

# 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

“Gaussian processes at the Helm(holtz): A better way to model ocean currents.” In *2022 NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems*. (Berlinghieri, R.; Broderick, T.; Giordano, R. J.; Ozgokmen, T.; Srinivasan, K.; Trippe, B.L.; Xia, J.)

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

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

## Awards and scholarships

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|-------------|--|
| 2023        | <a href="#">28th Annual LIDS Student Conference</a> best presentation award for the Optimization and Algorithms session.   |
| 2022        | Complementary travel grant for NeurIPS 2022 ( <i>provided by NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems' organizers</i> )          |
| 2022        | <a href="#">ISBA</a> best poster award for the category BayesComp/j-ISBA   |
| 2022        | <a href="#">BAYSM</a> Microsoft award for best contributed talk  |
| 2019 – 2021 | Bocconi graduate <a href="#">merit award</a>   |
| 2016        | <a href="#">30th International Championship for Mathematical and Logical games</a> .<br><i>Category L2: 2nd national place (Milan, May), 6th international place (Paris, August)</i> |
| 2014        | 1st national place at <a href="#">Mathematical Modelling competition</a> (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),  $\text{\LaTeX}$ , Git.
- *Theory*: Bayesian modeling, machine learning, probability theory, stochastic processes.
- *Languages*: English (fluent), Italian (native), Spanish (basic).