



Olympio Hacquard

Resume

Education

- 2014 **Baccalaureat**, *Lycée Buffon, Paris, First class honors.*
- 2014-2016 **Preparatory classes**, *Lycée Henri IV, Paris, Two-year undergraduate intensive course in mathematics and physics..*
- 2016-2020 **Normalien élève from ENS Paris-Saclay**, *Cachan.*
- 2016-2018 **Bachelor in mathematics**, *ENS Paris-Saclay, Cachan, First class honors.*
- 2018-2019 **Master of mathematics, Computer Vision and Machine Learning**, *ENS Paris-Saclay, Cachan, honors.*
- 2020-2023 **PhD in mathematics**, *Université Paris-Saclay, INRIA, From Topological Features to Machine Learning Models: A Journey through Persistence Diagrams.*
Under the supervision of Gilles Blanchard and Clément Levrard

Research Experiences

- 2017 **5 months research internship**, *Under the supervision of Jean-Michel Morel and Jérémy Anger, CMLA, ENS-Paris Saclay.*
Phase retrieval methods for blur kernel estimation.
- 2018 **4 months research internship**, *Under the supervision of Fanny Delebecque and Patrick Cattiaux, IMT, Université Toulouse 3 Paul Sabatier.*
Topological interactions for collective behaviour.
- 2019 **5 months research internship**, *Under the supervision of Stéphanie Allasonnière, VitadX and CRC, Université Paris Descartes.*
Data synthesis using atlas estimation and differential geometry
- 2019-2020 **Pre-doctoral research year abroad**, *Under the supervision of Herbert Edelsbrunner and Wolfgang Polonik, IST Austria and UC Davis, Vienna and Davis.*
On some stochastic aspects of topological data analysis

Teaching experiences

- 2018 **Math examiner**, *Lycée Henri IV and lycée St-Louis.*

2020-2023 **Teaching assistant**, *Université Paris-Saclay*, Maths for economics, Python lab session, Statistical testing, Markov chains, Practice orals.
Bachelor and Master level

Publications

- 2019 **Topological interactions for collective dynamics, a study of a (not so) simple model**, *P. Cattiaux, F. Delebecque, O. Hacquard*, Preprint.
- 2022 **Topologically penalized regression on manifolds**, *O. Hacquard, K. Balasubramanian, G. Blanchard, C. Levrard, W. Polonik*, JMLR.
- 2023 **Statistical learning on measures, an application to persistence diagrams**, *O. Hacquard, G. Blanchard, C. Levrard*, Preprint.
- 2023 **Euler characteristic tools for topological data analysis**, *O. Hacquard, V. Lebovici*, Preprint.

Communications

- October 2020 **Regression on a Laplace eigenbasis using a topological penalty**, *Datashape team seminar*, Remote.
- April 2021 **Diffeomorphic atlas estimation for bladder cancer prediction**, *UC Davis working group*, Remote.
- June 2021 **Regression on a Laplace eigenbasis using a topological penalty**, *JDS 2021*, Remote.
- October 2021 **Regression on a Laplace eigenbasis using a topological penalty**, *Congrès des jeunes chercheurs en mathématiques appliquées*, Ecole Polytechnique.
- December 2021 **Topologically penalized regression on manifolds**, *Forum des jeunes mathématicien.ne.s*, Université de Franche-Comté.
- January 2022 **Topologically penalized regression on manifolds**, *Datashape team seminar*, Laboratoire de mathématiques d'Orsay.
- January 2022 **Topologically penalized regression on manifolds**, *IRMAR statistics seminar*, Université Rennes II.
- April 2022 **Topologically penalized regression on manifolds**, *Young statisticians meeting*, Porquerolles.
- August 2022 **Statistical learning on measures (poster)**, *Stat Maths appli workshop*, Frejus.
- March 2023 **Statistical learning on measures, an application to persistence diagrams**, *Datashape team seminar*, LMO.
- April 2023 **Statistical learning on measures (poster)**, *Statlearn workshop*, Montpellier.
- May 2023 **Topologically penalized regression on manifolds (poster)**, *ICLR 2023*, Kigali, *Journal to conference track*.
- June 2023 **Euler tools in topological data analysis**, *APTICAL team seminar*, Laboratoire d'informatique de Grenoble.
- July 2023 **Classification of measures, an application to persistence diagrams**, *JDS 2023*, Université Libre de Bruxelles.

Distinctions

September 2021 **Mathematics and industry challenge**, with *E. Lasalle* and *V. Lebovici*, Pedestrians trajectory reconstruction, Eurecam company.
1st place

Visits

April-July 2022 **UC Davis**, *W. Polonik* and *K. Balasubramanian*.

Outreach activities

2018 **Cordées de la réussite**, *Scientifical outreach for high-school students*, Nim game.
2020-2022 **Maths en Jeans**, *Research initiation weekly workshop for middle-school students*.

Languages

French Native language

English Level C1+

Cambridge Advanced 199/210

Russian Level B1

Computer skills

Python, \LaTeX , GitHub

Hobbies

Music Piano, harmonica, guitar and choir singing

Cinema Extra in several movies and TV shows