

# **TELMED 2026: 5th International Workshop on Telemedicine and e-Health in the digital society Program**

**Friday, March 20<sup>th</sup> 2026**

**8:30am - 9:00am — Registration**

**8:45 – 9:00am — Opening and Introduction to TELMED Workshop**

**(Piero Castoldi, Scuola Superiore Sant'Anna, Italy)**

## **Session 1: Advanced Technologies for Health monitoring**

**9:00am - 10:40am - (Chair Piero Castoldi, Scuola Superiore Sant'Anna, Italy)**

### **A Novel Signal PreProcessing Framework for Improved Diagnostic Microwave Imaging in Stroke Detection**

Zenalda Hajdaraj (University of Rome Tor Vergata, Italy), Riccardo Marra (University of Rome Tor Vergata, Italy), Tommaso Rossi (University of Rome Tor Vergata, Italy), Ernestina Cianca (University of Rome Tor Vergata, Italy), Mauro De Sanctis (University of Rome Tor Vergata, Italy)

### **On-Device AI for Voice-Driven Multi-Parameter Health-Risk Monitoring**

Mona Moradi (Scuola Superiore Sant'Anna, Italy), Molka Gharbaoui (Scuola Superiore Sant'Anna, Italy), Alessandro Pacini (Scuola Superiore Sant'Anna, Italy), Alberto Giannoni (Scuola Superiore Sant'Anna e Fondazione Toscana Gabriele Monasterio, Italy), Claudio Passino (Scuola Superiore Sant'Anna & Fondazione Toscana Gabriele Monasterio, Italy), Michele Emdin (Scuola Superiore Sant'Anna e Fondazione Toscana Gabriele Monasterio, Italy), Stefano Dalmiani (Fondazione Toscana Gabriele Monasterio, Italy), Paolo Marcheschi (Fondazione Toscana Gabriele Monasterio, Italy), Luca Valcarenghi (Scuola Superiore Sant'Anna, Italy)

### **Smartwatch-based gesture recognition for medication adherence via CNN-BiLSTM networks**

Marcos Negreiros Rylo (Federal University of Amazonas, Brazil & SIDIA, Brazil), Joao Arthur Alcantara (Sidia, Brazil), Florindo A. C. Ayres Júnior (Federal University of Amazonas, Brazil), Renan Landau P. De Medeiros (Federal University of Amazonas - UFAM & Federal University of Amazonas, Brazil), Iury Valente de Bessa (UFAM, Brazil), Vicente F. Lucena Júnior (Federal University of Amazonas, Brazil)

### **Unsupervised Characterization of REM Sleep Behavior Disorder from Home-Based EEG Recordings**

Irene Rechichi (Politecnico di Torino, Italy), Miriam Carenzo (Politecnico di Torino, Italy), Gabriele Giarrusso (Politecnico di Torino, Italy), Alessandro Cicolin (Università di Torino, Italy), Gabriella Olmo (Politecnico di Torino, Italy)

## **Multi-Band Attention Network for Stress Monitoring Using Reduced-Channel EEG Signals**

Bushra Jalil (Scuola Superiore Sant'Anna, Italy), Anas Shamoan (University of Pisa, Italy), Luca Valcarengi (Scuola Superiore Sant'Anna, Italy)

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## **Session 2: Personal data management**

**11:00am - 12:00pm (Chair Anna Lina Ruscelli, Scuola Superiore Sant'Anna, Italy)**

### **Personal Data Ecosystems in Decentralised Clinical Trials**

Helen Oliver (Birkbeck, University of London, United Kingdom), Mohamed Ragab (Birmingham City University, United Kingdom), Mohammad Bahrani (University of Southampton, United Kingdom), Alexandra Poulouvassilis (Birkbeck, University of London, United Kingdom), Thanassis Tiropanis (University of Southampton, United Kingdom), Adriane Chapman (University of Southampton, United Kingdom), George Roussos (Birkbeck College, University of London, United Kingdom)

### **Formal Verification and Mitigation of Vulnerabilities in the IMDGuard Protocol**

Christian Coduri (Politecnico di Torino, Italy), Alessio Sacco (Politecnico di Torino, Italy), Guido Marchetto (Politecnico di Torino, Italy), Riccardo Sisto (Politecnico di Torino, Italy)

### **Privacy Leakage in Small Agentic Healthcare Models: An Empirical Analysis**

Gianluca Aguzzi (University of Bologna, Italy), Sara Montagna (University of Urbino, Italy), Stefano Ferretti (University of Bologna, Italy)

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## **12:00pm-12:40pm — Keynote**

**Speaker:** Prof. Alberto Giannoni, Monasterio Foundation & Scuola Superiore Sant'Anna (Italy)

**Title:** Innovative applications and challenges in telemedicine

**Abstract:** Telemedicine has long been proposed as a strategy to improve healthcare access, particularly for chronic conditions requiring continuous monitoring. Although remote consultations have been shown to reduce waiting times and telemonitoring to lower hospitalization rates in selected populations, most initiatives remain limited to pilot phases and rarely achieve sustainable, system-wide integration. This gap reflects persistent institutional and organizational barriers that hinder the translation of technological innovation into routine clinical practice.

The COVID-19 pandemic accelerated the adoption of digital health solutions but also exposed key structural limitations, including fragmented digital platforms, poor interoperability with Electronic Health Records, and connectivity disparities. Beyond technical challenges, sociocultural barriers further limit implementation, notably low digital literacy among older adults and the so-called gerotechnology gap. In addition, ethical concerns have emerged

regarding the potential depersonalization of care when remote interfaces partially replace in-person interactions. These challenges are particularly pronounced in geographically remote areas, where healthcare access is further constrained by workforce shortages and logistical barriers, often leading to delayed or inadequate care.

We aim to describe a comprehensive methodological framework designed to support the integration of telemedicine into routine clinical practice in remote areas. Moving beyond a purely technological perspective, the approach combines quantitative and qualitative assessment of healthcare needs, evaluation of digital infrastructure, and a flexible, multi-tiered intervention model tailored to local contexts. The framework was developed within the Tuscany Health Ecosystem project, funded by Italy's National Recovery and Resilience Plan (PNRR), and implemented in three remote areas of the Tuscany region, characterized by aging populations and limited healthcare accessibility.

**Keynote Speaker Bio:** Alberto Giannoni, MD, PhD, is Associate Professor of Cardiology at Scuola Superiore Sant'Anna and Consultant Cardiologist at Fondazione Monasterio, a research hospital within the Tuscany Regional Health System. His work bridges cardiovascular medicine, neurophysiology, and digital health, with particular emphasis on telemedicine and remote monitoring in heart failure and cardio-respiratory disorders. His research focuses on brain-heart interactions and neural control of cardiovascular and respiratory function, combining physiological modeling, advanced neuroimaging, and innovative strategies for the management of cardiovascular diseases. He has lead initiatives developing digital and proximity-care models to improve access to specialized cardiovascular services in underserved areas, contributing to large-scale implementation programs including a recently released regional law promoting novel strategies for prevention of juvenile sudden cardiac death, and the PNRR-funded Tuscany Health Ecosystem project, which focus on integrating telemedicine, remote monitoring, and data-driven clinical pathways into routine clinical practice. He has authored over 200 peer-reviewed publications, 12 book chapters and edited two Springer books on sleep apnea and neuromodulation in cardiology. He is a Fellow of the European Society of Cardiology and has served on guideline panels of the European Respiratory Society. He serves as Associate Editor and reviewer for several international journals in the cardiovascular field.

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## **Session 3: Computing paradigms and applications for human wellbeing**

**2:00pm - 3:10pm - (Chair Mona Moradi, Scuola Superiore Sant'Anna, Italy)**

**The SERENADE project: Sensor-Based Explainable Detection of Cognitive Decline**

Gabriele Civitarese (University of Milan, Italy), Michele Fiori (University of Milan, Italy), Daniela Galimberti (University of Milan, Italy), Andrea Arighi (Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Milan, Italy), Emanuela Rotondo (Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Italy), Vittoria Borracci (Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Italy), Graziana Florio (University of Milan, Italy), Claudio Bettini (University of Milan, Italy)

### **Edge-Based Well-Being Monitoring Using Non-Biometric Multimodal Digital Signals**

Anna Kobusińska (Poznan University of Technology, Poland), Andrzej Stroiński (Poznan University of Technology, Poland)

### **Edge-Assisted Federated Learning for Real-Time Stress Detection in Wearable IoMT Systems**

Kevin Post (University of Tartu, Estonia), Zhigang Yin (University of Tartu, Estonia), Reo Kuchida (University of Tartu, Estonia), Huber Flores (University of Tartu, Estonia), Saifur Rahman (Deakin University, Australia), Shantanu Pal (Deakin University, Australia), Chandan Karmakar (Deakin University, Australia)

### **A Scalable Edge-Cloud Platform for Remote, Wellbeing-Oriented Monitoring of Upper-Limb Strength and Double Vision in Myasthenia Gravis**

Joanna Weissenberg (Poznan University of Technology, Poland), Marek Michalski (Poznan University of Technology, Poland & Institute of Communications and Computer Networks, Poland)

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## **Session 4: Systems and perspectives for Health Monitoring**

**4:00pm - 5:00pm - (Chair Lorenzo Mucchi, University of Florence, Italy)**

### **Performant and Small: Can We Have Both? SLMs on Mobile Devices for Healthcare Chatbot**

Aqila Farahmand (University of Urbino, Italy), Sara Montagna (University of Urbino, Italy), Alessandro Bogliolo (University of Urbino, Italy), Stefano Ferretti (University of Bologna, Italy), Matteo Magnini (University of Bologna, Italy)

### **Vitals by Vision: Lightweight Attention Network for Remote Heart Rate Monitoring in Telemedicine**

Anas Shamoan (University of Pisa, Italy), Luca Valcarengi (Scuola Superiore Sant'Anna, Italy), Bushra Jalil (Scuola Superiore Sant'Anna, Italy)

### **Correlation-Weighted KAN Attribution for Explainable AF Detection using Single-Lead ECG**

Chandan Pandey (TCS Research, India), Anirban Dutta Choudhury (Tata Consultancy Services, India), Tanuka Bhattacharjee (Tata Consultancy Services, India), Aniruddha Sinha (Tata Consultancy Services, India)

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**5:00pm – 5:15pm Workshop conclusions**

**(Piero Castoldi, Scuola Superiore Sant'Anna; Lorenzo Mucchi, University of Florence; Anna Lina Ruscelli, Scuola Superiore Sant'Anna)**