

CV UPDATED TO AUGUST 2023

PERSONAL INFORMATION

Lucia Schiatti

ORCID ID <https://orcid.org/0000-0002-1105-4376>

Scopus Author ID: 56277968900

RESEARCH INTERESTS

Machine Learning, AI, Neuroscience, Assistive and Rehabilitation Technologies

CURRENT POSITION

Marie Skłodowska-Curie Postdoc Fellow at Infolab, Computer Science and Artificial Intelligence Lab (CSAIL), and at the Center for Brains, Minds and Machines (CBMM), **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA. *1/09/2021 – Present*

- Developed computational models of visual attention for the assessment and rehabilitation of functional skills in children with visual impairments, within the project TIRESIA (<https://cordis.europa.eu/project/id/896415>).
- Collected eye-tracking data to characterize the pattern of attention during complex tasks (action recognition, social interaction)
- Served as a Teacher Assistant at the MIT-Harvard Center for Brains, Minds and Machines (CBMM) summer course.

RESEARCH EXPERIENCE

Postdoctoral researcher at the Unit for Visually Impaired People (U-VIP), Center for Human Technologies (CHT), **Italian Institute of Technology (IIT)**, Genoa, Italy. *1/12/2018 – 31/08/2021*

- Developed and evaluated eye-tracking procedures for the assessment of visual attention and oculomotor skills in visually impaired children [A1], [A3], [J2].
- Designed and contributed to the technical development of devices for rehabilitation and multisensory stimulation of children with visual impairments, within the framework of the joint lab IIT-Fondazione Mondino ([IIT-Mondino jointlab](#)) [C3], [J1].

Postdoctoral research fellow at the Biomedical Robotics Lab, Department of Advanced Robotics (ADVR), **Italian Institute of Technology (IIT)**, Genoa, Italy. *1/03/2018 - 30/11/2018*

- Designed and Engineered a low-cost and portable hardware for electroencephalographic (EEG) recording for assistive purposes [A2].

Ph.D. fellow at the Biomedical Robotics Lab, Department of Advanced Robotics (ADVR), **Italian Institute of Technology (IIT)**, Genoa, Italy. *1/11/2014 - 28/02/2018*

- Devised and investigated multimodal communication interfaces based on gaze detection (eye-tracking) and brain EEG signals within the project: "Empathic and Expressive Technologies for People with Amyotrophic Lateral Sclerosis" (TEEP-SLA, <https://teep-sla.eu/>) [C9], [C8], [C7], [C6], [C4].
- Conceptualized and validated a system to integrate context information (human EEG Error potential) in a reinforcement learning scheme to improve human-machine interaction in assistive applications [C5].
- Designed and programmed the myoelectric control system for a low-cost hand prosthesis, in the framework of a collaboration with the Neurolab at the University of Genoa and the Onlus Time for Peace (TFP) – Genoa [C1].

Research collaborator at the **Center for Biomedical Technologies (BIOtech)**, University of Trento, Trento, Italy. 1/04/2013 - 31/10/2014

- Developed time domain modelling tools for multivariate time series analysis, and contributed to the related publicly available Matlab toolbox (Schiatti et al 2015). I validated the toolbox by characterizing causality patterns between ECG, heart period and arterial pressure physiological time series [C10], [J3].

Trainee with the European program Leonardo da Vinci at the Department of Data Analysis, Faculty of Psychology and Educational Sciences, **Ghent University**, Ghent, Belgium. 1/12/2013 - 15/04/2014

- Streamlined data analysis algorithms for information-based measures of dynamical connectivity, implemented in Matlab. I applied such algorithms to characterize brain connectivity on primates' cortical electroencephalography (ECoG) signals.

EDUCATION

Ph.D. in Bioengineering and Robotics, Italian Institute of Technology-University of Genoa, Italy. 6/02/2018
Final dissertation: Co-adaptive control strategies in assistive Brain-Machine Interfaces. Supervisors: *Dr Leonardo De Mattos and Prof. Darwin G. Caldwell*.

M.Sc. Degree (with honours) in Mechatronic Engineering, University of Trento, Italy. 26/03/2013
Final dissertation: Frequency analysis of brain rhythms for motor execution and motor imagery tasks classification. Supervisors: *Prof. Mauro Da Lio, Dr. Giandomenico Nollo, Dr. Luca Faes*.

B.Sc. Degree (with honours) in Industrial Engineering, University of Trento, Italy. 27/03/2009
Final dissertation: Selective Laser Melting of maraging steels. Supervisors: *Prof. Alberto Molinari*.

PUBLICATIONS

Journals

- J1. Morelli*, F, L **Schiatti***, G Cappagli, C Martolini, M Gori, and S Signorini. "Clinical assessment of the TechArm system on visually impaired and blind children during uni-and multi-sensory perception tasks". In: *Frontiers in Neuroscience*, 17, 1158438, 2023. *2021 Impact factor 5.152*.
- J2. Gori, M, L **Schiatti** and MB Amadeo. "Masking Emotions: Face Masks Impair How We Read Emotions". In: *Frontiers in Psychology* 12:669432, 2021. *2021 Impact factor 4.755*.
- J3. **Schiatti**, L, G Nollo, G Rossato, and L Faes. "Extended Granger causality: a new tool to identify the structure of physiological networks". In: *Physiological measurement* 36.4, 2015, p. 827. *2-years Impact factor 2.688*.

Conference Proceedings

- C1. **Schiatti**, L, Gori, M, Schrimpf, M, Cappagli, G, Morelli, F, Signorini, S, Katz, B and Barbu A. "Modeling Visual Impairments with Artificial Neural Networks: a Review". In: *International Conference on Computer Vision (ICCV), 11th International Workshop on Assistive Computer Vision and Robotics (ACVR)*, 2023.
- C2. Reboli, T, S Meloni, G Ballardini, G Carlini, M Casadio, F Sante, M Serafica, G Vigo and L **Schiatti**. "Hybrid Actuation Mechanism for an Ultra Low-Cost Transhumeral Prosthesis: Preliminary Study". In: *5th International Conference on NeuroRehabilitation (ICNR)*, 2020.
- C3. **Schiatti**, L, G Cappagli, C Martolini, A Maviglia, S Signorini, M Gori, and M Crepaldi. "A Novel Wearable and Wireless Device to Investigate Perception in Interactive Scenarios". In: *IEEE 42nd Annual International Conference of the Engineering in Medicine and Biology Society (EMBC)*, 2020, pp. 3252-3255.
- C4. **Schiatti**, L, G Barresi, J Tessadori, LC King and LS Mattos. "The Effect of Vibrotactile Feedback on ErrP-Based Adaptive Classification of Motor Imagery". In: *IEEE 41st Annual International Conference of the Engineering in Medicine and Biology Society (EMBC)*, 2019, pp. 6750-6753.
- C5. **Schiatti**, L, J Tessadori, N Deshpande, G Barresi, LC King and LS Mattos. "Human in the Loop of Robot Learning: EEG-based Reward Signal for Target Identification and Reaching Task". In: *IEEE International Conference on Robotics and Automation (ICRA)*, 2018, pp. 4473-4480.

- C6. **Schiatti, L**, J Tessadori, G Barresi, LS Mattos, and A Ajoudani. “Soft brain-machine interfaces for assistive robotics: A novel control approach”. In: IEEE International Conference on Rehabilitation Robotics (ICORR), 2017, pp. 863–869.
- C7. Tessadori, J, L **Schiatti**, G Barresi, and LS Mattos. “Does tactile feedback enhance single-trial detection of error-related EEG potentials?” In: IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2017, pp. 1417–1422.
- C8. Barresi, G, J Tessadori, L **Schiatti**, D Mazzanti, DG Caldwell, and LS Mattos. “Focus-sensitive dwell time in EyeBCI: Pilot study”. In: IEEE 8th Annual International Conference of the Computer Science and Electronic Engineering (CEECE), 2016, pp. 54–59.
- C9. **Schiatti, L**, L Faes, J Tessadori, G Barresi, and L Mattos. “Mutual information-based feature selection for low-cost BCIs based on motor imagery”. In: IEEE 38th Annual International Conference of the Engineering in Medicine and Biology Society (EMBC), 2016, pp. 2772–2775.
- C10. **Schiatti, L**, G Nollo, G Rossato, and L Faes. “Investigating cardiovascular and cerebrovascular variability in postural syncope by means of extended Granger causality”. In: 8th Conference of the European Study Group on Cardiovascular Oscillations (ESGCO), 2014, pp. 43–44.

Abstracts

- A1. **Schiatti, L**, and M Gori. “Effect of visual impairments on the auditory-visual fusion in speech perception: a pilot study”. In: 42nd European Conference on Visual Perception (EVCP), 2019, poster presentation.
- A2. Malvicino, S, L **Schiatti**, J Tessadori, G Barresi, M Casadio and LS Mattos. “Low-Cost and Open-Source Semi-Dry Electrodes for Assistive BCIs”. In: IEEE 41st Annual International Conference of the Engineering in Medicine and Biology Society (EMBC), 2019, poster presentation.
- A3. **Schiatti, L**, S Signorini, and M Gori. “Quantitative evaluation of visual social attention in children with low vision using eye tracking”. In: 17th Biannual Meeting of Child Vision Research Society (CVRS), 2019, poster presentation.

GRANTS & FUNDINGS

Project	Duration (Months)	Amount (EUR)	Role
“Technology for visual Impairments Rehabilitation on Early-life through Social Information Augmentation” (TIRESIA) – H2020 MSCA Global Individual Fellowship (GA 896415)	36	251,002.56	Coordinator

PRESENTATION AT CONFERENCES AND SCIENTIFIC MEETINGS

International Conferences

- 14th International Conference on Low Vision Rehabilitation, July 24-27, 2023, Denver, CO, USA. Panel presentation.
- IEEE 42nd Annual International Conference of the Engineering in Medicine and Biology Society (EMBC), July 20-24, 2020, Montreal, Canada, Virtual Event. Virtual presentation.
- 42nd European Conference on Visual Perception (EVCP), August 25-29, 2019, Leuven, Belgium. Poster presentation.
- IEEE 41st Annual International Conference of the Engineering in Medicine and Biology Society (EMBC), July 23-27, 2019, Berlin, Germany. Podium presentation.
- 17th Biennial Meeting of Child Vision Research Society (CVRS), June 15-17, 2019, Pisa, Italy. Poster presentation.
- IEEE International Conference in Robotics and Automation (ICRA), May 21-25, 2018, Brisbane, Australia. Interactive presentation. Video: <https://www.youtube.com/watch?v=vongfg9ANeM>
- IEEE 15th International Conference on Rehabilitation Robotics (ICORR), July 17-20, 2017, London, UK. Poster presentation. Video: https://www.youtube.com/watch?v=k6DyosvWB_s
- IEEE 38th Annual International Conference of the Engineering in Medicine and Biology Society (EMBC), August 16-20, 2016, Orlando, Florida, USA. Podium presentation.
- 8th Conference of the European Study Group on Cardiovascular Oscillations (ESGCO), May 25-28, 2014, Trento, Italy. Podium presentation.

National Conferences

1. 23rd National Congress of the Italian Society of Palliative Care (SICP), November 16-19, 2016, Rome, Italy. Interactive TEEP-SLA stand.

Invited talks and seminars

- Invited panel presentation within the Panel “Functional Vision Across the Life Span” at the 14th International Conference on Low Vision Rehabilitation, July 24-27, 2023, Denver, CO. 24/07/2023
- Invited talk at the Bioethics Festival – Round Table on “The gentle force of care. Visions in dialogue”, organised by the Italian Institute of Bioethics, Santa Margherita Ligure, Genoa, Italy. 28/08/2020
- Invited talk entitled “Development of ocular movements and technologies for the enriched environment” at the conference “Visione e Sviluppo Neuropsicomotorio – Nuove frontiere per l’intervento ri-abilitativo nel bambino con disabilità visive (Vision and Neuropsychomotor Development - New frontiers of rehabilitation interventions in children with visual impairments)” within the Brain Awareness Week, IRCCS Fondazione Mondino, Pavia, Italy. 13/03/2019
- Invited talk entitled “EEG headsets for Brain-Computer Interfaces” at the Round Table on People with ALS & Technology, Festival of Science, Genoa, Italy. 31/10/2018
- Invited talk at the Seminar “Work in International Cooperation” organized by Elisa Ferrara, University of Genoa, Italy. 24/10/2017
- Seminar on "Brain Connectivity during a Problem Solving Task" at the Department of Experimental Psychology, Ghent University. Invited by Prof. Daniele Marinazzo. 13/03/2014

AWARDS, PRIZES and HONOURS

- Winner of a Marie Skłodowska-Curie Action (MSCA) Global Individual Fellowship under the Horizon 2020 Framework Programme with the project TIRESIA (896415) – “Technology for visual Impairments Rehabilitation on Early-life through Social Information Augmentation”. 04/02/2020
- Awarded with a “Seal of Excellence” certificate by the European Commission, for the project proposal 844432 (VA-TIRESIA) under the Horizon 2020’s Marie Skłodowska-Curie actions call H2020-MSCA-IF-2018. 19/03/2019
- First prize and scholarship in the Start Cup competition from the University of Genoa for the business idea “UNLOCK”, awarded during SMARTcup Liguria 2018, Genoa, Italy. 21/11/2018
- Special Partner Prize from the law office “Francesca Redoano” for the business idea “UNLOCK”, awarded during SMARTcup Liguria 2018, Genoa, Italy. 21/11/2018
- Winner of a scholarship assigned during the 6th SPeRA Congress from the University of Genoa within the "International Cooperation and Development" course, Genoa, Italy. 21/11/2015
- Winner of a Ph. D. scholarship from the Italian Institute of Technology, Genoa, Italy. 13/10/2014
- Winner of a scholarship within the EU program “Leonardo Da Vinci” (project n. 2012-1-IT1-LEO02-02539 – Title “Giovani Cittadini d’Europa” – Phase II), assigned from “Educazione all’Europa”, Ravenna, Italy. 17/07/2013

ACADEMIC SERVICE ACTIVITIES

Reviewer activities: IEEE EMBC, IEEE ICRA, Frontiers in Neuroscience, NeurIPS, ICML.

Session Chair: IEEE EMBC 2019.

Community Service: Member of Mitaly board (Student Association of Italians at MIT). Co-organised with PIB (Professional Italians in Boston) the event “(Bio)Tech: current trends, future prospects” held at MIT on May 4th 2023.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2018-Present Member, Institute of Electrical and Electronic Engineers (IEEE).

2016-2018 Student Member, Institute of Electrical and Electronic Engineers (IEEE).

SUPERVISING AND MENTORING ACTIVITIES

Co-supervised **4 Master students** from the course of Bioengineering and **1 Undergraduate student** from the course of Electronic Engineering and Information Technologies at the University of Genoa (supervisor: Prof. Maura Casadio); co-supervised **1 Undergraduate (UROP) student** from the Department of Electronic Engineering and Computer Science (EECS) at the Massachusetts Institute of Technology (supervisor: Dr. Boris Katz).

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| [U2] | Undergraduate student: Audrey Douglas. Project: Development of stimuli to investigate human and machine visual attention in the context of social interaction, MIT Undergraduate Research Opportunities Program (UROP). | <i>June 2022 – May 2023</i> |
| [M4] | Graduate student: Elena Ferrazzano. Thesis title: “A device for myoelectric control of low-cost upper limb prostheses”. | <i>July 2020 - March 2021</i> |
| [M3] | Graduate student: Silvia Meloni. Thesis title: “Mechanical design of a low-cost upper limb prosthesis”. | <i>October 2019 - July 2020</i> |
| [U1] | Undergraduate student: Federico Puppo. Thesis title: Sensors for the control of low-cost myoelectric prostheses. | <i>February - July 2019</i> |
| [M2] | Graduate student: Marta Campio. Thesis title: Multi joint control of low-cost upper limb prostheses. | <i>July 2018 - March 2019</i> |
| [M1] | Graduate student: Selene Malvicino. Thesis title: A low-cost EEG acquisition system for assistive brain-computer interfaces. | <i>May - December 2018</i> |

TEACHING ACTIVITIES

- Selected as Teacher Assistant (TA) at the MIT-Harvard Brain, Minds and Machines (BMM) Summer Course 2023. Co-organised and taught the tutorials “Computational models of visual attention” and “Reinforcement Learning”, co-supervised 1 student’s project. *4-25/08/2023*
- Selected as Teacher Assistant (TA) at the MIT-Harvard Brain, Minds and Machines (BMM) Summer Course 2022. Co-organised and taught the tutorial “Computational models of visual attention”; supervised 2 students’ projects. *4-25/08/2022*
- Facilitated scientific divulgation through the organisation and presentation of seminars at 7 high school institutes promoted by the Association ‘Into Brain’:
 - Seminar “Brain, Mind and Artificial Intelligence” (2 institutes, Spring 2022) *Spring 2022*
 - Seminar “Brain signals and alternative communication technologies for people with severe motor impairments” (5 institutes, Spring 2020 and 2021). *Spring 2021*
Spring 2020
- Lectured the module “Low-cost prostheses in low income countries” within the course of Biomedical Robotics (Prof. Maura Casadio), Master of Bioengineering, University of Genoa. Class of 25 students. *2/12/2020*
- Lectured the module “Interfaces for Amyotrophic Lateral Sclerosis (ALS) patients” within the course of Biomedical Robotics (Prof. Maura Casadio), Master of Bioengineering, University of Genoa. Class of 25 students. *12/12/2018*
- Co-lectured the module “Prostheses for accidents, injuries and dramatic amputations in developing countries” within the course of International Cooperation and Development at the University of Genoa. Modules of 4 hours, classes of 15 students. *November 2019 (a.y. 2019/20)*
October 2018 (a.y. 2018/19)
October 2017 (a.y. 2017/18)
October 2016 (a.y. 2016/17)
- Conducted didactic tutoring within the Biomedical Engineering course at the University of Genoa, covering Calculus, Linear Algebra, Physics, Informatics. Modules of 50 hours, classes of 70 students. *1/09/2017 - 31/12/2017*
1/09/2015 - 31/05/2016

COURSES AND CERTIFICATES

- **MIT Kaufman Teaching Certificate Program (KTCP):** Interactive workshop series intended for late-program graduate students and postdocs interested in academic careers or developing skills to support their teaching at MIT. *Spring 2023*
- **APRE Webinar on Open Science:** “European Commission policies for open science: a practical course to know obligations and opportunities”, Agency for the Promotion of European Research (APRE), Italy. *13,15,20,22/04/2021*
- **IIT Seminar “Clinical Investigation on Human Subjects”,** Italian Institute of Technology, Genoa, Italy. *22/06/2018*
- **IIT-UniGe High Tech Entrepreneurship Workshop,** Faculty of Economics at the University of Genoa and Italian Institute of Technology, Genoa, Italy. *22/03/2018 - 18/05/2018*
- **ACAI Summer School on Reinforcement Learning,** Nieuwpoort, Belgium. *7/10/2017 - 14/10/2017*
- **MIT-Harvard Summer Course on Brains, Minds and Machines,** Marine Biological Laboratory (MBL), Woods Hole, MA, USA. *13/08/2017 - 3/09/2017*
- **Deep Learning Hands-on Workshop,** NVIDIA Deep Learning Institute Milan, Italy. *25/05/2017*
- **IEEE-EMBS International Summer School on Biomedical Signal Processing,** Collegio Borromeo, Pavia, Italy. *30/08/2015 - 6/09/2015*
- **Summer School on Social Human-Robot Interaction,** Åland, Finland. *24/08/2015 - 28/08/2015*

REFERENCES

Boris Katz

boris@mit.edu

Principal Research Scientist

Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology
The Stata Center, 32-G430, 32 Vassar Street, Cambridge, MA 02139

Andrei Barbu

abarbu@mit.edu

Research Scientist

Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology
The Stata Center, 32-G430, 32 Vassar Street, Cambridge, MA 02139

Monica Gori

Monica.Gori@iit.it

Tenured Senior Scientist

Unit for Visually Impaired People - Center for Human Technologies, Fondazione Istituto Italiano di Tecnologia
Via Enrico Melen 83, Building B, 16152 Genova, Italia

Luca Faes

luca.faes@unipa.it

Associate Professor

Department of Energy, Information engineering and Mathematical models
University of Palermo, Palermo, Italy