

# MARTINA CONTISCIANI

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## CURRENT POSITION

**Postdoctoral Researcher** Mar. 2024 – Present

*Central European University - Dept. of Network and Data Science, Vienna, Austria*

- Research focused on the development of statistical methods and algorithms to analyze complex systems, with a particular interest in network inference. Currently working on the MOMA (Multiscale network modelling of migration flows in Austria) project together with Prof. Tiago P. Peixoto and Prof. Márton Karsai.

## EXPERIENCE

**Teaching Assistant** Dec. 2019 – Feb. 2022

*University of Tübingen, Tübingen, Germany*

- TA for Advanced Probabilistic Machine Learning and Applications (M.Sc) - WS 2019/2020, 2021/2022, SS 2021
- TA for Statistical Machine Learning (M.Sc) - SS 2020

**Intern** Mar. 2019 – Sep. 2019

*Max Planck Institute for Intelligent Systems - PIO Group, Tübingen, Germany*

- Master's thesis project focused on modelling covariate information in community detection algorithms

**Data Analyst** Jul. 2018 – Aug. 2018

*Unox S.p.A. – IT Office, Cadoneghe (PD), Italy*

- Project focused on the analysis of device usage data to improve the experience and profile of the customers

## EDUCATION

**Ph.D. in Computer Science** Oct. 2019 – Nov. 2023

*Max Planck Institute for Intelligent Systems - PIO Group, Tübingen, Germany*

- Thesis: Probabilistic Generative Models for Inference on Complex Systems
- Final Grade: Summa cum laude

**Master's degree in Data Science** Oct. 2017 – Sep. 2019

*University of Padua - Dept. of Mathematics, Padua, Italy*

- Thesis: A New Approach for Community Detection in Multilayer Networks
- Final Grade: 110/110 cum laude

**Bachelor's degree in Statistics for Business and Economics** Oct. 2014 – Sep. 2017

*University of Padua - Dept. of Statistical Sciences, Padua, Italy*

- Thesis: Automatic identification of time series and forecasting performances
- Final Grade: 110/110 cum laude

## PUBLICATIONS

11. **Contisciani M.\***, Hobbahn M.\* , Power E. A., Hennig P., and De Bacco C., (2025), Flexible inference in heterogeneous and attributed multilayer networks, *PNAS Nexus*, pgaf005 - \*contributed equally
10. Safdari H., **Contisciani M.**, De Bacco C., (2023), Anomaly, reciprocity, and community detection in networks, *Phys. Rev. Res.* 5, 033084
9. Ruggeri N., **Contisciani M.**, Battiston F., De Bacco C., (2023), Community detection in large hypergraphs, *Science Advances* 9, eadg9159
8. Lotito Q. F., **Contisciani M.**, De Bacco C., Di Gaetano L., Gallo L., Montresor A., Musciotto F., Ruggeri N., Battiston F., (2023), Hypergraphx: a library for higher-order network analysis, *Journal of Complex Networks* 11, cnad019
7. De Bacco C., **Contisciani M.**, Cardoso-Silva J., Safdari H., Baptista D., Borges G. L., Sweet T., Young J.-G., Koster J., Ross C. T., McElreath R., Redhead D., Power E. A., (2023), Latent network models to account for noisy, multiply reported social network data, *Journal of the Royal Statistical Society Series A: Statistics in Society*, qnac004

6. **Contisciani M.**, Battiston F., De Bacco C., (2022), Inference of hyperedges and overlapping communities in hypergraphs, *Nature Communications* 13, 7229
5. **Contisciani M.**, Safdari H., De Bacco C., (2022), Community detection and reciprocity in networks by jointly modelling pairs of edges, *Journal of Complex Networks* 10, cnac034
4. Higham K., **Contisciani M.**, De Bacco C., (2022), Multilayer patent citation networks: A comprehensive analytical framework for studying explicit technological relationships, *Technological Forecasting and Social Change* 179, 121628
3. Safdari H., **Contisciani M.**, De Bacco C., (2022), Reciprocity, community detection, and link prediction in dynamic networks, *Journal of Physics: Complexity* 3, 015010
2. Safdari H.\*, **Contisciani M.\***, De Bacco C., (2021), Generative model for reciprocity and community detection in networks, *Phys. Rev. Res.* 3, 023209 - \*contributed equally
1. **Contisciani M.**, Power E. A., De Bacco C., (2020), Community detection with node attributes in multilayer networks, *Scientific Reports* 2020 10:1 10, 1–16

## PRESENTATIONS

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### Guest lectures and seminars

- [2025] Dept. of Network and Data Science, Central European University, Vienna (AT)
- [2022] NetPLACE, online
- [2022] Dept. of Statistical Sciences, University of Padua, Padua (IT)
- [2021] Dept. of Statistical Sciences, University of Padua, online

### Invited presentations

- [2024] 2024 ISBA World Meeting, Venice (IT)
- [2023] Young Seminars SIFS, online

### Contributed presentations

- [2023] NetSci 2023, Vienna (AT) - EUSN 2023, Ljubljana (SI)
- [2022] NetSci 2022, online - EUSN 2022, London (UK) - CCS 2022, Palma de Mallorca (ES)
- [2021] Networks 2021, online - EUSN 2021, online

### Poster presentations

- [2020] NetSci 2020, online

## SERVICE

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**Open Source Contributor:** ProbINet, hypergraphx (HGX), VIMuRe, complex group interactions (XGI)  
**Reviewer:** Communications Physics, Journal of Complex Networks, Social Network Analysis and Mining, Applied Network Science  
**Organizer:** ELLIS Doctoral Symposium 2021

## AWARDS

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- [2023] **MPI-IS Outstanding Female Doctoral Student Prize:** honorable mention, Max Planck Institute for Intelligent Systems, Tübingen, Germany
- [2018] **Hackathon about Speech Recognition:** 1st place position, Unox S.p.A., Cadoneghe, Italy

## SKILLS

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**Languages:** Italian (mother tongue), English (upper-intermediate), German (intermediate)

**Soft Skills:** Conscientiousness, Agreeableness, Teamwork, Problem-Solving

**Technologies:** Python, R, MATLAB, SQL, TensorFlow, Keras, LaTeX, C, C#, HTML/CSS, Gephi, JDemetra+

**Last update:** February 4, 2025