



Costanza Iester

PhD Student – Bioengineer

Nationality: Italian

EDUCATION

Genoa, Italy

Nov 2021 – Present

PhD Student in Neuroscience – University of Genoa

The research focuses on developing new fNIRS signal analysis techniques to deepen the understanding of neurophysiological mechanisms underlying voluntary movement.

Genoa, Italy

Nov 2021

Professional Licensing Examination for Engineers – University of Genoa

Genoa, Italy

Sep 2019 – Jul 2021

Neuro-Engineering master's degree – University of Genoa

110/110 with honors

Thesis: "Perceptual learning in visual tasks after active and passive training"

Genoa, Italy

Sep 2016 – Jul 2019

Biomedical Engineering bachelor's degree – University of Genoa

110/110 with honors

Thesis: "Behavioral and neural correlates of dual tasks negotiation in MS using fNIRS."

EXPERIENCE

Tübingen, Germany

January – April 2024

Visiting PhD Student – University of Tübingen

Research period on study preparation, data collection and data analysis in a research setting involving functional near-infrared spectroscopy (fNIRS) and neurofeedback.

Padua, Italy

Jun 2022

Visiting PhD Student – University of Padua

Research period on the analysis of signals recorded by functional near-infrared spectroscopy (fNIRS), for the study of cortical activity at rest and during cognitive and motor tasks.

London, UK

Sep 2019

Research internship – City, University of London

OCT Image Analysis: Manual and Automatic Retinal Layer Segmentation

PUBLICATIONS on peer reviewed journals

Iester, C.*, Bonzano, L., Biggio, M., Cutini, S., Bove, M., Brigadoi, S.*. Comparing different Motion Correction Approaches for Resting-State Functional Connectivity Analysis with fNIRS Data. *Corresponding authors. Accepted: July, 27, 2024 – NeuroPhotonics.

Cassottana, P.*, **Iester, C.***, Bonzano, L., Traverso, C. E., & Iester, M. Quantitative evaluation of OCT angiography images in healthy and glaucomatous subjects through a novel approach: exploring inter-image variability, 2024; Eye, 1–5. Doi: 10.1038/s41433-024-03038-9. *These authors contributed equally

Bonzano, L., Biggio, M., Brigadoi, S., Pedullà, L., Pagliai, M., **Iester, C.**, Brichetto, G., Cutini, S., & Bove, M. Don't plan, just do it: Cognitive and sensorimotor contributions to manual dexterity. NeuroImage, 2023; 120348. doi:10.1016/j.neuroimage.2023.120348.

lester, C., Biggio, M., Cutini, S., Brigadoi, S., Papaxanthis, C., Bricchetto, G., Bove, M., Bonzano, L. Time-of-day influences resting-state functional cortical connectivity. *Front Neurosci*, 2023; 17, 1192674. doi: 10.3389/fnins.2023.1192674

Bonzano, L., Bortoletto, M., Zazio, A., **lester, C.**, Stango, A., Gasparotti, R., Miniussi, C., Bove, M. The hand motor hotspot for seed-based functional connectivity of hand motor networks at rest. *Front Neurosci* 2022; 16:896746. doi:10.3389/fnins.2022.896746

Montesano, G., Ometto, G., Higgins, B. E., **lester, C.**, Balaskas, K., Tufail, A., Chakravarthy, U., Hogg, R., Crabb, D. P. Structure function analysis in macular drusen with mesopic and scotopic microperimetry. *Transl Vis Sci Technol* 2020;9(13):43–57 doi: 10.1167/tvst.9.13.43.

CONTRIBUTION TO CONFERENCES

Neuroscience 2024

October 5–9, 2024, Chicago, US

- Marco Bove, Ambra Bisio, Monica Biggio, **Costanza lester**, Sabrina Brigadoi, Simone Cutini and Laura Bonzano. Frontoparietal cortical activity during a combined approach of action observation and proprioceptive stimulation reveals long-term plasticity in primary motor cortex.
- Laura Bonzano, Monica Biggio, **Costanza lester**, Davide Cattaneo, Simone Cutini, Ambra Bisio, Ludovico Pedullà, Alessandro Torchio and Marco Bove. Effects of speed and the use handrails on cortical activity patterns during treadmill walking.

VIII Biennial meeting of the Society for fNIRS

September 23–27, 2024, Birmingham, UK

- Monica Biggio, **Costanza lester**, Ambra Bisio, Sabrina Brigadoi, Simone Cutini, Laura Bonzano, Marco Bove. Cortical correlates of Hand Blink Reflex: insight from Near-Infrared Spectroscopy study.
- Laura Bonzano, Monica Biggio, **Costanza lester**, Davide Cattaneo, Simone Cutini, Ambra Bisio, Ludovico Pedullà, Alessandro Torchio, Marco Bove. Cortical correlates of treadmill walking: walking speeds and handrails holding effects.
- **Costanza lester**, Alice Bellosta, Monica Biggio, Elena Monteleone, Ludovico Pedullà, Ambra Bisio, Sabrina Brigadoi, Simone Cutini, Laura Bonzano, Marco Bove. Combining TMS and fNIRS to explore the cortical correlates of the interhemispheric inhibition. Accepted as Oral Presentation

The 40th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS)

September 18–20, 2024, Copenhagen, Denmark

- Ludovico Pedullà, **Costanza lester**, Alice Bellosta, Monica Biggio, Laura Bonzano, Ambra Bisio, Andrea Tacchino, Giampaolo Bricchetto, Marco Bove. Tailored rehabilitation using an instrumented walking aid can improve mobility and neural activity during walking in people with advanced multiple sclerosis.

29th Rehabilitation in Multiple Sclerosis (RIMS) annual conference

June 27–29, 2024, Hasselt, Belgium

- Alice Bellosta, Ludovico Pedullà, **Costanza lester**, Laura Bonzano, Monica Biggio, Ambra Bisio, Andrea Tacchino, Giampaolo Bricchetto, Marco Bove. Efficacy of a rehabilitation program for walking aid users in multiple sclerosis: Focus on the importance of walking aid.

The Organization for Human Brain Mapping (OHBM) 2024 Annual Meeting

June 23–27, 2024, Seoul, Korea

- **Costanza lester**, Alice Bellosta, Elena Monteleone, Monica Biggio, Ludovico Pedullà, Ambra Bisio, Sabrina Brigadoi, Simone Cutini, Laura Bonzano, Marco Bove. Investigating cortical neural correlates of ipsilateral Silent Period.
- **Costanza lester**, Monica Biggio, Laura Bonzano, Sabrina Brigadoi, Ludovico Pedullà, Simone Cutini, Giampaolo Bricchetto and Marco Bove. Reduced Resting-state Inter-Hemispheric Functional Connectivity in People with Multiple Sclerosis.
- Monica Biggio, **Costanza lester**, Ambra Bisio, Sabrina Brigadoi, Simone Cutini, Laura Bonzano, Marco Bove. Unveiling top-down modulation of Hand Blink Reflex through functional Near-Infrared Spectroscopy.

IX Conference GIS FN&N

June 14–15, 2024, Naples, Italy

– Fabiola Giovanna Mestanza Mattos, Alessandro Torchio, Elisa Gervasoni, **Costanza lester**, Laura Bonzano, Joel Pollet, Marco Bove, Davide Cattaneo. Does cortical activation pattern during treadmill walking change with a head stabilization task? An observational cross-sectional study in healthy subjects.

13th International Symposium on Gait and Balance in Multiple Sclerosis

Virtual Interactive Journal Club and Data Blitz, April 20, 2024

– Ludovico Pedullà, **Costanza lester**, Alice Bellosta, Monica Biggio, Laura Bonzano, Ambra Bisio, Andrea Tacchino, Giampaolo Brichetto, Marco Bove. Rehabilitation including walking aid training with real-time feedback can induce motor and neural changes in people with multiple sclerosis.

Neural Control of Movements (NCM) 2024 Annual Meeting

April 15–19, 2024, Dubrovnik, Croatia

– Ambra Bisio, Monica Biggio, **Costanza lester**, Laura Bonzano, Marco Bove. Combining proprioceptive stimulation and action observation to evoke plasticity in primary motor cortex: a TMS-fNIRS pilot study.

The Organization for Human Brain Mapping (OHBM) 2023 Annual Meeting

July 22–26, 2023, Montréal, Canada

– **Costanza lester**, Leonardo Nacci, Monica Biggio, Ambra Bisio, Simone Cutini, Sabrina Brigadoi, Laura Bonzano and Marco Bove. Cortical correlates of action observation combined with proprioceptive stimulation: An fNIRS study.

– **Costanza lester**, Laura Bonzano, Monica Biggio, Simone Cutini, Sabrina Brigadoi and Marco Bove. Resting-state functional connectivity during the day: A functional Near Infrared Spectroscopy study.

– **Costanza lester**, Monica Biggio, Laura Bonzano, Marco Bove, Simone Cutini and Sabrina Brigadoi. The impact of motion correction techniques in fNIRS resting-state functional connectivity analysis.

– Monica Biggio, **Costanza lester**, Laura Bonzano, Sabrina Brigadoi, Marco Bove and Simone Cutini. Cortical correlates of bimanual coupling investigated with functional Near-Infrared Spectroscopy.

– Monica Biggio, Ludovico Pedullà, **Costanza lester**, Tacchino Andrea, Giampaolo Brichetto, Ambra Bisio, Marco Bove and Laura Bonzano. Cortical differences between linear and curvilinear walking tasks in people with multiple sclerosis.

– Laura Bonzano, Monica Biggio, Sabrina Brigadoi, Ludovico Pedullà, Monica Pagliai, Giampaolo Brichetto, **Costanza lester**, Simone Cutini and Marco Bove. Cognitive and sensorimotor contributions to manual dexterity: An fNIRS study during 9HPT performance.

fNIRS Italy

July 6–7, 2023, Padua, Italy

– **Costanza lester**, Monica Biggio, Laura Bonzano, Sabrina Brigadoi, Ambra Bisio, Simone Cutini, and Marco Bove. Investigation of Bimanual Coupling: Behavioral and Hemodynamic Evidence of Interference Effects. Oral presentation

– **Costanza lester**, Sabrina Brigadoi, Monica Biggio, Simone Cutini, Giampaolo Brichetto, Marco Bove and Laura Bonzano. Resting-state functional connectivity using fNIRS: From methodological optimization to exploring daily variations in healthy controls.

28th Rehabilitation in Multiple Sclerosis (RIMS) annual conference

May 4–6, 2023, Genoa, Italy

– **Costanza lester**, Monica Biggio, Sabrina Brigadoi, Simone Cutini, Marco Bove and Laura Bonzano. Resting-state functional connectivity through fNIRS in healthy subjects and people with multiple sclerosis. Poster express presentation

– Valeria Bergamaschi, **Costanza lester**, Monica Biggio, Giampaolo Brichetto and Marco Bove. Is Circle-line paradigm an effective tool to assess callosal connectivity in Multiple Sclerosis?

IRCCS Network of Neuroscience and Neurorehabilitation (RIN) annual meeting

December 15–16, 2022, Bologna, Italy

– **Costanza lester**, Monica Biggio, Sabrina Brigadoi, Simone Cutini, Marco Bove and Laura Bonzano. Resting-state functional connectivity through functional near infrared spectroscopy.

– Monica Biggio, Laura Bonzano, Ludovico Pedullà, Andrea Tacchino, **Costanza lester**, Giampaolo Brichetto, Ambra Bisio and Marco Bove. Innovative techniques for monitoring and improving the effects of lower limb rehabilitation treatment: a study of people with multiple sclerosis.

VII Biennial meeting of the Society for fNIRS

October 9–12, 2022, Boston, USA

- **Costanza lester**, Monica Biggio, Laura Bonzano, Marco Bove, Simone Cutini and Sabrina Brigadoi. Comparing motion correction techniques for resting–state functional connectivity analysis in compliant healthy adults. [Oral blitz](#)
- Monica Biggio, **Costanza lester**, Laura Bonzano, Ambra Bisio, Sabrina Brigadoi, Marco Bove and Simone Cutini. Study of bimanual coupling effect with functional Near Infrared Spectroscopy.
- Laura Bonzano, **Costanza lester**, Monica Biggio, Sabrina Brigadoi, Simone Cutini and Marco Bove. Daily variations of resting–state functional Near Infrared Spectroscopy.

WORKSHOPS

fNIRS workshop

May 4, 2022, Padua, Italy

"From experimental design to signal analysis methods."

Satori workshop

January 25–26, Rome, Italy

"fNIRS Data Analysis with Satori."

RESEARCH PROJECT

Annual call of Italian multiple sclerosis association (2022)

Title: Unraveling active ingredients of neurorehabilitation: investigating cortical activity during task–oriented exercises

Grant Start Date: March 01, 2023

Grant Duration: 24 months

Role: Participant

Foundation: Italian Multiple Sclerosis Foundation

SUMMER SCHOOLS

Summer school of the PhD Course in Neuroscience at the University of Genoa. July 2, 3, 5, 9, 11, 2023.

Summer school of the PhD Course in Neuroscience at the University of Genoa. September 11–15, 2023.

Summer school of the PhD Course in Neuroscience at the University of Genoa. June 26–30, 2023.

Summer school of the PhD Course in Neuroscience at the University of Genoa. September 19–23, 2022.

Summer school of the PhD Course in Neuroscience at the University of Genoa. July 18–22, 2022.

TEACHING ACTIVITY

Genoa, Italy

Sept 2023 – June 2024

TUTOR – University of Genoa, Biomedical Engineer

"Tutoring and support for first–year engineering students in subjects including calculus, geometry, and informatics."

Genoa, Italy

Sept 2023 – Jan 2024

TEACHING SUPPORT (D.R. n 251 del 10/05/2013)

University of Genoa, Biomedical Engineer (Bachelor)

Course: Human Physiology

Genoa, Italy

Nov 2023 – Jan 2024

TEACHING SUPPORT (D.R. n 251 del 10/05/2013)

University of Genoa, Bioengineering (Master)

Course: Medical technologies for clinical neuroscience

THESIS CO-SUPERVISOR

Master of Bioengineering, University of Genoa, Genoa, Italy. *(March 2024)*

Title: An innovative methodology combining TMS, EMG and fNIRS to explore the dynamics of interhemispheric inhibition.

Candidate: Elena Monteleone

REVIEWER ACTIVITY in international journals

Springer Nature

AWARDS

Merit-based Scholarship

Awarded by the University of Genoa

Years: 2017/2018; 2018/2019; 2019/2020; 2020/2021.

IRIS award – Received based on first-year university grades

Awarded by the University of Genoa, 2017.

LANGUAGE SKILLS

Mother tongue: ITALIAN

Other languages: ENGLISH (B2 level) | FRENCH (B1 level)

Cultural exchange in France: Nizza 2011, Saint Malo 2013, Saint Malo 2014.

Summer school in UK: Cambridge 2012.

SKILLS

Microsoft Package | Advanced in MATLAB | Teamwork | Problem-Solving | Strong time management | Biomedical signal acquisition instruments: surface electromyographs (EMG), functional Near InfraRed Spectroscopy (fNIRS) and transcranial electrical stimulation (TMS) | Use of SIGNAL software for TMS data acquisition and analysis | Implementation of experimental paradigms using Open Sesame software | Use of statistical analysis software (STATISTICA) | Use of Aurora and Homer3 toolbox for fNIRS data acquisition and analysis.

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