Mathieu Carrière

Topological Data Analysis and Machine Learning

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French and American citizenship

Education

Now: Research Scientist, *DataShape, Inria Sophia Antipolis, Biot, France.*

2018-2020: Postdoc. Research Fellow, *Rabadán Lab, Columbia University, New York, USA.*

2014-2018: Ph.D. in Computer Science, *EDSTIC (Saclay), Inria Saclay, Palaiseau, France.*
Title: On metric and statistical properties of topological descriptors for geometric data.

2011-2014: Engineering Degree, *Ecole Centrale Paris, Châtenay-Malabry, France.*

2013-2014: M.Sc. in Mathematics, Vision and Learning, *ENS Cachan, Cachan, France.*

Research impact

I work on applied Topological Data Analysis (TDA) and statistical Machine Learning (ML).

ML 1 article in NeurIPS, 1 in AISTATS, 2 in ICML, 1 in JMLR, 1 in IJCAI.

TDA 4 articles in SoCG, 1 article in FoCM, 1 article in Abel.

Applis 1 article in SGP, 1 article in Bioinformatics.

Details on the articles can be found on my website: `https://mathieucarriere.github.io/website`.

Skills

Languages French (native), English (professional TOEFL 627/677), Spanish (B1 level).

Code C++, Python (proficient), R, Matlab (prior experience).

Coding projects

- Cover complex module of the C++/Python GUDHI library: `http://gudhi.gforge.inria.fr/doc/latest/group__cover__complex.html`.
- Representations module of the C++/Python GUDHI library: `https://gudhi.inria.fr/python/3.1.0.rc1/representations.html`.
- PersLay: a neural network layer for optimizing vectorizations of persistence diagrams: `https://github.com/MathieuCarriere/perslay`.
- MREC: a fast computational tool for optimal transport and applications to genomics: `https://github.com/MathieuCarriere/mrec`.
- My other projects can be found on my GitHub account: `https://github.com/MathieuCarriere`.

Grants

- Mobility Grant (1000 euros) from the DAAD exchange program.
- Mobility Grant (1000 euros) from the STIC doctoral school.
- Best Scientific Contribution 2017 (2nd Prize – 600 euros) from the STIC doctoral school.
- Funding Support (1800 dollars) from ICML 2017.
- Thiessé de Rosemont / Schneider Prize (10,000 euros) from Chancellerie des Universités de Paris.

Teaching Activities

I am an instructor for the following courses.

2020–2021 *Foundations of Geometric Methods in Data Analysis,* CentraleSupélec, Gif-sur-Yvette, France.

I was a teaching assistant for the following courses.

2015–2017 *Topological Data Analysis,* Ecole Polytechnique, Palaiseau, France.

2016–2017 *Basics of Algorithmic and Progamming,* Ecole Polytechnique, Palaiseau, France.

Outreach Activities

I organized the following events.

2019–2020 *New-York Applied Topology Meeting Group,* Columbia University, New-York, USA, `https://psoc.c2b2.columbia.edu/index.php/new-york-applied-topology-meeting-group/`.

Nov. 2019 *Symposium on Random Matrix Theory,* Columbia University, New-York, USA, `http://mc4660-projects.s3-website-us-east-1.amazonaws.com/rmtsymp2019/index.html`.

References

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