PERSONAL INFORMATION   Federica Baccini

EDUCATION AND TRAINING

2019 – 2023   ### PhD in Computer Science

University of Pisa, Department of Computer Science, Pisa, Italy
Institute of Informatics and Telematics of CNR, Pisa, Italy

Supervisors: Prof. Monica Bianchini and Dr. Filippo Geraci.
PhD thesis: *Analysis of multiple relations in multilayer and higher-order networks.*

September 2021 – March 2022   ### Visiting PhD student

School of Mathematical Sciences, Queen Mary University of London, London, United Kingdom
Supervisor: Prof. Ginestra Bianconi.

2017 – 2019   ### MA Applied Mathematics (Laurea Magistrale LM-40)

University of Siena, Department of Information Engineering and Mathematics, Italy, final grade: 110/110 cum laude

MA thesis: *Network analysis for the identification of histone modification data to explain haematopoiesis*, supervisor Prof. Monica Bianchini, co-supervisor Dr. Filippo Geraci.

2013 – 2017   ### BA in Matematica (Laurea Triennale L35)

University of Florence, Department of Mathematics and Informatics, Italy.

BA thesis: *Petri Nets: Structure and Applications*, supervisor Prof. Luca Ferrari.

2013   ### Liceo Scientifico Diploma

I.S.I.S Benedetto Varchi, Montevarchi (Arezzo), Italy, final grade: 100/100.

AFFILIATION

2019-
November 2019 - May 2023   Siena Artificial Intelligence Lab, Siena, Italy
Department of Computer Science, University of Pisa, Pisa, Italy
Institute of informatics and Telematics of CNR, Pisa, Italy

September 2021 - March 2022   School of Mathematical Sciences, Queen Mary University of London, London, United Kingdom

FIELDS OF INTEREST

My main research interests are in the field of network analysis and machine learning, with applications to bioinformatics and science of science. My current activity mostly focuses on the theoretical study of multilayer networks, higher-order networks and simplicial complexes, with emphasis on their application to multi–omics and bibliometric data.

PERSONAL SKILLS

Mother tongue(s)	Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English*	C1	C2	C2	C2	C2
French	B1	B1	A2	A2	A2

*in possession of IELTS Academic certification with overall band score 8.0.

Computer skills

- Python (advanced, with experiences in *Tensorflow* and *Gurobi*)

- MATLAB (advanced)

- R for statistical analysis

- LaTex (advanced)

- C (basic)

- Gephi for graph visualization and analysis

Driving licence	B

WORKSHOP & CONFERENCES

November 2022
International Workshop on Statistical inference for assessing and monitoring natural resources and biodiversity, Siena, Italy.
Presenting a work with title *Integration of similarity networks for combining multiple relations between biological species*.

October 2022
Conference of Complex Systems, Satellite event *Artificial Intelligence in complex systems: machine learning perspectives on complex networks,* , Palma de Mallorca, Spain.
Presenting a work with title *Weighted Simplicial Complexes and their Representation Power of Higher-Order Network Data and Topology*.

July 2022
Lipari School of Computational Complex and Social Systems - Data science: Models, Algorithms, AI and Beyond, Lipari, Italy.
Attendance as auditor.

November 2020
9th Italian Workshop on Machine Learning and Data Mining.
Presenting a work with title *Graph–Based Integration of Histone Modifications Profiles: Haematopoietic Cell Differentiation as a Case Study*.

July 2020
3rd Advanced Course on Data Science & Machine Learning, Certosa di Pontignano, Siena, Italy.
Presenting a poster with title *Network Analysis for the Integration of Histone Modification Data to Explain Haematopoiesis*.

REFEREE FOR JOURNALS

PLOS ONE, Scientific Reports, Computers in Biology and Medicine, Neurocomputing, Neural Computing and Applications.

[1] Baccini, F., Barabesi, L., & Petrovich, E. (2023). Similarity matrix average for aggregating multiplex networks. *Journal of Physics: Complexity*, 4(2), 025017. `https://doi.org/10.1088/2632-072X/acda09`.

[2] Baccini, F., Geraci, F., & Bianconi, G. (2022). Weighted simplicial complexes and their representation power of higher-order network data and topology. *Physical Review E*, 106(3), 034319. DOI: `https://doi.org/10.1103/PhysRevE.106.034319`.

[3] Baccini, F., Barabesi, L., Baccini, A., Khelfaoui, M., & Gingras, Y. (2022). Similarity network fusion for scholarly journals. *Journal of Informetrics*, 16(1), 101226. DOI: `https://doi.org/10.1016/j.joi.2021.101226`.

[4] Baccini, F., Bianchini, M., & Geraci, F. (2022). Graph-Based Integration of Histone Modification Profiles. *Mathematics*, 10(11), 1842. DOI: `https://doi.org/10.3390/math10111842`.

[5] Guerranti, F., Mannino, M., Baccini, F., Bongini, P., Pancino, N., Visibelli, A., & Marziali, S. (2021). CaregiverMatcher: graph neural networks for connecting caregivers of rare disease patients. *Procedia Computer Science*, 192, 1696-1704. DOI: `https://doi.org/10.1016/j.procs.2021.08.174`.