Giovanni Rebaudo

Contact information

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Current Positions

University of Turin, Turin, Italy

Assistant Professor (RTDA secs-s/01) **3/2023–Present**

Department of Economics, Social Studies, Applied Mathematics and Statistics (ESOMAS)

Collegio Carlo Alberto, Turin, Italy

Research affiliate, "de Castro" Statistics Initiative **3/2023–Present**

Bocconi Institute for Data Science and Analytics (BIDSA), Milan, Italy

Research affiliate, Bayesian Learning Laboratory (Bayes Lab) **6/2020–Present**

Past Position

University of Texas at Austin, Texas, USA

Post–Doctoral Research Fellow, Department of Statistics and Data Sciences **10/2020–2/2023**

Mentors: Peter Müller and Abhra Sarkar

Education

Bocconi University, Milan, Italy

Ph.D. in Statistics. Awarded with honors **9/2016–9/2020 (Thesis Defense 2/2021)**

- Title: *Bayesian Inference for Complex Data Structures: Theoretical and Computational Advances*
- Advisors: Antonio Lijoi and Igor Prünster

University of Trieste, Trieste, Italy

M.S. in Statistical and Actuarial Sciences. Final mark: 110/110 with honors **9/2014–7/2016**

- Title: *Bayesian Hierarchical Model: Theory and Application*
- Advisors: Francesco Pauli and Nicola Torelli

University of Milano-Bicocca, Milan, Italy

B.S. in Statistical and Economic Sciences. Final mark: 110/110 with honors **9/2011–7/2014**

- Title: *A New Technique for Estimation of Logarithmic Time Series Models: Forecast Comparison Based on Economic Data*
- Advisor: Matteo Maria Pelagatti

Research Interests

Bayesian Methods and Computation, Cluster Analysis, Bayesian Nonparametrics, Dimensionality Reduction, Time-Series Analysis, Predictive Inference, Categorical Regression, Auditory Neuroscience, Single-Cell RNA.

Publications

Papers in Peer-Reviewed Journals

1. Franzolini, B. and Rebaudo G. (2023+) **Entropy regularization in probabilistic clustering.** *Statistical Methods & Applications, in press.*
2. Ascolani, F., Lijoi, A., Rebaudo, G. and Zanella, G. (2023). **Clustering consistency with Dirichlet process mixtures.** *Biometrika*, 110, 551–558.
3. Lijoi, A., Prünster, I. and Rebaudo, G. (2023). **Flexible clustering via hidden hierarchical Dirichlet priors.** *Scandinavian Journal of Statistics*, 50, 213–234.
4. Fasano, A., Rebaudo, G., Durante D. and Petrone S. (2021). **A closed-form filter for binary time series**. *Statistics and Computing*, 31:47, 1–20.

Papers under Review

5. Rebaudo G. and Müller, P. **Graph-aligned random partition model (GARP).**
6. Lin Q., Rebaudo G. and Müller, P. **Separate exchangeability as modeling principle in Bayesian nonparametrics.**
7. Roark, C. L., Paulon, G., Rebaudo, G., McHaney, J. R., Sarkar, A. and Chandrasekaran, B. **Individual differences in working memory impact decision processes during speech category learning.**
8. Rebaudo G., Llanos, F., Chandrasekaran B. and Sarkar, A. **Bayesian mixed multidimensional scaling for auditory processing.**

Discussions

9. Rebaudo G., Fasano, A., Franzolini, B. and Müller, P. (2023) **A discussion on: "Evaluating sensitivity to the stick-breaking prior in Bayesian nonparametrics" by Giordano, R., Liu, R., Jordan M. I. and Broderick T.** *Bayesian Analysis*, 18, 345–347.
10. Catalano, M., Fasano, A. and Rebaudo G. (2023) **A discussion on: "Martingale posterior distributions" by Fong, E., Holmes C. and Walker S.** *Journal of the Royal Statistical Society Series B* [in press]

Conference Proceedings (Peer-Reviewed)

11. Anceschi N., Fasano, A. and Rebaudo G. (2023). **Expectation propagation for the smoothing distribution in dynamic probit.** *Bayesian Statistics, New Generations New Approaches (BaYSM2022).*[*in press*]
12. Fasano, A., Anceschi N., Franzolini, B. and Rebaudo G. (2023). **Efficient computation of predictive probabilities in probit models via expectation propagation.** *Book of Short Papers - CLADAG 2023.* [*in press*]
13. Franzolini, B., Bondi, L., Fasano, A. and Rebaudo G. (2023). **Bayesian forecasting of multivariate longitudinal zero-inflated counts: an application to civil conflict.** *Book of Short Papers - CLADAG 2023.* [*in press*]
14. Fasano, A., Anceschi N., Franzolini, B. and Rebaudo G. (2023). **Efficient expectation propagation for posterior approximation in high-dimensional probit models.** *Book of Short Papers - SIS 2023.*[*in press*]
15. Fasano, A., Rebaudo G. and Anceschi N. (2022). **Bayesian inference for the multinomial probit model under Gaussian prior distribution.** *Book of Short Papers - SIS 2022*, 871–876.
16. Franzolini, B. and Rebaudo G. (2022). **A regularized-entropy estimator to enhance cluster interpretability in Bayesian nonparametric.** *Book of Short Papers - SIS 2022*, 387–398.
17. Fasano, A. and Rebaudo G. (2021). **Variational inference for the smoothing distribution in dynamic probit models.** *Book of Short Papers - SIS 2021*, 1076–1081.

Awards

Academic Awards

[2020] Special financial support, Bocconi University.
[2020] Research fellowship, Bocconi University.
[2016-20] Merit-based Ph.D. fellowship, Bocconi University.

Data Competitions

[2018] **Predictive challenge:** best objective prediction. **Stat Under the Stars 4**.
[2017] **Predictive challenge:** first position. YoungCLADAG data contest.

Travel Awards

[2023] Travel award, IISA conference (750$).
[2022] Travel award, BNP world meeting (1000$).
[2022] Travel award, ISBA world meeting (300$).
[2019] Travel award, O'Bayes conference (400£).

Service to Profession

Referee (alphabetical order)

- Peer-reviewed Journals: • Annals of Statistics • Bayesian Analysis • Electronic Journal of Statistics • Journal of Machine Learning Research • Scandinavian Journal of Statistics • Statistical Methods & Applications • Statistical Science.
- Conferences: • BAYSM (Bayesian Young Statisticians Meeting)

Paper Competition Reviewer

Student Paper Competition for Section on Bayesian Statistical Science (SBSS) of the American Statistical Association (ASA). **2022**

Volunteer for the European Researchers' Night. Milan, Italy. **9/2019**

Service to University

Students Supervised or Co-supervised

Paolo Ciriacì, B.Sc. in Economics at the University of Turin (2023, expected).

Research Networks & Memberships

I am a member of the:
Complex Data Modeling Research Network led by MiDaS, Institute of Mathematical Statistics [IMS], International Society for Bayesian Analysis [ISBA], Italian Statistical Society [SIS].

Grants & Funding

Principal Investigator of the ESOMAS Department research project "Bayesian models for interpretable random structures" (Funding Agency: University of Turin; Duration: 2023-25).

Member of the Research Project of National Interest (PRIN) group "Discrete random structures for Bayesian learning and prediction." (National Coordinator: Antonio Lijoi; Funding Agency: Italian Ministry of University and Research; Duration: 2023-25).

Member of the NIH project research group "Bayesian methods for optimizing combination antiretroviral therapy for mental health in people with HIV" (Principal Investigator: Yanxun Xu; Funding Agency: The National Institutes of Health; Duration: 2022-27).

Member of the NSF project research group "Novel statistical frameworks for local inference in neuroscience of learning" (Principal Investigator: Abhra Sarkar; Funding Agency: The National Science Foundation; Duration: 2020-23).

Member of the NSF project research group "Collaborative research: Bayesian inference for interpretable random structures" (Principal Investigator: Peter Müller; Funding Agency: The National Science Foundation; Duration: 2020-23).

Member of the Research Project of National Interest (PRIN) group "Modern Bayesian nonparametric methods" (National Coordinator: Igor Prünster; Funding Agency: Italian Ministry of University and Research; Duration: 2017-20).

Teaching Experience

Excellence in Teaching Certificates

- Bocconi Excellence in Advanced Teaching by BUILT (**BEAT**). **2019**

Lecturer at **University of Turin**, Turin, Italy

- Statistics - B.Sc. (AY 2022/2023, 2023/2024).
- Introduction to Data Science: Statistical Learning and Data Analytics - B.Sc. (AY 2022/2023, 2023/2024).

Guest Lecturer at **University of Texas at Austin**, Texas, USA

- Monte Carlo Methods - Ph.D. (AY 2022/2023).
- Mathematical Statistics I - Ph.D. (AY 2022/2023).
- Introduction to Mathematical Statistics - B.Sc. (AY 2022/2023).

Teaching Assistant at **Bocconi University**, Milan, Italy

- Machine Learning II - M.Sc. (AY 2020/2021, AY 2019/2020).
- Data Analysis - M.Sc. (AY 2019/2020, AY 2018/2019, AY 2017/2018).

Schools

[2018] **Graphical Models**.
Bocconi Summer School in Advanced Statistics and Probability. Como, Italy.
Instructors: S. Lauritzen (University of Copenhagen) and R. Evans (University of Oxford).

[2017] **Statistical Causal Learning**.
Bocconi Summer School in Advanced Statistics and Probability. Como, Italy.
Instructors: B. Schölkopf (Max Planck Institute for Intelligent Systems, Tübingen), I. Tolstikhin (Google AI, Zürich) and D. Lopez-Paz (Facebook AI Research, Paris).

Presentations

Invited Presentations

[2023] EcoSta 2023 [International Conference on Econometrics and Statistics]. Tokyo, Japan.
[2023] Approximation Methods in Bayesian Analysis [CIRM Workshop]. Luminy, France.
[2022] IISA Conference 2022 [International Indian Statistical Association]. Bangalore, India.
[2022] ISBA 2022 [International Society of Bayesian Analysis]. Montreal, Canada.
[2021] CMStatistics–ERCIM 2021 [14th International Conference of the ERCIM WG on Computational and Methodological Statistics]. London, UK (online).
[2021] BIRS–CMO [Workshop on Foundations of Objective Bayesian Methodology]. Oaxaca, Mexico.
[2021] EcoSta 2021 [International Conference on Econometrics and Statistics]. Hong Kong (online).
[2021] BISP 12 [Bayesian Inference in Stochastic Processes]. Milan, Italy, with discussion (online).

[2020] CMStatistics–ERCIM 2020 [13th International Conference of the ERCIM WG on Computational and Methodological Statistics]. London, UK (online).
[2019] IIASA Conference 2019 [International Indian Statistical Association]. Mumbai, India.
[2019] Second Italian Meeting in Probability and Statistics. Vietri sul Mare, Italy.

Contributed Presentations

[2022] BNP13 [International Conference on Bayesian Nonparametrics]. Puerto Varas, Chile.
[2022] ENAR Meeting [Eastern North American Region International Biometric Society]. Houston, USA (online).

Poster Presentations

[2019] O'Bayes 2019 [Objective Bayes Methodology Conference]. Warwick, United Kingdom.
[2019] BNP12 [International Conference on Bayesian Nonparametrics]. Oxford, United Kingdom.

Seminars

[2021] SDS Seminar Series. Department of Statistics and Data Sciences at the University of Texas at Austin, USA (online).

Computer Skills

Statistical Software and Programming Language: R, Python, SAS, STAN, MATHEMATICA.