Quentin Garrido

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Education

- **Meta - FAIR, Université Gustave Eiffel** — Paris, France
  *PhD in computer science; Co-advised by **Yann LeCun** and **Laurent Najman**.* — *Mar 2022 – Mar 2025*
- **École Normale Supérieure Paris-Saclay** — Gif-sur-Yvette, France
  *MSc in Mathematics, Computer Vision and Machine Learning (MVA); **highest honors*** — *2020 – 2021*
- **ESIEE Paris Engineering School** — Noisy-Le-Grand, France
  *MSc in Computer Science; **top of the class*** — *2016 – 2021*

Work Experience

- **Meta - FAIR** — Paris, France
  Research Scientist Assistant, CIFRE PhD program — *Mar 2022 – Mar 2025*
  - **Self-supervised learning**: Researched various aspects of self-supervised learning and its applications: theory, label-free evaluation, equivariant representation learning, application to physics, links to world modeling, study of physics understanding in video models. Led to 12 publications, including 6 (co-)first authored ones.
  - **Supervision**: Co-advised by *Yann LeCun* and *Laurent Najman*.
- **Facebook AI Research** — Paris, France
  Research internship — *May 2021 – Sept 2021*
  - **Self-Supervised Learning**: Developed a self-supervised approach to learn image representations that contain invariant and equivariant information with respect to a set of transformations. The method relies on the optimisation of regularized latent variables to learn the transformation in representation space.
  - **Supervision**: Supervised by *Yann LeCun* and *Laurent Najman*.
- **Heidelberg University - HCI - Image Analysis and Learning lab** — Heidelberg, Germany
  Research internship — *May 2020 – Aug 2020*
  - **Machine learning on graphs**: Developed a new autoencoder based dimensionality reduction method which aims to preserve the hierarchical properties present in the data.
    Combined deep learning methods and graph based techniques such as a density based Minimum Spanning Tree.
    Applied and evaluated the method on single-cell transcriptomics data to visualize cellular differentiation.
  - **Supervision**: Supervised by *Laurent Najman* and *Fred Hamprecht*.

Awards

- **ICLR 2023 Outstanding Paper Honorable Mention (9/1574 papers)**:
  On the duality between contrastive and non contrastive self-supervised learning
- **Ian Lawson Van Toch Memorial Award for Outstanding Student Paper 2022 (1/48 papers)**:
  Visualizing hierarchies in scRNA-seq data using a density tree-biased autoencoder

Publications

Highlighted publications

- **Quentin Garrido**, Yubei Chen, Adrien Bardes, Laurent Najman, and Yann LeCun. On the duality between contrastive and non-contrastive self-supervised learning. In *The Eleventh International Conference on Learning Representations*, 2023. **(Outstanding Paper Honorable Mention)**
- **Quentin Garrido**, Randall Balestriero, Laurent Najman, and Yann Lecun. Rankme: Assessing the downstream performance of pretrained self-supervised representations by their rank. In *International conference on machine learning*, 2023. **(Oral Presentation)**
- Adrien Bardes, **Quentin Garrido**, Jean Ponce, Xinlei Chen, Michael Rabbat, Yann LeCun, Mahmoud Assran, and Nicolas Ballas. Revisiting feature prediction for learning visual representations from video. *Transactions on Machine Learning Research*, 2024.

- **Quentin Garrido**, Mahmoud Assran, Nicolas Ballas, Adrien Bardes, Laurent Najman, and Yann LeCun. Learning and leveraging world models in visual representation learning. *arXiv preprint*, 2024.
- **Quentin Garrido**, Nicolas Ballas, Mahmoud Assran, Adrien Bardes, Mike Rabbat, Emmanuel Dupoux, Laurent Najman, and Yann LeCun. Intuitive physics understanding emerges from self-supervised pretraining on natural videos. *To Appear*.
- **Quentin Garrido***, Grégoire Mialon*, Hannah Lawrence, Danyal Rehman, Yann LeCun, and Bobak Kiani. Self-supervised learning with lie symmetries for partial differential equations. *Advances in Neural Information Processing Systems*, 36:28973–29004, 2023.

Other publications

- **Quentin Garrido**, Laurent Najman, and Yann Lecun. Self-supervised learning of split invariant equivariant representations. In *International Conference on Machine Learning*, 2023.
- **Quentin Garrido**, Sebastian Damrich, Alexander Jäger, Dario Cerletti, Manfred Claassen, Laurent Najman, and Fred A Hamprecht. Visualizing hierarchies in scrna-seq data using a density tree-biased autoencoder. *Bioinformatics*, 38(Supplement_1):i316–i324, 2022.
- Haider Al-Tahan, **Quentin Garrido**, Randall Balestriero, Diane Bouchacourt, Caner Hazirbas, Mark Ibrahim, and Meta FAIR. Scaling vision-language models does not improve relational understanding: The right learning objective helps. *NeurIPS datasets and benchmarks*, 2024.
- Randall Balestriero, Mark Ibrahim, Vlad Sobal, Ari Morcos, Shashank Shekhar, Tom Goldstein, Florian Bordes, Adrien Bardes, Gregoire Mialon, Yuandong Tian, et al. A cookbook of self-supervised learning. *arXiv preprint*, 2023.
- Florian Bordes, Randall Balestriero, **Quentin Garrido**, Adrien Bardes, and Pascal Vincent. Guillotine Regularization: Why removing layers is needed to improve generalization in Self-Supervised Learning. *Transactions on Machine Learning Research*, 2022.
- Florian Bordes, Richard Yuanzhe Pang, Anurag Ajay, Alexander C Li, Adrien Bardes, Suzanne Petryk, Oscar Mañas, Zhiqiu Lin, Anas Mahmoud, Bargav Jayaraman, et al. An introduction to vision-language modeling. *arXiv preprint*, 2024.
- Mark Ibrahim, **Quentin Garrido**, Ari Morcos, and Diane Bouchacourt. The robustness limits of sota vision models to natural variation. *Transactions on Machine Learning Research*, 2022.

Service and Teaching

Reviewer for ECCV (2022,2024), NeurIPS (2024), ICCV (2023), ICLR (2025), Self-Supervised Learning workshop at NeurIPS (2022/2023/2024).
Teaching Assistant for the Master level "Algorithm Design" class at ESIEE Paris (2021/2022/2023).

Invited talks

- **Guest Lecture at Brown University (30/10/2024)**: Self-supervised learning
- **IMAGINE Seminar (29/05/2024)**: Understanding Self-Supervised Learning to go beyond invariant image representations
- **GTTI Seminar (Centre Borelli) (29/02/2024)**: Self-Supervised Learning: From learning representations to learning world models
- **AI4Science Talks (30/11/2023)**: Self-Supervised Learning with Lie Symmetries for Partial Differential Equations
- **NYU CILVR Seminar (26/10/2023)**: Self-Supervised Learning: Going beyond images
- **Extrality Seminar (04/10/2023)**: Self-Supervised Learning with Lie Symmetries for PDEs
- **Thales Research Seminar (21/07/2023)**: On the duality between contrastive and non contrastive self-supervised learning