

Melissa Monti

Biomedical Engineer, PhD student in Biomedical Engineering

Education

- Nov 2022 – ongoing **PhD student in Biomedical, Electrical and System Engineering – curriculum: Biomedical Engineering**
University of Bologna, Italy
Responsibilities: biophysical neuro-computational modeling, EEG data acquisition, EEG preprocessing and processing, graph theoretical analysis of EEG and MRI-based data
- 2022 **Master Degree in Biomedical Engineering for Neuroscience**
University of Bologna, Italy
- Final grade: 110/110 cum Laude
 - Score weighted average: 30/30
 - Master Thesis: Investigating perceptual multisensory impairments in autism through a neural network: a possible neural implementation for the shift from cross-modal competition to facilitation.
- Feb 2022 – May 2022 **Research Internship**
University of Bologna, Italy
Project: Neurocomputational modeling of multisensory integration.
- 2020 **Bachelor Degree in Biomedical Engineering**
University of Bologna, Italy
- Final grade: 110/110 cum Laude
 - Score weighted average: 29.68/30

Additional courses

- 7 Mar – 22 Mar 2024 **Special Topics in Applied Neuro-Engineering**
Organizer: University of Bologna
Cesena, Italy
- 11 Jun – 16 Jun 2023 **Summer School on Neurorehabilitation (SNNR) 2023**
Organizer: Shirley Ryan AbilityLab, Imperial College of London, Hospital los Madroños
Baiona, Spain
- 8 Jun – 9 Jun 2023 **Brain Inspired Computing Workshop (BICW)**
Organizer: Università degli studi di Modena e Reggio Emilia
Modena, Italy
- 18 Jan – 24 Feb 2023 **Current trends and advances in research in neuro-engineering: methods and applications - Introduction to AI for Health and well-being**
Organizer: University of Bologna
Online
- Oct – Dec 2020 **Behavioural and cognitive neuroscience**

*Organizer: IMT School for Advanced Studies Lucca
Pisa, Italy*

Research Experience

- Oct. 2023 – ongoing* **Research Fellow**
Sapienza University of Rome, Italy
Responsibilities: task programming, EEG data acquisition and processing, brain mapping, ERPs, spectral analysis, graph theoretical analyses.
- Aug 2022 – Sept 2022* **Master Thesis Student**
Albert Einstein College of Medicine, The Cognitive Neurophysiology Laboratory (CNL), New York, USA

Participation in research projects

- Investigator for the project “ACT2: Acting together: how motor styles shape action prediction and brain-to-brain connectivity in typical and autistic populations”, PRIN 2020, prot. 20207S3NB8, Italian Ministry for Universities and Research, 2022-2025.
- Investigator for the project “KEATS - Playing in the same Key: Emotions sharing in Autism by multi-Subject models”, Bando SEED - PNR Università Sapienza, 2021-2024.
- Investigator for the project “VR-BCI4PM: A virtual reality system controlled by a hybrid brain-computer interface to improve powered mobility in individuals with neuromotor disorders”, PRIN 2022, Italian Ministry for Universities and Research.
- Investigator for the project “Visuospatial modulation of bimanual touch perception in real and virtual environments”. National Science Foundation (NSF) NSF 2019959.

Collaborations

Sapienza University of Rome

Prof. Laura Astolfi

Country: Italy

Albert Einstein College of Medicine

Prof. Sophie Molholm

Country: USA

Wake Forest University

Prof. Barry E. Stein and Prof. Benjamin Rowland

Country: USA

Baylor College of Medicine

Prof. Jeffrey M. Yau

Country: USA

UCLA

Prof. Ladan Shams

Country: USA

Publications

Papers in International Journals

- **Monti, M.**, Molholm, S., Cuppini, C. The evolution of cross-modal brain organization during development: a neurocomputational-based investigation on typically developing and autistic children. *Submitted*.
- Cuppini, C., Molholm, S., **Monti, M.** Is competition the default configuration of cross-modal interactions? *Submitted*.
- **Monti, M.**, Molholm, S., Cuppini, C. (2023). Atypical development of causal inference in autism inferred through a neurocomputational model. *Frontiers in Computational Neuroscience*. 17.
- Cuppini, C., Magosso, E., **Monti, M.**, Ursino, M., & Yau, J. M. (2022). A neurocomputational analysis of visual bias on bimanual tactile spatial perception during a crossmodal exposure. *Frontiers in neural circuits*, 16, 933455.

Indexed Long Abstracts in National Conferences

- **Monti, M.**, Bisi, M.C., Stagni, R., Cuppini, C. (2023). The neural bases of sensory reweighting for postural control: a neuro-computational model. In *Proceedings XXIII Congresso SIAMOC 2023*. Page 98. Roma.

Abstract in National and International Conferences

- **Monti, M.** and Cuppini, C. Atypical development of causal inference in autism. FENS Forum 2024, Vienna (Austria), 25 Jun – 29 Jun (Abstract number 2062).
- **Monti, M.**, Bisi, M. C., Stagni, R., Cuppini, C. The neural bases of sensory reweighting for postural control: a neuro-computational model. XXIII Neuroscience 2023, Washington (USA), 11 Nov - 15 Nov (Session PSTR281, Presentation number PSTR281, Abstract Control Number 7166).
- Cuppini, C., **Monti, M.**, Magosso, E., Yau, J. Visual bias on bimanual tactile perception: investigation of the neural mechanisms using neurocomputational modelling. International Multisensory Research Forum 2023, Brussels (Belgium), 27 Jun - 30 Jun (Poster 81).
- **Monti, M.**, Molholm, S., Cuppini, C. A neural model of sensory interactions in young neurotypical and ASD children. VIII National Congress on Bioengineering 2023, Padua (Italy), 21 Jun - 23 Jun. (Abstract ID: 1643).
- **Monti, M.**, Molholm, S., Cuppini, C. A model of the maturation of sensory interactions: from cross-modal competition to facilitation in Autism. 2023 11th International IEEE/EMBS Conference on Neural Engineering, Baltimore (USA), 25 Apr-27 Apr (Abstract 406, Paper ID: 1570881557).
- Stein, B. E., Rowland, B. A., **Monti, M.**, Magosso, E., Cuppini, C. Neural Mechanisms Underlying the Reversal of Hemianopia with Multisensory Training. International Multisensory Research Forum 2022, Ulm (Germany), 3 Jul - 7 Jul (Poster 4:30, Abstract 291).
- Cuppini, C., **Monti, M.**, Ursino, M., Shams, L. A Hebbian model of the lexical-semantic memory helps explain the multisensory benefit in learning name-face association. CNS Annual Meeting 2022, San Francisco (USA), 23 Apr - 26 Apr (Poster Session A, Abstract 53).

Talks

Invited speech: Investigating perceptual multisensory impairments in Autism through a neural network: a possible neural implementation for the shift from cross-modal competition to facilitation, Albert Einstein College of Medicine, 14 Sept 2022.

Academic and didactic experience

- Teaching assistant in physiology (Bachelor's Degree in Biomedical Engineering, University of Bologna), A.A. 2022/2023, 2023/2024. Exercises on EEG acquisition and NEURON software
- Co-supervisor to 2 Master Theses in Biomedical Engineering
- Co-supervisor to 8 Bachelor Theses in Biomedical Engineering

Honours and Awards

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| 10 May 2024 | Merit-based scholarship for academic courses A.Y. 2021/2022
<i>INPS</i> |
| 13 Sept 2023 | Best Master Thesis "Nearlab 2023 - Politecnico di Milano"
<i>Italian National Group of Bioengineering (GNB)</i> |
| 7 Jun 2020 | Merit-based scholarship for laudable students enrolled in the A.Y. 2019/2020
<i>University of Bologna</i> |
| 22 May 2020 | Merit-based scholarship for academic courses A.Y. 2017/2018
<i>INPS</i> |
| 29 Jun 2019 | Merit-based scholarship "Antonio Fiorini" for university students
<i>Municipality of Molinella</i> |
| 18 Jun 2019 | Merit-based scholarship for laudable students enrolled in the A.Y. 2018/19
<i>University of Bologna</i> |
| 9 Jan 2019 | Merit-based scholarship for enrollment in courses relating to disciplinary areas of particular national interest
<i>University of Bologna</i> |