



ALESSIO DEVOTO

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EDUCATION

PhD in Data Science La Sapienza, University of Rome. Focus on Efficient and Adaptive neural networks and Explainability for AI models. Supervisor: Prof. Simone Scardapane.	Nov 2022 – Present
Visiting Researcher The University of Edinburgh. Focus on NLP with emphasis on efficient inference and explainability.	Mar 2024 – Jul 2024
Master's Degree in Computer Engineering La Sapienza, University of Rome – Final mark: 110/110 cum Laude.	Sep 2019 – Jan 2022
Visiting Student Universidad Politecnica de Valencia, Spain.	Feb 2021 – Jul 2021
Bachelor's Degree in Control and Computer Engineering La Sapienza University of Rome – Final mark: 110/110 cum Laude.	Sep 2016 – Oct 2019

EXPERIENCE

Teaching Assistant Teaching assistant for Neural Networks for Data Science Applications. Led hands-on PyTorch tutorials and project supervision for 120+ MSc students.	Sep 2023 – Present
ICF trainee Coach Training to become a life & business coach (30+ hours experience as individual coach).	Feb 2020 – Present
Tutor Tutor for 40+ university/high school students (Maths, Latin, Ancient Greek).	Sep 2016 – Present
Research Internship – ISPAMM Lab Development of models for explainable High Energy Physics.	Jan 2022 – Nov 2022

BLOG

I maintain a small blog where I share code tutorials and insights on various deep learning topics, like implementing a *"ViT from scratch in pure JAX"* or *"Logitlens from scratch without interpretability libraries"*.
Visit my blog here: <https://alessiodevoto.github.io/blog>.

PROJECTS

Explainability for High Energy Physics Partnership with CERN and University of Liverpool. Developed explainability methods for AI models (mainly GNNs) for Science Discovery. MUCCA Project Website	Feb 2023 – Present
Next Generation 6G communications. EU funded project with academic and industrial partners. Designed adaptive neural networks to make communication pipelines efficient and goal-oriented, for next-generation 6G. 6G-GOALS Website	Mar 2023 – Present

SELECTED PUBLICATIONS

- A Simple and Effective L_2 Norm-Based Strategy for KV Cache Compression.** A. Devoto*, Y. Zhao*, S. Scardapane, and P. Minervini. *Empirical Findings in Natural Language Processing (EMNLP)*, 2024. ([arXiv:2406.11430](#))
- Steering Knowledge Selection Behaviours in LLMs via SAE-Based Representation Engineering.** Y. Zhao, A. Devoto, G. Hong, X. Du, A. P. Gema, H. Wang, K.-F. Wong, and P. Minervini. *arXiv preprint arXiv:2410.15999*, 2024.
- Adaptive Computation Modules: Granular Conditional Computation For Efficient Inference.** B. Wójcik, A. Devoto, K. Pustelnik, P. Minervini, and S. Scardapane. *Proceeding of 39-th the AAAI Conference on Artificial Intelligence (AAAI)*, 2024. [arXiv:2312.10193](#), 2024.
- Adaptive Layer Selection for Efficient Vision Transformer Fine-Tuning.** A. Devoto, F. Alvetreti, J. Pomponi, P. Di Lorenzo, P. Minervini, and S. Scardapane. *arXiv preprint arXiv:2408.08670*, 2024.
- Analysing the Residual Stream of Language Models Under Knowledge Conflicts.** Y. Zhao, X. Du, G. Hong, A. P. Gema, A. Devoto, H. Wang, X. He, K.-F. Wong, and P. Minervini. *Mechanistic Interpretability Workshop (MINT) NeurIPS 2024*. [arXiv:2410.16090](#), 2024.
- Are We Done with MMLU?** A. P. Gema, J. O. J. Leang, G. Hong, A. Devoto, A. C. M. Mancino, R. Saxena, X. He, Y. Zhao, X. Du, and M. R. G. Madani. *arXiv preprint arXiv:2406.04127*, 2024.
- Adaptive Semantic Token Selection for AI-native Goal-oriented Communications.** A. Devoto, S. Petruzzi, J. Pomponi, P. Di Lorenzo, and S. Scardapane. *Global Communications Conference (GlobeComm 2024)* [arXiv:2405.02330](#), 2024.
- Reidentification of Objects From Aerial Photos With Hybrid Siamese Neural Networks.** A. Devoto, I. Spinelli, F. Murabito, F. Chiovoloni, R. Musmeci, and S. Scardapane. *IEEE Transactions on Industrial Informatics*, vol. 19, no. 3, pp. 2997–3005, 2022. IEEE.
- Enhancing High-Energy Particle Physics Collision Analysis through Graph Data Attribution Techniques.** A. Verdone, A. Devoto, C. Sebastiani, J. Carmignani, M. D’Onofrio, S. Giagu, S. Scardapane, and M. Panella. *WIRN*, [arXiv:2407.14859](#) 2024.
- Conditional computation in neural networks: principles and research trends.** S. Scardapane, A. Baiocchi, A. Devoto, V. Marsocci, P. Minervini, and J. Pomponi. *Artificial Intelligence*, [arXiv:2403.07965](#) 2024.
- Cascaded Scaling Classifier: class incremental learning with probability scaling.** J. Pomponi, A. Devoto, and S. Scardapane. *arXiv preprint arXiv:2402.01262*, 2024.

TECHNICAL SKILLS

Deep Learning Frameworks: PyTorch, JAX, Hugging Face Transformers

Programming Languages: Python, C, Java

Development Tools: Git, Docker, Unix/Linux

Research Areas: Adaptive & Dynamic Neural Networks, Efficient Inference & Training, AI Interpretability

Web Development: HTML, JavaScript, CSS

LANGUAGES

Italian: Native

English: C2

Spanish: C1

Portuguese: B2 & learning