

# Valentina Ghidini

POSTDOCTORAL RESEARCHER

Lugano, Switzerland

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## Research Interests

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Complex networks, Bayesian nonparametrics, statistical learning, eXplainable AI, interpretable machine learning, clustering, latent variable modelling.

## Research Experience

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### Università della Svizzera Italiana

POSTDOCTORAL RESEARCHER

Lugano, Switzerland

Sep 2023 - current

### ISI Foundation

RESEARCH INTERNSHIP

Turin, Italy

Feb 2019 - Sep 2019

### CRISP

RESEARCH INTERNSHIP

Milan, Italy

Sep 2016 - Mar 2017

## Education

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### Bocconi University

PHD, STATISTICS

Milan, Italy

2019 - 2024

- Advisors: O. Papaspiliopoulos, D. Durante
- Thesis: From post hoc explanations to Bayesian nonparametric models - unveiling hidden structures

### University of Turin

MSc, STOCHASTICS AND DATA SCIENCE

Turin, Italy

2017 - 2019

- Thesis: Quantitative and ontology-based eXplainable Artificial Intelligence techniques for computer vision
- Grade: 110/110 summa cum laude, with special mention for the academic curriculum

### University of Milano-Bicocca

BSc, STATISTICS AND INFORMATION MANAGEMENT

Milan, Italy

2014 - 2017

- Thesis: Analysis of the scientific network in PubMed using graph databases
- Grade: 110/110 summa cum laude

## Publications

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### SUBMITTED

[0] **Ghidini, V.**, Giudici, P., Raffinetti, E., 2024+. *Xi-Lorenz eXplainable Artificial Intelligence*.

### REFEREED JOURNALS

[1] Borgonovo, E., **Ghidini, V.**, Hahn, R., Plischke, E. <sup>1</sup> 2023. *Explaining classifiers with measures of statistical association*. Computational Statistics & Data Analysis, (182)107701.

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<sup>1</sup>Authors in alphabetical order

## REFEREED CONFERENCE PROCEEDINGS

- [2] **Ghidini, V.**, 2023. *Unlocking the mysteries of regression with Statistics*, Communications in Computer and Information Science 1901, xAI2023, 97–114.
- [3] Ascolani, F., **Ghidini, V.**, 2023. *Posterior clustering for Dirichlet process mixtures of Gaussians with constant data*. Book of Short Papers CLADAG 2023, 42-45.
- [4] Ascolani, F., **Ghidini, V.**<sup>1</sup>, 2023. *Linear models with assumptions-free residuals: a Bayesian Nonparametric approach*. Book of short papers SIS 2023, 253-256.
- [5] **Ghidini, V.**, Legramanti, S., Argiento, R., 2023. *Binomial extended stochastic block model for brain networks*. Book of short papers SIS 2023, 1121-1126.
- [6] **Ghidini, V.**, Legramanti, S., Argiento, R., 2023. *Extended stochastic block model with spatial covariates for weighted brain networks*. Bayesian Statistics, New Generations New Approaches (BAYSM2022), forthcoming.
- [7] **Ghidini, V.**, Perotti A., Schifanella R., 2019. *Quantitative and ontology-based comparison of explanations for image classification*. Lecture Notes in Computer Science 11943, 58–70.

## Software

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`xi-method`: Python library for explanations of black-box models.  
Available on PyPI ([pypi.org/project/xi-method](https://pypi.org/project/xi-method/)).  
Co-author and maintainer.

`bnpResiduals`: R package for Bayesian nonparametric modelling for regression residuals.  
Available on Github ([github.com/VaentinaGhidini/bnpResiduals](https://github.com/VaentinaGhidini/bnpResiduals)).  
Author and maintainer.

## Presentations

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### INVITED TALKS

**Talk @CMS Statistics** December 18, 2023 — Berlin, Germany.

**Seminar @CENTAI Institute** November 17, 2023 — Turin, Italy.

### CONTRIBUTED TALKS

**xAI 2023** July 26-28, 2023 — Lisbon, Portugal.

**SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation** June 21-23, 2023 — Ancona, Italy.

**Workshop on CLUstering: Bayesian Partition Models for Precise Medicine** February 24, 2023 — Turin, Italy.

**INFORMS Annual Meeting**, October 24-27, 2021 — Anaheim, California (online).

**International Conference on Machine Learning, Optimization, and Data Science**, September 10-13, 2019 — Pavia, Italy.

## POSTERS

**SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation** June 21-23, 2023 — Ancona, Italy.

**EAC ISBA**, July 8 - 9, 2022 — Taiwan (online).

**ISBA World Meeting** June 26 - July 2, 2022 — Montreal, Canada.

## OTHER

**Seminar series on *Responsible Modelling in Uncertain Times*** November 2021 — Panel discussion.

## Awards

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Travel grant (on competitive basis) for 2022 World Meeting of the International Society for Bayesian Analysis, Montreal, Canada.

International Society for Bayesian Analysis, July 2022.

PhD scholarship, four years.

Bocconi University, 2019.

Incentivi Lauree Scientifiche, three years.

Università degli Studi di Milano Bicocca, 2014.

Scholarships based on merit.

Different institutions, among which BCC Credito Cooperativo, Comune di Masate, Intesa San Paolo and others.

## External Funding

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Member of the PRIN-PNRR 2023-2025 project (P2022H5WZ9)

*Measuring Biodiversity via Bayesian Nonparametrics: Estimation, Clustering and Uncertainty Quantification*

EU-Next Generation EU funds.

## Teaching Experience

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### ADJUNCT LECTURESHIPS

2022 - 2023 **Advanced Python - Data Science module** (course 30590)

*Bocconi Univ.*

### TEACHING ASSISTANTSHIPS

Fall 2023 **Efficient Computational Algorithms**

*USI*

Fall 2021 **Mathematics** (course 30400)

*Bocconi Univ.*

2021 - 2023 **Statistics**

*Bergamo Univ.*

2020 - 2023 **Statistics** (course 30001)

*Bocconi Univ.*

## Certifications

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### **Natural Language Processing with Classification and Vector Spaces (2021)**

Institute: Coursera

Certificate number: GAJZ9GRHKN8D

### **PhD Beat - Bocconi Excellence in Advanced Teaching (2021)**

Institute: Bocconi University

### **Deep Learning Specialization (2019)**

Courses: Neural Networks and Deep Learning, Hyperparameters tuning, Sequence models, Convolutional Neural Networks.

Institute: Coursera

Certificate number: 9C4VZEV8YTW7

**SAS Certified Base Programmer for SAS 9 (2017)**

Institute: SAS Institute  
Certificate number: BP069923v9

**SAS Predictive Modeler Using SAS Miner 13 (2017)**

Institute: SAS Institute  
Certificate number: PMEM001296v13

**First Certificate in English (FCE) (2013)**

Institute: Cambridge Institute

Other \_\_\_\_\_

**EDITORIAL WORK**

Reviewer for the *European Journal of Operation Research*, *Computational Statistics & Data Analysis*, *IEEE Transactions on Network Science and Engineering*.

**PROFESSIONAL MEMBERSHIPS**

International Society for Bayesian Analysis (ISBA), Institute of Mathematical Statistics (IMS), BayesLab of Bocconi Institute for Data Science and Analytics (BIDSA), Società Italiana di Statistica (SIS).

**SERVICE TO THE PROFESSION**

Scientific and organizing committee of the satellite workshop to International Society for Bayesian Analysis (ISBA) world meeting in Lugano, Switzerland (scheduled for June 2024).

Volunteer at the European Researchers' Night. Milan, Italy (2019).