

Domenic Bersch

PhD Researcher
Computational Neuroscience & AI

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Research Summary

I study how biological and artificial systems learn and represent visual information, using comparisons between them to understand both. My research spans brain encoding models, in silico neuroscience, and vision model interpretability, with a growing focus on continual learning.

Looking For: Seeking a research internship in mechanistic interpretability or representation analysis of vision and multimodal models, with an additional interest in connections to neuroscience.

Publications

- 2026 **How Far Is Too Far? Object Recognition Declines Monotonically with Semantic Distance** 
D. Bersch, H.V. Tran, G. Roig
Conference on Neural Information Processing Systems (NeurIPS) · **Spotlight**
- 2026 **Vision Models Capture Complementary Representations in Children That Converge in Adults** 
D. Bersch, T. Schaumlöffel, M. Proietti, A. Franaszek-Traczewska, H.E. Zwad, S. Xie, et al.
Cognitive Computational Neuroscience (CCN) · **Spotlight** · **Contributed Talk**
- 2025 **Catalyzing In Silico Neuroscience with a Toolkit of Accurate Encoding Models of the Brain** 
A.T. Gifford, D. Bersch, D. Janini, G. Roig, R.M. Cichy
Cognitive Computational Neuroscience (CCN)
- 2025 **The Algonauts Project 2025 Challenge: How the Human Brain Makes Sense of Multimodal Movies** 
A.T. Gifford, D. Bersch, M. St-Laurent, B. Pinsard, J. Boyle, L. Bellec, A. Oliva, et al.
arXiv:2501.00504
- 2025 **Net2Brain: A Toolbox to Compare Artificial Vision Models with Human Brain Responses** 
D. Bersch, M.G. Vilas, S. Saba-Sadiya, T. Schaumlöffel, K. Dwivedi, et al.
Frontiers in Neuroinformatics, 19, 1515873

Education

- Jan 2024 – **PhD — Artificial Intelligence & Computational Neuroscience**
present Goethe University · Frankfurt, Germany · CVAI
Research on brain encoding models, model–brain alignment, and interpretability of deep neural networks.
- Apr 2021 – **M.Sc. Computer Science — Artificial Intelligence**
Jun 2023 Goethe University · Frankfurt, Germany
Master thesis: Model Calibration of Fine-Tuned Deep Neural Networks for Medical Applications
- Oct 2017 – **B.Sc. Computer Science**
Mar 2021 Goethe University Frankfurt · Frankfurt, Germany
Bachelor thesis: Towards a General Library for Deep Learning Models to Understand the Architecture of the Visual Cortex

Research Experience

- Jan 2024 – **Doctoral Researcher**
present CVAI Lab, Goethe University Frankfurt · Frankfurt, Germany
Research on visual representations in brains and deep neural networks; creator and lead developer of Net2Brain [↗](#) and lead developer of BERG [↗](#).
Supervisor: Prof. Dr. Gemma Roig
- Oct – Nov 2026 **Visiting Researcher**
Indian Institute of Technology Bombay · Mumbai, India
30-day research visit within the DAAD–DST Indo-German project exchange on adaptive deep neural networks under distribution shift, focusing on continual learning and catastrophic forgetting.

Industry Experience

- Jun 2022 – **Computer Vision Software Engineer (Working Student)**
Dec 2023 Seven Principles GmbH · Frankfurt, Germany
 - Developed and optimized computer vision and object recognition models for road safety.
 - Supported organization and technical coordination of a cross-company hackathon event.
 - Built reproducible ML workflows and model evaluation pipelines.
- Apr 2021 – **Data Scientist (Working Student)**
Jun 2022 Deloitte · Frankfurt, Germany
 - Built AI solutions in NLP for document question-answering systems.
 - Designed ML pipelines and CI/CD-based deployment workflows.
 - Automated data and business processes using ML and RPA tools.
- Oct 2019 – **IT Working Student**
Apr 2021 Deloitte · Frankfurt, Germany
 - Supported data systems and automated internal workflows.
 - Built analytics and reporting tools for tax declaration.
- 2019 & 2020 **Computer Science Working Student**
Sanofi · Frankfurt, Germany
Aug–Oct 2019: Python and SharePoint-based internal tools.
Aug–Oct 2020: VR/AR and internal software tooling support.
- Jun 2017 – **Technical Assistant**
Jul 2019 Bestlage 360 Immobilien (ISIS & Co) · Frankfurt, Germany
IT support and digital media production.
- Oct 2016 – **Lead Generation Agent**
Mar 2017 IDG Direct · Dublin, Ireland
Technical B2B lead generation.

Talks, Tutorials & Workshops

- 2026 **Keynote & Tutorial — In Silico Neuroscience: An Emerging Paradigm for Brain Discovery**
Cognitive Computational Neuroscience (CCN) · NYU, New York, USA
Keynote and hands-on tutorial on generating in silico neural responses at scale with BERG, presented with A.T. Gifford.
- 2026 **Spotlight Talk — Vision Models Capture Complementary Representations in Children That Converge in Adults**
Cognitive Computational Neuroscience (CCN) · NYU, New York, USA
Contributed talk in the session “Computational Psychiatry & Development”.
- 2024 **Workshop Host — Unveiling Cortical Functions with Net2Brain**
Cognition Academy 2024, Max Planck Institute · Dresden, Germany
Hands-on workshop on analyzing cortical function with brain and model representations.
- 2023 **Oral Presentation — Net2Brain**
Vision Sciences Society (VSS) · St. Pete Beach, Florida, USA

Student Supervision

- 2025 – **Student Project Supervision — Vision Transformer Interpretability**
present Research Project · Goethe University Frankfurt
Student research project on model interpretability of Vision Transformers
- 2024 **Bachelor’s Thesis Co-Supervision**
Artificial Intelligence · Goethe University Frankfurt
Bachelor’s thesis on model interpretability in computer vision.

Organization & Service

- 2026 – **Lead Organizer — Algonauts 2027 Challenge**
present Cognitive Computational Neuroscience (CCN) · Edinburgh, UK
In collaboration with CNeuroMod, launching late 2026 and featured at CCN 2027.
- 2025 **Co-Organizer and Presenter — Algonauts 2025 Award Ceremony**
Cognitive Computational Neuroscience (CCN) · Amsterdam, Netherlands
Organized and presented the challenge results and award session.
- Reviewer NeurIPS, ICLR, CVPR, CCN

Technical Skills

Models: Large language models (LLMs), vision-language models (VLMs), Vision Transformers (ViTs), CNNs

Research Software & Development: PyTorch, Hugging Face Transformers, Git, CI/CD, software testing, reproducible research workflows

Neural Data & Analysis: fMRI, EEG, MEG, brain encoding models, ridge regression, representational similarity analysis (RSA), model–brain alignment, in silico neuroscience

Evaluation & Interpretability: Probing, model interpretability, benchmark design, robustness and generalization evaluation

Computing & Tools: Linux, HPC clusters (SLURM), SQL, Power BI