

# Irene Cannistraci

## Postdoctoral Researcher

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## EDUCATION

**Ph.D. in Computer Science,**  
*Sapienza University of Rome*

Nov 2020 - Jan 2025  
Rome, Italy

Thesis: Improving Neural Networks Efficiency via Representation Similarities  
Advisor: Prof. Emanuele Rodolà  
Grade: Summa Cum Laude

**M.Sc. in Computer Science**  
*Sapienza University of Rome*

Sep 2018 - Oct 2020  
Rome, Italy

Grade: 110/110 cum laude

**B.Sc. in Computer Science**  
*Sapienza University of Rome*

Sep 2013 - Mar 2017  
Rome, Italy

## EXPERIENCE

**Postdoctoral Researcher**  
*ETH Zürich, Department of Computer Science*

Upcoming (Feb 2025)  
Zürich, Switzerland

Working on representation learning, multimodal machine learning, generative Ai, and healthcare in the MDS Lab, led by prof. Julia Vogt

**International Research Visit**  
*Institute of AI for Health, Helmholtz Munich*

Feb 2024 - July 2024  
Munich, Germany

Working at the intersection of representation learning, geometric deep learning, and topological machine learning in the AIDOS Lab, led by prof. Bastian Rieck

**Teaching Assistant**  
*LUISS Guido Carli University*

Sept 2023 - May 2024  
Rome, Italy

Lectured and mentored 40+ students for the Data Science in Action MSc course, and designed and implemented the course lab sessions.

**Teaching Assistant**  
*Sapienza University of Rome*

Feb 2023 - Jun 2023  
Rome, Italy

Lectured and mentored 80+ students for the Deep Learning and Applied AI MSc course.

**Software Developer Engineer**  
*NTT Data*

Jun 2017 - Feb 2019  
Rome, Italy

Developing multiple software for several international customers such as Enel and Telecom.

## SELECTED INVITED TALKS

**From Bricks to Bridges: Product of Invariances to Enhance Latent Space Communication**  
*Helmholtz AI, Helmholtz Munich*

29 Feb 2024  
Munich, Germany

Hosted by Prof. Stefan Bauer. Slides here

**Unifying Representations by Infusing Invariances in the Latent Space**  
*Tübingen AI center*

22 Jul 2023  
Tübingen, Germany

**Communicating between latent spaces with limited semantic correspondence**  
*Trento AI Journal Club*

31 Mar 2022  
Trento, Italy

Slides here

**Panelist for the Women in Data Science Event**  
*WiDS Rome Event*

24 Jun 2021  
Virtual

## AWARDS

**WIML Travel Grant**

Dec 2024

Travel Grant for attending NeurIPS

**ELISE Mobility Program for PhDs**

Mar 2024

Travel Grant of €5,000 for junior researchers in the ELISE/ELLIS network

**G-Research Grant for PhD Students**

Feb 2024

Research grant of £2,000 for PhD students and postdocs in quantitative fields

**Helmholtz Visiting Researcher Grant**

Feb 2024

Three months fully-funded research stay at the Helmholtz Munich (Apr-Jun)

**WIML Travel Grant**

Dec 2023

Travel Grant for attending NeurIPS

**Kickstarting Research Funding**

Nov 2022

Research grant of €1,000 for young researchers and Ph.D. students

**Women in Technology Scholarship**

Mar 2022

Grant of US\$8,000 for women of any age and nationality, pursuing an IT degree

## PROFESSIONAL ACTIVITIES

**Co-Organizer**  
UniReps@NeurIPS2024

**Reviewer**  
ICML, ICLR, NeurIPS, Re-Align@ICLR2023, NeurReps, UniReps, New in ML, WiML @NeurIPS2023, ACM TKDD 2021

**Volunteering**  
WiML@NeurIPS2023, NeurIPS2024

## TECHNICAL SKILLS

Representation Learning

Multimodal

Deep Learning

Computer Vision

Foundation Models

Transformers

NLP

Git

Python

PyTorch

## PUBLICATIONS

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### Peer reviewed

- [1] D. Avola, I. **Cannistraci**, M. Cascio, L. Cinque, A. Fagioli, G. L. Foresti, E. Rodolà, and L. Solito. "MV-MS-FETE: Multi-view multi-scale feature extractor and transformer encoder for stenosis recognition in echocardiograms". In: *Computer Methods and Programs in Biomedicine* 245 (2024), p. 108037.
- [2] I. **Cannistraci**, L. Moschella, M. Fumero, V. Maiorca, and E. Rodolà. "From Bricks to Bridges: Product of Invariances to Enhance Latent Space Communication". In: *The Twelfth International Conference on Learning Representations (ICLR 2024, spotlight, top 5%)*. 2024. URL: <https://openreview.net/forum?id=vngVydDWft>.
- [3] M. Prata, G. Masi, L. Berti, V. Arrigoni, A. Coletta, I. **Cannistraci**, S. Vyetenko, P. Velardi, and N. Bartolini. "Lob-based deep learning models for stock price trend prediction: a benchmark study". In: *Artificial Intelligence Review* 57.5 (2024), pp. 1–45.
- [4] D. Avola, I. **Cannistraci**, M. Cascio, L. Cinque, A. Diko, D. Distanto, G. L. Foresti, A. Mecca, and I. Scagnetto. "Real-Time GAN-Based Model for Underwater Image Enhancement". In: *International Conference on Image Analysis and Processing ICIAP 2023*. Springer. 2023, pp. 412–423.
- [5] I. **Cannistraci**, L. Moschella, V. Maiorca, M. Fumero, A. Norelli, and E. Rodolà. "Bootstrapping Parallel Anchors for Relative Representations". In: *The First Tiny Papers Track at ICLR 2023, Tiny Papers @ ICLR 2023, Kigali, Rwanda, May 5, 2023*. Ed. by K. Maughan, R. Liu, and T. F. Burns. OpenReview.net, 2023. URL: <https://openreview.net/pdf?id=VBuUL2IWlq>.
- [6] D. Crisostomi, I. **Cannistraci**, L. Moschella, P. Barbiero, M. Ciccone, P. Liò, and E. Rodolà. "From Charts to Atlas: Merging Latent Spaces into One". In: *NeurIPS 2023 Workshop on Symmetry and Geometry in Neural Representations (NeurReps @ NeurIPS 2023)* (2023). URL: <https://arxiv.org/abs/2311.06547>.
- [7] D. Avola, I. **Cannistraci**, M. Cascio, L. Cinque, A. Diko, A. Fagioli, G. L. Foresti, R. Lanzino, M. Mancini, A. Mecca, and D. Pannone. "A Novel GAN-Based Anomaly Detection and Localization Method for Aerial Video Surveillance at Low Altitude". In: *Remote Sensing* 14.16 (2022), p. 4110.

### Under Revision

- [8] I. **Cannistraci**, E. Rodolà, and B. Rieck. "Detecting and Approximating Redundant Computational Blocks in Neural Networks". In: *arXiv preprint arXiv:2410.04941* (2024).

### Preprints

- [9] I. **Cannistraci**, M. Fumero, L. Moschella, V. Maiorca, and E. Rodolà. "Infusing invariances in neural representations". In: *Extended Abstract, TAG-ML workshop @ ICML 2023* (2023). URL: <https://openreview.net/pdf?id=mCm4iiNoNc>.
- [10] M. Maranghi, A. Anagnostopoulos, I. **Cannistraci**, I. Chatzigiannakis, F. Croce, G. Di Teodoro, M. Gentile, G. Grani, M. Lenzerini, S. Leonardi, et al. "AI-based Data Preparation and Data Analytics in Healthcare: The Case of Diabetes". In: *arXiv preprint arXiv:2206.06182* (2022).

## REFEREES

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**Prof. Emanuele Rodolà** *ERC grantee*

📍 Sapienza University of Rome  
@ rodola@di.uniroma1.it

**Prof. Bastian Rieck** *ERC grantee*

📍 University of Fribourg  
@ bastian@rieck.me