

Luca Masserano

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EDUCATION

Joint PhD in Statistics and Machine Learning, Carnegie Mellon University Aug 2020 – May 2025
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 – May 2025

- **Trustworthy Scientific Inference with Machine Learning:** My research focuses on equipping regression, classification, and generative models with strong statistical guarantees, enabling their use to draw trustworthy and precise scientific conclusions. To do so, I combine classical statistics, modern ML 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 Web Services (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.

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*”. **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, R. Izbicki, A. Lee, D. Whiteson. “*On Improving Statistical Power by Leveraging Prior Distributions for Searches and Measurements in Particle Physics*” (*equal contribution). **Under Review (2025)**

LM*, J. Carzon*, A. Shen*, A. Ribeiro, J. Ingram, T. Dorigo, M. Doro, J. Speagle, R. Izbicki, A. Lee. “*Trustworthy Scientific Inference with Generative Models*” (*equal contribution). **Under Review (2025)**

T. Dorigo, M. Aehle, C. Arcaro, M. Awais, F. Bergamaschi, J. Donini, M. Doro, N. Gauger, R. Izbicki, J. Kieseler, A. Lee, **LM**, et al. “*Toward the End-To-End Optimization of the SWGO Array Layout*”. **Journal of Nuclear Physics B (2025)**

T. Dorigo, M. Doro, M. Aehle, N. Gauger, M. Awais, R. Izbicki, J. Kieseler, A. Lee, **LM**, et al. “*On the Utility Function of Experiments in Fundamental Science*”. **Physics Open (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, L^AT_EX, 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, Carnegie Mellon University Jan 2024
Awarded only to one student every year in recognition of research, contributions to pedagogy, and department citizenship.

Student Travel Award, SIAM UQ Conference Jan 2024
Awarded a travel grant through a competitive process to take part in 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”.

The Future Makers, Boston Consulting Group (BCG) May 2019
Highly selective (100 students) four-days workshop about global trends, leadership, geopolitics and social issues.

Bain Business Course, Bain & Company March 2019
Business cases and strategic analysis workshop for 20 selected students. I was offered an internship at the end of the event.

SELECTED TALKS AND POSTERS

ICML Vienna, Austria
Classification under Nuisance Parameters and Generalized Label Shift in Likelihood-Free Inference July 2024

SIAM Uncertainty Quantification Conference Trieste, Italy
Reliable Uncertainty Quantification for Machine Learning in Science Feb 2024

AISTATS Valencia, Spain
SBI with WALDO: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators Apr 2023

NeurIPS - Machine Learning and the Physical Sciences Workshop New Orleans, LA
Likelihood-Free Frequentist Inference for Calorimetric Muon Energy Measurement in High-Energy Physics Dec 2022

NeurIPS - Distribution Shifts Workshop New Orleans, LA
Adaptive Sampling for Probabilistic Forecasting under Distribution Shift Dec 2022

ML4Jets Rutgers University, Piscataway, NJ
SBI with WALDO: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators Nov 2022

Joint Statistical Meetings (JSM) Washington, D.C.
SBI with WALDO: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators Aug 2022

5th Inter-experiment Machine Learning (IML) Workshop CERN, Geneva, Switzerland
SBI with WALDO: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators May 2022

EXTRACURRICULAR ACTIVITIES

Professional Soccer Player, U.S. Ancona, Taranto F.C., Fidelis Andria (Italy)
I was a goalkeeper from 2012 to 2015 in different professional leagues. I stopped for an injury and to pursue other career paths.

Pianist, Istituto Civico Musicale G. Rossini (Italy)
I took part in several competitions at the national level from 2006 to 2012. Today, I still enjoy playing at an amateur level.