EMANUELE PALUMBO

PhD Student in Machine Learning @ ETH Zurich | epalu.github.io

Wehntalerstrasse 30, 8057 Zurich, CH | +41 76 530 3180 | Birthdate: 17.09.1996 | Nationality: Italian

emanuele.palumbo@inf.ethz.ch Google Scholar GitHub LinkedIn

EXPERIENCE

Apple AIML April 2025 – November 2025
ML Research Scientist Intern - Health AI *Zurich, Switzerland*

- Designed and trained a novel generative model on multimodal biosignal data, that uses wearable signals to synthesize arterial pressure waveforms for non-invasive cardiovascular monitoring.
- Explored methods for subject-specific personalized signal generation.
- Showed that cardiac biomarkers can be inferred from generated signals using a model trained solely on hemodynamic simulations, removing the need for invasive labels.
- Project selected for presentation at Apple Park, underscoring technical impact and relevance in the company; paper with research outcomes currently under review.
- Key contributions to a library to ease scaling and reproducibility of experiments on internal data.

EDUCATION

ETH Zurich 2022 – present
PhD Candidate, Institute for Machine Learning, Dept. of Computer Science *Zurich, Switzerland*

- Doctoral Fellow of the ETH AI Center
- Member of the Medical Data Science Group led by Prof. Julia Vogt
- **Key research areas**: Multimodal Learning, Generative Models, Unsupervised Learning, AI for Health

ETH Zurich 2018 – 2021
M. Sc. Data Science *Zurich, Switzerland*

- GPA: 5.49/6
- Master Thesis: *Structured Mixture-of-experts Multimodal Variational Autoencoders*

Università Politecnica delle Marche 2015 – 2018
B. Sc. Computer and Automation Engineering *Ancona, Italy*

- Final Grade : 110/110 *cum laude*
- Bachelor Thesis: *A MILP model for the maximum connected quasi-clique problem*

PUBLICATIONS †

- Deep Generative Clustering with Multimodal Diffusion Variational Autoencoders
  Palumbo, E., Manduchi, L. , Laguna, S., Chopard, D., and Vogt, J. E.
  International Conference on Learning Representations, 2024
- MMVAE+: Enhancing the Generative Quality of Multimodal VAEs without Compromises
  Palumbo, E., Daunhawer, I., and Vogt J. E.
  International Conference on Learning Representations, 2023
- Effective Bayesian Heteroscedastic Regression with Deep Neural Networks
  Immer, A.*, **Palumbo, E.***, Marx A., and Vogt, J. E.
  Advances in Neural Information Processing Systems, 2023

- From Logits to Hierarchies: Hierarchical Clustering made Simple (↗)
  Palumbo, E., Vandenhirtz M., Ryser A., Daunhawer I., and Vogt, J. E.
  International Conference on Machine Learning, 2025
- Identifiability Results for Multimodal Contrastive Learning (↗)
  Daunhawer, I., Bizeul, A., **Palumbo, E.**, Marx, A., and Vogt, J. E.
  International Conference on Learning Representations, 2023
- On the Limitations of Multimodal VAEs (↗)
  Daunhawer I., Sutter T. M., Chin-Cheong, K., **Palumbo, E.**, and Vogt, J. E.
  International Conference on Learning Representations, 2022
- 3DIdentBox: A Toolbox for Identifiability Benchmarking. (↗)
  Bizeul, A., Daunhawer, I., **Palumbo, E.**, Schölkopf, B., Marx, A., and Vogt, J. E.
  CleaR (Datasets Track) 2023.
- Therapeutic stays of Belarusian children in Italy: evaluation of their mental status, psychological consequences and physical health status. (↗)
  Ferrara, P., Pianese, G., Franceschini, G., **Palumbo, E.**, Ianni, A., Ghilardi, G..
  Minerva Pediatrics, 2021

---

* Equal contribution

† Preprints and Workshop Publications are listed on Google Scholar (↗)

AWARDS AND ACHIEVEMENTS

- Nov. 2024 **Top Reviewer**
  NeurIPS 2024 (↗)
- Dec. 2023 **Organizer and Program Chair**
  Deep Generative Models for Health workshop @ NeurIPS 2023 (↗)
- Oct. 2023 **Top Reviewer**
  NeurIPS 2023 (↗)
- May 2023 **Organizer and Program Chair**
  Time Series Representation Learning for Health workshop @ ICLR 2023 (↗)
- May 2022 **ETH AI Center Doctoral Fellowship**
  Recipient of the highly competitive ETH AI Center Doctoral Fellowship (↗)
  Supervised by Prof. Julia Vogt, with the co-supervision of Prof. Andrea Burden

RECENT TALKS

- 12/03/2024 **Invited talk** at **IBM Research Zurich**, *AI for Scientific Discovery*
  Generative Models for Representation Learning with Multiple Heterogeneous Modalities

REVIEWING EXPERIENCE

I reviewed for NeurIPS, ICML, and ICLR conferences, and was recognized as a Top Reviewer for NeurIPS 2023 and NeurIPS 2024.

TECHNICAL SKILLS

Programming Languages	Proficient with **Python**. Experienced in **Bash**. Familiar with **R**, **Matlab**, **C++**, **SQL**.
Deep Learning	Proficient with **PyTorch**, **TensorFlow**, **HuggingFace**.
Machine Learning	Proficient with **NumPy**, **Pandas**, **Scikit-learn**, **Matplotlib**. Familiar with **OpenCV**, **SciPy**, **NLTK**.
Software Engineering & Other	Proficient with **Unix**, **Vim**, **TEX**, **Git**. Experienced with **Docker**. Familiar with **CI/CD** tools.

LANGUAGES

Italian	Native	**Spanish**	Intermediate proficiency
English	Full professional proficiency	**German**	Basic proficiency