

Curriculum Vitae

Karolina Armonaite

Research interests: computational neuroscience, statistical methods for neurophysiological time series analysis, analysis of medical images, self-organized criticality, complex networks, fractals, machine learning, artificial intelligence

Education	
2019 – 2022	<p>PhD in “Minds and Technologies in Digital Society”, Ciclo XXXV, Uninettuno University, Rome, Italy. Winner of PhD fellowship.</p> <p><i>Title of the PhD thesis: “Assessment of spectral and fractal properties of neurodynamics: from statistics to machine learning”.</i></p> <p>SSD (Settori Scientifico Disciplinari) of the PhD thesis: ING-INF/05, M-PSI/02, FIS/02</p> <p><i>Supervisors: Prof. Livio Conti, Faculty of Engineering, Uninettuno University and INFN – Istituto Nazionale di Fisica Nucleare, Sezione Roma Tor Vergata, Italy.</i></p> <p><i>Prof. Franca Tecchio, ISTC – CNR, Institute of Cognitive Science and Technology at the Italian National Research Council, CNR, Rome, Italy.</i></p> <p>PhD thesis defended on February, 22nd, 2023</p>
2017 – 2019	Master degree in “Health Policy and Management”, Mykolas Romeris University, Vilnius, Lithuania.
2016 – 2017	Master post-lauream in Health Management, Klaipeda University, Klaipeda, Lithuania
2012 – 2015	Bachelor in Health Sciences, Klaipeda’s State College, Klaipeda, Lithuania
Professional experience	
A.Y. 2022 – 2023	Postdoc fellow (Assegno di Ricerca) in Computational Neuroscience, Faculty of Engineering, Uninettuno University, Rome, Italy.
A.Y. 2022 – 2023	Tutor of the course of “ <i>Platforms for Big Data</i> ” in the Master degree course of “Informatics Engineering, study path Big data”, Faculty of Engineering, Uninettuno University, Rome, Italy
A.Y. 2022 – 2023 A.Y. 2021 – 2022 A.Y. 2020 – 2021	Tutor of the course “ <i>Cognitive Ergonomics and Human Factor</i> ” in the Master degree course of “Cognitive Processes and Technologies, study path Cyber-psychology”, Faculty of Psychology, Uninettuno University, Rome, Italy.
Training and Skills	
2020 – 2021	Information Technology internship, Faculty of Engineering, Uninettuno University, Italy. <i>Certified acquired competences: analytical and computational mathematical methods, advanced statistics, object-oriented programming, artificial intelligence development, machine learning and deep-learning, electromagnetic signals processing, spectral analysis, fractal features extraction.</i>
June 2019	ERASMUS+ scholarship for internship at Uninettuno University, Rome, Italy. <i>Responsibilities: European projects management and data processing.</i>
2015 – 2019	Full-time employee at International Affairs Unit, UAB Interlog Lietuva (private equity company), Klaipeda, Lithuania. <i>Responsibilities: Big-data analytics and visualization.</i>
Jan. 2015 – June 2015	Internship at Neurological Disease and Rehabilitation Department, Klaipeda University Hospital, Klaipeda, Lithuania. <i>Responsibilities: Assisting to the medical team in the rehabilitation process of patients with neurological diseases as well as traumatic brain or spinal cord injuries.</i>

Selected publications

1. Karolina Armonaite, Massimo Bertoli, Luca Paulon, Eugenia Gianni, Marco Balsi, Livio Conti, and Franca Tecchio, "Neuronal Electrical Ongoing Activity as Cortical Areas Signature: An Insight from MNI Intracerebral Recording Atlas", *Cerebral Cortex*, 2021, Published: 2 November 2021, <https://doi.org/10.1093/cercor/bhab389>
2. Teresa L'Abbate, Karolina Armonaite, Eugenia Gianni, Massimo Bertoli, Livio Conti, Joy Grifoni, Andrea Cancelli, Carlo Cottone, Elisabetta Trombetta, Matteo Padalino, Camillo Porcaro, Franca Tecchio, "Corticomuscular coherence dependence on body side and visual feedback", 2022, *Neuroscience*, <https://pubmed.ncbi.nlm.nih.gov/35288177/>
3. Karolina Armonaite, Eugenia Gianni, Joy Grifoni, Lino Nobili, Luca Paulon, Marco Balsi, Livio Conti, Franca Tecchio, "Local neurodynamics as a signature of cortical areas: new insights from sleep", 2022, *Cerebral Cortex*, <https://pubmed.ncbi.nlm.nih.gov/35858209/>
4. Annalisa Pascarella, Eugenia Gianni, Matteo Abbondanza, Francesca Pitolli, Karolina Armonaite, Massimo Bertoli, Teresa L'Abbate, Joy Grifoni, Livio Conti, Luca Paulon, Franca Tecchio, "Normalized compression distance to measure cortico-muscular synchronization", Accepted for publication in *Frontiers in Neuroscience*; 19, October, 2022, doi:10.3389/fnins.2022.933391, <https://www.frontiersin.org/articles/10.3389/fnins.2022.933391/abstract>
5. Karolina Armonaite, Livio Conti, Franca Tecchio, "Book Review: "The fractal geometry of the brain", by Antonio Di Ieva, Accepted for publication in *Frontiers in Neuroscience*, Sec. Neuroprosthetics, on 4 November 2022, doi: 10.3389/fnins.2022.1078376, <https://www.frontiersin.org/articles/10.3389/fnins.2022.1078376/full>
6. Karolina Armonaite, Livio Conti and Franca Tecchio, "Fractal nature of the ongoing neuronal electrical activity", In "Fractal Geometry of the Brain", Editor Antonio Di Ieva, Accepted, To be published, 2023.
7. Massimo Bertoli; Angela Tataranni; Susanna Porziani; Patrizio Pasqualetti; Eugenia Gianni; Joy Grifoni; Teresa L'Abbate; Karolina Armonaite; Livio Conti; Andrea Cancelli; Carlo Cottone; Franco Marinozzi; Fabiano Bini; Federico Ceconi; Franca Tecchio, "Effects on Corticospinal Tract Homology of Faramus Personalized Neuromodulation Relieving Fatigue in Multiple Sclerosis: A Proof-of-Concept Study", *Brain Sci.* 2023, 574. <https://doi.org/10.3390/brainsci13040574>
8. Maria Rita Pagliara, Federico Ceconi, Patrizio Pasqualetti, Massimo Bertoli, Karolina Armonaite, Eugenia Gianni, Joy Grifoni, Teresa L'Abbate, Franco Marinozzi, Livio Conti, Luca Paulon, Antonino Uncini, Filippo Zappasodi and Franca Tecchio (2023). "On the Homology of the Dominant and Non-Dominant Corticospinal Tracts: A Novel Neurophysiological Assessment." *Brain Sciences*, 13(2), 278. <https://doi.org/10.3390/brainsci13020278>
9. Karolina Armonaite, Marco La Ventura, Luigi Laura, "Alzheimer's disease detection from structural MRI: a deep learning perspective", *Exploration of Neuroprotective Therapy*, Accepted for publication, 2023
10. Karolina Armonaite, Marco Balsi, Luca Paulon, Livio Conti, Franca Tecchio, "Methodological approach to investigate the local neurodynamic via power-law of the power spectrum properties", Submitted to *Physical Review Letters*, March 2023
11. Karolina Armonaite, Marco Balsi, Luca Paulon, Livio Conti, Franca Tecchio, "Local neurodynamics towards the parcellation of the cortex", Submitted to *Cell Reports Physical Science*, April 2023
12. Karolina Armonaite, Livio Conti, Gaetano Salina, Franca Tecchio, "Validity of Higuchi fractal dimension on neurophysiological time series", Submitted to *Physica D*, April 2023

Presentations at meetings & Schools	
14 July, 2021	K. Armonaite, "Spectral and Fractal Analysis of Electromagnetic Signals", talk at "Uninettuno – Tor Vergata joint meeting on artificial intelligence and big data analysis", Rome, Italy.
2-3 December, 2021	K. Armonaite, "My path to STEM", talk at "International Leadership Summit IEEE Woman in Engineering", Genoa, Italy.
16-24 July, 2022	L. Conti, M. Onofrio, D. Antonini, K. Armonaite, I. Bettarini, G. Renna, "Study of particle precipitation induced by natural electromagnetic sources measured by the HEPD detector". Talk at Session C1.3, 44 th COSPAR-Assembly, Athens, Greece.
9-13 July, 2022	K. Armonaite, L. Conti, F. Tecchio "The spectral and fractal neurodynamical features as a signature of cortical areas: an insight from Montreal Neurological Institute intracranial sEEG". Presentation at the Federation of European Neuroscience Societies (FENS) forum 2022, Paris, France.
18-25 June, 2022	Neural Circuit Dynamics NSAS School 2022 (NSAS - Neuroscience School of Advanced Studies Advanced Courses), Isola di San Servolo, Venice, Italy, Director: Gyorgy Buzsaki (USA)
4-8 September, 2022	K. Armonaite, M. Balsi, L. Conti, F. Tecchio, "Neuronal Electrical Ongoing Activity as Cortical Areas Signature: An Insight from MNI Intracerebral Recording Atlas", ICCN - International Congress of Clinical Neurophysiology, Geneva, Switzerland.
18-22 September, 2022	K. Armonaite, L. Conti, M. Balsi, and F. Tecchio, "How spectral and fractal analyses of neurodynamics reveal the signature of cortical areas in waking and sleeping states: a study of Montreal Neurological Institute intracranial sEEGs", Talk given at the: ACAIN 2022 (2nd Adv. Course & Symposium on Artificial Intelligence & Neuroscience) and LOD 2022 (8th Int. Conference on Machine Learning, Optimization, and Data Science), Siena, Italy.
15-17 March, 2023	K. Armonaite, L. Conti, F. Tecchio, "EEG markers during resting states in Space", talk at the Symposium: Biomedicina Spaziale per le Future Missioni di Esplorazione Umana dello Spazio: a Call to Action – Sessione FIS, Agenzia Spaziale Italiana.
Awards & memberships	
2019 – 2022	Winner of the call for a three-year full-time fellowship on neuroscience & technologies, granted by Uninettuno university on behalf of the Italian Ministry of University and Research (MIUR).
Since March 2022	A member of SINS - Italian Society for Neuroscience
Since September 2022	Affiliated to the LET'S - Laboratory of Electrophysiology for Translational neuroscience of the ISTC - CNR (Institute of Cognitive Sciences and Technologies, Department of Human and Social Sciences, Cultural Heritage, National Research Council), Rome, Italy
Projects	
2023 -	SpacEEG - Resting-state electroencephalographic markers in space The aim of this project is to analyse astronaut data collected on the International Space Station by the ALTEA mission of ASI (Italian Space Agency) in order to investigate how neuronal activity is modified by microgravity, sleep alterations and stress states in space. The main test areas are the primary somatosensory (S1) and motor (M1) regions. Principal Investigator: Prof. Livio Conti. Team: K. Armonaite, M. Balsi, L. Narici, A. Pascarella, L. Paulon, C. Porcaro, F. Tecchio
2021 - 2023	Seminars of ComplExplore Lab The project is an interdisciplinary lab of Uninettuno consisting of seminars and interactive meetings, in which experienced researchers, young researchers and students can discuss issues of complexity. <ul style="list-style-type: none"> Participation in design and development of the series of 50 seminars on complex systems and neuroscience

2022 - 2023	<p>Prowide project Call: Erasmus + The project aims to train OPMs (Online Proctoring Managers), support the digital transition of higher education institutions to high-quality online education, and develop methodologies of supervised distance examinations, ensuring the best integrity.</p> <ul style="list-style-type: none"> • Participation to the development of Module 7 – “Change management in HEI for adopting proctoring online exams”
2022 - present	<p>Green Scent project - Smart Citizen Education for a Green Future Call: Horizon 2020 project GreenScent aims at supporting the implementation of EU policies related to the Green Deal.</p> <ul style="list-style-type: none"> • Participation to the project to the development of the Work Package 1, working group Biodiversity