Beatrice Franzolini

Contact information

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Current positions

Jan 2022–present **Postdoctoral Research Fellow**, Agency for Science, Technology and Research (**A*STAR**) , Singapore Institute for Clinical Sciences (SICS), in Singapore, Republic of Singapore.
*As part of this appointment, I am a member of the Division of Biomedical Data Science (BiDS), led by Prof. Maria De Iorio., at the National University of Singapore (**NUS**).*

Jun 2020–present **Research Affiliate**, BayesLab of the Bocconi Institute for Data Science and Analytics (BIDSA), at **Bocconi University**, in 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

Bayesian nonparametrics, Bayesian modelling of complex data, Cluster Analysis, Bayesian methodology, Gaussian graphical models, Biostatistics, Financial econometrics.

Past academic positions

- Nov 2021–Jan 2022 *Research assistant*, Bocconi Institute for Data Science and Analytics (Milan, Italy)
- Sep 2017–Jan 2022 *PhD student in Statistics* (merit-based fellowship), Bocconi University (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)

Preprints and submitted papers

- **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* (arXiv:2208.00952, status: revision requested)
- Ascolani, F., **Franzolini, B.**, Lijoi, A., and Prünster, I. (2023+). *Nonparametric priors with full-range borrowing of information* (status: revision requested)
- **Franzolini, B.** and Rebaudo, G. (2023+). *Entropy regularization in probabilistic clustering* (status: revision requested)

Articles in refereed journals

(1) **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`

(2) **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

(3) 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`

(4) **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

(5) 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

Papers in preparation

- **Franzolini, B.**, Lijoi, A., Prünster, I. and Rebaudo, G. (2023+). *Multivariate species sampling models* (in preparation - a preliminary version can be found in Chapter 2 of the PhD thesis)
- **Franzolini, B.**, Lijoi, A. and Prünster, I. (2023+). *Dependent processes for panel count data* (in preparation - a preliminary version can be found in Chapter 5 of the PhD thesis)
- **Franzolini, B.** and De Iorio, M. (2023+). *Multi-source clustering via conditional partial exchangeability* (in preparation)
- Cremaschi A., **Franzolini, B.** and De Iorio, M. (2023+). *Bayesian nonparametric item response models: a joint analysis of eating-behaviour questionnaires and Z-BMI trajectories in GUSTO* (in preparation)
- **Franzolini, B.** and De Iorio, M. (2023+). *The geometry of scale mixtures priors* (in preparation)

Conferences, talks, and seminars

Invited talks

- 6th International Conference on Econometrics and Statistics (ECOSTA 2023), Tokyo, Japan (August 2023 - upcoming).
- 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

- 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

- 2022 Travel award, BNP world meeting (1000 USD)
- 2022 Travel award, ISBA world metting (700 USD)
- 2021 Financial support, Bocconi University
- 2017-21 Merit-based Ph.D. fellowship, Bocconi University

Society memberships

Institute of Mathematical Statistics (IMS) ; International Society for Bayesian Analysis (ISBA); Italian Statistical Society (SIS); Complex Data Modeling Research Network (MiDaS).

Professional activities

- **Chair-Elect** for j-ISBA section of ISBA - International Society for Bayesian Analysis (y. 2023).
- **Session organizer** at the 6th International Conference on Econometrics and Statistics (ECOSTA 2023), Tokyo, Japan.
- **Referee** for *Bayesian Analysis*, *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 (Singapore, Repubblic 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).

Teaching activities

Course title	Level	Univeristy	Type of activity*	Period	Duration
Statistica	BSc	Bocconi University	T	a.y. 2020-2021	20h
Financial Economentrics and Empirical Finance	MSc	Bocconi University	T	a.y. 2020-2021	12h
Statistica	BSc	Bocconi University	T	a.y. 2019-2020	40h
Statistica	BSc	Bocconi University	TA	a.y. 2020-2021	90h
Financial Economentric and Empirical Finance	MSc	Bocconi University	TA	a.y. 2020-2021	18h
Statistica	BSc	Bocconi University	TA	a.y. 2019-2020	90h
Financial Economentrics 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 Economentrics 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

*** T = as lecturer; TA = as teaching assistant**

Other education

2023 **Peer reviewing** , I'll be the Judge of That: Effective Peer Reviewing for Journals (Singapore)

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)

Public softwares

1. GitHub repository `DynamicGGM`: `R` code for *Change point detection in dynamic Gaussian graphical models*.
2. GitHub repository `MFMmultiHurdle`: `R` code for *Bayesian Clustering of Multiple Zero-Inflated Outcomes*.
3. GitHub repository `sHDP`: `Python` code for *Model Selection for Maternal Hypertensive Disorders with Symmetric Hierarchical Dirichlet Processes*

Language skills: Italian (native speaker), English (good), Spanish (basic).

Computer skills: R, Python, MATLAB, LaTeX, Stata, SAS, and EViews.