Caroline Haimerl

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google scholar profile
GitHub profile

current research

Champalimaud Centre for the Unknown, Lisbon, Portugal

2022-now **Postdoctoral researcher**
advisors: Joe J. Paton and Christian Machens

Project: flexible, multiscale behavior enabled by hierarchical representations and parallel learning in corticostriatal circuitry.
Methods: modular neural networks trained with reinforcement learning and inverse action objectives, neural population analysis in experimental collaborations

Project: representational drift without synaptic plasticity, through simple changes in excitability and recurrent dynamics
Methods: spiking network models, encoding-decoding theory

education

New York University, NY, US

2016-2022 **PhD Neuroscience**
advisors: Eero P. Simoncelli and Cristina Savin
affiliation: Center for Neural Science

Project: fast task-adaptation, development of a novel theory of how task-information can be transferred flexibly in biological and artificial neural networks based on labeling through latent dynamic modulators
Methods: bayesian inference, latent dynamical models, artificial neural networks, neural data analysis

University of Vienna, AUT

2012-2016 **Bachelor of Science - Psychology**

2011-2015 **Bachelor of Science - Statistics**

University of Chicago, IL, US

2015 exchange program with focus computational neuroscience

awards

2024 **Simons Collaboration on the Global Brain Transition to Independence Award**
2024 Portuguese Society for Neuroscience travel award for conference attendance
2022 NYU Dissertation award
2019-2021 **Google PhD fellowship**
2016-2018 MacCracken Fellowship for Doctoral Studies, NYU
2018 COSYNE travel grant for presenters
2017 CAJAL Stipend to attend summer school
2017 Dean's student travel grant to present research
2015-2016 Erasmus stipend for research abroad
2015 Scholarship for Exchange Semester, awarded by the University of Vienna
2014 Merit Scholarship
Department of Psychology, University of Vienna
2013 Merit Scholarship
Department of Statistics and Operations Research, University of Vienna

previous research

Google Brain, virtual, US
2021(3m) research intern
supervisor: Michael Isard
topic: mixture of heterogeneous experts models to scale up NLP Transformers

New York University, NY, US

2016 graduate research assistant

advisor: György Buzsáki
topic: decoding from neural populations in hippocampal CA1 during 2D maze exploration

INMED, Marseille, FR

2015-2016 research technician
advisors: Rosa Cossart and Arnaud Malvache
topic: modeling hippocampal networks underlying flexible spatio-temporal processing

University of Chicago, IL, US

2015 research technician
advisor: Jason MacLean
topic detecting microcircuits in temporal patterns of spontaneous cortical activity

publications

Haimerl, C., McNamee, D. (2024). *Regulating augmentations during open-ended learning via phasic serotonergic signaling*. accepted at **NeurIPS** workshop "Intrinsically Motivated Open-Ended Learning"

Boeshertz, G., **Haimerl, C.**, & Savin, C. (2023). *Task adaption by biologically inspired stochastic comodulation*. arXiv preprint arXiv:2311.15053.

Haimerl, C., Ruff, D. A., Cohen, M. R., Savin, C., & Simoncelli, E. P. (2023). *Targeted V1 comodulation supports task-adaptive sensory decisions*. **Nature Communications**, 14(1), 7879.

Haimerl, C., Simoncelli, E.P., Savin, C. (2022). *Targeted comodulation in V1 supports flexible and accurate downstream decoding*. **NeurIPS** workshop "All Things Attention" available on Open Review

Haimerl, C., Savin, C., Simoncelli, E.P. (2019). *Flexible and accurate decoding of neural populations through stochastic comodulation,* **NeurIPS**

Haimerl, C.*, Angulo-Garcia, D.*, Villette, V., Reichinnek, S., Torcini, A., Cossart, R., Malvache, A. (2019). *Internal representation of hippocampal neuronal population spans a time-distance continuum*, **PNAS**, 116 (15)

Malvache, A., Reichinnek, S., Villette, V., **Haimerl, C.**, Cossart, R. (2016). *Awake hippocampal reactivations project onto orthogonal neuronal assemblies*, **Science**, 353/6305

research talks

2024 Jun ISTA invited talk, Klosterneuburg
2024 Apr Champalimaud Internal Seminar, Lisbon
2024 Mar invited talk in Haefner lab (online)
2023 Sep Bernstein workshop, Berlin
2023 Feb Workshop "Towards a theory of artificial and biological neural networks", Les Houches
2023 Feb Champalimaud Internal Seminar, Lisbon
2022 Dec NeurIPS Workshop "All Things Attention", New Orleans
2021 Apr Invited talk, Champalimaud Centre for the Unknown, Lisbon
2021 Apr Invited talk, Max Planck Institute, Tübingen,
2021 Mar Lumos External Talks series (online)
2021 Jan Open House, CNS, NYU, New York (internal)
2020 Nov Neuroscience Talk Series, CNS, NYU, New York (internal)
2020 Jan Open House, CNS, NYU, New York (internal)
2019 Nov Doctoral student talk series, CNS, NYU, New York (internal)
2019 Oct Janelia Theory Workshop, Janelia Research Campus
2019 Jul Google PhD Fellowship Summit, Mountain View
2019 Jun Invited talk, Center for the Neural Basis of Cognition, University of Pittsburgh
2018 Oct Champalimaud Research Symposium, Lisbon
2018 Mar COSYNE main conference, Denver
2017 Mar INMED, Marseille

posters

2024 Dec NeurIPS workshop "Intrinsically Motivated Open-Ended Learning", Vancouver

	2024 June	FENS, Vienna
	2024 Feb	COSYNE main conference, Lisbon
	2023 Sep	Bernstein conference, Berlin
	2022 March	COSYNE main conference, Lisbon, see poster presentation online
	2020 Sep	Bernstein conference, Berlin
	2019 Dec	NeurIPS, Vancouver
	2019 Mar	COSYNE main conference, Lisbon
	2018 Jul	MLSS, Buenos Aires
	2017 Feb	COSYNE main conference, SLC
	2017 May	ICMNS, Boulder
	2016 Nov	SFN, San Diego
	2016 Jul	FENS, Copenhagen
professional activities	2024	Reviewing for Journal of Neuroscience
	2024	Teaching Assistant at Cajal Computational Neuroscience course
	2024	Organizer workshop “Multi-regional computations” COSYNE
	2023	Reviewing for COSYNE 2024
	2023-now	Founder of “Women & Allies in Science” group at the Champalimaud Centre
	2023-now	Organizer of Theory Seminars at Champalimaud Centre
	2023	Organizer workshop “Behavioral flexibility & its neural correlates” Bernstein conference
	2023	Reviewing for 9th European Student Conference on Behavior & Cognition
	2022	Reviewing for COSYNE 2023
	2022	selected speaker for SoapBox Science Lisbon at the Festival Internacional da Ciência FICA (science outreach)
	2022 Jul	Lecturer in Preschool of Cajal Computational Neuroscience course
	2020 Jul	Lecturer “Linear Dynamical Systems and the Kalman filter” Neuromatch Academy
	2020 Feb	Teaching Assistant “Normative Approaches to Understanding Neural Coding and Behavior” COSYNE tutorial
	2019 Oct	Lecturer “Dynamical latent models: Capturing dynamics underlying neural population activity” Janelia Theory Workshop, Janelia Research Campus
	2019	Teaching Assistant “Probabilistic Time Series Analysis” Center for Data Science, New York University
	2015	Teaching Assistant “Statistical Programming with R” Department of Statistics and Operations Research, University of Vienna
mentoring	2024	Thesis defense committee for PhD candidate Solène Sautory at Champalimaud Centre
	2024-now	Thesis defense committee for Master student Lucas Piper at Instituto Superior Técnico
	2023-now	Co-supervisor of PhD student Francisco Azevedo at Champalimaud Centre
	2023	Supervisor of summer intern Anna Freund
	2023	Co-supervisor of master student Gauthier Boeshertz
relevant courses & trainings	2023	Grant Writing Workshop by *ProScience*
	2018-2019	*“Computational Statistics”* taught by Liam Paninski, Columbia University *“Analysis of Time Series Data”* taught by Cristina Savin, NYU *“Optimization-Based Data Analysis”* taught by Carlos Fernandez-Granda, NYU
	2018 Jun	Machine Learning Summer School, Buenos Aires
	2017 Aug	*Cajal Computational Neuroscience course,* Champalimaud Centre
	2016 May	Paris Neuroscience School in Optical Imaging and Electrophysiology at the Université Paris Descartes and Ecole Normale Supérieure