# Alice Bizeul

PhD Candidate at ETH Zürich & ETH AI Center

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## Education

**PhD Candidate, ETH AI Center, ETH Zürich**                    Sept 2021 – Feb 2026 (expected)
*Advisors*: Prof. Julia Vogt (ETH Zürich), Prof. Bernhard Schölkopf (Max Planck Institute)
*Research Focus*: My PhD focuses on self-supervised representation learning. I am excited about better understanding self-supervised learning methods and proposing more principled yet effective paradigms for learning representations that are meaningful in a range of diverse downstream tasks. These interests have also led me to explore multi-modal learning and generative modeling.

**MSc Life Sciences Engineering, EPFL**                    Sept 2018 – Aug 2020
*Selected classes*: Machine Learning, Deep Learning, Applied Data Analysis, Artificial Neural Networks
*GPA*: 5.5/6 (high honors)

**BSc Life Sciences Engineering, EPFL**                    Sept 2014 – June 2017
*Selected classes*: Calculus, Algebra, Physics, Chemistry, Numerical Analysis, Programming in C++
*GPA*: 5/6

## Experience

**Applied Scientist Intern, Amazon Research**                    Nov 2023 – Apr 2024
*Collaborators*: Alex Vorobiov, Matthew Shreeve
*Research focus*: I worked on text-to-image diffusion model fine-tuning, developing a novel fine-tuning approach to manipulate image semantic content.

**Research Assistant, Massachusetts Institute of Technology (MIT)**                    Feb 2020 – Aug 2020
*Advisors*: Prof. Satrajit Ghosh
*Research focus*: I conducted my Master's Thesis on the generation and representation of 3D MRI scans using deep generative models (GAN, VAE).

**R&D Engineer Intern, GTX Medical, Eindhoven, NL**                    Feb 2018 – July 2018
*Research Focus*: I developed an EMG automatic detection algorithm to improve spinal cord injury rehabilitation therapy.

**Research Assistant, Vision Institute, Paris, FR**                    Sept 2017 – Feb 2018
*Research Focus*: I developed an experimental setup combining fMRI & VR to study visual processing and spatial cognition. This internship resulted in one journal and one conference publications.

## Publications

**Bizeul, A.**, Sutter, T., Ryser, A., Von Kügelgen, J., Schölkopf, B., Vogt, J., (2024). *Components Beat Patches: Eigenvector Masking for Visual Representation Learning.* Under review. Link to manuscript. Presented to one NeurIPS 2024 workshop.

Reizinger, P.\*, **Bizeul, A.\***, Juhos, A.\*, Ibrahim, M., Balestreiro, R., Vogt, J., Wieland, B., Klindt, D., (2024). *Cross-Entropy Is All You Need To Invert the Data Generating Process.* ICLR (**Oral**). Link to manuscript.

**Bizeul, A.**, Schölkopf, B., Allen, C., (2024). *A Probabilistic Model Behind Self-supervised Representation Learning.* TMLR. Link to manuscript. Presented to two NeurIPS 2023 workshops.

**Bizeul, A.**, Daunhawer, I., Palumbo, E., Marx, A., Vogt, J., (2023). *3DIdentBox: A Toolbox for Identifiability Benchmarking.* CLeaR. Link to manuscript.

Daunhawer, I., **Bizeul, A.**, Palumbo, E., Marx, A., Vogt, J., (2023). *Identifiability Results for Multimodal Contrastive Learning.* ICLR. Link to manuscript.

Ramanoël, S., Durteste, M., **Bizeul, A.**, Ozier-Lafontaine, A., Bécu, M., Rossignol, N., (2022). *Selective neural coding of object, feature, and geometry spatial cues in humans.* Human Brain Mapping. Link to manuscript.

Ramanoël, S., Durteste, M., **Bizeul, A.**, Ozier-Lafontaine, A., Bécu, M., Rossignol, N., Habas, C., Arleo, A., (2019) *Distinct cerebral structures are involved in landmark-vs. geometry-based spatial navigation.* Society for Neuroscience. Link to manuscript.

Please find a full overview of publications on my Google Scholar

## Skills

**Programming:** Python (TensorFlow, PyTorch), C/C++, MatLab, R
**Tools:** Unity, Blender
**Languages:** French (native), English (fluent), Dutch (elementary)

## Distinctions

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| ETH AI Center Doctoral Fellowship ($<4\%$ acceptance rate) | Sept 2021 |
| CLS Doctoral Fellowship (declined) | Sept 2021 |
| Palantir Women in Tech Scholarship | April 2019 |
| Prix de Mathématiques (to the best student in maths at the end of high school) | June 2014 |

## Supervision and Teaching

**MS Student Supervision** 2021 – 2024
I supervised multiple Master's students on semester projects and Master's theses during my PhD. These projects covered topics such as interpretable generative modeling, generative modeling in the frequency domain, and self-supervised learning in real-world settings as well as medical applications.

**Teaching Assistant, ETH Zürich** 2022 – 2024
Advanced Machine Learning, Machine Learning for Healthcare

**Teaching Assistant, EPFL** 2015 – 2018
Physics III, IV; Biology I, II

## Community Service

**ETH AI Center Post-Doctoral Symposium** 2021 – 2023
Supported the ETH AI Center in post-doctoral candidate screening, interviewing, and hiring.

**Reviewer for ML Conferences** 2021 – 2024
I served as a reviewer for Neurips (2021-2024), ICLR (2022–2025), ICML (2022–2023) conferences.