LUCA MASSERANO

PhD STUDENT IN STATISTICS at CARNEGIE MELLON UNIVERSITY

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EDUCATION

Carnegie Mellon University, PhD Student in Statistics — Aug 2020 – Dec 2024 (Expected)
Advisor: Ann B. Lee

Bocconi University, M.Sc. in Data Science (Statistics under Italian Law) — Sep 2018 – Jul 2020
GPA: 29.3/30, Final Grade: 110/110 *cum laude*

Università Cattolica del Sacro Cuore, B.Sc. in Quantitative Methods for Economics — Sep 2015 – Sep 2018
GPA: 29.3/30, Final Grade: 110/110 *cum laude*

RELEVANT EXPERIENCE

Carnegie Mellon University, Doctoral Researcher — Aug 2020 – present

- **Uncertainty quantification in simulation-based inference:** developing new methods that allow to do inference on parameters of interest via confidence regions with robust statistical guarantees. This line of work has many applications in different fields of science (e.g., high-energy physics, astronomy). My research has also been supported by the National Science Foundation (grant #2020295)
- **Learning under distribution shift:** developing techniques that can *(i)* detect and *(ii)* quantify the shift, and *(iii)* correct our models on the fly when possible. Lately, I've been working on these problems within a time series setting

Amazon (AWS AI Labs), Applied Scientist Intern — Jun 2022 – Aug 2022

- Researched and implemented a novel method to improve robustness of forecasting algorithms against distribution shifts. Offered to return for another internship in 2023

BlackRock, Quantitative Analyst Intern — Jul 2019 – Sep 2019

- Designed and developed a new research platform that allowed to inspect the downstream effect of any modification in a suite of equity risk models. Offered to return full-time in 2020

SmartFAB, Data Scientist Intern — Mar 2019 – May 2019

- Exploited various statistical models to improve real-time detection (+50% achieved) of damaged integrated circuits produced in a semiconductor plant in southern Italy

SELECTED PUBLICATIONS

Masserano, L., Dorigo, T., Izbicki, R., Kuusela, M., Lee, A. (2022) *Simulation-Based Inference with Waldo: Confidence Regions by Leveraging Prediction Algorithms or Posterior Estimators for Inverse Problems.* Accepted at AISTATS 2023

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

Masserano, L., Dorigo, T., Izbicki, R., Kuusela, M., Lee, A. (2022) *Likelihood-Free Frequentist Inference for Calorimetric Muon Energy Measurement in High-Energy Physics.* Accepted (poster) at NeurIPS 2022 ML for Physical Sciences Workshop

Dalmasso, N.*, **Masserano, L.***, Zhao, D., Izbicki, R., Lee, A. (2021) *Likelihood-Free Frequentist Inference: Confidence Sets with Correct Conditional Coverage* . Under review. * Equal contribution

COMPUTER SKILLS AND LANGUAGES

CODING: Proficient: Python (`lf2i` package maintainer), R; **Everyday Use**: Bash, LaTeX, Git, Vim; **Beginner**: C++

LANGUAGES: Italian (native speaker), English (fluent), Spanish (Intermediate)

ADDITIONAL EXPERIENCE

Teaching Assistant at Carnegie Mellon University, Department of Statistics

- *Computing TA* (Fall 2022): helping PhD students and faculty with research-related computing needs
- *STAT 36401* - Modern Regression (Head TA in Fall 2021); *STAT 36462* - Statistical Machine Learning

Professional Soccer Player
I played as goalkeeper from 2012 to 2015 in the third division in Italy. I stopped due to an injury

SELECTED TALKS

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 or Posterior Estimators Nov 2022

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

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