

# Lorenzo Masoero

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Born July 20, 1992—Turin, Italy  
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## Education

2019-2021 PhD, Electrical Engineering and Computer Science, Massachusetts Institute of Technology  
2017 - 2019 MSc in Electrical Engineering and Computer Science, Massachusetts Institute of Technology <sup>1</sup>  
2015 - 2016 MA in Statistics and Applied Mathematics, with distinction, Collegio Carlo Alberto  
2015 - 2016 MA in Quantitative Finance, 110/110 magna cum laude, Università degli Studi di Torino  
2012 - 2014 BA in Economics, 110/110 cum laude, Università degli Studi di Torino

## Scholarships and Awards

2020 SBSS Best Student Paper Award (ASA)  
2020 Bayes Comp Travel Award  
2018 BNP@NeurIPS Award  
2017 Andrew (1956) and Erma Viterbi Fellowship  
2016 Best Graduate Student of the Year (ATLEC)  
2015 - 2016 Graduate Allievi Honors Program Scholarship, Collegio Carlo Alberto, Moncalieri  
2012 - 2014 Undergraduate Allievi Honors Program Scholarship, Collegio Carlo Alberto, Moncalieri

## Other Relevant Experience

2020 Applied Research Intern, Amazon CoreAI under the supervision of Professor Guido Imbens, Professor Thomas Richardson and Dr. James McQueen

## Research

- “**Cross-Study Replicability in Cluster Analysis**”. Manuscript available on arXiv [<https://arxiv.org/pdf/2202.01910.pdf>] (M., Thomas, Parmigiani, Tyekucheva, Trippa)
- “**Multiple Randomization Designs**”. Manuscript available on arXiv [<https://arxiv.org/pdf/2112.13495.pdf>] (Bajari, Burdick, Imbens, M., McQueen, Richardson, Rosen)
- “**Bayesian nonparametric strategies for power maximization in rare variants association studies**”. **Spotlight** at Learning Meaningful Representations of Life, Neural Information Processing Systems, 2021 [[poster](#)]. Manuscript available on arXiv [<https://arxiv.org/pdf/2112.02032.pdf>] (M., Schraiber, Broderick)

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<sup>1</sup>**Completed coursework:** Dynamic Programming and Stochastic Control (6.231) [final project], Fundamentals of Probability (6.436), Inference and Information (6.437), Algorithms for Inference (6.438), Algorithmic aspects of Machine Learning (18.408) [final project], Bayesian modeling and inference (6.882), Advanced stochastic processes (6.265), Mathematical Statistics: A Non-Asymptotic Approach (9.S914), Learning-Augmented Algorithms (6.890)

- “**The Chicago Police Department dataset**”. Neural Information Processing Systems Track on Datasets and Benchmarks, 2021, [Dataset repository](#), [current release \(vo.1\)](#) and [documentation](#) (Horel, M., Agrawal, Roithmayr, Campbell)
- “**Scaled process priors: Improved predictions and uncertainties for new-feature counts via random scaling in Bayesian nonparametrics**”. In submission. Featured in ISBA 2021 [[poster](#)]. Manuscript available on arXiv [<https://arxiv.org/pdf/2106.15480.pdf>] (Camerlenghi, Favaro, M., Broderick)
- “**More for Less: Predicting and maximizing genetic variant discovery via Bayesian nonparametrics**”; to appear in Biometrika. **Best Student Paper Award**, awarded by the American Statistical Association, Section in Bayesian Statistical Science. Featured in SMEEB 2021, ASHG 2020, AABI 2019 [[poster](#); [presentation \(YouTube\)](#)]; Manuscript available on arXiv [<https://arxiv.org/pdf/1912.05516.pdf>] (M., Camerlenghi, Favaro, Broderick)
- “**Independent finite approximations for Bayesian nonparametric inference: construction, error bounds, and practical implications**”, in submission. Manuscript available on arXiv [<https://arxiv.org/pdf/2009.10780.pdf>] (Nguyen, Huggins, M., Mackey, Broderick)
- “**Posterior representations of hierarchical completely random measures in trait allocation models**”, **Spotlight**, *BNP@NeurIPS2018* [[poster](#)] (M., Camerlenghi, Favaro and Broderick)
- “**Sensitivity of Bayesian inference to data perturbations**”, *AABI 2018* [[poster](#)] (M., Stephenson, Broderick)
- “**Generic finite approximations for practical Bayesian nonparametrics**”, **Spotlight**, *NIPS 2017 Workshop on Advances in Approximate Bayesian Inference* [[poster](#)]. (Huggins, M., Mackey, Broderick)

## Theses

- “**Improved prediction and optimal sequencing strategies for genomic variant discovery via Bayesian nonparametrics**” – PhD thesis. Supervisor: Professor Tamara Broderick
- “**An asymptotic analysis of Gibbs-type priors**” – Master’s thesis. Supervisors: Professors Pierpaolo de Blasi and Igor Prünster
- “**Econometrics of the Big Data**” – Undergraduate thesis. Supervisor: Professor Alessandro Sembenelli

## Skills

- Proficient in Python (numpy, scipy, pandas, matplotlib, scikit-learn),  $\LaTeX$
- Past experience in C++, Matlab, R, RStudio

## Talks, Poster sessions and Conference Presentations

2021

- Collegio Carlo Alberto Statistics Seminar Series, “Improved prediction and optimal sequencing strategies for genomic variant discovery via Bayesian nonparametrics”
- CMS Statistics 2021, “Scaled process priors for Bayesian nonparametric estimation of the unseen genetic variation” [Invited session]
- ISBA: 2021 World Meeting of the International Society for Bayesian Analysis, “Scaled process priors for Bayesian nonparametric estimation of the unseen genetic variation” [Contributed session]
- SMEEB: Stochastic Models and Experiments in Ecology and Biology, “More for less: predicting and maximizing genomic diversity via Bayesian nonparametrics” [Contributed session]

2020

- American Society of Human Genetics meeting, “More for less: predicting and maximizing genomic diversity via Bayesian nonparametrics” [Poster session]
- Learning under complex structure, MIFODS workshop, *Cambridge (MA)*, “More for less: predicting and maximizing genomic diversity via Bayesian nonparametrics” [Poster session]
- Learning under complex structure, MIFODS workshop, *Cambridge (MA)*, “More for less: predicting and maximizing genomic diversity via Bayesian nonparametrics” [Poster session]
- Bayes Comp 2020, *Gainesville (FL)*, “More for less: predicting and maximizing genomic diversity via Bayesian nonparametrics” [Poster session]

2019

- Advances in Bayesian Nonparametric Methods and Its Applications, *Denver (CO)*, *JSM 2019*, “Genomic variety prediction via Bayesian nonparametrics” [Topic-contributed session]
- Advances in Approximate Bayesian Inference, *Vancouver, Canada*, “More for less: Predicting and maximizing genetic variant discovery via Bayesian nonparametrics”
- Statistics and Data Science Conference 2019, *Cambridge (MA)*. “Genomic variety prediction via Bayesian nonparametrics”
- MLxMIT, *Cambridge (MA)*, “Genomic variety prediction via Bayesian nonparametrics”
- LIDS & Stats seminar, *Cambridge (MA)*, “Genomic variety prediction via Bayesian nonparametrics”
- CSAIL-MSR Trustworthy and Robust AI (TRAC) Workshop, *Cambridge (MA)*, “Getting the most bang for your buck: Predicting and maximizing the number of new genetic variants in a future experiment”

2018

- BNP@NeurIPS 2018, Montreal (Canada) “Posterior representations of hierarchical completely random measures in trait allocation models” [**Spotlight**]

## Professional Service

2021 Reviewer for Statistical Science, AISTATS, ICBINB  
2020 Reviewer for AAAI 2020, AISTATS 2020  
2019 Reviewer for AISTATS 2019, NeurIPS 2019, AABI 2019  
2018 Reviewer for BNP@NeurIPS2018