Sam Gijsen

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Postdoctoral researcher building foundation models and multimodal representation learning systems for neural and physiological time series. First-author publications at ICLR 2026 and ICML 2025. Interested in applying deep learning to scientific problems at scale.

Selected Publications

Brain-Semantoks: Learning Semantic Tokens of Brain Dynamics with a Self-Distilled Foundation Model [link]

ICLR 2026, Gijsen, S, Schulz, M, Ritter, K

Self-distilled foundation model for brain dynamics. Pretrains in 2 hours, eliminates finetuning, exhibits log-linear scaling laws on cross-dataset downstream tasks.

EEG-Language Pretraining for Highly Label-Efficient Clinical Phenotyping [link]

ICML 2025, Gijsen, S, Ritter, K

First multimodal EEG-language model. Self-supervised pretraining with natural language supervision enables label-efficient clinical phenotyping.

Self-supervised deep learning for encoding pathological between-subject information in EEG data [link]

ICLR 2025, LMRL Workshop, Gijsen, S, Ritter, K

Neural surprise in somatosensory Bayesian learning [link]

PLOS Computational Biology 2021, Gijsen, S, ..., Blankenburg, F

Active inference and the two-step task [link]

Scientific Reports 2022, Gijsen, S, Grundei, M, Blankenburg, F

EEG mismatch responses in a multi-modal roving stimulus paradigm [link]

Human Brain Mapping 2023, Grundei, M, Gijsen, S, Blankenburg, F

Experience

Postdoctoral Researcher in Machine Learning — *Germany*

Tübingen AI Center, Hertie Institute for AI in Brain Health — *Jan. 2023 - PRESENT*

- Developed a self-distilled foundation model for neural time series; state-of-the-art performance across 10 tasks without finetuning (ICLR 2026)
- Built the first EEG-language multimodal model, showing that language supervision improves learned representations of neural data (ICML 2025)
- Led a team to 7th / 1,183 in the 2025 NeurIPS EEG Competition with a novel multi-modal fusion architecture

Research Assistant — *London, UK*

King's College London, Department of Neuroimaging — *Jul. 2017 - Sep. 2018*

- Pharmaco-imaging and analysis (time series, ICA) leading to two publications
- Project coordination and communication with scientists, radiologists, pharmacological industry, and medical staff

Intership — *London, UK*

King's College London, Department of Neuroimaging — *Nov. 2016 - Jul. 2017*

- Thesis: ICA for pharmaco-imaging timeseries

Research Assistant — *Maastricht, Netherlands*

Maastricht University — *Aug. 2016 - Nov. 2016*

- Designing, programming, and piloting experimental work using high-field MRI

Education

PhD + Dr. rer. nat. in Computational Cognitive Neuroscience — *Berlin, Germany*

Neurocomputation and Neuroimaging Unit, Freie Universität Berlin — *Oct. 2018 - Dec. 2022*

- Computational modeling of neural perceptual learning and decision making
- Competitive doctoral program (Mind and Brain - 10% Acceptance)
- Winner of DAAD International Research Scholarship (2 per year)
- Thesis: The brain as a generative model: information-theoretic surprise in learning and action [link]

MSc Research Master in Cognitive and Clinical Neuroscience *Maastricht, Netherlands*
Maastricht University *Oct. 2015 - Sep. 2017*

BSc Psychology *Maastricht, Netherlands*
Maastricht University *Oct. 2012 - Sep. 2015*

Selected Talks

[Poster] International Conference on Learning Representations (ICLR) *Rio de Janeiro, Brazil, 2026*
[Oral] Recent Advances in Machine Learning for Healthcare, PariSanté Campus *Paris, France, 2026*
[Poster] International Conference on Machine Learning (ICML) *Vancouver, Canada, 2025*
[Oral] Neural Traces: Advanced M/EEG Methods and Clinical Applications *Berlin, Germany, 2024*

Skills

Techniques Self-Supervised Learning„ Representation Learning, Time series, Multimodal ML, Experimental Design
Languages Python, Git, Bash, MATLAB
Machine Learning Pytorch, Scikit-Learn, SciPy, PyMC, SQL, NumPy, Pandas
Communication English (Fluent), Dutch (Mother Tongue), German (Intermediate)