

Andrea Gilardi | Curriculum Vitae

– Milan, Italy

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Summary

I am an Assistant Professor (Ricercatore SECS-S/01, Legge 240/10 tipo A) at the [Department of Mathematics of Politecnico di Milano](#). I am a member of the [MOX](#) laboratory of mathematical modelling and scientific computing. My main research interests focus on spatial and spatiotemporal models for events on linear networks.

Current Position

Politecnico di Milano

Milan, Italy

Assistant Professor (RTDA)

JUN. 23 - Today

I am working on a project named *GRINS: Growing Resilient, INclusive and Sustainable* which is part of the Next Generation EU program (National Recovery and Resilience Plan).

Education

University of Milano - Bicocca

PhD in Statistics and Mathematical Finance

NOV.17–APR.21

University of Milano - Bicocca

Master Degree in Statistics (LM-82)

SET.15–OTT.17

Final mark: 110/110 e lode (Magna cum laude)

Università of Milano - Bicocca

Bachelor Degree in Statistics (L-41)

SET.12–SET.15

Final mark: 110/110 e lode (Magna cum laude)

Teaching

Lecturer (Docente)

- *Basics of Statistics and Biomedical Signals*, Politecnico di Milano, Bachelor degree in Biomedical Engineering, 30 hours, a.y. 2023-2024. [Details](#).
- *R for Data Science*, University of Milano - Bicocca, PhD in Economics, Management and Statistics, Curriculum Statistics, 12 hours per year, aa.yy. 2022-2023; 2023-2024. [Updated materials](#).
- *Livellamento al Software R* (Introduction to the R Software), University of Milano - Bicocca, Master degree in Statistics and Economics, 14 hours per year, aa.yy. 2022-2023; 2023-2024.

Teaching Assistant (Esercitatore)

- *Basics of Statistics and Biomedical Signals*, Politecnico di Milano, Bachelor degree in Biomedical Engineering, 15 hours, a.y. 2023-2024. [Details](#).
- *Statistica II* (Statistics II), University of Milano - Bicocca, Bachelor degree in Statistical and Economic Sciences, 20 hours, aa.yy. 2017-2018; 2022-2023; 2023-2024.

Tutor

- *Statistica II* (Statistics II), University of Milano - Bicocca, Bachelor degree in Statistical and Economic Sciences, 40 hours per year, aa. yy. 2018-2019; 2019-2020; 2020-2021; 2021-2022.
- [Lab Data Challenges](#), University of Milano - Bicocca, Master degree in Statistics and Economics, 20 hours, a.y. 2020-2021.
- *R for Road Safety*, RAC Foundation, 12 hours, Oct. 2019, [Program](#) and [Materials](#).
- *Introduction to R*, University of Milano - Bicocca, Bbetween 2019 MULTIMEDIA, 20 hours, a.y. 2018-2019, [Materials](#).
- *Introduction to tidyverse and plumber*, University of Turin - Master in Data Science, 4 hours, Oct. 2018.

- *Statistica Economica M* (Economic Statistics), University of Milano - Bicocca, Master degree in Statistics and Economics, 20 hours, a.y. 2017-2018.
- *Informatica* (Informatics), University of Milano - Bicocca, Bachelor degree in Statistical and Economic Sciences, 20 hours, a.y. 2016-2017.

Working Experience

POLIMI Graduate School of Management

Professor

Milan, Italy

NOV. 23 - DEC.23

I held a 16 hours course entitled "Analytics - Tools di Analisi" for approximately 30 employees of [ACEA](#). We focused on descriptive and exploratory statistics, supervised and unsupervised clustering techniques, and principal components analysis with practical examples in JASP.

University of Milano - Bicocca

Research fellow (*Assegnista di Ricerca*)

Milan, Italy

JAN. 21 - JUN. 23

I worked on a project entitled "Spatio-temporal models for spatial network data" under the supervision of Prof. [Riccardo Borgoni](#).

Catholic University of the Sacred Heart

Tutor

Milan (Italy)

OCT.20-NOV.20

I worked on a project named *Black Box and Big Data per la stima e la previsione dei sinistri* under the supervision of Prof. [Diego Zappa](#).

University of Milano - Bicocca

Tutor

Milan (Italy)

JUN.20-OCT.20 & JUN.21 - OCT.21 & JUN.22 - OCT.22 & JUN.23-OCT.23

I prepared and organized the admission tests for the master degree in Statistics and Economics, Department of Economics, Management and Statistics.

GR & Partner S.A.S

Consultant

Milan (Italy)

APR.18-OCT.18

I developed a User Interface using R and Shiny.

PhD Thesis

Title: *Statistical Models and Data Structures for Spatial Data on Road Networks*

Supervisor: Prof. Riccardo Borgoni and Prof. Jorge Mateu

Summary: The thesis introduces data structures, vital pre-processing steps, and statistical models to analyse spatial data lying on road networks using point-pattern and network-lattice approaches.

Master Degree Thesis

Title: *Previsione spaziotemporale per gli interventi in emergenza delle ambulanze nel comune di Milano*

Supervisor: Prof. Riccardo Borgoni

Summary: We developed a spatiotemporal model to predict the distribution of the emergency medical interventions in Milan.

Visiting Periods

- I spent seven months in Castellón de la Plana (ES), from February 2020 to June 2020 and May 2021 to July 2021, working with Prof. [Jorge Mateu](#) on statistical models for events on road networks.
- I stayed in Leeds (UK) for three months, from September 2019 to November 2019, working with Prof. [Robin Lovelace](#) on R packages and classes for road networks. [Final presentation](#).

Publications

1. **Gilardi, A.**, Lovelace, R., Padgham, M., Data structures and methods for reproducible street network analysis: overview and implementations in R. Under review. [Preprint](#);
2. **Gilardi, A.**, Borgoni, R., Mateu, J., A non-separable first-order spatio-temporal intensity for events on linear networks: an application to ambulance interventions. (2023+) Accepted for publication in *Annals of Applied*

Statistics. [Preprint](#);

3. **Gilardi, A.**, Borgoni, R., The impact of traffic flow and road signs on road accidents: an approach based on spatiotemporal point pattern analysis on linear networks. In: Book of the Short Papers - SIS 2023 (pp. 702-707), Pearson, ISBN: 9788891935618AAVV, Ancona (IT). [Link](#);
4. **Gilardi, A.**, Borgoni, R., Presicce, L., Mateu, J. (2023) Measurement Error Models for Spatial Network Lattice Data: Analysis of car crashes in Leeds. *Journal of the Royal Statistical Society: Series A (Statistics in Society)* Volume 186, Issue 3, July 2023, Pages 313–334, <https://doi.org/10.1093/jrsssa/qnad057>;
5. **Gilardi, A.**, Borgoni, R., Mateu, J. (2022). Geographically weighted regression for spatial network data: an application to traffic volumes estimation. In 51th Scientific Meeting of the Italian Statistical Society (pp. 1504 - 1509). Torino:Pearson Italia. ISBN: 9788891932310, Caserta (IT). [Link](#).
6. **Gilardi, A.**, Borgoni, R., Mateu, J. (2022). Spatial statistical calibration on linear networks: an application to the analysis of traffic volumes. In Proceedings of the 10th International Workshop on Spatio-Temporal Modelling, Lleida (Spain), 1-3 June 2022. ISBN 978-84-9144-364-3. http://doi.org/10.21001/METMA_X.
7. Borgoni, R., **Gilardi, A.**, Zappa, D. (2022). Optimal Subgrids from Spatial Monitoring Networks. In: (a cura di): Lombardo R; Camminatiello I; Simonacci V, IES 2022 Innovation & Society 5.0: Statistical and Economic Methodologies for Quality Assessment - Book of Short Papers. p. 148-152, Sesto San Giovanni:Professional Knowledge Empowerment, ISBN: 978-88-94593-35-8, Capua, 2022. [Link](#).
8. **Gilardi, A.**, Mateu, J., Borgoni, R., Lovelace, R. (2022) Multivariate hierarchical analysis of car crashes data considering a spatial network lattice. *Journal of the Royal Statistical Society: Series A (Statistics in Society)* Volume 185, Issue 3, July 2022, Pages 1150–1177, <http://doi.org/10.1111/rssa.12823>;
9. **Gilardi, A.**, Borgoni, R., Presicce, L., Mateu, J. (2021) Measurement error models on spatial network lattices: car crashes in Leeds. In 13th Scientific Meeting of the Classification and Data Analysis Group, Firenze, September 9-11, 2021. <https://doi.org/10.36253/978-88-5518-340-6>;
10. **Gilardi, A.**, Borgoni, R., Mateu, J. (2021). A spatio-temporal model for events on road networks: an application to ambulance interventions in Milan. In 50th Scientific Meeting of the Italian Statistical Society (pp. 702 - 707). Torino:Pearson Italia. ISBN: 9788891927361, Pisa - Virtual. [Link](#);
11. Borgoni, R., **Gilardi, A.**, Zappa, D. (2020). Assessing the Risk of Car Crashes in Road Networks. *Social Indicators Research*, 1-19. <https://doi.org/10.1007/s11205-020-02295-x>;
12. Borgoni, R., **Gilardi, A.**, Zappa, D. (2020). Spatial modelling of driver crash risk using georeferenced data. In NESPUTT 2019 - New Economic & Statistical Perspectives on Urban & Territorial Themes. (NESPUTT 2019). E-book. vol. libreriauniversitaria, ISBN: 9788833592091, University of Milan - Bicocca, 2019. [Link](#);
13. **Gilardi, A.**, Borgoni, R., Zappa, D. (2020). Assessing the Risk of Car Accidents in Road Networks. In NESPUTT 2019 - New Economic & Statistical Perspectives on Urban & Territorial Themes. (NESPUTT 2019). E-book. vol. libreriauniversitaria, ISBN: 9788833592091, University of Milan - Bicocca, 2019. [Link](#);
14. **Gilardi, A.**, Borgoni, R., Zappa, D. (2019). Spatial Logistic Regression for Events Lying on a Network: Car Crashes in Milan. In: Book of Short Papers SIS2019. (pp. 1165-1170), Pearson, ISBN: 9788891915108, Milano, 2019. [Link](#);
15. **Gilardi, A.**, Borgoni, R., Pagliosa, A., Bonora, R. (2018). Spatiotemporal Prevision for Emergency Medical System Events in Milan. In: Book of short Papers SIS 2018 (pp. 1697-1702). ISBN: 9788891910233, Palermo, Italia, 2018. [Link](#).

Summer Schools and Workshops

- R Project Sprint 2023, University of Warwick (UK), August 30 - September 1, 2023. [Webpage](#).
- Contributing to R, Online workshop held during useR! 2021.
- Spatial Statistics for huge datasets and best practices, Online workshop held during useR! 2021.
- Tidyverse developer day, Tolouse (FR), July 2019. [Announcement](#).
- Robust Statistics : Foundations and Recent Developments, University of Milano-Bicocca, March 2019.
- CLADAG, Summer School on Clustering and Classification, University of Catania - May 2018.

Conferences

Invited

- 52th meeting of the Italian Statistical Society, 17 - 20 June 2024, Bari, Italy
- 2023 IMS International Conference on Statistics and Data Science (ICSDS), December 18-21, 2023, Lisbon, Portugal
- 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 17-19 December 2022) - King's College London.
- Summer Institute in Computational Social Science (SICSS-Covenant), 22-29 June 2022, Covenant University, Ogun State, Nigeria. Online Event.
- OpenGeoHub Summer School 2021, 1-3 September 2021, Online Event.

Contributed

- Free and Open Source Software for Geospatial (FOSS4G), 22-28 August 2022, Florence (Italy).
- 51th meeting of the Italian Statistical Society, 22-24 June 2022, Caserta (Italy).
- METMA X, 10th International Workshop on Spatio-Temporal Modelling, 1-3 June 2022, Lleid (Spain)
- CLADAG 2021, 13th Scientific Meeting Classification and Data Analysis Group, 9-11 September 2021, Online.
- UseR! 2021 Meeting, 5-9 July 2021, Online.
- 50th meeting of the Italian Statistical Society, 21-25 June 2021, Online.
- OpenGeoHub 2020, 16-23 August 2020, Wageningen (Netherlands).
- Nesputt 2019: New Economic & Statistical Perspective, 21-22 November 2019, Milan (Italy).
- Meeting of the Italian Statistical Society, 18-21 June 2019, Milan (Italy).
- 49th Meeting of the Italian Statistical Society, 20-22 June 2018, Palermo (Italy).

Attended

- GRASPA 2023, 10-11 July 2023, Palermo (Italy).
- Workshop Young Environmental Statistician (YES), February 3rd, 2023, University of Bologna (Italy).
- e-Rum 2020: European R User Meeting, 17-20 June 2020, Online event.
- UseR! 2019 Meeting, 9-12 July 2019, Toulouse (France).
- StataTalk, March 29th, 2019, University of Bologna (Italy).
- StataTalk, November 17th, 2017, University of Padova (Italy).

Organized Conferences

- I organized an online Webinar and Hackathon related to the R package [sfnetworks](#) as official satellite event of the e-Rum 2020 Conference. [Materials](#), [slides](#) and [recordings](#).
- I was a member of the Local Organizing Committee of [Nesputt 2019: New Economic & Statistical Perspective](#) conference, Milan (Italy).

Grants

- [Tidy Spatial Networks in R](#) funded by the [R Consortium](#). 9000\$. Joint project with [Lucas van der Meer](#), [Lorena Abad](#), and [Robin Lovelace](#).

Awards

- Travel award to attend the [R Project Sprint 2023](#) event. 650£.
- Scholarship for the OpenGeoHub 2020 - Summer School. Project: *plotKML functionality to support sf and stars objects*. 800€. [Final presentation](#).
- [SIS](#) award for the best poster at the SIS-2019 conference.
- [Young-SIS](#) award for the best poster at the SIS-2018 conference.

Community activities

Referee service

AStA Advances in Statistical Analysis; rOpenSci; Scientific Reports; Spatial Statistics; Statistical Methods & Applications; Technometrics.

Affiliations

Institute of Mathematical Statistics (IMS); International Statistical Institute (ISI); rOpenSci; Società Italiana di Statistica (SIS).

Projects and activities with public engagement

- Member of the group working on Progetto di Terza Missione entitled *Analisi della dislocazione spaziale e spaziotemporale degli interventi extraospedalieri e definizione di criteri per monitorare e dimensionare la flotta dei mezzi di soccorso*, University of Milano - Bicocca, 2023.

Software

I am a proficient R user, with a particular interest in the `r-spatial` world and tidyverse environment. I am the author of two R packages, namely `osmextract` ([reviewed](#) by rOpenSci foundation and now on [CRAN](#)) and `sfnetworks` (also on [CRAN](#)). The first package focuses on the management and downloading of Open Street Map data extracts obtained from several providers (like [Geofabrik](#)), while the second package provides a tidy approach to spatial network analysis.

I contributed to several R packages like `ggplot2`, `recipes`, `sf`, `stplanr` and `osmdata`. I attended the [Tidyverse Developer Day](#) in Tolouse during the UseR! 2019 conference and I attended the [R Project Sprint 2023](#) event at the University of Warwick (UK).

I can write scientific documents and presentations using \LaTeX and I have a basic knowledge of Rust, GDAL, POSTGIS, JASP, SAS, Python, and STATA.

Badges

SAS: [SAS Certified Base Programmer for SAS 9](#)

SAS: [SAS Certified Predictive Modeler Using SAS Enterprise Miner 7](#)

Additional Information

Associazioni: Volunteer at Volontari del Soccorso di Calolziocorte from July 2016.

Notes

Autorizzo la pubblicazione ai sensi del D.Lgs. n. 33/2013 "Riordino della disciplina riguardante gli obblighi di pubblicità, trasparenza e diffusione di informazioni da parte delle pubbliche amministrazioni" e acconsento all'utilizzo delle informazioni ivi contenute ai sensi del D.L. n. 196/2003 "Codice in materia di protezione dei dati personali".

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000.