



Ivan Marisca

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LANGUAGES

Italian (Native)

English (Professional)

French (Basic)

Spanish (Basic)

About Me

I am a Ph.D. student at the **Graph Machine Learning Group**, within the Swiss AI lab **IDSIA** and **USI** - Università della Svizzera italiana (Switzerland), under the supervision of Prof. **Cesare Alippi**. Additionally, I am enrolled in the **ELLIS** Ph.D. program under the joint supervision of Prof. **Cesare Alippi** and Prof. **Michael Bronstein**. I am currently on a research visit at the **University of Oxford**, collaborating with Prof. **Michael Bronstein**.

Previously, I obtained BSc (2017) and MSc (2020) degrees in Computer Science and Engineering at **Politecnico di Milano** (IT). My master thesis project has been supervised by Prof. **Nicola Gatti**.

My research focuses on **graph deep learning** for **irregular spatiotemporal data**. I'm interested in the applications of **graph-based** methods in problems regarding data coming from **sensor networks**, like **imputation**, **regularization**, and **prediction** of observations.

Education

Ph.D. Student in Informatics 2020 — ongoing

📍 **Università della Svizzera italiana (USI)**

Currently, I am a Ph.D. Student at the Swiss AI Lab IDSIA at USI Università della Svizzera Italiana, under the supervision of Prof. Cesare Alippi.

Research visit Mar 2024 — Aug 2024

📍 **University of Oxford**

6-month research visit within the group of Prof. **Michael Bronstein**.

MSc in Computer Science and Engineering 2017 — 2020

📍 **Politecnico di Milano**

Master's degree with honors (110/110L), defending a thesis on machine learning. During the two years of studies, I mostly attended AI-oriented courses.

Exchange Sep 2018 — Jan 2019

📍 **Universitat Politècnica de València**

During the semester spent abroad – in Valencia – within the Erasmus program, I attended Spanish and English courses on programming, robotics and AI.

BSc in Engineering of Computing Systems 2014 — 2017

📍 **Politecnico di Milano**

The course program covered general topics of engineering and computer science.

High School in Mathematics 2009 — 2014

📍 **Liceo C. Caminiti (IT)**

High school diploma with a specific focus in mathematics and science.

Academic Activities

Teaching

- **Advanced Topics in Machine Learning** (TA) – MSc at USI Sep 2023 — Jan 2024
Teaching assistant, involved in course organization, lecture preparation and student tutoring.
- **Graph Deep Learning** (TA) – MSc at USI Feb 2023 — Jun 2023
Lectures design and students tutoring on team projects.
- **Advanced Topics in Machine Learning** (TA) – MSc at USI Sep 2022 — Jan 2023
Students tutoring for projects on reproducibility.
- **Graph Deep Learning** (TA) – MSc at USI Feb 2022 — Jun 2022
I gave a lecture on Spatiotemporal Graph Neural Networks and tutored students on projects.
- **Introduzione all'Intelligenza Artificiale e ML** (TA) – MSc at USI Sep 2021 — Jan 2022
Course on AI and ML delivered in Italian for high school teachers.
- **Machine Learning** (TA) – BSc at USI Feb 2021 — Jun 2021
Lab sessions on practical aspects and show how to design machine learning solutions to real-world problems.


Last update: Jul 13, 2024

I hereby authorize the use of my personal data in accordance to the GDPR 679/16 - "European regulation on the protection of personal data".

Supervised students

- **Valentina Moretti**, MSc at University of Bologna Ongoing
State Initialization in Recurrent Neural Networks.
- **Simone Mugnai**, MSc at University of Bologna 2024
Graph-based Imputation and Smoothing for Forecasting with Missing Data
- **Marco Latella**, MSc at USI 2022
Graph Representation Learning for Multi-site Photovoltaic Energy Production

Talks

- **Invited talk** at University of Oxford May 2024
Talk on graph deep learning for irregular spatiotemporal data at the **Learning on Graphs and Geometry (LoG²)** seminar series.
- **Invited talk** at Baker Hughes (Virtual) Jul 2022
Seminar on time series imputation for the Baker Hughes' AI team.
- **Spotlight talk** at TGL Workshop (New Orleans) Dec 2022
Presenting the paper **Scalable Spatiotemporal Graph Neural Networks** at the **Temporal Graph Learning Workshop** at NeurIPS 2022.
- **Reading group presentation** at TGL reading group (Virtual) Feb 2024
Presenting the paper **Taming Local Effects in Graph-based Spatiotemporal Forecasting** at the **Temporal Graph Learning Reading Group**. ( **Video**)
- **Reading group presentation** at TGL reading group (Virtual) Apr 2023
Presenting the paper **Scalable Spatiotemporal Graph Neural Networks** at the **Temporal Graph Learning Reading Group**.
- **Poster presentation** at NeurIPS (New Orleans) Dec 2023
Presenting **Taming Local Effects in Graph-based Spatiotemporal Forecasting** at the 37th Conference on Neural Information Processing Systems.
- **Poster presentation** at AAAI (Washington D.C.) Feb 2023
Presenting **Scalable Spatiotemporal Graph Neural Networks** at the 37th AAAI Conference on Artificial Intelligence.
- **Poster presentation** at NeurIPS (New Orleans) Nov 2022
Presenting **Learning to Reconstruct Missing Data from Spatiotemporal Graphs with Sparse Observations** at the 36th Conference on Neural Information Processing Systems.
- **Poster presentation** at ICLR (Virtual) Apr 2022
Presenting **Filling the G_ap_s: Multivariate Time Series Imputation by Graph Neural Networks** at the 10th International Conference on Learning Representations.
- **Abstract presentation** at MLDM (Virtual) Nov 2021
Presenting the abstract "Multivariate Time Series Imputation by Graph Neural Networks" at the 10th Italian Workshop on Machine Learning and Data Mining.

Awards & Scholarships

- **Doctoral Mobility grant** — Università della Svizzera italiana Dec 2023
Grant of CHF 20'000 (≈\$23K) for a 6-month research stay at **University of Oxford** to work with Prof. Michael Bronstein's group.
- **Travel Award** — NeurIPS Dec 2023
Travel award to attend the NeurIPS conference in New Orleans (US).
- **Best Paper Award** — **Temporal Graph Learning Workshop @ NeurIPS** Dec 2022
For the paper **Scalable Spatiotemporal Graph Neural Networks**.
- **Travel Award** — NeurIPS Nov 2022
Travel award to attend the NeurIPS conference in New Orleans (US).
- **Scholarship** — National Association SAPAR 2019
Scholarship awarded to the top-4 students in STEM subjects.
- **Scholarship** — Politecnico di Milano 2019
Reduced tuition for high merits.

Program Committee Member

- **Journals**

IEEE Transactions on Neural Networks (TNNLS) — Neural Networks

- **Conferences**

Advances in Neural Information Processing Systems (NeurIPS) — International Conference on Machine Learning (ICML) — International Joint Conference on Neural Networks (IJCNN)

Projects

I believe in worldwide accessibility of science. As such, I make the software I develop for my research publicly available through [my GitHub page](#). You can also find the code related to my publications on the [GitHub page of Graph Machine Learning Group](#).



Torch Spatiotemporal

Torch Spatiotemporal (**TSL**) is a library built upon [PyTorch](#) and [PyG](#) for neural spatiotemporal data processing, with a focus on Graph Neural Networks.



[GitHub](#)



[Documentation](#)

Other projects

- **GraPV**

Sep 2020 — Feb 2023

Developing of graph-based methods for multi-site photovoltaic power forecasting, to improve accuracy on portfolio production prediction. The solution is based on novel graph-based AI strategies exploiting existing heterogeneous information and related dependencies. Joint project in collaboration with [DXT Commodities](#), funded by [Innosuisse](#).

Publications

Graph-based Forecasting with Missing Data through Spatiotemporal Downsampling

Ivan Marisca, Cesare Alippi, Filippo Maria Bianchi

International Conference on Machine Learning, 2024

Graph Deep Learning for Time Series Forecasting

Andrea Cini, **Ivan Marisca**, Daniele Zambon, Cesare Alippi

Preprint, 2023

Taming Local Effects in Graph-based Spatiotemporal Forecasting

Andrea Cini*, **Ivan Marisca***, Daniele Zambon, Cesare Alippi

Advances in Neural Information Processing Systems, 2023

Scalable Spatiotemporal Graph Neural Networks

Andrea Cini*, **Ivan Marisca***, Filippo Maria Bianchi, Cesare Alippi

Proceedings of the AAAI conference on artificial intelligence, 2023

Learning to Reconstruct Missing Data from Spatiotemporal Graphs with Sparse Observations

Ivan Marisca*, Andrea Cini*, Cesare Alippi

Advances in Neural Information Processing Systems, 2022

Filling the G_ap_s: Multivariate Time Series Imputation by Graph Neural Networks

Andrea Cini*, **Ivan Marisca***, Cesare Alippi

International Conference on Learning Representations, 2022

*Equal contribution.