

## 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).

## Past academic positions

### After PhD:

Jan 2022–Jul 2023 *Research Fellow*, Agency for Science, Technology and Research (Singapore)  
 Jan 2022–Jul 2023 *Member*, Division of Biomedical Data Science, NUS School of Medicine (Singapore)  
 Jan 2022–Jul 2023 *Research affiliate*, Bayesian Learning Laboratory (Milan, Italy)

### Before PhD:

Nov 2021–Jan 2022 *Research assistant*, Bocconi Institute for Data Science and Analytics (Milan, Italy)  
 Jun 2020–Nov 2021 *Research affiliate*, Bayesian Learning Laboratory (Milan, Italy)  
 Sep 2019–Aug 2021 *Adjunct professor*, Bocconi University (Milan, Italy)  
 Sep 2018–Aug 2021 *Teaching assistant*, Bocconi University (Milan, Italy)  
 Sep 2019–Aug 2020 *Teaching assistant*, Catholic University of the Sacred Heart (Milan, Italy)  
 Apr 2017–Jul 2017 *Research assistant*, Bocconi University (Milan, Italy)  
 Jul 2016–Jul 2017 *Tutor*, assisting MSc students with thesis, Bocconi University (Milan, Italy)  
 Jul 2016–Sep 2016 *Research assistant*, 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](https://arxiv.org/abs/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).
- **Research assistantship** 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 assistantship** for Chapter 1 of the book “*Essentials of time series for financial applications*”, Guidolin M. and Pedio M., Academic Press, 2018.”
- **Volunteer** for
  - RiminiInRete, a digital database for studying and improving Rimini’s school system (Rimini, Italy),
  - European Researchers’ Night 2019 (Milan, Italy),
  - Fondazione Rodolfo De Benedetti, 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 Econometric 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)