



Universiteit
Leiden
The Netherlands

Learning under constraints: inference, selection and validation with maximum entropy models

Giuffrida, F.

Citation

Giuffrida, F. (2026, September 10). *Learning under constraints: inference, selection and validation with maximum entropy models*. Retrieved from <https://hdl.handle.net/1887/4309386>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4309386>

Note: To cite this publication please use the final published version (if applicable).

Acknowledgements

These acknowledgements mention very few names: the people who accompanied me through these years are simply too many. I hope that each of them will recognise themselves, at least in part, in the words that follow.

First of all, I wish to thank my supervisors, Diego Garlaschelli and Peter Grünwald, who both represent to me an example of curious, genuine science that holds its ground, and who have been a guide throughout these years, academically and personally. Diego encouraged me from the very beginning to look beyond and to gain experience elsewhere: without his invitation, I might never have left for Leiden, and this journey would have unfolded very differently. I am grateful for our many conversations, both scientific and personal, which carried me through some of the most difficult moments along the way. I thank Peter for his patience in building a shared vocabulary, for listening to me, and for guiding me through a field that was not my own. I am also grateful to the Machine Learning group at CWI for welcoming me on many occasions in the months following my return to Lucca.

I would like to thank my friends and colleagues in Leiden, for filling my time in the Netherlands with new food and new languages, new experiences and new ways of seeing things — and for still being there, ever since.

I thank the entire NETWORKS unit in Lucca, in its past and present composition: each of its members contributed to a different phase of my doctoral path. In particular, I thank Tommaso and Tiziano, who witnessed from the start my attempts to find my footing among the topics at the heart of this thesis and who contributed actively to its realisation.

More broadly, I am grateful to my friends and colleagues in Lucca, who have been a source of inspiration, warmth and familiarity from the first year of my PhD until today: from the microeconomics exercises of that first year to the final stretch, I am not sure I could have done this without you. A special mention goes to Alessio, with whom I shared nearly every phase of this long journey — taking apart his most outlandish ideas has been one of the most scientifically valuable exercises I have had the honour of performing.

I also wish to acknowledge the community of researchers and friends I have met over the years at conferences, from NetSci — including its Dutch edition — to CCS. These meetings offered this work, and me, essential moments of confirmation and growth, and introduced me to many curious and delightful people whom I hope to meet again along the strange paths that life takes.

To my friends Marco, Clara, Anna, Lorenzo and Lisa: thank you for managing to be there, even while scattered across Europe.

To my ever-growing family, including its youngest members: I still owe you all a proper explanation of what it is I actually do (and perhaps I always will). I am grateful for your presence and your support, which I feel strong and steady even when I forget to call (sorry, Mum).

To Agnese's family, thank you for all the birthdays celebrated "as a surprise".

Finally, to Agnese, who has been there in every moment, the happiest ones and especially the hardest. Together, there is nothing we can't face.

Curriculum Vitae

Francesca Giuffrida was born in Rome, Italy, on August 28, 1995. She attended the Liceo Scientifico Taletè in Rome. In 2014, she enrolled in the Bachelor's degree programme in Physics at Sapienza University of Rome, where she graduated *cum laude* in 2017. She subsequently continued her studies at the same institution in Theoretical Physics, with a focus on Statistical Physics, obtaining her Master's degree *cum laude* in 2020. During the final months of her Master's, she became interested in Complex Systems and Network Science. Her Master's thesis, written under the supervision of Prof. Andrea Gabrielli and Prof. Giulio Cimini, focused on the introduction of link-to-link interactions in heterogeneous random graphs.

In November 2020, she began her PhD in Systems Science at the IMT School for Advanced Studies Lucca, within the ENBA track (Economics, Networks and Business Analytics), under the supervision of Prof. Diego Garlaschelli. During the first year of the PhD program, she completed coursework in econometrics, game theory, microeconomics, complex systems, and network science.

In November 2022, she became a PhD candidate at the LION Institute of Leiden University within a joint supervision agreement with IMT Lucca, under the supervision of Prof. Diego Garlaschelli and Prof. Peter Grünwald. She spent one year in Leiden and subsequently moved back to Lucca, while carrying out repeated research visits to Leiden University and to the Centrum Wiskunde & Informatica (CWI) in Amsterdam. In November 2024, she was awarded a one-year research fellowship at the University of Palermo, under the scientific supervision of Prof. Rosario N. Mantegna, which concluded in November 2025. She currently lives in Monza, Italy.