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 Kügelen, J., Schölkopf, B., Vogt, J., (2024). *Components Beat Patches: Eigenvector Masking for Visual Representation Learning.* Under review. Link to manuscript. To be 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.* Under review. Link to manuscript. To be presented to two NeurIPS 2024 workshops.

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

ETH AI Center Doctoral Fellowship (<4% acceptance rate) Sept 2021
CLS Doctoral Fellowship (declined) Sept 2021
Palantir Women in Tech Scholarship Apr 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 (2022–2024), ICML (2022–2023) conferences.