasquale Arpaia and Maria Cacciapuoti (University of Naples Federico II, Italy); Andrea Cataldo (University of Salento, Italy); Olimpia Criscuolo (Fondazione Peppino Scoppa Onlus, Italy); Sabatina Criscuolo (National Research Council of Italy, Italy & University of Naples Federico II, Italy); Antonio Masciullo (University of Salento, Italy); Marisa Pesola (University of Naples Federico II, Italy); Raissa Schiavoni (University of Salento, Italy); Annarita Tedesco (University of Naples, Federico II, Italy)

- 1019 A Novel Deterministic Approach for Automatic Classification of Congestive Heart Failure**
Benedetta Rega (Università degli Studi di Napoli Federico II, Italy); Alessandro Filisetti (Elettronica S.p.A., Italy); Pietro Bia (Elettronica Group, Italy); Egidio De Benedetto (University of Naples Federico II, Italy); Antonio Manna (Elettronica SpA, Italy)
- 1024 Short-Term Forecasting of Household Energy Consumption Using Recurrent Neural Networks**
Martina Botticelli (ENEA, Italy); Francesco Isgrò and Andrea Pollastro (University of Naples Federico II, Italy); Sabrina Romano (ENEA, Italy)
- 1030 Omnidirectional Photographic Capture for VR-Based Representation of Indoor Space: a Subjective Study**
Giovanni Lo Monaco, Luca Guarnera and Sebastiano Battiato (University of Catania, Italy); Salvatore Livatino (University of Hertfordshire, United Kingdom)
- 1036 Foliar Wetness Prediction Using Sensor Network Data and WaveNet-Based Deep Learning Models**
Irene Cappelli (University of Siena, Italy); Filippo Costanti (University of Florence, Italy); Elia Ceroni, Monica Bianchini and Ada Fort (University of Siena, Italy)
- 1042 Development of a Compact Neural Network for IR Background Estimation in Wearable Eye Trackers**
Alberto Pettenella (EssilorLuxottica, Italy); Daniele M Crafa and Jacopo Spagnoli (Politecnico di Milano, Italy); Luca Merigo and Tommaso Ongarello (EssilorLuxottica, Italy); Marco Carminati (Politecnico di Milano, Italy)
- 1048 Experimental Investigation of Bacterial Cellulose Based Composites as Deformation Sensors**
Salvatore Graziani, Giovanna Di Pasquale and Sara Sadat Hosseini (University of Catania, Italy); Luca Patanè (University of Messina, Italy); Antonino Pollicino (University of Catania, Italy); Francesca Sapuppo (University of Messina, Italy); Carlo Trigona (University of Catania, Italy); Maria Gabriella Xibilia (University of Messina, Italy)
- 1054 3D Virtual Activation Volume for Automated Grasping in Teleoperated Robotic Manipulation**
Antonio Di Tecco, Daniele Leonardis, Antonio Frisoli and Andrea Begni (Sant'Anna School of Advanced Studies, Italy); Claudio Loconsole (Universitas Mercatorum & Institute of Mechanical Intelligence, Scuola Superiore Sant'Anna, Italy)
- 1060 From Regulation to Implementation: EU AI Act Compliance in Engineering and Construction of the Oil & Gas and Petrochemical Sectors**
Rimma Dzhusupova (Eindhoven University of Technology, The Netherlands); Helena Holmström Olsson (Malmö University, Sweden); Jan Bosch (Chalmers University of Technology, Sweden); Mark van den Brand (Eindhoven University of Technology, The Netherlands)
- 1066 Bridging Large Language Models and Logic Programming**
Valerio Crocetti and Aldo F. Dragoni (Università Politecnica delle Marche, Italy)
- 1072 Towards AI-Driven Personalized Treatment: a Dynamic Reinforcement Learning Approach for HIV Therapy**
Giulio Pisaneschi (University of Pisa, Italy); Gabriele Gemignani (Polytecnic of Bari, Italy); Alberto Landi (University of Pisa, Italy)
- 1078 A Comparative Evaluation of Function-Calling LLMs in a Cognitive Architecture**
Marco Pardini, Federico Galatolo, Lorenzo Cominelli, Angelo De Marco and Mario Giovanni C.A. Cimino, Alberto Greco and Enzo Pasquale Scilingo (University of Pisa, Italy)
- 1084 Transfer Learning on a Deep Learning Approach to Optimize Laryngeal Cancer Detection on Endoscopic Images**
Haiyang Wang and Luca Mainardi (Politecnico di Milano, Italy)
- 1090 DMTR Norm: Improving the Performance of Handwriting Verification Model with Distortion Minimized Text Region Preprocessing**
SeYeon Jeong, MyeongHoon Lee, HyeonSu Jung and Kyungbaek Kim (Chonnam National University, Korea (South))
- 1096 Evaluating the Usability of Teach E-AI 2C Robotic Farm: An Educational Software for Introducing Young Learners to Embodied Artificial Intelligence**
Clara Nobile, Federico Diano, Alessio Manfredini, Onofrio Gigliotta, Davide Marocco and Michela Ponticorvo (University of Naples Federico II, Italy)
- 1101 Implementation of Emotional Digital Twin (EDT) for Cobot Omron TM5-700**
Enrico Mattei (A2VI-Lab, University of L'Aquila, Italy); Nicola Stampone, Michele Gabrio Ernesto Antonelli and Pierluigi Beomonte Zobel (University of L'Aquila, Italy)

- 1107 Improving Motor Imagery Decoding Through EEG Frequency Band Analysis**
Javier V. Juan (INTEGRA, Center for Clinical Neuroscience HLM, Hospital Los Madroños, Madrid, Spain); Sergio Pacheco (Universidad Europea de Madrid, Spain); Eduardo Iáñez (Brain-Machine Interface Systems Lab, Miguel Hernández University of Elche, Spain); Mario Ortiz (Miguel Hernández University of Elche, Spain); Jesús Tórero (INTEGRA, Center for Clinical Neuroscience HLM, Hospital Los Madroños, Madrid, Spain); José M. Azorín (Universidad Miguel Hernandez de Elche, Spain)
- 1113 A Therapist Interface for Telerehabilitation Using Virtual Glove**
Daniele Lozzi (University of L'Aquila & A2VI-Lab, Italy); Mirko Salvatore (University of L'Aquila, Italy); Enrico Mattei (A2VI-Lab, University of L'Aquila, Italy)
- 1119 Virtual Reality and Serious Games in Anger Induction: a Narrative Review**
Pasquale Arpaia (University of Naples Federico II, Italy); Javier Marín-Morales (Universitat Politècnica de Valencia, Spain); Leonardo Saitta (Polytechnic University of Valencia, Italy & Federico II University, Italy); Ersilia Vallefucio (University of Naples Federico II, Italy)
- 1125 Detecting Mental Stress Using EEG and Biosignals: Towards a Neuro-Adaptive System**
Michael Leitner and Selina Christin Wriessneger (Graz University of Technology, Austria)
- 1131 Multi-Class Error-Related Potentials for Correcting Robot Navigation Mistakes: a Human-in-the-Loop Approach Using EEG Brain-Robot-Interfacing**
Karameldeen Ibrahim Mohamed Omer (Politecnica Delle Marche, Italy & University of Khartoum, Sudan); Andrea Monteriù, Alessandro Freddi, Francesco Ferracuti and Sabrina Iarlori (Università Politecnica delle Marche, Italy)
- 1136 Surface Electromyography-Based Muscle Fatigue Assessment During Hand Grasping Exercises**
Hiba Hellara and Sawzan Njeh (TU Chemnitz, Germany); Aseel Afaneh (Jordan University of Science and Technology, Jordan); Olfa Kanoun (Chemnitz University of Technology, Germany)
- 1142 A Narrative Review of Virtual Human Twins (VHTs) of Healthcare Professionals**
Ludovica Gargiulo (National Council of Research, STIIMA-CNR, Italy); Selen Naz Saritas and Ezgi Arar (National Research Council, Italy); Leonardo Saitta (Polytechnic University of Valencia, Spain & Federico II University, Italy); Matteo De Luca and Ersilia Vallefucio (University of Naples Federico II, Italy); Sara Arlati and Marta Mondellini (National Research Council, Italy); Nicola Moccaldi (University of Naples Federico II, Italy); Giovanni D'Errico (University of Salento, Italy); Atieh Mahroo (National Research Council & University of Milano-Bicocca, Italy); Walter Terkaj (STIIMA, Italy); Marco Sacco (Italian National Research Council, Italy); Pasquale Arpaia (University of Naples Federico II, Italy)
- 1148 Single-Channel Ear-EEG for Emotion Monitoring: A Feasibility Study**
Marco Arnesano (Università eCampus, Italy); Pasquale Arpaia (University of Naples Federico II, Italy); Simone Balatti (AWEAR Technologies Inc., Italy); Gloria Cosoli (Università eCampus, Italy); Matteo De Luca (University of Naples Federico II, Italy); Ludovica Gargiulo (National Council of Research, STIIMA-CNR, Italy); Nicola Moccaldi (University of Naples Federico II, Italy); Lorenzo Pasquini and Theodore Zanto (UCSF Weill Institute for Neurosciences School, USA); Antonio Forenza (AWEAR Technologies Inc., USA)
- 1154 Towards Prediabetes Detection from Generative AI-Augmented Continuous Glucose Monitoring of Postprandial Glycemic Response Using Bi-LSTM**
Agnese Piersanti, Libera Lucia Del Giudice and Francesco Marraudino (Università Politecnica delle Marche, Italy); Christian Göbl (Medical University of Vienna, Austria); Laura Burattini (Università Politecnica delle Marche, Italy); Andrea Tura (CNR Institute of Neuroscience, Italy); Micaela Morettini (Università Politecnica Delle Marche, Italy)
- 1159 Evaluation of ChatGPT and Gemini Large Language Models for Generating Pharmacokinetic Models with SimBiology**
Libera Lucia Del Giudice, Agnese Piersanti and Alessandro Morelli (Università Politecnica delle Marche, Italy); Christian Göbl (Medical University of Vienna, Austria); Laura Burattini (Università Politecnica delle Marche, Italy); Andrea Tura (CNR Institute of Neuroscience, Italy); Micaela Morettini (Università Politecnica Delle Marche, Italy)
- 1164 Preprocessing Methods for Memristive Reservoir Computing for Image Recognition**
Rishona Daniels, Duna Wattad and Ronny Ronen (Technion - Israel Institute of Technology, Israel); David Saad (Aston University, United Kingdom); Shahar Kvatinsky (Technion - Israel Institute of Technology, Israel)

- 1170 Alpha Band EEG Resting-State Dynamic Functional Source Connectivity in First-Episode Schizophrenia**
Romain Aubonnet (Università di Roma Tor Vergata, Italy); Mahmoud Hassan (Institute of Biomedical and Neural Engineering, Reykjavik University, Iceland); Paolo Gargiulo (Reykjavik University, Iceland); Stefano Seri (Aston University, United Kingdom); Giorgio Di Lorenzo (Università di Roma Tor Vergata, Italy)
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Session 7.1 - From Brain Dynamics to Real-World Applications: Functional Neuroimaging and BCI Advances

Room: Aula Magna G. Conti

- 1176 Cerebellar Functional Connectivity Reorganization in a Split-Brain Patient**
Erica Iammarino and Ilaria Marcantoni (Università Politecnica delle Marche, Italy); Luca Reversi (Azienda Ospedaliera-Universitaria Marche, Italy); Francesco Mariotti (Università Politecnica delle Marche, Italy); Giusi Piccolantonio (Università di Verona, Italy); Nicoletta Foschi and Mojgan Ghoushi (Azienda Ospedaliera-Universitaria Marche, Italy); Luisa De Vivo (Università of Camerino, Italy); Gabriele Polonara, Mara Fabri and Laura Burattini (Università Politecnica delle Marche, Italy)
- 1182 A Data-Driven Resting-State fMRI Study of Chronic Low Back Pain: Unraveling the Relationships Between Gender, Brain Connectivity, and the Noradrenergic System**
Federica Tomaiuolo (University of Chieti-Pescara, Italy); Francesco Cerritelli (COME Collaboration, Italy); Carlo Sestieri, Teresa Paolucci, Stefano L. Sensi, Stefano Delli Pizzi and Antonio Ferretti (University of Chieti-Pescara, Italy)
- 1188 Imaginary Coherence in Parent-Infant EEG Hyperscanning: Neural and Behavioral Synchrony in Social Interactions**
Giorgia Procissi (Institute of Clinical Physiology, National Research Council, Italy); Elena Capelli and Miriam Paola Pili (University of Pavia, Italy); Lorenzo Bachi (National Research Council, Italy); Valentina Riva (Scientific Institute IRCCS E. Medea, Italy); Lucia Billeci (Institute of Clinical Physiology, National Research Council, Italy); Livio Provenzi (University of Pavia, Italy)
- 1194 Towards Effortless Brain-Machine Interaction: an SSVEP-Based BMI with Object Detection in FPV**
Karameldeen Ibrahim Mohamed Omer (Università Politecnica Delle Marche, Italy & University of Khartoum, Sudan); Andrea Monteriù (Università Politecnica Delle Marche, Italy)
- 1200 Toward Plug-and-Play BCIs: Applying Zero-Shot Deep Learning to Motor Imagery EEG Signals**
Maryam Alimardani and Berat Aras (Vrije Universiteit Amsterdam, The Netherlands)
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Session 7.2 - PSYCHOBIT - PART II

Room: Room T37

- 1206 A Novel Framework for Evaluating Motor Sounds Using Psychometric and Biosensor Measures**
Monica Casella, Vincenzo Fusco, Elio Di Giulio, Michela Ponticorvo and Raffaele Dragonetti (University of Naples Federico II, Italy)
- 1212 AI-Powered Gamified Learning Environment for Personalized Education in Primary and Secondary Schools**
Angelo Rega (Università Telematica Pegaso, Italy & School Psychology Research and INTervention Lab, Italy); Carolina Mele and Lucia Miranda (Università Telematica Pegaso, Italy); Luigi Iovino (Garage 94 S.R.L, Italy)
- 1218 Fostering Soft Skills Through Educational Robotics: Missed Opportunities and New Directions**
Francesca De Santis (University of Macerata, Italy); Alessandra Vitanza (Institute of Cognitive Sciences and Technologies (ISTC) - CNR, Italy); Francesco Palumbo and Onofrio Gigliotta (University of Naples Federico II, Italy)
- 1224 Engaging Children in Educational Robotics Through Escape Games**
Erica Chinzer (University of Naples Federico II, Italy); Aymeric Vellinger and Antoine Hubermont (University of Namur, Belgium); Onofrio Gigliotta (University of Naples Federico II, Italy); Alessandra Vitanza (Institute of Cognitive Sciences and Technologies - CNR, Italy); Elio Tuci (University of Namur, Belgium)

1230 A Preliminary Study on Assessing Patient Behavioral Quality Using Deep Learning

Paolo Pagliuca (Institute of Cognitive Sciences and Technologies - CNR, Italy); Stefania De Marco (Università della Campania Luigi Vanvitelli, Italy); Alessandra Vitanza (Institute of Cognitive Sciences and Technologies - CNR, Italy); Nicola Milano (University of Naples Federico II, Italy); Angelo Rega (Università Telematica Pegaso, Italy & School Psychology Research and INTERvention Lab, Italy); Stefano Nolfi (Institute of Cognitive Sciences and Technologies - CNR, Italy)

Session 7.3 - Biomimetic Memristive Nanotechnologies for Artificial Intelligence, Edge Computing and Neuromorphic Engineering Applications

Room: Room T3

1236 A Multiterminal Setup for Complex Dynamics Characterization and Unconventional Computing in Self-Organizing Memristive Networks

Davide Pilati (Politecnico di Torino, Italy & INRiM - Advanced Materials Metrology and Life Sciences Division, Italy); Fabio Michieletti (Politecnico di Torino, Italy); Alessandro Cultrera and Gianluca Milano (INRiM - Istituto Nazionale di Ricerca Metrologica, Italy); Carlo Ricciardi (Politecnico di Torino, Italy)

1242 Tunable Neural Network Implementation Using Niobium Oxide Memristors

Andras Horvath (Peter Pazmany Catholic University, Germany); Ahmet Demirkol (Istanbul Technical University, Turkey); Alon Ascoli (Politecnico di Torino, Italy); Ronald Tetzlaff (Technische Universität Dresden, Germany)

1248 An Adaptive Training Method for Memristive Next Generation Reservoir Computing Systems

Alon Ascoli, Davide Rossetti, Fernando Corinto (Politecnico di Torino, Italy); Ahmet Samil Demirkol and Ronald Tetzlaff (Technische Universität Dresden, Germany); Tzvetan Ivanov and Jonas Schneegaß (TU Ilmenau, Germany); Ilya Petrenyov, Alexander Shkurmanov, Martin Ziegler and Kristina Nikiruy (Kiel University, Germany)

1254 Using a SystemC Based Design and Simulation System for Hyperdimensional Computing with Multi-Level-Cell Look-Up-Tables with ReRAM

Benjamin Seiler and John Reuben (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany); Dietmar Fey (Chair for Computer Architecture, FAU, Erlangen, Germany)

1260 Low-Power Switching of Memristors Exhibiting Fractional-Order Dynamics

Yuriy V. Pershin and Nathan Astin (University of South Carolina, USA)

Session 8.1 - Brain-Computer Interfaces in Healthcare and Rehabilitation

Room: Aula Magna G. Conti

1266 The Development of a Closed-Loop, Patient-Centered, Extended Reality System to Enhance Balance in People with Multiple Sclerosis: A Research Protocol

Gabriele Perachioti (University of Ferrara, Italy); Nicola Moccaldi (University of Naples Federico II, Italy); Giovanni D'Errico (University of Salento, Italy); Isolde Martina Busch (Università di Verona, Italy); Elisa Magosso (University of Bologna, Italy); Sofia Straudi (University of Ferrara, Italy)

1272 EEG Correlates of Car Sickness in Naturalistic Driving Conditions

Lucas Benoit (IMT Atlantique & Stellantis, France); Nicolas Farrugia (IMT Atlantique, France); Eleonore Henry and Clément Bougard (Stellantis, France); Giulia Lioi (IMT Atlantique, France)

1278 Riemannian Geometry Methods for Enhancing EEG-Based Assessment of Mindfulness Treatment in Migraine

Pasquale Arpaia (University of Naples Federico II, Italy); Marco Congedo (GIPSA-Lab, France); Lucrezia Di Marino (University of Naples Federico II, Italy); Elisa Visani, Licia Grazzi and Paola Lanteri (Fondazione IRCCS Istituto Neurologico Carlo Besta, Italy); Nicola Moccaldi (University of Naples Federico II, Italy); Marco Nalin (Ab Medica, Italy); Rachele Robbio (University of Naples Federico II, Italy); Dunja Duran (IRCCS Istituto Neurologico Carlo Besta, Italy)

1284 Exploring Performance Variability in Deep Neural Networks for Motor Imagery Classification: Towards a Zero-Calibration Brain-Computer Interface

Pasquale Arpaia, Antonio Esposito, Enza Galasso, Fortuna Galdieri (University of Naples Federico II, Italy); Angela Natalizio and Marco Parvis (Politecnico di Torino, Italy); Andrea Pollastro (University of Naples, Federico II, Italy)

1290 Asynchronous Control of an Exoskeleton with BMI: Evaluation and Validation of EEG Processing and Classification Strategies for Motor Imagery

Cristina Polo-Hortiguera, Vicente Quiles and Paula Soriano-Segura (Miguel Hernandez University of Elche, Spain); Carlo Cavaliere-Ballesta (Universidad Miguel Hernández & BMI Lab research group, Spain); Yash Bhambhani and Mario Ortiz (Miguel Hernández University of Elche, Spain); Eduardo Iáñez (Brain-Machine Interface Systems Lab, Miguel Hernández University of Elche, Spain); José M. Azorín (Universidad Miguel Hernandez de Elche, Spain)

Session 8.2 - PSYCHOBIT - PART III

Room: Room T37

1296 Personalized Biofeedback for Affective Dynamics: A Virtual Reality Framework Based on Markov Modeling
Pietro Cipresso, Gloria Simoncini and Francesca Borghesi (University of Turin, Italy)

1302 Development of the User eXperience Questionnaire for Virtual Reality Applications in Healthcare (UXVR-H)
Francesca Bruni (eCampus University, Italy); Elisa Pedrolì (Istituto Auxologico Italiano, Italy)

1308 Human-Computer Interaction in Education: A Psychologically Grounded Approach
Elena Dell'Aquila (Pegaso University, Italy); Michela Ponticorvo (University of Naples Federico II, Italy); Pierpaolo Limone and Raffale Di Fuccio (Pegaso University, Italy)

1313 Understanding Aesthetic Judgments of 20th-Century Sculptures: a Multimodal Machine Learning Approach
Zoryana Andrusyak and Selina Christin Wriessnegger (Graz University of Technology, Austria)

1319 A Measurement Approach for the Assessment of Indoor Multidomain Comfort: The MULTICLIMACT Experience
Gloria Cosoli (Università eCampus, Italy); Nibras Abo Alzahab (Marche Polytechnic University, Italy); Dianel Ago (Callisia & eCampus University, Italy); Simone Murazzo (LIS - Live Information System, Italy); Rania Christoforou (Medical Faculty, RWTH Aachen University, Germany); Mina Moayyedi and Marcel Schweiker (RWTH Aachen University, Germany); Marco Arnesano (Università eCampus, Italy); Ilaria Ciuffreda and Gian Marco Revel (Università Politecnica delle Marche, Italy)

Session 8.3 - Emerging Technologies for Health Monitoring and Personalized Medicine

Room: Room T3

1325 EDArt: a Preliminary Framework for the Simulation of Hand-Movement Artifact-Corrupted Electrodermal Activity Signal
Gianluca Rho and Nicola Carbonaro (University of Pisa, Italy); Marco Laurino (National Research Council, Italy); Alessandro Tognetti and Alberto Greco (University of Pisa, Italy)

1331 A Deep Learning Approach for Nystagmus Recognition in RGB Videos
Giacomo Nunziati, Andrea Porri, Paolo Andreini, Simone Bonechi and Monica Bianchini (University of Siena, Italy); Rudi Pecci and Mattia Ronchetti (AOU Careggi- Università di Firenze, Italy); Franco Scarselli (University of Siena, Italy); Simone Vanni (Università di Firenze, Italy)

1337 Exploring Digital Twin Applications in Pediatric Anthropometry: a Preliminary Validation Study
Maria Del Mar Uclés Torrente and Gema Esperanza Ruiz Gamarra (Biomedicine Program, Spain); José M Alcalde-Llargo (University of Tuscia & University of Córdoba, Spain); Manuel Vaquero Álvarez (University of Cordoba, Spain); Isabel M^a Blancas Sánchez (Occidente Azahara Healthcare Center, Spain); Enrique Yeguas-Bolívar, Manuel Vaquero-Abellán and Pilar Aparicio-Martínez (University of Córdoba, Spain)

1343 Integration of Wearable Sensors and Metabolic Chamber Data for Energy Expenditure Assessment: a Preliminary Study
Giulio Pisaneschi, Gianluca Rho, Alberto Greco, Mirko Marracci, Alessio Basolo, Ferruccio Santini, Enzo Pasquale Scilingo, Alberto Landi and Paolo Piaggi (University of Pisa, Italy)

1349 FEV1 Trajectory Classification in COPD Patients

Francesco Bossi, Alberto Greco, Gianluca Rho and Carlotta Marinai (University of Pisa, Italy); Pasquale Bufano, Michele Zanoletti, Eleonora Melissa and Marco Laurino (National Research Council, Italy); Francesco Di Rienzo, Carlo Vallati and Nicola Carbonaro (University of Pisa, Italy); Henrik Watz (Velocity Clinical Research Germany, Ahrensburg, Germany); Mustafa Abdo (Thoraxklinik at Heidelberg University Hospital, Germany); Alessandro Tognetti (University of Pisa, Italy)

Session 8.4 - General Session - PART II

Room: Room T4

1355 Development of a Measurement System Based on IoT Technologies, Artificial Intelligence and Virtual Reality for Personalized Care of Vulnerable Individuals

Sara Meletani, Sara Casaccia, Sabrina Iarlori, Francesco Ferracuti, Andrea Monteriù (Università Politecnica delle Marche, Italy); Andrea Angelino (Ageing-Tech, Italy); Fabio Zangheri (Micro Center S.r.l, Italy); Florinda Filippini (Labirinto, Italy); Gian Marco Revel (Università Politecnica delle Marche, Italy); Francesca Martelli and Massimiliano Roccetti (Ageing-Tech, Italy)

1361 Design of an IoT-Based Monitoring Sensor Network and Preliminary AI-Driven Data Analysis for Health Measurement in Residential Care Homes

Sara Meletani, Sara Casaccia, Milena Martarelli and Gian Marco Revel (Università Politecnica delle Marche, Italy); Paolo Rinaldesi (Revelop Srl, Italy); Carlo Lucadei and Marco Panichi (Ksenia Security Innovation, Italy); Aldo F. Dragoni (Università Politecnica Delle Marche, Italy); Waleed Abdullah Mohammed Alromaema (Università Politecnica delle Marche, Italy & Healthcare Engineering Srl, Italy)

1367 Robotic Collaborative Walker with Impedance Control and Augmented Reality for Assisted Walking and User Empowerment

Mariolino De Cecco, Giandomenico Nollo, Alessandro Luchetti, Matteo Bonetto, Damiano Fruet and Muhammad Irtaza (University of Trento, Italy); Md Mustafizur Rahman, Ryosuke Shigeto and Isidro Butaslac (Nara Institute of Science and Technology, Japan)

1373 Deep Learning-Based Automated Defect Detection Systems in High-Speed Railway

Liuchang Yang, Kang Du, Chao Xu, Jianfeng Cheng, Renwei Kang, Ting Bi and Tao Jiang (Huazhong University of Science and Technology, China)