

# Lev Telyatnikov

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📍 Rome, Italy

in [levtelyatnikov](#)

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## Research area: Topological Deep Learning and Topology Inference

### Education

**Ph.D. in Data Science**, Sapienza University, Oct. 2021–Oct. 2024, Italy  
**Visiting Ph.D. student**, New York University, Apr. 2024–Oct. 2024, USA  
**Visiting Ph.D. student**, Cambridge University, Jan. 2023–Aug. 2023, UK  
**M.S. in Data Science**, Sapienza University, 2019–2021, Italy  
**B.S. in Applied mathematics and Computer science**, PFUR, 2015–2019

### Publications ([Google scholar](#))

**Conference: NeurIPS (A++)**, Under submission. 📄

**TopoBenchmarkX: A Framework for Benchmarking Topological Deep Learning** This work introduces TopoBenchmarkX, a modular open-source library designed to standardize benchmarking and accelerate research in Topological Deep Learning.

**Conference: ICLR (A++)**, 2023

**From Latent Graph to Latent Topology Inference: Differentiable Cell Complex Module.** We present the [Differentiable Cell Complex Module for inferring sparse and irregular graph topology](#), capturing multi-way interactions between data points. The two-step inference maintains [scalability](#) by avoiding exhaustive search. [The approach surpasses state-of-the-art techniques](#), providing significant improvements, across homophilic and heterophilic datasets.

**Conference: AISTATS (A+)**, 2023

**EGG-GAE: scalable graph neural networks for tabular data imputation.** We introduce an efficient graph autoencoder for addressing the Missing Data Imputation (MDI) problem. Our approach involves [inferring the optimal graph connectivity in the latent space, considering both the downstream tasks and MSI](#). We demonstrate significant improvements across multiple benchmarks and baselines regarding imputation error and final downstream accuracy.

**Conference: ACM CoNEXT, Graph Neural Networking Workshop + Oral at LoG, 2023**  
**[Topological Graph Signal Compression](#)**

In this paper, we introduce a novel method for graph signal compression using topological-inspired message passing. Our approach significantly reduces reconstruction errors by effectively compressing temporal link-based signals from real-world datasets.

### Awards and activity

**6G Goal-Oriented AI-enabled Learning and Semantic Communication Networks**

I am engaged as a researcher in a major European initiative to advance AI-enabled learning and semantic communication networks.

**Organizer, ICML Topological Deep Learning Challenge at the GRaM Workshop, 2024**

The challenge focuses on representing data in a topological domain, bridging the gap between topological deep learning and structured data. Successfully engaged 56 participating teams.

**Core developer of the open-source PyT package suite, 2024**

Created and maintained the PyT package suite, which has garnered over 500 stars. Made significant contributions to the TopoModelX and TopoBenchmarkX libraries.

**Winner of ICML Topological Deep Learning Challenge, 2023**

**Winner of Image Search Engine Challenge, Google competition, 2021**

### Work Experience

**Research Fellow, Ecole Polytechnique, France, Jan. 2021 – Sep. 2021**

Enabled manipulation of intrinsic and extrinsic symmetries in 3D shapes, enhancing zero-shot classification accuracy by 2% and improving object denoising performance by 4% over SOTA.

**Research Data Scientist Intern, Translated, Italy, Jan. 2021 – Sep. 2021**

Developed a self-supervised representation learning pipeline for cross-lingual prosody transfer between Italian↔English. Achieved a 5% improvement in the Mean Opinion Score (MOS).

**Data Scientist Intern (NLP), Bank, June 2020 – Dec. 2020**

Deployed an audio denoising and speech defect classification (SPC) system into an automated hiring process. Successfully integrated the pipeline into production, streamlining evaluations.

### About me

My name is Lev Telyatnikov, and I am a final-year doctoral student at Sapienza University under the supervision of Simone Scardapane. I am finalizing my thesis for submission by the end of October, with a defense scheduled for January 2025.

Throughout my doctoral studies, I have been deeply engaged in research focused on higher-order neural networks (topological and hypergraphs), topology latent learning, and their applications. You can find a comprehensive list of my publications and other relevant activities on my [Google Scholar profile](#).

### Computer Skills

**Programming Language:**

Python, R, MATLAB, SQL

**Frameworks/Libraries:**

PyTorch, TensorFlow, OpenCV, scikit-learn, pandas, NumPy

**Other Software/Tools:**

Git, Apache Hadoop, Spark, Docker, MongoDB, AWS

### Language Skills

**English** (Advanced, C2)

**Italian** (Intermediate, B1)

### References

**[Simone Scardapane](#), Sapienza**  
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### Interests

Topological Deep Learning, Graph Neural Networks, Signal Processing, Data Imputation, Message Passing, Network Traffic Compression, Topological Domains, Homophily and Heterophily in Neural Networks, Compression, Benchmarking Frameworks, Representations Learning, Geometric Deep Learning