Laura D'Angelo

Department of Economics, Management and Statistics
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Current position

Postdoctoral researcher in Statistics (From Dec 2021)
Department of Economics, Management and Statistics
University of Milano-Bicocca
Supervisor: Prof. Bernardo Nipoti

Research interests

- Bayesian modeling
- Model-based clustering
- Bayesian nonparametrics

Education

PhD in Statistics
Oct 2018 – Nov 2021; defense on May 4, 2022
Department of Statistical Science, University of Padova
- Thesis: "Bayesian modeling of calcium imaging data"
- Supervisor: Prof. Antonio Canale
- Co-supervisor: Prof. Michele Guindani

Master's Degree in Statistics
Oct 2015 – Nov 2017
Department of Statistical Science, University of Padova
- Thesis: "Bayesian nonparametric models: applications in insurance"
- Supervisor: Prof. Antonio Canale
- Final mark: 110/110 with honors

Bachelor's Degree in Statistics, Economics and Finance
Oct 2012 – Sep 2015
Department of Statistical Science, University of Padova
- Thesis: "Covariate-specific area under the ROC curve"
- Supervisor: Prof. Gianfranco Adimari
- Final mark: 110/110 with honors

Visiting periods

University of California, Irvine; Department of Statistics.
Irvine, California; USA. Jan 2020 – Nov 2020
Supervisor: Prof. Michele Guindani

Work experience

- Data analyst at BIP, Milan, Italy (Jan 2018 – Sep 2018).

Awards

- 2025: Travel award ($500); BNP14.
- 2025: Research prize for "fascia A" articles (€1,500).
  Funding provided by the Department of Economics, Management and Statistics (University of Milano-Bicocca) within the project "Dipartimenti d'Eccellenza 2023-2027".
  Awarded publication: D'Angelo L. and Denti F. (2024), BA.
- 2022: Poster Award; ISBA World Meeting.
- 2022: Junior travel award ($500); ISBA World Meeting.
- 2021: Best Student/Postdoc Contributed Paper Award ($1,000); ISBA World Meeting.
- 2017: First prize at Stats Under the Stars[3] (€1,000), Firenze, Italy, June 27 – 28.

Publications

Working papers and ongoing projects

- D'Angelo L., Nipoti B., and Rigon T. (2025+) "Bent discriminant analysis" (ongoing project).
- D'Angelo L., Nipoti B., and Ongaro A. (2025) "Dependent Dirichlet processes via thinning". *arXiv preprint*, arXiv:2506.18223, 1–28.
- D'Angelo L., Canale A., Denti F., and Guindani M. (2025) "Decoding neuronal ensembles from spatially-referenced calcium traces: a Bayesian semiparametric approach". *arXiv preprint*, arXiv:2508.09576, 1–17.
- Denti F. and D'Angelo L. (2025) "sanba: An R package for Bayesian clustering of distributions via shared atoms nested models". *arXiv preprint*, arXiv:2508.09758, 1–29.

Articles in peer-reviewed journals

- Denti F. and D'Angelo L. (2025) "The generalized nested common atoms model". *Econometrics and Statistics*, 1–28 (in press).
  DOI: 10.1016/j.ecosta.2025.01.001
- D'Angelo L. and Denti F. (2024) "A finite-infinite shared atoms nested model for the Bayesian analysis of large grouped data". *Bayesian Analysis*, 1–34 (in press).
  DOI: 10.1214/24-BA1458
- D'Angelo L. and Canale A. (2023) "Efficient posterior sampling for Bayesian Poisson regression". *Journal of Computational and Graphical Statistics*, 32(3), 917–926.
  DOI: 10.1080/10618600.2022.2123337
- D'Angelo L., Canale A., Yu Z., and Guindani M. (2023) "Bayesian nonparametric analysis for the detection of spikes in noisy calcium imaging data". *Biometrics*, 79(2), 1370–1382.
  DOI: 10.1111/biom.13626

Discussions and conference proceedings

- D'Angelo L., Nipoti B., and Ongaro A. (2025) "Modeling related survival samples via dependent nonparametric mixtures". In *Statistics for Innovation III*, Conference proceedings of SIS 2025, Springer, 73–78. DOI: 10.1007/978-3-031-95995-0_13.
- D'Angelo L., Nipoti B., and Ongaro A. (2025) "Two-level clustering of patients and hospitals via thinned dependent Dirichlet process mixtures". In *Methodological and Applied Statistics and Demography II*, Conference proceedings of SIS 2024, Springer, 37–42. DOI: 10.1007/978-3-031-64350-7_7.
- D'Angelo L. (2025) "Exploring the challenges of the analysis of the Allen Brain Observatory dataset". In *Advances in Neural Data Science*, Proceedings of the Data Research Camp 2022, Venice, Italy; Springer, 1–11. ISBN: 978-3-031-70638-7.

- D'Angelo L. (2023) "A comparison of computational approaches for posterior inference in Bayesian Poisson regression". In *Book of the Short Papers SIS 2023*, Springer, 903–907. ISBN: 9788891935618AAVV.
- D'Angelo L. and Denti F. (2023) "Bayesian analysis of Amazon's best-selling books via finite nested mixture models", in *Book of the Short Papers SIS 2023*, Springer, 1117-1120. ISBN: 9788891935618AAVV.
- D'Angelo L. (2022) "Bayesian nonparametric clustering of spatially-referenced spike train data", in *Book of the Short Papers SIS 2022*, 514-519, Springer. ISBN: 9788891932310.
- Denti F., D'Angelo L., and Guindani M. (2022) "Bayesian approaches for capturing the heterogeneity of neuroimaging experiments", in *Book of Short Papers SIS 2022*, Springer, 17–29. ISBN: 9788891932310.
- D'Angelo L. and Canale A. (2021) Contributed Discussion on: "Centered Partition Processes: Informative Priors for Clustering", in Bayesian Analysis, 16(1), 356–358. DOI: 10.1214/20-BA1197
- D'Angelo L., Canale A., Yu Z., and Guindani M. (2021) "Detection of neural activity in calcium imaging data via Bayesian mixture models", in *Book of the Short Papers SIS 2021*, Springer, 745–750. ISBN: 9788891927361.
- D'Angelo L. (2019) "Model-based clustering in group life insurance via Bayesian nonparametric mixtures", in *Book of the Short Papers SIS 2019*, Springer, 781–786. ISBN: 9788891915108.

Software

- Denti F. and D'Angelo L. (2025) "sanba: Fitting Shared Atoms Nested Models via MCMC or Variational Bayes", *R package*, available on CRAN. DOI: 10.32614/CRAN.package.sanba
- D'Angelo L. and Denti F. (2024) "SANple: Fitting Shared Atoms Nested Models via Markov Chains Monte Carlo", *R package*, available on CRAN. DOI: 10.32614/CRAN.package.SANple
- D'Angelo L. (2021) "bpr: Fitting Bayesian Poisson Regression", *R package*, available on CRAN. DOI: 10.32614/CRAN.package.bpr

Teaching experience

- Lecturer: Statistical Modelling (56 hours). A.Y. 2025/2026, B.Sc. in Artificial Intelligence; inter-university course of the Universities of Pavia, Milan-Bicocca, and Milan.
- Teaching Assistant: Statistics (20 hours) A.Y. 2024/2025, B.Sc. in Marketing, Business Communication and Global Markets; University of Milano-Bicocca.
- Lecturer: Statistical Modelling (32 hours). A.Y. 2024/2025, B.Sc. in Artificial Intelligence; inter-university course of the Universities of Pavia, Milan-Bicocca, and Milan.
- Lecturer: Statistical Modelling (32 hours). A.Y. 2023/2024, B.Sc. in Artificial Intelligence; inter-university course of the Universities of Pavia, Milan-Bicocca, and Milan.
- Teaching Assistant: Advanced Statistics (M.Sc. course in Statistics) and Mathematical Analysis 1 (B.Sc. course in Statistics). A.Y. 2016/2017; University of Padova.

Conference presentations

- Contributed talk: "Dependent Dirichlet processes via thinning"; *BNP*, Los Angeles, USA; June 23 – 27, 2025.
- Contributed talk: "Modeling related survival samples via dependent nonparametric mixtures"; *SIS 2025*, Genova, Italy; June 16 – 18, 2025.

- Invited talk: "Flexible modeling of grouped multivariate data via Bayesian shared-atom nested mixture models"; *CMStatistics 2024*, London, UK; December 14 – 16, 2024.
- Invited talk: "Uncovering the heterogeneity of the neuronal activity in calcium imaging studies via Bayesian mixture models"; *ISBA 2024*, Venezia, Italy; July 1 – 7, 2024.
- Invited talk: "Two-level clustering of patients and hospitals via thinned dependent Dirichlet process mixtures"; *SIS 2024*, Bari, Italy; June 17 – 20, 2024.
- Invited talk: "A Bayesian hierarchical mixture model for clustering Spotify's songs and artists"; *StaTalk 2023*, Roma, Italy; September 15 – 16, 2023.
- Contributed talk: "A comparison of computational approaches for posterior inference in Bayesian Poisson regression"; *SIS 2023*, Ancona, Italy; June 21 – 23, 2023.
- Invited talk: "Bayesian nonparametric clustering of spatially-referenced spike train data"; *SIS 2022*, Caserta, Italy; June 22 – 24, 2022.
- Discussant at the solicited session "Bayesian inference for complex random structures"; *SIS 2022*, Caserta, Italy; June 22 – 24, 2022.
- Contributed talk: "Bayesian nonparametric analysis for the detection of spikes in noisy calcium imaging data"; *JSM 2021* (online conference); August 8 – 12, 2021.
- Contributed talk: "Bayesian nonparametric analysis for the detection of spikes in noisy calcium imaging data"; *ISBA 2021* (online conference), June 23 – July 2; 2021.
- Contributed talk: "Detection of neural activity in calcium imaging data via Bayesian mixture models"; *SIS 2021* (online conference); June 21 – 25, 2021.
- Talk: "Efficient posterior sampling for Bayesian Poisson regression"; Junior session at the *Bayesian Nonparametrics for Complex Data, Concluding workshop*, University of Padova; January 24, 2020.
- Contributed talk: "Model-based clustering in group life insurance via Bayesian nonparametric mixtures"; *SIS 2019*, Milan, Italy; June 12 – 14, 2019.

Poster presentations

- "Dependent Dirichlet processes via thinning"; *SISBayes 2025*, Padova, Italy; September 4 – 5, 2025.
- "Finite-infinite nested priors for the segmentation of complex, large-scale grouped datasets"; *BAYSM 2024*, Venezia, Italy; June 29 – 30, 2024.
- "Clustering activation patterns of spatially-referenced neurons"; *Statistical methods and models for complex data*, Padova, Italy; September 21 – 23, 2022.
- "Clustering activation patterns of spatially-referenced neurons"; *ISBA 2022*, Montreal, Canada; June 27 – July 1, 2022.

Seminars

- "Introduzione ai modelli mistura Bayesiani" (Introduction to Bayesian mixture models), seminar in the MSc course "Temi e metodi di popolazione e società" (Dott. P. Belloni); Department of Statistics, University of Padova, Padova, Italy; May 29, 2025.
- "Analyzing the activation patterns and heterogeneity of the neuronal response via Bayesian mixture models"; Department of Environmental Sciences, Informatics and Statistics, Ca' Foscari University of Venice, Venezia, Italy; April 9, 2024.
- "Modeling grouped data via finite nested mixture models: an application to calcium imaging data"; seminar at Dipartimento di Statistica, Informatica, Applicazioni "Giuseppe Parenti", Università degli Studi di Firenze, Firenze, Italy; June 8, 2023.

- Two seminars in the MSc course "Temi e metodi di popolazione e società" (Dott. P. Belloni): "Introduzione ai modelli mistura Bayesiani" (Introduction to Bayesian mixture models) and "Modelli mistura gerarchici per il clustering di contenuti musicali" (Nested mixture models for clustering Spotify's songs and artists); Department of Statistics, University of Padova, Padova, Italy; May 8–9, 2023.
- "Analysis of calcium imaging data via finite nested mixture models"; seminar at the Department of Economics, University of Bergamo; April 4, 2023.
- "Analysis of calcium imaging data via nested mixture models"; seminar during the MSc course of Bayesian Statistics, Department of Mathematics, Politecnico di Milano; October 28, 2022.
- "Clustering activation patterns of spatially-referenced neurons"; virtual seminar at the Department of Statistics, ITAM, Mexico; September 2, 2022.
- Presentation of the topic and data description at the Data Research Camp, San Servolo Island, Venezia, Italy; July 12, 2022.
- Seminar on the use of Latex for scientific writing and bibliography management (April 23, 2021; 2.30 hourhe function (2.2) satisfies the following two properties that are desirable for a similarity function in (2.1). First, we require symmetry with respect to permutations of the sample indices ihe function (2.2) satisfies the following two properties that are desirable for a similarity function in (2.1). First, we require symmetry with respect to permutations of the sample indices is). M.Sc. course in Statistics, University of Padova.

Workshops

- Workshop of the Italian Statistical Society group SISBayes. September 4 – 5, 2025; Padova, Italy.
- Workshop on the 25th Anniversary of the Dependent Dirichlet Process; workshop on Bayesian Predictive Inference. June 22, 2025; Los Angeles, USA.
- Bayesian Nonparametrics for Complex Data, Concluding workshop. January 24, 2020; Padova, Italy.
- Data Research Camp, San Servolo Island, Venezia, Italy. July 2 – 5, 2019. 3-day meeting where groups of young scholars, advised by a senior researcher, were asked to develop innovative methods and models to analyze a common dataset.

Research groups

- 2023: Member of the local unit of Milano-Bicocca of the PRIN 2022 (included after funding).
  PI: Antonio Lijoi, Università Bocconi. Title: "Discrete random structures for Bayesian learning and prediction".
  Funding provided by MUR Ministero dell'Università e della Ricerca.

Service

Organization of Scientific Events

- Member of the local organizing committee of StaTalk 2025, University of Milano-Bicocca, June 13-14, 2025.

Memberships

- International Society for Bayesian Analysis
- Società Italiana di Statistica

Referee for: (alphabetical order)

Biometrics; Biostatistics; Computational Statistics and Data Analysis; Journal of Computational and Graphical Statistics; Journal of Machine Learning Research; Journal of the Royal Statistical Society, Series C; Statistical Science; Statistics in Medicine.

Computer skills

- Languages: R, Rcpp (good); Python (basic).
- Other: Latex; Git.