

# 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. Minor in mathematics
- 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).
- 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).  
Study abroad at UC San Diego (Winter 2019). Major in mathematics. Term GPA: 4.0/4.0.

## Experience

- 2023 – Summer    **Apple Inc.** - Seattle, WA  
*Machine Learning Research Intern, Health AI*
- 2020 – 2021    **BayesLab, Bocconi Institute for Data Science and Analytics (BIDSA)** - Milan, Italy  
*Visiting Student Research Assistant*
- 2018 – Summer    **Morgan Stanley** - London, UK  
*Software Engineering Intern*

## Publications & Preprints

- 2025    “**Lipschitz-Driven Inference: Bias-corrected Confidence Intervals for Spatial Linear Models**”. Preprint arXiv 2502.06067. (Burt, D. R.\*; Berlinghieri, R.\*; Bates, S., Broderick, T., \* : equal contribution)
- “**Multi-marginal Schrödinger Bridges with Iterative Reference Refinement**”. In *International Conference on Artificial Intelligence and Statistics (AISTATS 2025)* [Oral, top 2% of submissions]. (Shen, Y.\*; Berlinghieri, R.\*; Broderick, T., \* : equal contribution)
- 2024    “**Can individuals use smoke forecasts for personal decision-making? A call to action**”. Preprint arXiv:2409.05866. (Berlinghieri, R.\*; Burt, D. R.\*; Giani, P.; Fiore, A.; Broderick, T.)
- 2023    “**Gaussian processes at the Helm (holtz): A more fluid model for ocean currents**”. In *International Conference on Machine Learning 2023*. (Berlinghieri, R.; Trippe, B. L.; Burt, D. R.; Giordano, R.; Srinivasan, K.; Özgökmen, T.; Junfei, X.; Broderick, T.)
- “**Measuring utility with diffusion models**”. *Science Advances* 9 (34), 2023. (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.)

## Workshop Publications

- 2025 “**Beyond Schrödinger Bridges: A Least-Squares Approach for Learning Stochastic Dynamics with Unknown Volatility**”. In *In ICLR 2025 Frontiers in Probabilistic Inference Workshop and ICLR 2025 Learning Meaningful Representation of Life Workshop* (Berlinghieri, R.\*; Shen, Y.\*; Broderick, T.)
- 2024 “**Learning a vector field from snapshots of unidentified particles rather than particle trajectories**”. In *ICLR 2024 Workshop on AI4DifferentialEquations in Science*. (Shen, Y.\*; Berlinghieri, R.\*; Broderick, T.)
- 2023 “**Gaussian processes at the Helm(holtz): A more fluid model for ocean currents**”. In *ICLR 2023 Workshop on Physics for Machine Learning*. (Berlinghieri, R.; Trippe, B. L.; Burt, D. R.; Giordano, R.; Srinivasan, K.; Özgökmen, T.; Junfei, X.; Broderick, T.)
- 2022 “**Gaussian processes at the Helm(holtz): A better way to model ocean currents**”. In *NeurIPS 2022 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.)

## Awards and scholarships

- 2024 [ISBA World Meeting](#) travel award  
[AGU Annual Meeting 2023](#) outstanding student presentation award (OSPA)
- 2023 [Bayesian Nonparametrics Networking Workshop 2023](#) travel award  
[EnviBayes Workshop on Complex Enviromental Data 2023](#) travel award  
[36th New England Statistics Symposium](#) best student poster award  
[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*)  
[ISBA world meeting](#) best poster award for the category BayesComp/j-ISBA  
[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

- [8th International Conference on Econometrics and Statistics](#). Tokyo, Japan, August 2025. “*Multimarginal Schrödinger Bridges with Iterative Reference Refinement*.” [Invited Talk]
- [28th International Conference on Artificial Intelligence and Statistics \(AISTATS\)](#). Phuket, Thailand, May 2025. “*Multimarginal Schrödinger Bridges with Iterative Reference Refinement*.” [Oral presentation]
- [7th Symposium on Advances of Approximate Bayesian Inference \(AABI\)](#). Singapore, April 2025. “*Beyond Schrödinger Bridges: A Least-Squares Approach for Learning Stochastic Dynamics with Unknown Volatility*.” [Poster]
- [Learning Meaningful Representations of Life \(LMRL\) Workshop at ICLR 2025](#). Singapore, April 2025. “*Beyond Schrödinger Bridges: A Least-Squares Approach for Learning Stochastic Dynamics with Unknown Volatility*.” [Poster]
- [Frontiers in Probabilistic Inference: Sampling Meets Learning Workshop at ICLR 2025](#). Singapore, April 2025. “*Beyond Schrödinger Bridges: A Least-Squares Approach for Learning Stochastic Dynamics with Unknown Volatility*.” [Poster]
- [International Conference on Recent Developments in the Techniques of Bayesian Paradigm](#). Varanasi, India, January 2025. “*Multimarginal Schrödinger Bridges with Iterative Reference Refinement*.” [Invited Talk]
- [Yale FDS Conference: Recent Advances and Future Directions for Sampling](#). New Haven, September 2024. “*Multimarginal Schrödinger Bridges with Iterative Reference Refinement*.” [Poster]
- Joint Statistical Meetings of American Statistical Association ([JSM 2024](#)). Portland OR. August 2024. “*Multimarginal Schrödinger Bridges with Iterative Reference Refinement*.” [Contributed talk]

- World Meeting of the International Society for Bayesian Analysis ([ISBA 2024](#)). Venice. July 2024. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Contributed talk]
- Bayesian Young Statisticians Meeting ([BAYSM 2024](#)). Venice. June 2024. “Multi-marginal Schrödinger Bridges with Iterative Reference Refinement.” [Poster]
- [Satellite workshop to ISBA world meeting](#). Lugano. June 2024. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Poster]
- [HAQAST Massachusetts](#). Cambridge, MA. June 2024. “Can individuals use smoke forecasts for personal decision-making? A call to action” [Poster]
- [ICLR 2024 Workshop on AI4DifferentialEquations in Science](#). Vienna. May 2024. “Multi-marginal Schrödinger Bridges with Iterative Reference Refinement.” [Poster]
- [University of Cambridge AI4ER Seminar Series](#). January 2024. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [**Invited talk**]
- [AGU Annual Meeting](#). San Francisco, CA. December 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [**Invited talk @ physics-informed machine learning session**]
- [Bayesian Nonparametrics Networking Workshop 2023](#). Melbourne, December 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Poster]
- [EnviBayes workshop on complex enviromental data 2023](#). Fort Collins CO, September 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Poster]
- [International Conference on Machine Learning](#). Honolulu HI, July 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Poster]
- [NESS 2023](#). Boston MA, June 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [Contributed Talk, Poster]
- [MIT Machine Learning Advances Symposium](#). Cambridge MA, May 2023. “Gaussian processes at the Helm(holtz): A more fluid model for ocean currents.” [**Spotlight talk**]
- [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

- Program Chair and Organizer of [NeurIPS 2024 Workshop on Bayesian Decision-making and Uncertainty](#).
- Co-organizer of the [Virtual Seminar Series on Bayesian Decision-making and Uncertainty](#).
- Former *Co-President*, [EECS Graduate Student Association](#), MIT (2023).
- Organizer of reading group "*Optimal Transport for Everyone*" at MIT (2023).
- 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.

## Skills

- *Softwares and programming languages*: Python (proficient), R (familiar), Julia (familiar), C/C++ (basic),  $\text{\LaTeX}$ , Git.
- *Research Interests*: AI for Science, Spatiotemporal modeling, Gaussian Processes, Optimal Transport, Bayesian modeling, Uncertainty Quantification, Generative models.
- *Languages*: English (fluent), Italian (native), Spanish (basic).