# Renato Berlinghieri

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## Education

2021 – Present **Massachusetts Institute of Technology** – Cambridge, MA
PhD in Electrical Engineering and Computer Science
Advisor: Tamara Broderick.
Current coursework: deep learning, probability theory, probabilistic graphical models, non-asymptotic statistics, statistical reinforcement learning and decision making.

2019 – 2021 **Bocconi University** – Milan, Italy
MSc in Data Science and Business Analytics
Supervisors: Igor Prünster and Antonio Lijoi.
*GPA: 30/30 – Final grade: 110/110 cum laude (graduated rank 1 of my class).*
Main coursework: statistical learning, Bayesian inference, optimization, stochastic processes, deep learning, statistical physics.

2016 – 2019 **Bocconi University** – Milan, Italy
BSc in Economics, Management and Computer Science
*GPA: 30/30 – Final grade: 110/110 cum laude (graduated rank 1 of my class).*
Main coursework: statistics, algorithms, machine learning, programming (Python, R, Julia).
Study abroad at UC San Diego (Winter 2019). Major in mathematics. *Term GPA: 4.0/4.0.*

## Experience

2021 – Present **MIT Laboratory for Information & Decision Systems (LIDS)**
*Research assistant. Advisor: Tamara Broderick.*
Developing Bayesian methodology for modeling, inference, and evaluation of applied and theoretical problems. I am currently focused on building a physics-informed Gaussian Process model to infer ocean currents from observations of the trajectories of surface drifter buoys.

2020 – 2021 **BayesLab, Bocconi Institute for Data Science and Analytics (BIDSA)**
*Visiting student research assistant. Mentors: Igor Prünster and Antonio Lijoi.*
Studying Bayesian nonparametric models using completely random measures, I investigated a framework for measuring model dependence based on optimal transport/Wasserstein distance.

2018 – 2020 **Bocconi University Department of decision sciences**
*Intern research assistant. Supervisor: Massimo Marinacci.*
Developed methodology to study neuroeconomics using statistical models for decision making and simulations (in *Julia* and *Python*).

2017 – 2018 **Bocconi University IGIER Research center**
*Undergraduate research assistant.*
Developed data scraping and NLP routines for economic research in *Python*. In particular, analysis of sentiment towards immigration and racial discrimination in the US at the beginning of 20th century.

## Publications & Preprints

2023 **"Gaussian processes at the Helm (holtz): A more fluid model for ocean currents."** ArXiv preprint arXiv:2302.10364 & 2022 NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems. (Berlinghieri, R.; Trippe, B. L.; Burt, D. R.; Giordano, R.; Srinivasan, K.; Özgökmen, T.; Junfei, X.; Broderick, T.)

**"Measuring utility with diffusion models."** Under review. (Berlinghieri, R.; Krajbich, I.; Maccheroni, F.; Marinacci, M.; Pirazzini, M.)

2022 **"Subspace diffusion generative models."** In *European Conference on Computer Vision 2022.* (Jing, B.*; Corso, G.*; Berlinghieri, R.; Jaakkola, T.)

## Awards and scholarships

2023 28th Annual LIDS Student Conference best presentation award for the Optimization and Algorithms session.
2022 Complementary travel grant for NeurIPS 2022 (*provided by NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems' organizers*)
2022 ISBA best poster award for the category BayesComp/j-ISBA
2022 BAYSM Microsoft award for best contributed talk
2019 – 2021 Bocconi graduate merit award
2016 30th International Championship for Mathematical and Logical games.
*Category L2: 2nd national place (Milan, May), 6th international place (Paris, August)*
2014 1st national place at Mathematical Modelling competition (Perugia, category intermediate).

## Talks, poster sessions and conference presentations

- 28th Annual LIDS Student Conference. Cambridge MA, February 2023. *"Gaussian processes at the Helm(holtz): A more fluid model for ocean currents."* [Contributed talk]
- NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems. New Orleans LA, December 2022. *"Gaussian processes at the Helm(holtz): A better way to model ocean currents."* [Contributed talk]
- 13th International Conference on Bayesian Nonparametrics (BNP13). Puerto Varas, Chile, October 2022. *"Gaussian processes at the Helm(holtz): A better way to model ocean currents."* [Contributed talk]
- World Meeting of the International Society for Bayesian Analysis (ISBA 2022). Montreal, Canada, July 2022. *"Gaussian processes at the Helm(holtz): A better way to model ocean currents."* [Poster session]
- Bayesian Young Statisticians Meeting (BAYSM 2022). Montreal, Canada, June 2022. *"Gaussian processes at the Helm(holtz): A better way to model ocean currents."* [Contributed talk]
- MIT Statistics and Data Science Conference (SDSCon), Cambridge MA, April 2022. *"Gaussian processes at the Helm(holtz): A better way to model ocean currents."*

## Leadership, mentorship, and extra-curricular activities

- *Co-President*, EECS Graduate Student Association, MIT.
- Board member of MITaly, the Italian association at MIT.
- MIT Graduate application assistant program (GAAP) *mentor* - this program is designed for providing assistance during grad school application to underrepresented groups.
- Mentor and former mentee of *LeadTheFuture*, a leading mentorship non-profit organization for Italian students in STEM, with acceptance rate below 20%.
- Former President and co-founder of *Computational Society for Bocconi Students* – the first student society at Bocconi University interested in Computer Science and Statistics.
- Former course representative, student Ambassador, and member of the *MSc in Data Science committee* at Bocconi University - active participation in planning courses' structure and mentoring activities for incoming BSc and MSc students.
- Junior tutor for nation-wide *Olympiads of mathematics workshops*. Main activities: teaching algebra, combinatorics, and number theory lectures. Select exercises and organise competitions' simulations.
- *Interests:* running, swimming, playing basketball, soccer, amateur cooking, playing piano, memes.

## Skills

- *Softwares and programming languages*: Python (proficient), R (familiar), Julia (familiar), C/C++ (basic), LaTeX, Git.
- *Theory*: Bayesian modeling, machine learning, probability theory, stochastic processes.
- *Languages*: English (fluent), Italian (native), Spanish (basic).