Valentino Maiorca (he/him)

🎓 h-Index (Google Scholar): 7
🐙 GitHub (800+★): github.com/flegyas

✉: valentino@maiorca.xyz
🌐: flegyas.github.io
in: valentino-maiorca

My research pioneers the "latent space communication" concept between neural networks, which we recently introduced in [1]. Enabling new approaches to model reuse, compatibility analysis, and deep insights into their representations. Recognized by top research venues (e.g., ICLR, NeurIPS, ICML, ACL, CoSyNe) and being a central topic of the UniReps Workshop @ NeurIPS 2023 & 2024, the community has just started using it to explore novel pathways in natural language processing, signal processing, computer vision, reinforcement learning, neuroscience, and beyond.

EDUCATION

Ph.D. in Computer Science

Sapienza University of Rome / Institute of Science and Technology, Austria   2021-now
Working on: Representation Learning & Latent Communication –**Advisors:** Prof. E. Rodolà, Prof. F. Locatello

MSc in Computer Science

*Sapienza University of Rome –**Grade: 110/110 with honors*   2021
Thesis: Text-driven Adversarial Attacks on Social Graphs –**Advisors:** Prof. E. Rodolà, Dr. R. Marin
Relevant courses: NLP, CV, Web and Social Information Extraction, ML, DL & AI, Linguistics, Bioinformatics.

BSc in Computer Science

*Sapienza University of Rome –**Grade: 102/110*   2019
Thesis work extended as company product and presented at ACL 2019 –**Advisor:** Prof. R. Navigli

EXPERIENCE

Babelscape.com   *Rome, Italy*

*NLP Engineer (**Best Employee 2020 Nominee**)*   *Jun 2019 - July 2021*
Improved the quality (+2% of the original metric for each module) and **doubled** the speed of the company's multilingual NLP pipeline. Developed a novel approach for multilingual named entity recognition data creation (published at EMNLP 2021).

Causal Learning and Artificial Intelligence Group   *Klosterneuburg, Austria*

Visiting Researcher @ ISTA   *Oct 2023 - Apr 2024*

- Collaborated with Prof. Francesco Locatello on formally framing the latent communication concept, and empirically with an extensive and first-of-its-kind Python library.
- Teaching Assistant for the *Applied Deep Learning for Scientists* course. Devising the tutorials and homeworks.

SELECTED PUBLICATIONS (FULL LIST ON GOOGLE SCHOLAR)

1. ***ICLR 2023 (oral)*** – *"Relative representations enable zero-shot latent space communication"* – L. Moschella*, <u>V. Maiorca</u>*, M. Fumero, A. Norelli, F. Locatello, and E. Rodolà

2. ***ACL 2023 (main)*** – *"Accelerating Transformer Inference for Translation via Parallel Decoding"*- A. Santilli, S. Severino, E. Postolache, <u>V. Maiorca</u>, M. Mancusi, R. Marin, E. Rodolà

3. ***NeurIPS 2023*** – *"ASIF: Coupled Data Turns Unimodal Models to Multimodal without Training"* – A. Norelli, M. Fumero, <u>V. Maiorca</u>, L. Moschella, E. Rodolà, and F. Locatello

4. ***NeurIPS 2023*** – *"Latent Space Translation via Semantic Alignment"* – <u>V. Maiorca</u>*, L. Moschella*, A. Norelli, M. Fumero, F. Locatello, and E. Rodolà

5. ***ICLR 2024 (spotlight)*** – *"From Bricks to Bridges: Product of Invariances to Enhance Latent Space Communication"* – I. Cannistraci, M. Fumero*, L. Moschella*, <u>V. Maiorca</u>, and E. Rodolà

6. ***NeurIPS 2024*** – *"Latent Functional Maps"* – *M. Fumero*, M. Pegoraro*, <u>V. Maiorca</u>, F. Locatello, and E. Rodolà*

Community

Open Source Projects: WikiNEuRal (**5M+ downloads**), nn-template (**600+** ★); Latentis (**40+** ★);

Reviewer Activity: *Outstanding Reviewer* for ICCV (2023), EMNLP (2022, tertiary reviewer), ICML (2024), ICLR (2024, also Volunteer), NeurIPS (2023), NeurReps (2022, 2023), UniReps (2023), TAG-ML (2023), NeurIPS (2024, tertiary reviewer), ICLR (2025, tertiary reviewer), AISTATS (2025);

Program Chair for UniReps @NeurIPS 2024: Unifying Representations in Neural Models

Selected Invited Talks

ICLR 2023 – *Oral presentation*   May 3, 2023
"Relative representations enable zero-shot latent space communication"   Kigali, Rwanda

First Workshop on Multimodal Representation Learning   May 5, 2023
Panelist   ICLR 2023, Kigali, Rwanda

BrainAI Meetings (ENS/Meta) – *Hosted by Prof. Jean-Rémi King*   June 8, 2023
Latent Space Communication   École Normale Supérieure, Paris, France

Universitat Pompeu Fabra – *Hosted by Prof. Marco Baroni*   Jun 12 & Sep 13, 2023
Leveraging Emerging Similarities for Latent Communication   Barcelona, Spain

IST Young Scientist Symposium (YSS)   Nov 9, 2023
Latent Communication in the era of huge pre-trained networks   ISTA, Austria

Vogel's Lab – *Hosted by Prof. Tim Vogels*   Mar 21, 2024
Data Semantics as a Latent Bridge   ISTA, Austria

Scholarships and Awards

- LazioDiSCo.it **Scholarship**   2013 2014 2019
- Imminent **Grant** "Incremental Parallel Inference for Machine Translation" by Translated.com   2022
- Lightning AI Travel **Scholarship**   2022
- **Outstanding Reviewer Award** at International Conference on Computer Vision (ICCV)   2023
- Sapienza Mobility **Grant**   2023
- **Top 5% paper** (oral) at International Conference on Learning Representations (ICLR)   2023
- **Top 5% paper** (spotlight) at International Conference on Learning Representations (ICLR)   2024

Referees

Emanuele Rodolà (*homepage*) – **Roberto Navigli** (*homepage*)
Francesco Locatello (*homepage*) – **Fabrizio Silvestri** (*homepage*)