Luca Masserano

Email: lmassera@andrew.cmu.edu; masserano.luca@gmail.com   **Website:** https://lucamasserano.github.io/

EDUCATION

Joint PhD in Statistics and Machine Learning, Carnegie Mellon University   Aug 2020 – May 2025 (Expected)
Advisor: Ann B. Lee. Co-mentor: Barnabás Póczos. CMU Presidential Fellow for the Statistics Department (2024).

MSc in Data Science (Statistics), Bocconi University   Sep 2018 – Jul 2020
GPA: 29.3/30, Final Grade: 110/110 *Summa cum laude.*

BSc in Quantitative Methods for Economics, Università Cattolica del Sacro Cuore   Sep 2015 – Sep 2018
GPA: 29.2/30, Final Grade: 110/110 *Summa cum laude.*

EXPERIENCE

Doctoral Researcher, Carnegie Mellon University   Aug 2020 – Present

- **Trustworthy Scientific Inference with Generative Models:** My PhD research focuses on equipping modern generative models with strong statistical guarantees, enabling their use to draw trustworthy and precise scientific conclusions. To do so, I combine classical statistical theory, modern machine learning methodology, and real-world scientific applications. To achieve a broad impact, we collaborate with domain scientists from several institutions (e.g., CERN and NASA).

Machine Learning Scientist Intern, Amazon (AWS AI Labs)   Jun – Aug 2022/2023/2024

- **Project (2024):** Enhancing Foundation Models for Time Series Forecasting via Wavelet-based Tokenization.
  Offered to return full-time in 2025, conditional on available headcount.

- **Project (2023):** End-to-end Learning of Mixed-Integer Programs via Stochastic Perturbations.
  Offered to return for another internship in 2024.

- **Project (2022):** Adaptive Sampling for Probabilistic Forecasting Under Distribution Shifts.
  Offered to return for another internship in 2023.

Quantitative Analyst Intern, BlackRock   Jul 2019 – Sep 2019

- **Project:** Developed and tested a research platform to analyze the effect of modifications in a suite of equity risk models.
  Offered to return full-time in 2020.

Data Scientist Intern, SmartFAB   Mar 2019 – May 2019

- **Project:** Deployed ML algorithms to improve real-time detection of damaged semiconductors in a production plant.

SELECTED PUBLICATIONS AND PREPRINTS

CONFERENCES

LM, A. Ansari, B. Han, X. Zhang, C. Faloutsos, M. Mahoney, A. Wilson, S. Rangapuram, D. Maddix, Y. Wang. *"Enhancing Foundation Models for Time Series Forecasting via Wavelet-based Tokenization"*. Under Review, ICML (2025)

LM, A. Shen, T. Dorigo, M. Doro, R. Izbicki, A. Lee. *"Classification under Nuisance Parameters and Generalized Label Shift in Likelihood-Free Inference"*. ICML (2024), Best Poster Award at NeurIPS ML4PS Workshop (2023)

LM, T. Dorigo, R. Izbicki, M. Kuusela, A. Lee. *"Simulation-Based Inference with Waldo: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators for Inverse Problems"*. AISTATS (2023), Best Paper Award from ASA

LM, S. Rangapuram, S. Kapoor, R. Nirwan, Y. Park, M. Bohlke-Schneider. *"Adaptive Sampling for Probabilistic Forecasting under Distribution Shifts"*. NeurIPS DistShift Workshop (2022)

JOURNALS

J. Carzon⋆, **LM**⋆, A. Ghosh, A. Lee, D. Whiteson. *"Improving on Likelihood-ratio-based Parameter Constraints by Leveraging Prior Distributions with Frequentist-Bayes Procedures"* (⋆equal contribution). In submission, Physical Review Letters (2025)

LM⋆, J. Carzon⋆, A. Shen⋆, A. Ribeiro, T. Dorigo, M. Doro, J. Speagle, R. Izbicki, A. Lee. *"Valid Scientific Inference from Generative Models"* (⋆equal contribution). Under review, Nature Communications (2025)

N. Dalmasso⋆, **LM**⋆, D. Zhao, R. Izbicki, A. Lee. *"Likelihood-Free Frequentist Inference: Bridging Classical Statistics and Machine Learning for Simulation-Based Inference"* (⋆equal contribution). Electronic Journal of Statistics (2024)

SKILLS

Programming: Python (preferred), R. Developer/maintainer of the `lf2i` package for likelihood-free inference.

Libraries & Tools: NumPy, SciPy, Pandas, Matplotlib, Scikit-learn, PyTorch, Bash, LaTeX, Git, Azure, AWS.

Spoken Languages: Italian (native), English (fluent), Spanish (intermediate).

SERVICE

Teaching Assistant at Carnegie Mellon University

- Computing TA: helping PhD students and faculty with research-related computing needs.
- STAT 36401 - Modern Regression (Head TA in Fall 2021).
- STAT 36462 - Statistical Machine Learning.

Reviewer: NeurIPS 2024.

AWARDS

Presidential Fellow for the Statistics Department   Jan 2024
Awarded only to one student every year in recognition of research, contributions to pedagogy, and department citizenship.

SIAM Student Travel Award   Jan 2024
Awarded a travel grant through a competitive process to take part to the 2024 SIAM Uncertainty Quantification conference.

Best Poster Award, NeurIPS, Machine Learning for Physical Sciences Workshop   Dec 2023
Classification under Nuisance Parameters and Generalized Label Shift in Likelihood-Free Inference.

Best Paper Award, American Statistical Association (ASA), Section on Physical Sciences Jan 2023
Simulation-based Inference with WALDO: Confidence Regions from Prediction Algorithms and Posterior Estimators.

EXTRACURRICULAR ACTIVITIES

Professional Soccer Player, U.S. Ancona, Taranto F.C., Fidelis Andria
I played as goalkeeper from 2012 to 2015 in different professional leagues in Italy. I stopped due to an injury.