MARIA LAURA BATTAGLIOLA

@ mlbattagliola@gmail.com +52 5574571300
https://laurabattagliola.com github.com/LauraBattagliola
ORCID: 0009-0008-0278-233X

EDUCATION

University of Copenhagen
Copenhagen, Denmark
Awarded in 2021

Ph.D. in Statistics
Doctoral Thesis: *Quantile Regression for Scalar and Functional Clustered Data and Data Analysis with Phase-Amplitude Separation*
Supervisors: Prof. Helle Sørensen and Prof. Ana-Maria Staicu (North Carolina State University)

Politecnico di Milano
Milan, Italy
Awarded in 2017

M.Sc. in Mathematical Engineering, Specialization in Applied Statistics
Master's Thesis: *A Nonparametric Local Method for Inference on Functional Time Series and Its Application to Bike Sharing Data*
Supervisors: Prof. Simone Vantini, Prof. Alessia Pini, Prof. Helle Sørensen (University of Copenhagen)
Grade: 108/110

Politecnico di Milano
Milan, Italy
Awarded in 2014

B.Sc. in Mathematical Engineering

ACADEMIC POSITIONS

Instituto Tecnológico Autónomo de México (ITAM)
Mexico City, Mexico
Aug 1, 2024 – Present

Assistant Professor C (Tenure-Track)
Department of Statistics

École Polytechnique Fédérale de Lausanne (EPFL)
Lausanne, Switzerland
Oct 1, 2021 – May 31, 2024

Postdoctoral Researcher
Statistical Data Science Laboratory, Department of Mathematics

University of Copenhagen
Copenhagen, Denmark
Aug 1, 2021 – Aug 31, 2021

Research Assistant
Section of Statistics and Probability Theory, Department of Mathematical Sciences

RESEARCH VISITS

Vrije Universiteit Amsterdam
Amsterdam, Netherlands
Feb 2026

Visiting Researcher
Guest of Prof. Jan O. Bauer, Department of Econometrics and Data Science

University of Copenhagen
Copenhagen, Denmark
Sep 2023

Visiting Researcher
Guest of Prof. Martin Bladt, Department of Mathematical Sciences

Columbia University
New York, NY, USA
Oct 2019 – Dec 2019

Visiting Researcher
Ph.D. visiting student under Prof. Todd R. Ogden, Department of Biostatistics

North Carolina State University
Raleigh, NC, USA
May 2018, Oct 2018

Visiting Researcher
Ph.D. visiting student under Prof. Ana-Maria Staicu, Department of Statistics

University of Copenhagen
Copenhagen, Denmark
Mar 2017 – Jun 2017

Visiting Researcher
Master's visiting student under Prof. Helle Sørensen, Department of Mathematical Sciences

PUBLICATIONS

Published or Accepted

- M. L. Battagliola and M. Bladt.
  Extremile Scalar-on-Function Regression.
  Preprint, 2025. Available at `https://arxiv.org/abs/2405.20817`.
  Accepted by *Canadian Journal of Statistics*.
- M. L. Battagliola and S. C. Olhede.
  Modeling Spatio-Temporal Transport: From Rigid Advection to Realistic Dynamics.
  Environmetrics, Volume 37, Pages e70079, 2026.
  `http://dx.doi.org/10.1002/env.70079`
- M. L. Battagliola, H. Sørensen, A. Tolver, and A.-M. Staicu.
  Quantile Regression for Longitudinal Functional Data with Application to Feed Intake of Lactating Sows.
  Journal of Agricultural, Biological and Environmental Statistics, Volume 30, Pages 211–230, 2025.
  `https://doi.org/10.1007/s13253-024-00601-5`
- M. L. Battagliola, H. Sørensen, A. Tolver, and A.-M. Staicu.
  A Bias-Adjusted Estimator in Quantile Regression for Clustered Data.
  Econometrics and Statistics, Volume 23, Pages 165–186, 2022.
  `https://doi.org/10.1016/j.ecosta.2021.07.003`

Submitted

- M. L. Battagliola and O. Peralta
  Optimization-Free Concentrated Matrix-Exponentials
  Preprint, 2026. Available at `https://arxiv.org/abs/2604.26304`.
  Submitted to *BIT Numerical Mathematics*.
- H. Albrecher, M. L. Battagliola, M. Bladt, A. J. A. Müller, and T. Swierczynski.
  Spatio-Temporal Non-Stationarity of Flood Risk in the European Alps over the Last 1,450 Years.
  Preprint, 2026. Available at `https://egusphere.copernicus.org/preprints/2026/egusphere-2026-1016/`.
  Submitted to *Natural Hazards and Earth System Sciences*.
- M. L. Battagliola, L. J. Benoit, S. Canetta, S. Zhang, and R. T. Ogden.
  Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders
  Preprint, 2025. Available at `http://arxiv.org/abs/2512.18760`.
  Submitted to *JRSS C*.
- M. L. Battagliola and J. O. Bauer.
  Localized Functional Principal Component Analysis based on Covariance Structure.
  Preprint, 2025. Available at `https://arxiv.org/abs/2506.02836`.
  Submitted to *Statistics and Computing*.
- Y. Fahmy, M. L. Battagliola, and J. Guinness
  Estimating Velocity Vector Fields of Atmospheric Winds using Transport Gaussian Processes.
  Preprint, 2025. Available at `https://arxiv.org/abs/2505.10898`.
  Submitted to *Annals of Applied Statistics*.

In Progress

- M. L. Battagliola and J. Yslas.
  Mixed Poisson Models with Time Dependence (Expected submission: May 2026).
- M. L. Battagliola and M. Bladt.
  General Sampling of Copulas with Dirichlet Processes Mixture Models (Expected submission: June 2026).
- M. L. Battagliola, S. Elipot, J. P. Grainger, and S. C. Olhede.
  Isotropic Spectral Estimation Applied to Oceanic Currents Velocities (Expected submission: June 2026).
- M. L. Battagliola, O. Peralta, and J. Yslas.
  Probabilistic Learning for the Thinning of Discrete Phase-Type Counts.
- M. L. Battagliola and J. Yslas.
  Unsupervised Feature Learning and Anomaly Detection in Functional Data.
- M. L. Battagliola, A. Pini, and H. Sørensen
  Interval-wise Testing for Functional Time Series.
- M. L. Battagliola, O. Peralta, L. Rojas-Nandayapa, and J. Yslas.
  Algorithmic Inference for Interval Phase-Type Distributions.
- M. L. Battagliola and J. O. Bauer.
  Fast Inference for High-Dimensional Covariance Splits via Subsampling.

Software Contributions

Consistent with my commitment to Open Science, all research submissions are accompanied by documented code. My GitHub portfolio (`github.com/LauraBattagliola`) features 5 public repositories, including the R packages **ExtrFunReg**, **LFPCA**, and **fQGAM**.

TEACHING EXPERIENCE

Graduate courses are indicated with *.

Lecturer

Instituto Tecnológico Autónomo de México — Lecturing, tutoring and grading

2025-2026 *Simulation*
2024-2025 *Applied Statistics III - Multivariate Methods* (2 times)
2024-2026 *Applied Statistics II - Linear Models* (4 times)

Teaching Assistant

École Polytechnique Fédérale de Lausanne — Tutoring and grading

2023-2024 *Probability and Statistics II*
2022-2023 *Statistics for Data Science**
2021-2022 *Linear Models*

University of Copenhagen — Lecturing, tutoring and grading

2018-2021 *Regression** (4 times)
2019-2020 *Graphical Models**

SUPERVISION AND MENTORING

Students of whom I am or was main supervisor are indicated with *. The concluded projects are indicated with †

Ph.D. Students

- **Alaric Müller**† (University of Lausanne) on paper *Spatio-Temporal Non-Stationarity of Flood Risk in the European Alps over the Last 1,450 Years*. .
- **Youssef Fahmy**† (Cornell University) on paper *Estimating Velocity Vector Fields Using Transport Gaussian Processes*.

Master's Students

- **Sonia Mancera***,† (ITAM) on thesis *Detection of the "Hit the Wall" Phenomenon in Marathon Records via Change Point Analysis*.
- **Shizhe Zhang**† (Columbia University) on paper *Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders* .
- **Zineb Agnaou***,† (EPFL) on semester project *Stock Trading: Prediction of Auction Volumes*.
- **Qayis Beji***,† (EPFL) on thesis *Spline-Based Estimation for Spectra of Isotropic Random Fields*..

Bachelor's Students

- **Lars Daniel Johansson Niño*** (ITAM) on thesis *Efficient Bayesian Inference on Mixed Effects Functional-on-Scalar Models*.
- **Armando Sanchez Lopez*** (ITAM) on thesis *Simulation of Space and Space-Time Processes using Bayesian Nonparametric Methods*.
- **Guillermo Arana*** (ITAM) on thesis *Supervised and Unsupervised Classification Methods for Functional Data*.
- **Raymundo Luna Peña***,† (ITAM) on thesis *Analysis of the Yearly Evolution of PM2.5 over the Continental US*.
- **Monika Stoilova***,† (EPFL) on semester project *Bootstrap Methods for Time Series*.
- **Valentin Piquerez***,† (EPFL) on semester project *Exploring Bootstrap Methods for Stationary Time Series*.
- **Salya Diallo***,† (EPFL) on semester project *Exploring Representation and Analysis of Functional Data*.

INTERNATIONAL COLLABORATIONS

- Prof. Hansjörg Albrecher, University of Lausanne and Swiss Finance Institute, Switzerland
- Prof. Jan O. Bauer, Vrije Universiteit Amsterdam, Netherlands
- Prof. Martin Bladt, University of Copenhagen, Denmark
- Prof. Sarah Canetta, Columbia University, USA
- Prof. Shane Elipot, University of Miami, USA
- Dr. Jake Grainger, EPFL, Switzerland
- Prof. Joseph Guinness, Washington University in St. Louis, USA
- Prof. Todd R. Ogden, Columbia University, USA
- Prof. Sofia C. Olhede, EPFL, Switzerland
- Prof. Oscar Peralta, University of Copenhagen, Denmark
- Prof. Alessia Pini, Università Cattolica del Sacro Cuore of Milano, Italy
- Prof. Helle Sørensen, University of Copenhagen, Denmark
- Prof. Ana-Maria Staicu, North Carolina State University, USA
- Prof. Jorge Yslas, University of Liverpool, UK

PRESENTATIONS

- *Functional Data Analysis for Learning and Memory Dynamics in Cognitive Disorders.* Invited talk at IIMAS, Mexico City, March 2026.
- *Predicting Extreme Weather Conditions via Extremile Scalar-on-Function Regression.* Invited talk to the Department of Econometrics and Data Science at Vrije Universiteit Amsterdam, Amsterdam, February 2026.
- *An Integrated Frameworks for Simulating and Estimating Complex Spatio-Temporal Transport.* Invited talk at UNAM, Mexico City, February 2026.
- *Extremile Scalar-on-Function Regression with Application to Climate Scenarios.* Invited presentation at the Institute for Financial and Actuarial Mathematics, University of Liverpool, Liverpool, October 2025.
- *Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders.* Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, September 2025.
- *Localized Functional Principal Component Analysis and Identification of Compactly-Supported Functional Processes.* Invited talk at CIMAT, Guanajuato, February 2025.
- *Extremile Scalar-on-Function Regression with Application to Climate Scenarios.* Invited talk at CMStatistics 2024, London, December 2024.
- *Flexible and Efficient Simulation of Spatio-Temporal Processes with Advection.* Contributed talk at Joint Statistical Meetings, Toronto, August 2023.
- *Flexible and Efficient Simulation of Spatio-Temporal Processes with Advection.* Invited talk at CNRS-Imperial Workshop on Waves and Imaging, London, March 2023.
- *Quantile Regression for Longitudinal Functional Data with Application to Feed Intake of Lactating Sows.* Invited talk at CMStatistics 2022, London, December 2022.
- *Modeling Learning Curves of Mice.* Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, December 2019.
- *A Bias-Adjusted Estimator in Quantile Regression for Clustered Data.* Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, October 2019.
- *Quantile Regression for Longitudinal Data.* Presentation to the Section of Statistics and Probability at the University of Copenhagen, November 2018.
- *Quantile Regression for Longitudinal Data.* Poster session at Data Science Summer School, Paris, June 2018.

COORDINATION OF ACADEMIC VISITS

- Prof. Jan O. Bauer (ITAM, November 2024)
- Dr. Osvaldo Angtuncio (ITAM, October 2025)
- Prof. Jorge Yslas (ITAM, November 2025)

AWARDS, GRANTS AND FUNDING

École Polytechnique Fédérale de Lausanne

Lausanne, Switzerland

2023

Bernoulli Center for Fundamental Studies Grant

Amount: CHF 23,000
Purpose: Funding for the *Discrete Random Structures Workshop* (https://drs23.epfl.ch/workshop-on-discrete-random-structures/)
Role: Organizer with Dr. Anda Skeja (Uppsala University)

University of Copenhagen

Copenhagen, Denmark

2017 – 2020

Ph.D. Research Fellowship

Funding Agency: The Danish Council for Independent Research, Natural Sciences (FNU)
Parent Grant: *Quantile regression for longitudinal functional data*
(Total Grant: DKK 2,177,699. PI: Prof. Helle Sørensen)
Role: Awarded the competitive, fully funded 3-year doctoral position attached to this national grant.

REVIEWER FOR JOURNALS

Journal of Statistical Planning and Inference | Canadian Journal of Statistics | Biostatistics | Scandinavian Journal of Statistics | Journal of Agricultural, Biological and Environmental Statistics | Journal of the Royal Statistical Society: Series C

LANGUAGES

- **Danish:** Elementary Proficiency
- **English:** Full Professional Proficiency
- **Italian:** Native Speaker
- **Spanish:** Professional Competence
- **French:** Elementary Proficiency

SOFTWARE SKILLS

R | Python | C/C++ | Matlab