Beatrice Franzolini

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Contact information

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Current position

Jul 2023–Present	*Researcher (Italian RTD-A)*, Bocconi Institute for Data Science and Analytics, Bocconi University (Milan, Italy)
Jun 2020–Present	*Fellow*, Bayesian Learning Laboratory - BayesLab, Bocconi University (Milan, Italy)

Past academic positions

	After PhD:
Jan 2022–Jul 2023	*Research Fellow*, Agency for Science, Technology and Research - A*STAR (Singapore, Republic of Singapore)
Jan 2022–Jul 2023	*Member*, Division of Biomedical Data Science, Yong Loo Lin School of Medicine, National University of Singapore - NUS (Singapore, Republic of Singapore)
	Before PhD:
Nov 2021–Jan 2022	*Research assistant*, Bocconi Institute for Data Science and Analytics, Bocconi University (Milan, Italy)
Sep 2019–Aug 2021	*Adjunct professor*, Department of Decision Science, Bocconi University (Milan, Italy)
Sep 2018–Aug 2021	*Teaching assistant*, Department of Decision Science, Bocconi University (Milan, Italy)
Sep 2019–Aug 2020	*Teaching assistant*, Department of Statistics, Catholic University of the Sacred Heart (Milan, Italy)
Apr 2017–Jul 2017 Jul 2016–Sep 2016	*Research assistant*, Department of Finance, Bocconi University (Milan, Italy)
Jul 2016–Jul 2017	*Tutor*, assisting MSc students with thesis, Bocconi University (Milan, Italy)

Education

Sep 2017 - Feb 2022	***PhD in Statistics*, Bocconi University** (Milan, Italy) *Advisors*: Antonio Lijoi, Igor Prünster *Thesis*: On Dependent Processes in Bayesian Nonparametrics: Theory, Methods, and Applications. *Final Mark*: with honors
Sep 2014 - Apr 2017	***Master of Science in Finance*, Bocconi University** (Milan, Italy) *Advisor*: Massimo Guidolin *Final Mark*: 110/110 with honors
Sep 2011- Jul 2014	***Bachelor in Statistics*, University of Bologna** (Bologna, Italy) *Advisor*: Luca De Angelis *Final Mark*: 110/110 with honors

Research interests

My research interests are in Bayesian statistics and machine learning with a focus on Bayesian nonparametrics, computational statistics, clustering and random partition models, change-point detection, dynamic models, biomedical applications, and financial econometrics applications.

Publications

Preprints and submitted papers

1. Franzolini, B., De Iorio, M., and Eriksson, J. (2023+). *Conditional partial exchangeability: a probabilistic framework for multi-view clustering.* arXiv:2307.01152 (status: submitted)

Articles in refereed journals

2. Ascolani, F., Franzolini, B., Lijoi, A., and Prünster, I. (2023+). Nonparametric priors with full-range borrowing of information, *Biometrika*, forthcoming.
3. Franzolini, B., Beskos, A., De Iorio, M., Poklewski-Koziell, W. P., and Grzeszkiewicz, K. (2023+). Change-point detection in dynamic Gaussian graphical models: the impact of COVID-19 pandemic on US stock market, *The Annals of Applied Statistics*, forthcoming.
4. Franzolini, B. and Rebaudo, G. (2023). Entropy regularization in probabilistic clustering, *Statistical Methods & Applications*, `https://doi.org/10.1007/s10260-023-00716-y`

5. Franzolini, B., Lijoi, A., and Prünster, I. (2023). Model selection for maternal hypertensive disorders with symmetric hierarchical Dirichlet processes, *The Annals of Applied Statistics*, 17(1), 313-332. https://doi.org/10.1214/22-AOAS1628
6. Franzolini, B., Cremaschi, A., van den Boom, W., and De Iorio, M. (2023). Bayesian clustering of multiple zero-inflated outcomes, *Philosophical Transactions of the Royal Society A*, 381(2247), 20220145. https://doi.org/10.1098/rsta.2022.0145

Refereed proceedings and discussions

7. 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(1), 287-366. https://doi.org/10.1214/22-BA1309
8. Franzolini, B., Bondi, L., Fasano, A., and Rebaudo, G. (2023). *Bayesian forecasting of multivariate longitudinal zero-inflated counts: an application to civil conflict.* In Book of Short Papers CLADAG 2023, 465-468. (Editors: Corretto, P., Giordano G., La Rocca, M., Parrella, M. L., Rampichini, C.) ISBN 9788891935632
9. Fasano, A., Anceschi, N., Franzolini, B., and Rebaudo, G. (2023). *Efficient computation of predictive probabilities in probit models via expectation propagation.* In Book of Short Papers CLADAG 2023, 449-452. (Editors: Corretto, P., Giordano G., La Rocca, M., Parrella, M. L., Rampichini, C.) ISBN 9788891935632
10. Fasano, A., Anceschi, N., Franzolini, B., and Rebaudo, G. (2023). *Efficient expectation propagation for posterior approximation in high-dimensional probit models.* In Book of Short Papers SIS 2023, 1133-1138. (Editors: Chelli, F. M., Ciommi, M., Mariani, F., Recchioni, M. C.) ISBN 9788891935618
11. Franzolini, B. and Rebaudo, G. (2022). *A regularized-entropy estimator to enhance cluster interpretability in Bayesian nonparametrics.* In Book of Short Papers SIS 2022, 387-397. (Editors: Balzanella, A., Bini, M., Cavicchia, C. and Verde, R.). ISBN 9788891932310
12. Ascolani, F., Franzolini, B., Lijoi, A., and Prünster, I. (2021). *On the dependence structure in Bayesian nonparametric priors.* In Book of Short Papers SIS 2021 (Editors: Perna, C., Salvati, N. and Schirripa Spagnolo, F.). ISBN 9788891927361

Seminars and conference presentations

Invited talks

- 2024 World Meeting of the International Society for Bayesian Analysis (ISBA 2024), Venezia, Italy (July 2024 - upcoming).
- 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023), Berlin, Germany (December 2023 - upcoming).
- 6th International Conference on Econometrics and Statistics (ECOSTA 2023), Tokyo, Japan (August 2023).
- Approximation Methods in Bayesian Analysis @ CIRM, Marseille, France (June 2023).
- 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022), London, UK (December 2022).
- 2022 World Meeting of the International Society for Bayesian Analysis (ISBA 2022), Montreal, Canada (June 2022). Travel award (700 USD).
- 51st Meeting of the Italian Statistical Society (SIS 2022), Caserta, Italy (June 2022).
- 5th International Conference on Econometrics and Statistics (ECOSTA 2022), Kyoto, Japan (June 2022).
- Foundations of Objective Bayesian Methodology Workshop, Oaxaca, Mexico (November 2021).
- 4th International Conference on Econometrics and Statistics (ECOSTA 2021), ~~Hong Kong~~, virtual (June 2021).
- 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMSTATISTICS 2020), ~~London, UK~~, virtual (December 2020).
- 45th Arkansas Spring Lectures Series - Mathematical Sciences, virtual lectures - Fayetteville, USA (November 2020).

Contributed talks

- 14th Scientific Meeting Classification and Data Analysis Group (Cladag 2023), Salerno, Italy (September 2023).
- 13th International Conference on Bayesian Nonparametrics (BNP13 2022), Puerto Varas, Chile (October 2022). Travel award (1000 USD).
- Workshop ISBA@CIRM, Marseille, France (June 2021).
- 2021 World Meeting of the International Society for Bayesian Analysis (ISBA 2021), ~~Kunming, China~~, virtual (June 2021).
- 50th Meeting of the Italian Statistical Society (SIS 2021), virtual conference - Pisa, Italy (June 2021).

Awards and funding

- 2023-26 Task Member of *PE1 FAIR - Future Artificial Intelligence Research - CUP B43C22000800006*
- 2022 Travel award, BNP world meeting (1000 USD)
- 2022 Travel award, ISBA world meeting (700 USD)
- 2021 Financial support, Bocconi University
- 2017-21 Merit-based Ph.D. fellowship, Bocconi University

Professional services

- **Chair-Elect** for j-ISBA section of ISBA - International Society for Bayesian Analysis (y. 2023).
- **Member of the scientific committee** for
  - the Blackwell-Rosenbluth award by j-ISBA (y. 2023) - j-ISBA liaison,
  - the BAyesian Young Statisticians Meeting (BAYSM:O 2023) conference by j-ISBA (y. 2023).
- **Session organizer** at
  - 6th International Conference on Econometrics and Statistics (ECOSTA 2023), Tokyo, Japan.
    Session title: "Advances in Bayesian nonparametrics and model-based clustering".
    Speakers: B. Betancourt, M. Catalano, A. Cremaschi, F. Gaffi, A. Guglielmi.
  - International Symposium on Nonparametric Statistics 2024 (ISNPS 2024), Braga, Portugal.
    Session title: "Random partitions and Bayesian dependent clustering".
    Speakers: L. Duan, G. Page, A. Riva Palacio, G. Rebaudo.
- **Referee** for *Bayesian Analysis*, *BAYSM* (BAyesian Young Statisticians Meeting), *Biostatistics*, *Computational Statistics and Data Analysis*, *Journal of the American Statistical Association*, *Stat*, and *Statistical Science*.
- **Coordinator**, monthly reading group of Statistics, at NUS and A*STAR, 2022-2023 (Singapore, Republic of Singapore).
- **Contributing editor**, Zanichelli editore S.p.A, 2016–2019 (Bologna, Italy).
- **Reasearch assistanship** for: Guidolin, M., and Thornton D. L. *Predictions of short-term rates and the expectations hypothesis.* International Journal of Forecasting 34.4 (2018): 636-664.
- **Writing assistanship** for Chapter 1 of the book "*Essentials of time series for financial applications*, Guidolin M. and Pedio M., Academic Press, 2018."
- **Volonteer** for
  - RiminiInRete, a digital database for studying and improving Rimini's school system (Rimini, Italy),
  - European Researchers' Night 2019 (Milan, Italy),
  - Fondazione Rodolfo Debenedetti, project: racCONTAMI 2018, Third Census of Homeless People in Milan (Milan, Italy).

Society memberships

Institute of Mathematical Statistics (IMS); International Society for Bayesian Analysis (ISBA) [sections: Junior-ISBA, Bayesian Nonparametrics, Biostatistics and Pharmaceutical Statistics]; Italian Statistical Society (SIS) [sections: Classification and Data Analysis Group]; Complex Data Modeling Research Network (MiDaS).

Public softwares

1. GitHub repository `FuRBI`: `Python` and `R` codes for *Nonparametric priors with full-range borrowing of information*.
2. GitHub repository `CPE`: `R` code for *Conditional partial exchangeability: a probabilistic framework for multi-view clustering*.
3. GitHub repository `ERC`: `R` code for *Entropy regularization in probabilistic clustering*.
4. GitHub repository `DynamicGGM`: `R` code for *Change point detection in dynamic Gaussian graphical models*.
5. GitHub repository `MFMmultiHurdle`: `R` code for *Bayesian Clustering of Multiple Zero-Inflated Outcomes*.
6. GitHub repository `sHDP`: `Python` code for *Model Selection for Maternal Hypertensive Disorders with Symmetric Hierarchical Dirichlet Processes*.

Teaching activities

Course title	Level	Univeristy	Type of activity*	Period	Duration
Bayesian Statistical Methods	MSc	Bocconi University	CD	a.y. 2023-24	48h
Statistica	BSc	Bocconi University	I	a.y. 2020-21	20h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	I	a.y. 2020-21	12h
Statistica	BSc	Bocconi University	I	a.y. 2019-20	40h
Statistica	BSc	Bocconi University	TA	a.y. 2020-21	90h
Financial Economentric and Empirical Finance	MSc	Bocconi University	TA	a.y. 2020-21	18h
Statistica	BSc	Bocconi University	TA	a.y. 2019-20	90h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	TA	a.y. 2019-20	18h
Statistics	BSc	Catholic Uni. of the Sacred Heart	TA	a.y. 2019-20	24h
Statistica	BSc	Bocconi University	TA	a.y. 2018-19	90h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	TA	a.y. 2018-19	18h
Metodi quantitativi per la finanza	BSc	Bocconi University	TA	a.y. 2018-19	57h

*** CD = Course Director; I = Instructor; TA = Teaching Assistant**

Other education

2023 **Grant writing** , Introduction to grant writing: writing effective grant proposals (Singapore) *Instructor*: J. Lebrun

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)

2018 **Bocconi Excellence in Advanced Teaching** (BEAT) by BUILT (Milan, Italy)