

Contact information

Email : franzolini@pm.me or beatrice.franzolini@unibocconi.it

Website : <https://beatricefranzolini.github.io>

Current position

Jul 2023–Present **Researcher (Italian RTD-A)**, Bocconi University, 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)

Before PhD:

Nov 2021–Jan 2022 *Research assistant*, Bocconi Institute for Data Science and Analytics (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 preparation, 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)
 Thesis: On Dependent Processes in Bayesian Nonparametrics: Theory, Methods, and Applications
 Advisors: Antonio Lijoi, Igor Prünster
 Final Mark: with honours (cum laude)
 Sep 2014 - Apr 2017 **Master of Science in Finance, Bocconi University** (Milan, Italy)
 Thesis: Can a Consumption-Based Stochastic Discount Factor Jointly Price the Cross-section of Commodity Futures Returns?
 Advisor: Massimo Guidolin
 Final Mark: with honours (110/110 cum laude)
 Sep 2011- Jul 2014 **Bachelor in Statistics, University of Bologna** (Bologna, Italy)
 Thesis: Utility Functions for C-CAPM: an Empirical Analysis to Compare CRRA Functions with Epstein and Zin Function.
 Advisor: Luca De Angelis
 Final Mark: with honours (110/110 cum laude)

Research interests

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

Preprints and submitted papers

- **Franzolini, B.**, De Iorio, M., and Eriksson, J. (2023+). *Conditional partial exchangeability: a probabilistic framework for multi-view clustering*. arXiv:2307.01152 (status: submitted)
- Ascolani, F., **Franzolini, B.**, Lijoi, A., and Prünster, I. (2023+). *Nonparametric priors with full-range borrowing of information* (status: revision requested)

Articles in refereed journals

- (1) **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, in press.
- (2) **Franzolini, B.** and Rebaudo, G. (2023). *Entropy regularization in probabilistic clustering*, Statistical Methods & Applications, <https://doi.org/10.1007/s10260-023-00716-y>
- (3) **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>
- (4) **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

- (5) **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, in press.
- (6) 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, in press.
- (7) 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, in press.
- (8) 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>
- (9) **Franzolini, B.** and Rebaudo, G. (2022). *A regularized-entropy estimator to enhance cluster interpretability in Bayesian nonparametrics*. In Book of Short Papers SIS 2022 (Editors: Balzanella, A., Bini, M., Cavicchia, C. and Verde, R.). ISBN 9788891932310
- (10) 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

Conferences, talks, and seminars

Invited talks

- 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), virtual conference - Hong Kong (June 2021).
- 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMSTATISTICS 2020), virtual conference (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 - upcoming).
- 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), virtual conference (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 the 6th International Conference on Econometrics and Statistics (ECOSTA 2023), Tokyo, Japan. Invited session title: “Advances in Bayesian nonparametrics and model-based clustering”.
- **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); Italian Statistical Society (SIS); Complex Data Modeling Research Network (MiDaS).

Public software

1. GitHub repository CPE: R code for *Conditional partial exchangeability: a probabilistic framework for multi-view clustering*.
2. GitHub repository ERC: R code for *Entropy regularization in probabilistic clustering*.
3. GitHub repository DynamicGGM: R code for *Change point detection in dynamic Gaussian graphical models*.
4. GitHub repository MFMMultiHurdle: R code for *Bayesian Clustering of Multiple Zero-Inflated Outcomes*.
5. 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. 2023-2024	48h
Statistica	BSc	Bocconi University	I	a.y. 2020-2021	20h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	I	a.y. 2020-2021	12h
Statistica	BSc	Bocconi University	I	a.y. 2019-2020	40h
Statistica	BSc	Bocconi University	TA	a.y. 2020-2021	90h
Financial Econometric and Empirical Finance	MSc	Bocconi University	TA	a.y. 2020-2021	18h
Statistica	BSc	Bocconi University	TA	a.y. 2019-2020	90h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	TA	a.y. 2019-2020	18h
Statistics	BSc	Catholic University of the Sacred Heart	TA	a.y. 2019-2020	24h
Statistica	BSc	Bocconi University	TA	a.y. 2018-2019	90h
Financial Econometrics and Empirical Finance	MSc	Bocconi University	TA	a.y. 2018-2019	18h
Metodi quantitativi per la finanza	BSc	Bocconi University	TA	a.y. 2018-2019	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)