GIULIA CORNIANI, PH.D.

POSTDOCTORAL RESEARCH FELLOW, Harvard Medical School

@ giulia.corniani@gmail.com +1 347 865 8039 119 Prospect Street, 02143 Somerville MA, USA
G www.scholar.google.com/giuliacorniani in www.linkedin.com/giulia-corniani

CURRENT POSITION

Postdoctoral Research Fellow

Harvard Medical School and Spaulding Rehabilitation Hospital

March 2023 – Ongoing Boston, MA

- Quantitative assessment of human motor behavior using Machine Learning, Deep Learning, Markerless Video Analysis, and Wearable Sensing Technology
- Neural Stimulation and Augmentation Techniques for Enhancing Motor Control in Neurological Conditions
- Neural and Musculoskeletal Modeling of Human-Robot Interaction with Exoskeletons

EDUCATION

Ph.D. in Computational Neuroscience

University of Sheffield

Nov 2019 - Feb 2023 Sheffield, United Kingdom

Marie Skłodowska-Curie fellow in the Neutouch Innovative Training Network.
Thesis title: *Mechanotransduction and information coding in the human peripheral tactile system*

M.Sc. in Bioengineering

Università degli Studi di Padova

Sep 2016 - Dec 2018 Padua, Italy

Thesis title: *Classification of EEG and fNIRS signals from Completely Locked-in State Patients for a Brain-Computer Interface communication system*

B.Sc. in Information Engineering

Università degli Studi di Padova

Sep 2013 - Sep 2016 Padua, Italy

OTHER APPOINTMENTS

- **Technology Reviewer** Oct 2023 - Ongoing
  NIH Blueprint MedTech program
  Assess innovation, feasibility, and clinical impact of medical device projects. Provide expert feedback to inform funding decisions.
- **Editorial Board Member** Jun 2023 - Ongoing
  IEEE Open Journal of Engineering in Medicine and Biology
  Evaluation of manuscript submissions, overseeing peer-review processes, and ensuring high-quality, impactful publications in biomedical engineering.

OTHER PROJECTS

- **RecovHer** May 2025
  Most Scalable Solution Award @ MIT Women's Health AI Hackathon
  Agentic AI framework designed to support physical rehabilitation after breast surgery through personalized coaching and real-time feedback.

REFEREES

Paolo Bonato, Ph.D.
Postdoc advisor
Harvard Medical School
Spaulding Rehabilitation Hospital
Boston, MA, USA
pbonato@mgh.harvard.edu

Hannes P. Saal, Ph.D.
Ph.D. supervisor
Active Touch Laboratory
University of Sheffield
Sheffield, UK
h.saal@sheffield.ac.uk

ABOUT ME

I am a **Postdoctoral Research Fellow** at **Harvard Medical School**, conducting clinical research at the Motion Analysis Lab within Spaulding Rehabilitation Hospital. My work lies at the intersection of biomedical engineering, human motor behavior analysis, and digital health innovation.
With a background in computational neuroscience and a strong focus on **translational applications**, I develop machine learning and deep learning methods to analyze human behaviors in both healthy and clinical populations.

MAIN PUBLICATIONS

Corniani, G. and Saal, H. (2020). Tactile innervation densities across the whole body. *Journal of Neurophysiology*

Corniani, G., Casal, M. A., Panzeri, S., and Saal, H. P. (2022). Population coding strategies in human tactile afferents. *PLoS Computational Biology*

Corniani, G., Lee, Z. S., Carré, M. J., Lewis, R., Delhaye, B. P., and Saal, H. P. (2024). Sub-surface deformation of individual fingerprint ridges during tactile interactions. *eLife*

Parisi, F., **Corniani, G.**, Bonato, P., Balkwill, D., Acuna, P., Go, C., Sharma, N., and Stephen, C. D. (2024). Motor assessment of x-linked dystonia parkinsonism via machine-learning-based analysis of wearable sensor data. *Scientific Reports*

Bonato, P., Feipel, V., **Corniani, G.**, Arin-Bal, G., and Leardini, A. (2024). Position paper on how technology for human motion analysis and relevant clinical applications have evolved over the past decades: striking a balance between accuracy and convenience. *Gait Posture*

Corniani, G., Sapienza, S., Vergara-Diaz, G., Valerio, A., Vaziri, A., Bonato, P., and Wayne, P. (2025). Digital monitoring of tai chi balance training in older adults using wearable sensors and machine learning. *Scientific Reports*

LANGUAGES

English
Italian
Spanish
German

SKILLS

Python | Matlab | PyTorch | Scikit-learn | Git | Docker | Machine Learning | Deep Learning | Generative AI | Multimodal Modeling | Wearable Sensors | Video Analysis | Translational clinical research | Study design | Multidisciplinary | Leadership

Last updated: May 29th, 2025