SCIENTIFIC-PROFESSIONAL CURRICULUM
Pierluigi Reali, PhD

Pierluigi
Reali

Date of Birth:
Nationality:
Residence:
Phone number:
Websites:

E-mail:
Pec:

SHORT BIO

I am a post-doctoral researcher at the Dept. of Electronics Information and Bioengineering of Politecnico di Milano (PoliMi), with a focus on biomedical signal processing and medical informatics.

My academic path began in 2010, when I enrolled at PoliMi in the Bachelor's program in Biomedical Engineering, desiring to learn how to use information technologies to benefit people's health. My interest in research sparked during my Bachelor's thesis, which introduced me to the functional assessment and signal processing fields. My interest in these topics, together with a passion for Medical Informatics, further grew during my Master's degree, which I completed in 2016 with a thesis on the quantitative evaluation of the body schema in obese subjects, developed in collaboration with the San Giuseppe di Piancavallo hospital (IRCCS Istituto Auxologico Italiano). This experience grew my passion for biostatistics and allowed me to discover the fascinating applications of bioengineering to quantitative psychology, motivating my decision to pursue a PhD. In 2017, I won a scholarship funded by the H2020 LiNK project and started a PhD in Bioengineering at PoliMi. My project focused on the development of quantitative models for evaluating emotions and stress from Autonomous and Central Nervous System physiological signals, including ECG, respiration, and EEG. Thanks to this project, I cultivated my passion for programming, statistics, and machine learning, as well as data analysis and management skills such as parallel computing and system administration. In addition, I earned priceless experience in teaching and tutoring Bachelor's and Master's theses. Within the LiNK project, I had the opportunity to connect with researchers from Coimbra and Valencia and participate in several international conferences and workshops. Furthermore, I had an incredibly enriching four-month experience in Karlsruhe (2019-2020) as a visiting PhD student at the Institute of Information Systems and Marketing (IISM) of the Karlsruhe Institute of Technology (KIT), where I developed part of my dissertation. I received my PhD in March 2021. Since then, I have prosecuted my research on physiological signals and participated in projects with companies. I gladly complemented these activities by being a teaching assistant in several PoliMi courses, mainly Medical Informatics, and a contract professor in Biostatistics and Bioinformatics at Università Statale di Milano for two consecutive years.

Since March 2022, leveraging my experience with biomedical data, I have been working in the WG2 of the Health Big Data Project (HBD) on the definition of data collection and processing pipelines to enable efficient data sharing and enhance their usability in multicentric studies. In particular, I have been exploring the capabilities of specific data formats (e.g., DICOM, EDF) and data models (e.g., OMOP-CDM, HL7-FHIR) to define data standardization and harmonization pipelines for biosignals, bioimages, and genomic data.

EDUCATION AND TRAINING

02/2017 - 03/2021 **Ph.D. in Bioengineering** (17 March 2021), Politecnico di Milano, Milan, Italy.
Ph.D. scholarship funded by the LiNK project (H2020 Grant Agreement No 692023)
Dissertation title: *Towards the Development of Physiological Models for Emotion and Stress Assessment.* Advisor: Prof. A. M. Bianchi
Main focus: Acquisition, **processing, and analysis of physiological signals** (including ECG, respiration, and EEG), with the implementation of statistical models (also *mixed effects models*) for emotion recognition and stress detection from physiological features.

03/2017 **Licensed as a Professional Information Engineer** (*Esame di Stato* passed on 7 March 2017), Politecnico di Milano, Milan, Italy.

09/2013 – 07/2016 **Master's degree in Biomedical Engineering** (28 July 2016),
Politecnico di Milano, Milan, Italy. Final mark: 107/110
Thesis title: *Definizione di un setup sperimentale per la valutazione quantitativa dello schema corporeo in soggetti obesi.* Advisor: Prof. V. Cimolin

09/2010 – 09/2013 **Bachelor's degree in Biomedical Engineering** (24 September 2013), Politecnico di Milano, Milan, Italy. Final mark: 93/110
Thesis title: *Analisi della postura coricata e stima del dispendio energetico associato ai cambiamenti posturali su diversi materassi.* Advisor: Prof. C. A. Frigo

RESEARCH, PROFESSIONAL, AND TEACHING EXPERIENCE

Research experience

03/2022 - now **Post-doctoral researcher: Health Big Data project**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Research fellowship supported by the Health Big Data (HBD) project (Italian Ministry of Health, fund No. 2018-28)
Research title: *Models and techniques for collecting and integrating genomic data, biosignals, and bioimages for research.*
Main research focus: In collaboration with the participating IRCCS hospitals, I work on the development of **data collection, processing, standardization, and harmonization pipelines** to enable efficient data sharing and effective data usage for clinical research in multicentric studies. More specifically: assessment of **data harmonization** techniques for biosignals, bioimages, and omic data; identification of the **minimum dataset of information and metadata** needed for clinical research; application of **data models** (e.g., OMOP-CDM, HL7-FHIR) to structuring biomedical data and facilitate data discovery and analysis.

03/2021-03/2022 **Post-doctoral researcher: Speed-y project**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Research fellowship funded by E-Distribuzione and Enel Green Power
Research title: *Speed-y: monitoring of biomedical parameters for risk prevention*.
Main research focus: Development of a **wearable solution** (commercial PPG smartwatch + anomaly detection algorithm) to prevent risks of injury in workers. Collection, processing, and analysis of physiological (mainly HRV), motion, and environmental data from smartwatches and standard instrumentation.

01/2017-03/2017 **Research internship**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Main research focus: Analysis of **cardio-respiratory patterns** during sleep and in cardiovascular patients. Development and validation of a **MATLAB toolbox for ECG signal processing**. Acquisition and analysis of ECG and EEG signals.

Professional and Teaching experience

03/2024 - now **Project Manager (ICT area)**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Main responsibilities: Supporting research teams with the definition and planning of **HW/SW configurations and upgrades** for High-Performance Computing (HPC) servers and Network Attached Storage (NAS) systems. Assisting research teams in defining and implementing tailored **data management, storage, backup,** and **security policies** and redacting documents testifying compliance with relevant **ethics and privacy regulations** (e.g., GDPR). Administration of shared servers for **virtualization** and other specific research needs.

09/2024 – 11/2024 **Consultant in Biostatistics**
Infectious Disease Unit, Ospedale San Raffaele, Milano, Italy.
Main responsibilities: Understanding clinical researchers' analysis needs and conducting **statistical analyses on clinical data**, in particular survival analysis (Kaplan-Meier, Cox regression), analysis of the differences, and analysis of association. Participating in writing research abstracts and articles for peer-reviewed journals.

03/2018 - now **Teaching assistant in Medical Informatics (Prof. A.M. Bianchi)**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Total time: **176 hours** in the Academic Years (AY) 2017/2018 (20 hours), AY 2018/2019 (30 hours), AY 2019/2020 (20 hours of integrative didactic activity + 5 hours of tutoring), AY 2020/2021 (31 hours), AY 2021/2022 (20 hours), AY 2022/2023 (20 hours), and AY 2023/2024 (30 hours).

03/2022 - 03/2024 **Contract professor in Biostatistics and Bioinformatics**
Dept. of Veterinary Medicine, Università degli Studi di Milano
Total time: **64 hours** in the Academic Years (AY) 2021/2022 (32 hours) and AY 2022/2023 (32 hours). Additional time dedicated to preparing and correcting written assignments, administering oral tests, and assigning grades.

09/2020 - 12/2023 **Teaching assistant in Progetto Informazione (Prof. M. Ferrario)**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Total time: **61 hours** in the Academic Years (AY) 2020/2021 (11 hours), AY 2021/2022 (20 hours), AY 2022/2023 (10 hours), and AY 2023/2024 (20 hours).

03/2018 - 06/2018 **Teaching assistant in Informatica Medica (Prof. L. Pattini)**
Dept. of Electronics Information and Bioengineering, Politecnico di Milano
Total time: **20 hours** in the Academic Year 2017/2018.

MOBILITY

11/2019 - 03/2020 (4 months)	**Visiting PhD student** at the Karlsruhe Institute of Technology (Institute of Information Systems and Marketing), Karlsruhe, Germany. Advisor: Prof. Christof Weinhardt Main research activity: Analysis of the interaction between ***flow*** and **emotions** through the **advanced processing of physiological signals** and the application of **statistical modeling** to combine physiological features with perceived emotions (questionnaires) and behavioral data (task performance). The research I conducted during this period became part of my PhD dissertation.

PARTICIPATION IN RESEARCH PROJECTS

1. **Health Big Data.** Supported by the Italian Ministry of Health, fund No. 2018-28.
   Reference period: 03/2022 – now
   My contribution: Research activity as a post-doctoral researcher (see *Research Experience*); participation in regular project meetings; organization of WG2's official plenary meetings, with presentation of the results during oral speeches.
   Collaborators: 51 Italian IRCCS hospitals from ACC, Cardio, RIN, and IDEA networks.

2. **LLC-Network: The Lombardia long COVID Network for the implementation of best practices in the comprehensive management of long COVID** (Fondazione Cariplo, ref. 2021-4236)
   Reference period: 03/2024 – now
   My contribution: Definition and implementation of strategies to harmonize multicentric clinical datasets, leveraging standard data models (e.g., OMOP-CDM); participation in regular project meetings of the WG3, with presentation of the results to the other WGs and project partners.
   Collaborators: Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, ASST Santi Paolo e Carlo, ASST Spedali Civili Brescia, ASST Niguarda, IRCCS Mario Negri.

3. **E-MOTIONS: Investigating Aesthetic Emotions in Virtual and Real Environments** (PRIN – Bando 2022 Prot. 2022NWRENN)
   Reference period: 10/2023 – now
   My contribution: Contributed to writing the project proposal; responsible for conducting physiological data acquisition, processing, and analysis; presentation of the results to project partners.
   Collaborators: Research Center in Communication Psychology (PSICOM), Università Cattolica del Sacro Cuore, Milan, Italy.

4. **LiNK: Linking excellence in biomedical knowledge and computational intelligence research for personalized management of CVD within PHC** (H2020 Grant Agreement No. 692023)
   Reference period: 02/2017 - 12/2018
   My contribution: Research activity as a PhD student (see *Education and Training*); participation in technical meetings with project partners; responsible for maintaining the project website and social networks.
   Collaborators: Polytechnic University of Valencia, Valencia, Spain; University of Coimbra, Coimbra, Portugal.

FELLOWSHIPS AND AWARDS

March 2024-2025: **Research fellowship** on the LLC-Network project funded by *Fondazione Cariplo*.

March 2022-2024: **Research fellowship** on the Health Big Data project funded by the *Italian Ministry of Health*.

March 2020-2022: **Research fellowship** on the Speed-y project funded by *E-Distribuzione*.

February 2017-2020: **PhD doctoral scholarship** funded by the *H2020 LiNK project*.

INVITED TALKS, ORAL, AND POSTER PRESENTATIONS

Invited talks

Keynote speech titled ***"An introduction to ECG and Heart Rate Variability analysis"*** on **March 26th 2024** at the international research seminar titled "Biosignals in Information Systems and Marketing" organized by Karlsruhe Institute of Technology (KIT) and Politecnico di Milano - supported by the German Research Foundation (DFG) in the project GRK2739/1 - "KD2School"

Keynote speech titled ***"An introduction to ECG and Heart Rate Variability analysis"*** on **April 4th 2023** at the international research seminar titled "Biosignals in Information Systems and Marketing" organized by Karlsruhe Institute of Technology (KIT) and Politecnico di Milano - supported by the German Research Foundation (DFG) in the project GRK2739/1 - "KD2School"

Oral presentations

I presented the work titled ***"Development of Data Ingestion Pipelines for the Federated Use of Biomedical Data in Research: The Health Big Data Project"*** (P. Reali et al.) in an oral session at the conference "IEEE 22nd Mediterranean Electrotechnical Conference (MELECON)", in **June 2024**.

I presented the work titled ***"Heart Rate Variability from Wearables: A Comparative Analysis Among Standard ECG, a Smart Shirt, and a Wristband"*** (P. Reali et al.) in an oral session at the conference "16th International Conference on Wearable, Micro & Nano technologies for Personalized Health (pHealth)", in **June 2019**.

I presented the work titled ***"Integrated Data Analysis for the Quantification of Emotional Responses During Video Observation"*** (P. Reali et al.) in an oral session at the conference "IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI)", in **September 2017**.

Poster presentations

I presented the work titled ***"Efficacy of Time- and Frequency-Domain Heart Rate Variability Features in Stress Detection and Their Relation with Coping Strategies"*** (P. Reali et al.) in a poster session at the conference "XV Mediterranean Conference on Medical and Biological Engineering and Computing – MEDICON 2019", in **September 2019**.

I presented the work titled ***"Investigating the Optimal Baseline Positioning to Maximize Cognitive Experimental Outcome"*** (P. Reali et al.) in a poster session at the conference "41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)", in **July 2019**.

ACTIVITY AS CO-ADVISOR OF MASTER'S AND BACHELOR'S THESES

Master's Theses at Politecnico di Milano in Biomedical engineering

1. C. Cosentini, "Sviluppo di modelli per il riconoscimento delle emozioni a partire da segnali fisiologici", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
2. A. Romito, "Valutazione dell'aritmia sinusale respiratoria su soggetti sani sottoposti a stress psicosociale acuto", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
3. M. Fabris, "Automatic assessment of the stress level: modeling and mobile implementation", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
4. A. Comi, "Modelli di regressione multivariati per la predizione delle emozioni sulla base del segnale elettroencefalografico", advisor: professor Anna Maria Bianchi, **AY 2018/2019**.
5. A. Credidio, "Tool per la riabilitazione neuropsicovisiva in pazienti pediatrici", advisor: professor Anna Maria Bianchi, **AY 2018/2019**.
6. N. Trevisanello, "EEG artifacts detection using Convolutional Neural Networks", advisor: professor Anna Maria Bianchi, **AY 2021/2022**.
7. L. Male, "Exploring DICOM Standard in Data Lakes: a Graph Data Catalog", advisor: professor Letizia Tanca, **AY 2022/2023**.
8. A. Carotenuto, "From ECG to OMOP: Development of an OMOP-based ETL Pipeline for ECG-related Bio-signal Information", advisor: professor Maria Gabriella Signorini, **AY 2023/2024**.

Bachelor's Theses at Politecnico di Milano in Biomedical engineering

1. F. Biamonte, G. Pezzalli, S. Simula, C. Ines Polo, "Misure multiparametriche per la classificazione di emozioni generate con stimoli visivi", advisor: professor Anna Maria Bianchi, **AY 2016/2017**.
2. E. Corato, D. Bani, D. Ghezzi, "Misure multiparametriche per lo studio delle emozioni", advisor: professor Anna Maria Bianchi, **AY 2016/2017**.
3. R. Pranzo, L. Volpe, F. Mortara, "Quantificazione delle emozioni mediante la misura di parametri fisiologici", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
4. D. Alushaj, M.A. Zanetti, A. Bicelli, T. Bistoni, "Sviluppo di un tool per la riabilitazione visuo-motoria in pazienti pediatrici", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
5. K.F. Awoudor, P. Baitelli, A. Cancrini, "Studio delle emozioni mediante l'analisi quantitativa di parametri fisiologici", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
6. F. Medea, A. Pesenti, C. Scrocciolani, "Misure fisiologiche da sistemi wearable; validazione e confronto con strumentazione standard", advisor: professor Anna Maria Bianchi, **AY 2017/2018**.
7. A. Lomagno, D. Pedroni, "Validazione di strumentazione indossabile tramite il monitoraggio di parametri fisiologici", advisor: professor Anna Maria Bianchi, **AY 2018/2019**.
8. G. De Marchi Giusto, E.A. Franchi, D. Giachetti, A. Hailu, "Acquisizione e Analisi di Segnali Fisiologici in Esperimenti di Affective Computing", advisor: professor Anna Maria Bianchi, **AY 2018/2019**.
9. A. Goggi, V. Guleva, S. Ibrahimi, "Analisi di Segnali Fisiologici per la Valutazione della Baseline Ottimale", advisor: professor Anna Maria Bianchi, **AY 2018/2019**.
10. M. Imbeni, "Frontal Alpha Asymmetry in the Characterisation of Emotional Response to Visual Stimuli", advisor: professor Anna Maria Bianchi, **AY 2019/2020**.
11. G. Albani, S. Bonomi, F. De Vecchi, V. Galletta, "Analisi di potenziali cerebrali correlati a risposte emotive indotte da immagini", advisor: professor Anna Maria Bianchi, **AY 2019/2020**.
12. L. Bibiano, G. Cimetta, "Acquisizione e confronto di segnali di variabilità cardiaca ottenuti tramite strumentazione wearable", advisor: professor Anna Maria Bianchi, **AY 2021/2022**.

13. G. Cappiello, E. Eula, G. Ferri, G. Guida, "Valutazione dell'accuratezza della variabilità cardiaca misurata con dispositivi wearable", advisor: professor Anna Maria Bianchi, **AY 2021/2022**.
14. F. Bruni, F. Burinato, I. Caridi, A. Conti, "Analisi di segnali fisiologici per la valutazione delle emozioni", advisor: professor Anna Maria Bianchi, **AY 2022/2023**.
15. A. C. Colom, "Analysis of parameters in EEG signals to evaluate the response to emotional stimuli", advisor: prof. Anna Maria Bianchi, prof. Vicente Traver Salcedo (Polytechnic University of Valencia), **AY 2023/2024**.

REFEREE FOR CONFERENCES AND PEER-REVIEWED JOURNALS

I reviewed a total of 12 manuscripts (excluding resubmissions) for the following **peer-reviewed journals**:

- Biomedical Signal Processing and Control (N=3)
- Frontiers in Physiology (N=1)
- HardwareX (N=1)
- IEEE Open Journal of Engineering in Medicine and Biology (N=1)
- IOP Journal of Neural Engineering (N=2)
- IOP Physiological Measurement (N=2)
- MDPI Sensors (N=1)
- Scientific Reports (N=1)

I reviewed a total of 26 manuscripts for the following **conferences**:

- IEEE EMBC: 2019 (N=1), 2022 (N=1), 2023 (N=3), 2024 (N=5)
- IEEE MELECON: 2020 (N=1), 2022 (N=2), 2023 (N=1)
- IEEE ICDH: 2023 (N=3), 2024 (N=3)
- Others: GNB 2018 (N=1), EAI HealthyIoT 2022 (N=2), IEEE EUROCON 2023 (N=2), IEEE IHTC 2024 (N=1)

I served as a **TPC member** for the **IEEE ICDH 2023**, **IEEE ICDH 2024**, **IEEE MELECON 2024**

PERSONAL SKILLS

Languages

Italian: mother tongue
English: fluent in writing and speaking

Soft skills

- Good communication skills acquired by **participating in international conferences** and **working as a contract professor, teaching assistant** (classes in Italian and English), and **tutor of many BSc and MSc degree theses**. I always appreciate suggestions from my students, and I have always sought their honest and constructive opinions. I strongly believe in the continuous improvement of myself.
- Good relational skills. In my experience as a researcher, I have often **collaborated with peers and professors from international universities and several companies**. Many of these collaborators had very different backgrounds (e.g., psychology, clinical practice, business), which allowed me to hone my ability to **communicate with different audiences**.

- Good teamwork skills. **I always do my best to help and support colleagues** because building cooperative and trustworthy relationships with them can create new opportunities and positively influence everyone's career and job life.
- Good organizational skills acquired during the Ph.D., **working on several projects at once** and having to **report regularly on each**.
- Attention to detail and commitment to providing constructive suggestions, learned from **critically reviewing Master's theses and manuscripts for peer-reviewed journals**.

TECHNICAL SKILLS

Software and programming languages

- **MATLAB**: proficient; especially with Signal Processing Toolbox, Statistics and Machine Learning Toolbox, and Parallel Computing Toolbox
- **Python**: intermediate, active learner; most used libraries: *mne*, *numPy*, *pandas*, *scikit-learn*, *Keras*, and *TensorFlow* (signal processing, data manipulation, neural network training, testing, and hyper-parameter tuning)
- **SPSS**: proficient user
- **R**: intermediate; most used libraries: *lme4* and *glme* (for mixed effects modeling)
- Basics of **SQL** for database management
- Basics of **C**
- Experienced with **software for electrophysiological data acquisitions**. Integration and synchronization of several biosignals, even through custom **batch scripts** and serial port communication. Setting of acquisition equipment and parameters.

System administration and cloud services

- **Amazon Web Services (AWS) cloud platform**: proficient user; especially with **EC2** (setup and usage of instances for parallel computing and GPU-assisted computing) and **S3** (data management and object-based storage)
- **Containers and Virtualization technologies**: proficient user. Building, management, and use of containers through Docker and Podman; setup and management of virtual machines (VirtualBox, kvm-qemu, and Proxmox); experienced with advanced virtualization topics (e.g., PCIe/GPU-passthrough)
- **Configuration and maintenance of Linux servers**: proficient. Especially skilled in ensuring **data security and integrity**: definition and implementation of cryptography (LUKS), access control (configuration of groups' roles and users' permissions), storage (RAID, LVM, ZFS), and backup policies. Administration of **shared resources for research**: storage quotas (XFS), computing resources (SLURM).
- **Enterprise-level hardware and appliances for data centers**: knowledgeable; especially of Network Attached Storage (NAS), CPUs and GPUs for servers, workstations, professional laptops.

Other software skills

- **Collaborative tools**: proficient user of Git, Asana (project management), and Discord (as admin).
- **Operating Systems**: proficient user of Windows and Linux (RHEL and Debian derivatives, Proxmox).
- **Office tools**: proficient user of MS Word, Excel, PowerPoint, and Access.
- Video/audio editing tools: independent user of DaVinci Resolve, Audacity, and the like.

CERTIFICATIONS

- **ETS–TOEIC** (Test of English for International Communication – Listening and Reading Test), total score: 880. September 2013.
- **Enterprise System Management and Security** (Coursera, certificate code: JT894AAZ3N7V). October 2021.

PUBLICATIONS

ORCID: https://orcid.org/0000-0003-3041-4004

Scopus ID: 57197796698; https://www.scopus.com/authid/detail.uri?authorId=57197796698

Peer-reviewed journal articles

[P1] S. Coelli, A. Calcagno, C. M. Cassani, F. Temporiti, **P. Reali**, R. Gatti, M. Galli, A. M. Bianchi, "Selecting methods for a modular EEG pre-processing pipeline: an objective comparison," *Biomedical Signal Processing and Control* 90, 105830, 2024. https://doi.org/10.1016/j.bspc.2023.105830

[P2] M.O. Mendez, A.M. Bianchi, F. Recker, B. Strizek, J.S. Murguía, **P. Reali**, J. Jimenez-Cruz, "Multifractal analysis of heart rate variability in pregnancy during sleep," Front. Cardiovasc. Med. 11, 2024. https://doi.org/10.3389/fcvm.2024.1404055

[P3] M.T. Knierim, M.G. Bleichner, **P. Reali**, "A Systematic Comparison of High-End and Low-Cost EEG Amplifiers for Concealed, Around-the-Ear EEG Recordings," *Sensors* 23, 4559, 2023. https://doi.org/10.3390/s23094559

[P4] S. Nazzari, **P. Reali**, E. Ceppi, R. Giorda, C. Piazza, A.M. Bianchi, G. Reni, A. Frigerio, "Respiratory Sinus Arrhythmia (RSA) stress response in preschool age varies by serotonin transporter polymorphism (5-HTTLPR): A preliminary report," *Journal of Experimental Child Psychology* 219, 105413, 2022. https://doi.org/10.1016/j.jecp.2022.105413

[P5] **P. Reali**, R. Lolatto, S. Coelli, G. Tartaglia, A.M. Bianchi, "Information retrieval from photoplethysmographic sensors: a comprehensive comparison of practical interpolation and breath-extraction techniques at different sampling rates," *Sensors* 22, 1428, 2022. https://doi.org/10.3390/s22041428

[P6] M. Knierim, C. Berger, **P. Reali**, "Open-Source Concealed EEG Data Collection for Brain-Computer-Interfaces - Neural Observation Through OpenBCI Amplifiers with Around-the-Ear cEEGrid Electrodes," *Brain-Computer Interfaces (BCI)* 8(4), pp. 161-179, 2021. https://doi.org/10.1080/2326263X.2021.1972633

[P7] **P. Reali**, C.Piazza, G. Tacchino, L. Songia, S. Nazzari, G. Reni, A. Frigerio, A.M. Bianchi, "Assessing stress variations in children during the strange situation procedure: comparison of three widely used respiratory sinus arrhythmia estimation methods," Physiological Measurement 42(8), 2021. https://doi.org/10.1088/1361-6579/ac18ff

[P8] G. Tacchino, S. Coelli, **P. Reali**, M. Galli, A.M. Bianchi, "Bicoherence interpretation in EEG requires Signal to Noise ratio quantification: an application to sensorimotor rhythms," *IEEE Transactions on Biomedical Engineering* 67(9), pp. 2696-2704, 2020. https://doi.org/10.1109/tbme.2020.2969278

Book chapters

[B1] A. M. Bianchi, S. Coelli, R. Lolatto, **P. Reali**, G. Baselli, "Chapter 4 - Signal processing for cardiovascular applications in p-health" in *Personalized Health Systems for Cardiovascular Disease*, Academic Press, 2022, Pp. 85-118, ISBN 9780128189504, https://doi.org/10.1016/B978-0-12-818950-4.00007-0.

Conference proceedings

Indexed in Scopus

[CP1] M. Carrara, S. Coelli, **P. Reali**, "Heart Rate Variability metrics during exercise: a comparison between standard ECG and a smart t-shirt", in *2024 IEEE International Workshop on Sport, Technology and Research (STAR)*, pp 94–8, 2024. https://doi.org/10.1109/STAR62027.2024.10635955

[CP2] **P. Reali**, A. Carotenuto, D. Piantella, L. Tanca, P. Plebani, M.G. Signorini, "Development of Data Ingestion Pipelines for the Federated Use of Biomedical Data in Research: The Health Big Data Project", in *2024 IEEE 22nd Mediterranean Electrotechnical Conference (MELECON)*, pp.678-683, 2024. https://doi.org/10.1109/MELECON56669.2024.10608617

[CP3] D. Piantella, **P. Reali**, P. Kumar, L. Tanca, "A Minimum Metadataset for Data Lakes Supporting Healthcare Research," presented at the *32nd Italian Symposium on Advanced Database Systems (SEBD 2024)*, in *CEUR Workshop Proceedings*, vol 3741, pp 681–91, 2024. https://ceur-ws.org/Vol-3741/paper47.pdf

[CP4] F. Goffi, **P. Reali**, A. Ferro, V.R. Pescuma, G. Schiena, Y. Barone, P. Enrico, Y. Torrente, F.M. Triulzi, A.M. Bianchi, P. Brambilla, E. Maggioni, "Brain-heart interaction: an ECG-fMRI integrated study in physiology and major depressive disorder", *VIII Congress of the National Group of Bioengineering – GNB 2023*. https://re.public.polimi.it/handle/11311/1259410

[CP5] G. Steyde, A. Calcagno, **P. Reali**, A.M. Bianchi, "Quantitative Measures of Autonomic Activations During Software Development," in *2022 IEEE 21st Mediterranean Electrotechnical Conference (MELECON),* pp. 574-578, 2022. https://doi.org/10.1109/MELECON53508.2022.9842918

[CP6] V. Guleva, A. Calcagno, **P. Reali**, A.M. Bianchi, "Personality Traits Classification from EEG Signals Using EEGNet," in *2022 IEEE 21st Mediterranean Electrotechnical Conference (MELECON),* pp. 590-594, 2022. https://doi.org/10.1109/MELECON53508.2022.9843118

[CP7] M. Knierim, V. Pieper, M. Schemmer, N. Loewe, **P. Reali**, "Predicting In-Field Flow Experiences Over Two Weeks from ECG Data: A Case Study," in *Information Systems and Neuroscience (NeuroIS) 2021*, pp. 96-102, 2021. https://doi.org/10.1007/978-3-030-88900-5_11

[CP8] G. Rocco, **P. Reali**, R. Lolatto, G. Tacchino, M. Mandolfo, A. Mazzola, A.M. Bianchi, "Exploration of the physiological response to an online gambling task by frequency domain analysis of the electrodermal activity," in *2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, pp. 91-94, 2020. https://doi.org/10.1109/EMBC44109.2020.9175972

[CP9] **P. Reali**, A. Brugnera, A. Compare, A.M. Bianchi, **"**Efficacy of Time- and Frequency-Domain Heart Rate Variability Features in Stress Detection and Their Relation with Coping Strategies,**"** in *XV Mediterranean Conference on Medical and Biological Engineering and Computing – MEDICON 2019*, pp. 209-216, 2019. https://doi.org/10.1007/978-3-030-31635-8_25

[CP10] **P. Reali**, R. Lolatto, P. De Stefano, S. Cerutti, A.M. Bianchi, "Investigating the Optimal Baseline Positioning to Maximize Cognitive Experimental Outcome," in *2019 41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, pp. 4529-4532, 2019. https://doi.org/10.1109/EMBC.2019.8857489

[CP11] **P. Reali,** G. Tacchino, G. Rocco, S. Cerutti, A.M. Bianchi, "Heart Rate Variability from Wearables: A Comparative Analysis Among Standard ECG, a Smart Shirt, and a Wristband," in *pHealth 2019*, 261, pp. 128-133, 2019. https://doi.org/10.3233/978-1-61499-975-1-128

[CP12] **P. Reali**, C. Cosentini, P. De Carvalho, V. Traver, A.M. Bianchi, "Towards the development of physiological models for emotions evaluation," in *2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, pp. 110–113, 2018. https://doi.org/10.1109/EMBC.2018.8512236

[CP13] **P. Reali**, D. Bettiga, A. Mazzola, L. Lamberti, M. Pillan, S. Cerutti, A.M. Bianchi, "Integrated Data Analysis for the Quantification of Emotional Responses During Video Observation," in *2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI)*, 2017. https://doi.org/10.1109/RTSI.2017.8065945

Not indexed in Scopus

[N1] F. Goffi, **P. Reali**, A. Ferro, V.R. Pescuma, P. Enrico, G. Schiena, Y. Barone, F.M. Triulzi, A.M. Bianchi, P. Brambilla, E. Maggioni, "Dynamic functional connectivity of the central autonomic network in major depressive disorder", *36th ECNP Congress 2023*, published in *Neuroscience Applied* 2, 103698, 2024. https://doi.org/10.1016/j.nsa.2023.103698

[N2] M. Mandolfo, D. Bettiga, **P. Reali**, R. Lolatto, "Would you bet on your physiological response? An analysis of the physiological and behavioral characteristics of online electronic gaming machines players," in *2019 NeuroPsychoEconomics Conference*, 2019. **Runner-up for Best Paper Award.** https://re.public.polimi.it/handle/11311/1117328

[N3] **P. Reali**, A. Martinez-Millana, P. de Carvalho, A.M. Bianchi, "Cardiovascular effects of stress and emotions: a brief overview of concepts and assessment methods," in *Workshop on Innovation on Information and Communication Technologies (ITACA-WIICT 2018)*, 2018.

[N4] D. Bettiga, **P. Reali**, A. delle Donne, P. Pogliani, A. Camassa, A. Franciosini, "Halo effect of television programs on brand advertisement: a neuroscience research," in *XXVIII Annual Scientific Meeting Associazione italiana di Ingegneria Gestionale (RSA AiIG 2017)*, 2017.

DECLARATIONS

Autorizzo al trattamento dati ai sensi del GDPR 2016/679 del 27 aprile 2016 (Regolamento Europeo relativo alla protezione delle persone fisiche per quanto riguarda il trattamento dei dati personali).

Autorizzo la pubblicazione del Curriculum Vitae sul sito istituzionale del Politecnico di Milano (sez. Amministrazione Trasparente) in ottemperanza al D. Lgs n. 33 del 14 marzo 2013 (e s.m.i.).

Date November 7th, 2024 **Signature**