Luca Maestrini

CURRICULUM VITAE

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Personal Details

Place of Birth: Pesaro (PU), Italy
Date of Birth: 23rd September 1991
Nationality: Italian

Contact Information

Research School of Finance, Actuarial Studies
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Current Position

Since January 2024
Lecturer of Statistics
Research School of Finance, Actuarial Studies and Statistics, The Australian National University, Canberra, Australia

Past Positions

January 2022 – January 2024
Postdoctoral Research Fellow
Research School of Finance, Actuarial Studies and Statistics, The Australian National University, Canberra, Australia
Supervisor: **A./Prof. Francis Hui**; Co-Supervisor: **Prof. Alan Welsh**

October 2018 – January 2022
Postdoctoral Research Fellow
School of Mathematical and Physical Sciences, University of Technology Sydney, Sydney, Australia
Supervisor: **Prof. Matt Wand**

October 2018 – December 2021
Research Fellow
Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers

Research Interests

Computational statistics, generalized linear mixed models, theory and methods of inference, time series analysis, variational approximations

Education

October 2015 – September 2018 (thesis submission), February 2019 (thesis discussion)
PhD in Statistical Sciences
Università degli Studi di Padova, Padua, Italy
Thesis title: "On Variational Approximations for Frequentist and Bayesian Inference"
Supervisor: **Prof. Nicola Sartori**; Co-Supervisors: **Prof. Alessandra Salvan**, **Prof. Matt Wand**

October 2013 – September 2015
Master Degree (*Laurea Magistrale*) in Management Engineering and Finance
Politecnico di Milano, Milan, Italy
Thesis title: "Pairs Trading: a New Approach Based on the Beveridge–Nelson Decomposition"
Supervisor: **Prof. Rocco Mosconi**; Co-Supervisor: **Mr. Mattia Manzoni**
Final grade: 110 cum Laude / 110

March 2015
Athens Programme in Non-linear Mathematical Models and Applications
Universidad Politecnica de Madrid, Madrid, Spain

August 2014 – January 2015
Erasmus Exchange Programme in Industrial Engineering and Management
Kungliga Tekniska Högskolan, Stockholm, Sweden

September 2010 – July 2013
Bachelor Degree (*Laurea Triennale*) in Management and Production Engineering
Politecnico di Milano, Milan, Italy
Final grade: 110 cum Laude / 110

September 2005 – July 2010
High School Diploma
Istituto Tecnico Economico Tecnologico Bramante–Genga, Pesaro, Italy
Final grade: 100 cum Laude / 100

Visits

December 2024 (one week)
London School of Economics and Political Science, Department of Statistics, London, United Kingdom

December 2024 (one week)
Università di Bologna, Department of Statistical Sciences, Bologna, Italy

November 2024 (one week)
University of Wollongong, School of Mathematics and Applied Statistics, Wollongong, Australia

July–August 2024, December 2023, July–August 2023, December 2022
Università degli Studi di Padova, Department of Statistical Sciences, Padua, Italy

October 2023 (one week)
University of Melbourne, School of Mathematics and Statistics, Melbourne, Australia

January 2020 (three weeks)
University of Leeds, School of Mathematics, Leeds, United Kingdom

April 2017 – June 2018
University of Technology Sydney, School of Mathematical and Physical Sciences, Sydney, Australia

Other Roles

March 2022 – Today
Council Member of the Australian Capital Territory branch of the Statistical Society of Australia (with the role of Early Career and Student Statisticians Representative from March 2022 to March 2024)

December 2024
Organizer of the session "Topics in Bayesian modeling and computation" at the 17th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics)

November 2024
Member of the selection panel for the Data Visualisation Prize of the Statistical Support Network at The Australian National University

January 2024 – December 2024
Organizer of the Summer Camp of the Research School of Finance, Actuarial Studies and Statistics at The Australian National University

December 2023
Organizer of the session "Advances in Bayesian modeling and computation" at the 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics)

December 2021 and December 2022
Organizer of the session "Advances in variational approximations" at the 14th and 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics)

March 2020 – March 2022
Council Member of the New South Wales branch of the Statistical Society of Australia with the role of Early Career and Student Statisticians Representative

June 2020 – August 2021
Organizing Committee Member of the Early Career and Student Statistician Conference (ECSSC) 2021 with the role of Sponsorship Manager

May 2019 – April 2021
Member of the Early Career Researchers Committee of the Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers

Memberships

International Biometric Society (Australasian region), International Society for Bayesian Analysis, Statistical Society of Australia (Canberra branch)

Awards, Grants and Scholarships

2022
- SSA President's Award for Leadership in Statistics, awarded to the 2020–2022 Branch Councils of the Statistical Society of Australia
- SSA Diamond Jubilee Fellowship, AUD 5,000, Statistical Society of Australia
- ISBA 2022 World Meeting Travel Award, USD 900, International Society for Bayesian Analysis

2021
- Research Sprint Scheme grant *Variational approximations for structural equation models* (applicant: Dr. Luca Maestrini; co-applicant: Prof. Louise Ryan; co-investigator: Dr. Khue-Dung Dang), AUD 29,726.05, Australian Research Council Centre of Excellence for Mathematical and Statistical Frontiers
- Research Sprint Scheme grant *Copula directional dependence techniques for inferring directionality on gene expression data* (applicant: Dr. Clara Grazian; co-applicant: Dr. Luca Maestrini; co-investigator: Dr. Emily Wong), AUD 28,022.31, Australian Research Council Centre of Excellence for Mathematical and Statistical Frontiers

2020
Winner of the Young Statistician Showcase prize, Australasian section, at the International Biometric Conference 2020 (IBC 2020), USD 3,000, International Biometric Society

2018
ISBA 2018 World Meeting Travel Award, USD 250, International Society for Bayesian Analysis

2017
Grant for international cooperation activities, EUR 2,000, Università degli Studi di Padova

2015
Award for *cum Laude* master graduation, EUR 400, Banca di Credito Cooperativo del Metauro

2014–2015
Grant from Erasmus Programme 2015, about EUR 1,200, European Commission

2011–2015
Grant for out of town students with GPA higher than 27/30, about EUR 4,000 per academic year (four academic years), Politecnico di Milano

Grant in form of tuition fees exemption for students with GPA higher than 29/30, about EUR 2,500 per academic year (over five academic years), Politecnico di Milano

2011
- Award for the best first-year students (students with the highest GPAs), EUR 4,000, Politecnico di Milano
- Award for the best high-school student (student with the highest GPA) graduated in 2010 from Istituto Tecnico Economico Tecnologico Bramante–Genga, Pesaro, Italy, EUR 500, Banca di Gradara

2010

Award for *cum Laude* high-school diploma, EUR 500, Italian Ministry of Education

Publications and Research Pipeline

Pipeline
- Maestrini, L., Bernardi, M. and Livieri, G. Variable selection for heteroskedastic regression models via variational approximations
- Maestrini, L., Hui, F. K. C. and Welsh, A. H. Restricted maximum likelihood estimation in generalized linear mixed models
- Dang, K.-D., Maestrini, L. and Hui, F. K. C. Variational Bayes for mixture of Gaussian structural equation models Hui, F. K. C., Dang, K.-D. and Maestrini, L. Simultaneous coefficient clustering and sparsity for multivariate mixed models
- Scealy, J. L., Hui, F. K. C., Maestrini, L. and Wood, A. T. A. Multiplicative semiparametric regression for manifold-valued responses

Refereed Journal Articles
- Hui, F. K. C., Dang, K.-D. and Maestrini, L. (2024+). Simultaneous coefficient clustering and sparsity for multivariate mixed models. To appear in *Journal of Computational and Graphical Statistics*
- Maestrini, L., Aykroyd, R. G. and Wand, M. P. (2025). A Variational inference framework for inverse problems. *Computational Statistica and Data Analysis*, **202**, 1–15
- Maestrini, L., Bhaskaran, A. and Wand, M. P. (2024). Second term improvement to generalised linear mixed model asymptotics. *Biometrika*, **111 (3)**, 1077–1084
- Hui, F. K. C., Maestrini, L. and Welsh, A. H. (2024). Homogeneity pursuit and variable selection in regression models for multivariate abundance data. *Biometrics*, **80 (1)**, 1-11
- Xuan, H., Maestrini, L., Chen, F. and Grazian, C. (2024). Stochastic variational inference for GARCH models. *Statistics and Computing*, **34 (1)**, 1–26
- Collins, S., Maestrini, L., Hui F. K. C., Stuart, B. and Ueland, M. (2023). The use of generalised linear mixed models to investigate lipids in textiles as biomarkers of decomposition. *iScience*, **26 (8)**, 1–11
- Degani, E., Maestrini, L., Toczydłowska, D. and Wand, M. P. (2022). Sparse linear mixed model selection via streamlined variational Bayes. *Electronic Journal of Statistics*, **16 (2)**, 5182–5225
- Dang, K.-D. and Maestrini, L. (2022). Fitting structural equation models via variational approximations. *Structural Equation Modeling: A Multidisciplinary Journal*, **29 (6)**, 839–853
- Collins, S., Maestrini, L., Ueland, M. and Stuart, B. (2022). A preliminary investigation to determine the suitability of pigs as human analogues for post-mortem lipid analysis. *Talanta Open*, **5**, 1–11
- Ueland, M., Collins, S., Maestrini, L., Forbes, S. L. and Luong, S. (2021). Fresh vs. frozen human decomposition - a preliminary investigation of lipid degradation products as biomarkers of post-mortem interval. *Forensic Chemistry*, **24**, 1–9
- Maestrini, L. and Wand, M. P. (2021). The Inverse G-Wishart distribution and variational message passing. *Australian and New Zealand Journal of Statistics*, **63 (3)**, 517–541
- Maestrini, L. and Wand, M. P. (2018). Variational message passing for Skew *t* regression. *Stat*, **7(1)**, 1–11

Refereed Conference Proceeding Articles

- Degani, E., Maestrini, L. and Bernardi, M. (2021). Model fitting and Bayesian inference via power expectation propagation. *Book of Short Papers SIS 2021*, editors Perna, C., Salvati, N. and Schirripa Spagnolo, F., pp. 1026–1031. Pearson, ISBN 9788891927361
- Maestrini, L. and Wand, M. P. (2018). Variational approximations for frequentist and Bayesian inference. *Book of Short Papers SIS 2018*, editors Abbruzzo, A., Piacentino, D., Chiodi, M. and Brentari, E., pp. 1447–1452. Pearson, ISBN: 9788891910233
- Maestrini, L. and Wand, M. P. (2018). Variational message passing for Skew t regression. *Proceedings of the 33rd International Workshop on Statistical Modelling*, Bristol, pp. 204–208

Conference Presentations, Seminars and Talks

2024
- 17th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), King's College London, London, United Kingdom, and online, December 14–16 (invited oral presentation)
- Università di Bologna, Department of Statistical Sciences, Bologna, Italy, December 12 (invited seminar)
- National Institute for Applied Statistics Research Australia (NIASRA) of University of Wollongong, Wollongong, Australia, November 13 (invited seminar)
- 26th International Conference on Computational Statistics (CompStat), Justus-Liebig-University of Giessen, Giessen, Germany, and online event, August 27 – 30 (invited oral presentation)
- Bernoulli-IMS 11th World Congress in Probability and Statistics, Ruhr University Bochum, Bochum, Germany, August 12–16 (oral presentation)

2023
- 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), HTW Berlin, University of Applied Sciences, Berlin, Germany, and online, December 16–18 (invited oral presentation)
- Australian Statistical Conference (ANZSC) 2023, Wollongong, Australia, December 10–15 (oral presentation)
- 25th International Conference on Computational Statistics (CompStat), Birkbeck University, London, United Kingdom, and online event, August 23 – 26 (oral presentation)

2022
- 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), King's College London, London, United Kingdom, and online, December 17–19 (invited oral presentation)
- Workshop on Statistical Deep Learning, University of Wollongong Business School, Sydney, Australia, October 24 – 25 (invited oral presentation)
- 24th International Conference on Computational Statistics (CompStat), University of Bologna, Bologna, Italy, and online event, August 23 – 26 (invited oral presentation, online)
- International Biometric Conference (IBC) 2022, Riga, Latvia, July 10–15 (oral presentation)
- 2022 International Society for Bayesian Analysis World Meeting (ISBA), Montreal, Canada, July 26 – July 1 (invited oral presentation)

2021
- 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), King's College London, London, United Kingdom, and online, December 18–20 (invited oral presentation, online)
- Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers (ACEMS) Students and Early Career Researchers Retreat 2021, virtual event, November 1–2 (oral presentation, online)
- Early Career & Student Statisticians Conference (ECSSC) 2021, virtual event, July 26 – August 1 (poster presentation, online)
- Australian and New Zealand Statistical Conference (ANZSC) 2021, virtual event, July 5–9 (oral presentation, online)

- 2021 International Society for Bayesian Analysis World Meeting (ISBA), virtual event, June 28 – July 2 (oral and poster presentations, online)
- National Institute for Applied Statistics Research Australia (NIASRA) of University of Wollongong, Wollongong, Australia, June 4 (<u>invited</u> seminar, online)
- University of New South Wales, Sydney, Australia, March 12 (<u>invited</u> seminar, online)

2020

- Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers (ACEMS) Students and Early Career Researchers Retreat 2020, virtual event, November 2–3 (oral presentation, online)
- International Biometric Conference (IBC) 2020, virtual event, July 6 – August 30 (oral presentation, online, as Australasian winner of the Young Statistician Showcase Competition)
- University of Leeds, Leeds, United Kingdom, January 21 (<u>invited</u> seminar)

2019

- Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers (ACEMS) Students and Early Career Researchers Retreat 2019, Adelaide, South Australia, October 28–30 (oral presentation).
- 12th International Conference on Monte Carlo Methods and Applications (MCM), University of Technology Sydney, Sydney, Australia, July 8–12 (<u>invited</u> oral presentation)
- 3rd International Conference on Econometrics and Statistics (EcoSta), National Chung Hsing University, Taichung, Taiwan, June 25–27 (oral presentation)
- 2019 Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers (ACEMS) Enabling Algorithms Theme Symposium, University of Technology Sydney, Sydney, Australia, June 13–14 (<u>invited</u> oral presentation)

2018

- Australian Research Council Centre of Excellence for Mathematical and Statistical frontiers (ACEMS) Students and Early Career Researchers Retreat 2018, Torquay, Victoria, Australia, October 29–31 (oral presentation)
- Workshop on Advanced Statistics for Physics Discovery, University of Padua, Padua, Italy, September 24–25 (poster and three minutes oral presentation)
- 33rd International Workshop on Statistical Modelling (IWSM), University of Bristol, Bristol, United Kingdom, July 15–20 (oral presentation)
- 2018 International Society for Bayesian Analysis World Meeting (ISBA), University of Edinburgh, Edinburgh, United Kingdom, June 24–29 (poster presentation)
- 49th Scientific Meeting of the Italian Statistical Society (SIS), University of Palermo, Palermo, Italy, June 20–22 (oral presentation)

Teaching

Autumn 2024 (Semester 1)
  Lecturer, undergraduate/graduate course *STAT4026/STAT6026 Graphical Data Analysis*, The Australian National University

Summer 2023 (Semester 1)
  Lecturer, master course *STAT6030 Generalised Linear Modelling*, The Australian National University

Spring 2022 (Semester 2)
- Invited Lecturer, undergraduate/graduate course *STAT3015/STAT4030/STAT7030 Generalised Linear Modelling*, The Australian National University
- Tutor and Head of Tutors, undergraduate course *STAT1008 Quantitative Research Methods*, The Australian National University

Spring 2021 (Semester 2)
  Tutor, undergraduate course *37357 Advanced Statistical Modelling*, University of Technology Sydney

Autumn 2020 (Semester 1)
  Tutor, undergraduate course *37151 Introduction to Statistics*, University of Technology Sydney

Students Co-Supervision

Doctoral Students

- Nelson Chua (2023–), PhD student in Statistics at The Australian National University, Canberra, Australia. Main supervisor: Dr. Francis Hui; co-supervisor: Prof. Alan Welsh. Thesis topic: composite likelihood for spatial data
- Hanwen Xuan (2021–), PhD student in Mathematics and Statistics at University of New South Wales, Sydney, Australia. Main supervisor: Dr. Feng Chen; co-supervisor: Dr. Clara Grazian. Thesis topic: variational approximations for time series data
- Elham Merikhi (2020–), PhD student in Project Management at The Australian National University, Canberra, Australia. Main supervisor: A./Prof. Patrick L'Espoir Decosta; co-supervisors: A./Prof. Guihyun Park, Dr. Alicia Gilchrist, Dr. Mehdi Rajabi Asadabadi. Thesis title: "Risk-Return Trade-off in Project Appraisal and Selection". (The panel supervision started in 2024)
- Sharni Collins (2019–2023), PhD in Forensic Sciences at University of Technology Sydney, Sydney, Australia. Main supervisor: Dr. Maiken Ueland; co-supervisor: A./Prof. Barbara Stuart. Thesis title: "Investigation of Post-Mortem Lipids in Textiles Associated with Decomposition Remains". Thesis submission: August 2023
- Emanuele Degani (2018–2022), PhD in Statistical Sciences at Università degli Studi di Padova, Padua, Italy. Main supervisor: A./Prof. Mauro Bernardi. Thesis title: "Some Developments on Variational Approximation Methods for Bayesian Inference". Thesis submission and discussion: January 2022 and May 2022

Masters Students

- Silvia Montaldo (2020), MSc in Statistical Sciences at Università degli Studi di Padova, Padua, Italy. Main supervisor: A./Prof. Mauro Bernardi. Thesis title: "Approximate Inference for Large Spatial Data Sets". Final grade: 110 cum Laude / 110. Oliviero Lessi Prize special mention for the best graduate thesis on mathematical statistics, Italian Statistical Society. Thesis submission and discussion: November 2020
- Immanuel Taddei (2020), MSc in Management and Economics at Università degli Studi di Padova, Padua, Italy. Main supervisor: Prof. Diego Campagnolo. Thesis title: "Experience as Determinant of Performance: Elements of Success and Failure in the Italian Football Serie B". Final grade: 110 cum Laude / 110. Thesis submission and discussion: February 2020 and March 2020
- Davide Aronadio (2019), MSc in Statistical Sciences at Università degli Studi di Padova, Padua, Italy. Main supervisor: A./Prof. Mauro Bernardi. Thesis title: "Bayesian Variable Selection via Mean-Field Variational Bayes". Final grade: 110 cum Laude / 110. Thesis submission and discussion: March 2019

Review Activity

Peer-Reviewed Journals

Australian & New Zealand Journal of Statistics, *Bayesian Analysis*, *Biometrics*, *Journal of the American Statistical Association*, *SIAM/ASA Journal on Uncertainty Quantification*, *Stat* (×2), *Statistical Modelling*, *Statistics and Computing* (×3), *Test*

Doctoral Theses

Kehinde Olobatuyi, Università Degli Studi di Milano Bicocca, Milan, Italy; Doctoral Degree in Statistics; Supervisor: Robert Aykroyd; Thesis title: "A Family of Variational Algorithms for Approximate Bayesian Inference of High-Dimensional Data"; Thesis submission: March 2021

Masters Theses

Omar Ghattas, The Australian National University, Canberra, Australia; Master of Mathematics (Advanced); Supervisors: Matt P. Wand and Markus Hegland; Thesis title: "Streamlined Variational Inference for Bayesian Mixed and Crossed Effects Models"; Thesis submission: October 2019. Final grade: First Class Honours

Honours Theses

The Australian National University, Canberra, Australia

Computer Skills

- Statistical Software and Programming Languages: R (including RStan and Rcpp), C++, Fortran 77, Python, SAS
- Software Development and Hosting Platforms: Dropbox, GitHub, Google Drive, OneDrive
- Document Preparation Systems: LaTeX, Microsoft Office
- Computer Operating Systems: macOS, Unix, Windows

Language Skills

Italian (native), English (fluent), French (fluent)

References

Upon request