

Pedro L. C. Rodrigues

✉ pedro.rodrigues@melix.org
📄 plcrodrigues.github.io

Research experience

Post-doctoral researcher, Parietal team, INRIA-Saclay, Palaiseau, France. Currently working under the supervision of Dr. Alexandre Gramfort since 01/Mar/2020.

- **Project:** Algorithms for simulation-based inference with applications to computational neuroscience. Main publications: [\(α\)](#)

Doctoral researcher, VIBS Team, GIPSA-lab, Grenoble, France. Worked under the supervision of Dr. Marco Congedo and Prof. Christian Jutten from 01/Oct/2016 until 31/Dec/2019.

- **Project:** Methods for analysis and classification of multivariate time series. Applications mainly to neural signals. Main publications: [\(β\)](#) and [\(γ\)](#)

Graduate researcher, Escola Politécnica da USP, São Paulo, Brazil. Worked under the supervision of Prof. Luiz A. Baccalá from 01/Jan/2014 until 30/Sep/2016.

- **Project:** Methods for detecting and characterizing neural connectivity in event-related potentials. Main publications: [\(δ\)](#)

Education

Ph.D. in “Signal, Image, Parole, and Télécoms”, Université Grenoble Alpes, Grenoble, France, from 01/Oct/2016 until 30/Sep/2019. Ph.D. defense: 16/Oct/2019. Jury presided by Patrick Flandrin and composed by Alexandre Gramfort (reader), Yannick Berthoumieu (reader), Fabien Lotte, and Stéphane Canu. Supervision of Dr. Marco Congedo and Prof. Christian Jutten.

- Title of the thesis: “*Exploring invariances of multivariate time series via Riemannian geometry: validation on EEG data*”. Available at [tel-02345388](tel:02345388)

Master of science, Universidade de São Paulo, São Paulo, Brazil, from 01/Jan/2014 until 31/Jul/2016. Supervision of Prof. Luiz A. Baccalá.

- Title of the dissertation: “*Algorithms for inference of neural connectivity in event-related potentials*”. DOI: [10.11606/D.3.2017.tde-17032017-094453](https://doi.org/10.11606/D.3.2017.tde-17032017-094453)

Diplôme de l'Ecole Polytechnique, Ecole Polytechnique, Palaiseau, France, from 01/Apr/2011 until 31/Jul/2015. Double degree program with the Escola Politécnica da Universidade de São Paulo, Brazil.

Engineering degree in Telecommunications, Escola politécnica da Universidade de São Paulo, São Paulo, Brazil, from 01/Jan/2008 until 31/Dec/2013. Double degree program with the Ecole Polytechnique, France.

Main publications

- (α) PLC Rodrigues and A Gramfort. “Learning summary features of time series for likelihood free inference”. Workshop on Machine Learning and the Physical Sciences at the 34th Conference on Neural Information Processing Systems (NeurIPS), Dec 2020, Online conference. Available at [arXiv:2012.02807](https://arxiv.org/abs/2012.02807).
- (β) PLC Rodrigues, M Congedo, C Jutten, “Dimensionality transcending: a method for merging BCI datasets with different dimensionalities,” IEEE Transactions on Biomedical Engineering, July, 2020, in press. Available at [hal-02905045](https://hal.archives-ouvertes.fr/hal-02905045).

- (γ) PLC Rodrigues, C Jutten, M Congedo, "Riemannian Procrustes analysis: transfer learning for brain-computer interfaces," IEEE Transactions on Biomedical Engineering, vol. 66, no. 8, pp. 2390-2401, December, 2018. Available at [hal-01971856](#).
- (δ) PLC Rodrigues and LA Baccalá, "A new algorithm for neural connectivity estimation of EEG event related potentials," 2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Milan, 2015, pp. 3787-3790. DOI: [10.1109/EMBC.2015.7319218](#).

Teaching experience

Teaching assistant, *ENSE3 (Grenoble INP)*, Course on "Signal processing" (TP, BE, and TD) to students of the 2nd year of the engineering program, 56 hours in total between 2017 and 2019. Professor responsible for the course: Pierre Granjon (GIPSA-lab).

Teaching assistant, *PHELMA (Grenoble INP)*, Course on "Numerical optimization" (TP and BE) to students of the 2nd year of the engineering program, 20 hours in total from 2017 until 2019. Professor responsible for the course: Bertrand Rivet (GIPSA-lab).

Teaching assistant, *ENSIMAG (Grenoble INP)*, Course on "Data mining and statistical data analysis" (TP and TD) to students of the 2nd year of the engineering program, 32 hours in total from 2017 until 2019. Professor responsible for the course: Jean-Baptiste Durand (Laboratoire Jean Kuntzmann).

Teaching assistant, *Escola Politécnica da Universidade de São Paulo*, Course on "Stochastic processes" to students of the 3rd year of the engineering program, 40 hours in 2013. Professor responsible for the course: Luiz A Baccalá (Universidade de São Paulo).

Other scientific activities

Reviewer for NeuroImage (impact factor: 5.90), IEEE Transactions on Biomedical Engineering (impact factor: 4.42), and IEEE Transactions on Neural Systems and Rehabilitation Engineering (impact factor: 3.34).

Regular contributions to several open-source packages:

- `pyriemann`, a Python package for manipulating covariance matrices respecting the intrinsic geometry of the manifold that they define.
- `MOABB`, a comprehensive benchmark of popular classification methods for brain-computer interface applied on an extensive list of freely available EEG datasets.
- `sbi`, a PyTorch package for simulation-based inference.

Invited talk at the "Covariance matrix advances for machine learning" day for the GdR-ISIS group from the CNRS. Online presentation in Dec/2020.

Co-creator and maintainer of 7 publicly available datasets containing experimental recordings carried out at the GIPSA-lab in Grenoble, France. Each dataset contains a link for download, a detailed documentation, and a repository with minimal working code. See [plcrodrigues.github.io/code](#) for details.

Organization of a one-day workshop on "Benchmarking BCI classification methods" with Prof. Sylvain Chevallier (Université Paris-Saclay) during the Graz BCI Conference 2019 in Austria, 20 attendees.

Presentation at the Pint of Science festival sharing to a wide audience the latest research developments on brain-computer interfaces. Grenoble, May/2017.