Marco **GHISLIERI**

Assistant Professor with time contract
at Department of Electronics and Telecommunications
Politecnico di Torino, Turin, Italy

EDUCATION AND ACADEMIC CAREER

ASSISTANT PROFESSOR / Assistant Professor with time contract at Politecnico di Torino - Turin (10/01/2022 - present)

- University: Politecnico di Torino, Turin, Italy
- Research: "*Innovative techniques in neuro-engineering and neural computation*"

RESEARCH ASSISTANT / Post-Doc Research Assistant at Politecnico di Torino - Turin (01/12/2020 - 09/30/2022)

- University: Politecnico di Torino, Turin, Italy
- Research: "*Assessment of motor control strategies in patients affected by Parkinson's Disease before and after bilateral sub-thalamic nucleus deep brain stimulation*"

DEGREE / Doctor of Philosophy in Bioengineering and Medical and Surgical Sciences - Turin (10/01/2017 - 07/26/2021)

- University: University of Turin and Politecnico di Torino, Turin, Italy
- Thesis: "*Muscle Synergy Assessment during Cyclic and Non-Cyclic Movements: Methodological Issues and Application-oriented Studies*"
- Supervisors: prof. Marco Knaflitz and prof. Valentina Agostini

SCHOLARSHIP / Scholarship Holder at Politecnico di Torino – Turin (01/18/2017 - 09/31/2017)

- University: University of Turin – Division of Hematology of Città della Scienza e della Salute of Turin
- Project's title: "*Design and Validation of a New Biobank System for Hematologic Neoplasms*"

DEGREE / Master of Science in Biomedical Engineering - Turin (09/30/2014 - 12/15/2016)

- University: Politecnico di Torino, Turin, Italy
- Thesis: "*Effect of Yoga meditation on the central nervous system: a pilot study*"
- Supervisors: prof. Marco Knaflitz and prof. Valentina Agostini
- Grade: **110/110**

DEGREE / Bachelor of Science in Biomedical Engineering - Turin (09/27/2010 - 03/21/2014)

- University: Politecnico di Torino, Turin, Italy
- Thesis: "*Ingegneria Clinica: Servizio di ingegneria clinica presso il centro emergenze San G. Bosco di Torino*"
- Supervisor: prof. Filippo Molinari
- Grade: **94/110**

TEACHING ACTIVITY

LAB TEACHING ASSISTANT / Politecnico di Torino - Turin (10/11/2017 - present)

- First Level Degree in Biomedical Engineering: **Bio-images** (prof. Valentina Agostini)
- Second Level Degree in Biomedical Engineering: **NeuroEngineering** (prof. Valentina Agostini), and **Design of Implantable Medical Devices** (prof. Marco Knaflitz)

TEACHING ASSISTANT / Università di Torino - Ivrea (06/24/2020 - present)

- First Level Nursing Degree: **Telemedicine in Geriatrics** (prof. Paola Maina)

PROFESSOR / Politecnico di Torino - Turin (06/23/2023 - 06/23/2023)

- Specializing Master' Program in Technology and Public Policy: **Technology for Health Inclusion**

LAB TEACHING ASSISTANT / Politecnico di Torino - Turin (10/16/2023 - 06/14/2024)

- First Level Degree in Biomedical Engineering: **Neuroengineering and active aging** (prof. Valentina Agostini)

PROFESSOR / Politecnico di Torino - Turin (09/20/2019 - 10/25/2019)

- Specializing Master' Program in Telemedicine: **Technologies supporting telemedicine**

EDITORIAL INVOLVEMENT

ASSOCIATE EDITOR / Associate Editor for Scientific International Journals (06/23/2024 - present)

- **Scientific Reports** (Nature, Impact Factor 2023: 3.8, Scimago: Q1 Multidisciplinary), **Applied Bionics and Biomechanics** (Hindawi, Impact Factor 2023: 1.8, Scimago: Q3 Bioengineering, Q3 Biomedical engineering, Q3 Biotechnology).

REVIEW EDITOR / Peer-Reviewer for Scientific International Journals - 96 peer review records of 70 manuscripts (10/01/2018 - present)

- **Computer Methods and Programs in Biomedicine** (7 reviews), **Computer Methods in Biomechanics and Biomedical Engineering** (1 review), **Frontiers in Bioengineering and Biotechnology** (3 reviews), **Frontiers in Human Neuroscience** (2 reviews), **Frontiers in Physiology** (1 review), **Frontiers in Rehabilitation Sciences** (6 reviews), **Frontiers in Sports and Active Living** (4 reviews), **Gait and Posture** (8 reviews), **IEEE Journal of Biomedical and Health Informatics** (4 reviews), **IEEE Transactions on Neural Systems and Rehabilitation Engineering** (2 reviews), **JCO Clinical Cancer Informatics** (5 reviews), **Journal of Gerontology and Geriatrics** (1 review), **Journal of NeuroEngineering and Rehabilitation** (25 reviews), **Scientific Reports** (6 reviews), **Sensors** (13 reviews), and **The Journal of Open Source Software** (1 review).

MEMBERSHIPS AND AWARDS

AWARD / My Research in 3 minutes - Politecnico di Torino - November 2019
AWARD / The Carlo J. De Luca Award - International Society of Electrophysiology and Kinesiology (ISEK) - 2022
AWARD / Best Poster Award at M. Grattarola Neuroengineering Summer School - IEEE Sensors Council Italy Chapter - 2022
AWARD / Best Ph.D. Thesis Awards - "Gruppo Nazionale Bioingegneria" (GNB) - 2022

MEMBERSHIP / Member of the IEEE - "Advancing Technology for Humanity" since 2019
MEMBERSHIP / Member of the ISEK - "International Society of Electrophysiology and Kinesiology" since 2020
MEMBERSHIP / Member of GNB - "Gruppo Nazionale di Bioingegneria" since 2017
MEMBERSHIP / Member of SIAMOC - "Società Italiana Analisi del Movimento in Clinica" since 2023.

RESEARCH INTEREST

Dr. Marco GHISLIERI is active in the field of **biomedical signal processing and interpretation**, with a main focus on **surface electromyographic** and **kinematic signals** during cyclical and non-cyclical movements. His main applications in these fields are:

*I) Analysis of **muscle activation patterns** both in physiological and pathological conditions during cyclical movements through innovative deep learning-based approaches*. More specifically, Dr. GHISLIERI recently proposed and validated on both synthetic and experimental electromyographic signals an innovative deep learning-based **muscle activity detector** to precisely identify the start and end time-instants of muscle activations during human movements.

*II) Evaluation of the **modular organization of the central nervous system** during cyclic and non-cyclic movements based on the extraction of the **muscle synergies** from electromyographic signals*. Dr. GHISLIERI's studies are mainly focused on applying muscle synergy theory clinics to assess differences in motor control strategies between healthy subjects and patients suffering from neurodegenerative (i.e., Parkinson's disease) and orthopedic (i.e., chronic ankle instability) diseases.

Dr. GHISLIERI is also active in the field of **neuroengineering** and, particularly, in developing deep learning-based algorithms to interpret neuronal activities for controlling external devices.

Further details about Dr. GHISLIERI's research can be found at the following link: https://biolab.polito.it/people/marco-ghislieri/.

RESEARCH OUTPUT

Dr. GHISLIERI has published **more than 30 contributions** including journal papers and peer-reviewed proceedings in the field of biomedical signal processing. A complete list of Dr. GHISLIERI's publications can be found at the following links:

Scopus: https://www.scopus.com/authid/detail.uri?authorId=57202379042
Google Scholar: https://scholar.google.com/citations?user=cQdvUtEAAAAJ&hl=it

In the following, the **Scopus summary** of Dr. GHISLIERI:

H-index	Total number of citations	Total number of publications
10	416	• **17** peer-reviewed articles • **11** conference papers • **1** book chapter • **3** reviews

RESEARCH PROJECTS AND COLLABORATIONS

Dr. Marco GHISLIERI is involved in numerous projects and collaborations with both national and international research groups. In the following, the complete list of projects and collaborations:

- **Neuromuscular Systems Lab, School of Electrical & Electronic Engineering, University College Dublin, Dublin, Ireland – Prof. Madeleine Lowery**
- **CNRS-Musèum National d'Histoire Naturelle-UPDV, Paris, France – Prof. Gilles Berillon and Dr. François Druelle**

FUNDED PROJECTS

PRIN PNRR 2022 / “OMNIA-PARK”: Objective monitoring of axial symptoms in Parkinson's disease: quantitative assessment in daily life based on the use of wearables, video sensing and artificial intelligence - Ministero dell’Università e della Ricerca, Italy (2022 - present)

PRIN 2022 / “PD-DBS”: Effect of bilateral subthalamic nucleus deep brain stimulation on gait analysis and muscle synergies of patients affected by advanced Parkinson’s disease during dual-task walking - Ministero dell’Università e della Ricerca, Italy (2022 - present)

CNRS / “Syntès”: Common motor control strategies for different locomotor tasks: from quadrupedal to bipedal walking - Musèum National d’Histoire Naturelle-UPDV, Paris, France (03/01/2022 – 03/01/2023).

Torino, July 31, 2024

Sincerely,

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Marco GHISLIERI