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| **Caroline Haimerl** | | | | |
| Champalimaud Centre for the Unknown,  Av. Brasilia, 1400-038 Lisboa | | | +43699 10660514  *caroline.haimerl@research.fchampalimaud.org* | [*google scholar website*](https://scholar.google.com/citations?hl=en&user=oljDL7MAAAAJ) *//* [*personal website*](https://carolinehaimerl27.github.io/)  [*https://github.com/CarolineHaimerl27*](https://github.com/CarolineHaimerl27) |
| current research | **Champalimaud Centre for the Unknown**, Lisbon, Portugal | | | |
|  | 2022-now | **Postdoctoral researcher** | | |
|  | advisors: | Joe J. Paton and Christian Machens | | |
|  | I study how hierarchical behavioral control is achieved in the brain by developing new theoretical models of efficient state and action representation that incorporate recent experimental findings of parallel hierarchical circuits in the basal ganglia and provide predictions for their roles in different cognitive and motor tasks. Methods: Reinforcement Learning, Control Theory | | | |
| education | **New York University**, NY, US | | | |
|  | 2016-2022  advisors:  affiliation: | **PhD Neuroscience**  Eero P. Simoncelli and Cristina Savin  Center for Neural Science | | |
|  | How does the brain route visual information given a particular task? Combining computational modeling and neural data analysis, I developed 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 | | | |
|  | **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 | | |
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| previous research | **Google Brain**, virtual, US | | | |
| 2021(3m)  supervisor:  topic: | research intern  Michael Isard  mixture of heterogeneous experts models to scale up NLP Transformers | | |
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|  | **New York University**, NY, US | | | |
| 2016  advisor:  topic: | graduate research assistant  György Buzsáki  decoding from neural populations in hippocampal CA1 during 2D maze exploration | | |
|  | **INMED**, Marseille, FR | | | |
|  | 2015-2016  advisors:  topic: | research technician  Rosa Cossart and Arnaud Malvache  modeling hippocampal networks underlying flexible spatio-temporal processing | | |
|  | **University of Chicago**, IL, US | | | |
|  | 2015 | research technician | | |
|  | advisor:  topic | Jason MacLean  detecting microcircuits in temporal patterns of spontaneous cortical activity | | |
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| publications | 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*](https://papers.nips.cc/paper/9584-flexible-information-routing-in-neural-populations-through-stochastic-comodulation.pdf)*,* **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*](https://www.pnas.org/content/116/15/7477), **PNAS**, 116 (15) | | | |
|  | Malvache, A., Reichinnek, S., Villette, V., **Haimerl, C.**, Cossart, R. (2016). [*Awake hippocampal reactivations project onto orthogonal neuronal assemblies*](http://science.sciencemag.org/content/353/6305/1280.long), **Science**, 353/6305 | | | |
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| research talks | 2023 Sep  2023 Feb  2022 Dec  2021 Apr  2021 Apr  2021 Mar  2021 Jan  2020 Nov  2020 Jan  2019 Nov  2019 Oct  2019 Jul  2019 Jun  2018 Oct  2018 Mar  2017 Mar | *Bernstein workshop talk*, Berlin  *“Towards a theory of artificial and biological neural networks”,* Les Houches  *NeurIPS Workshop “All Things Attention”,* New Orleans  *Champalimaud,* Lisbon  *MPI,* Tübingen  *Lumos External Talks series*, Vienna  *Open House,* CNS,NYU, New York (internal)  *Lab Talks Series,* CNS,NYU, New York (internal)  *Open House,* CNS,NYU, New York (internal)  *Doctoral student talk series,* CNS,NYU, New York (internal)  ***Janelia Theory Workshop*, Janelia Research Campus**  *Google PhD Fellowship Summit*, Mountain View  *Center for the Neural Basis of Cognition*, University of Pittsburgh  [***Champalimaud Research Symposium***](https://symposium.research.fchampalimaud.org/)**, Lisbon**  ***COSYNE* *main conference*, Denver**  *INMED*, Marseille | | |
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| posters | 2024 June  2024 Feb  2023 Sep  2022 March  2020 Sep  2019 Dec | *FENS meeting, Vienna*  *COSYNE* main conference, Lisbon  *Bernstein conference*, Berlin  *COSYNE* main conference, Lisbon, see [poster presentation](https://www.world-wide.org/cosyne-22/finetuning-hierarchical-circuits-through-2cf75432/)  *Bernstein conference*, Berlin  *NeurIPS*, Vancouver | | |
|  | 2019 Mar | *COSYNE* main conference*,* Lisbon | | |
|  | 2018 Jul | *MLSS*, Buenos Aires | | |
|  | 2017 Feb  2017 May  2016 Nov  2016 Jul | *COSYNE* main conference, SLC  *ICMNS*, Boulder  *SFN*, San Diego  *FENS*, Copenhagen | | |
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| teaching, outreach, organization, reviewing | 2024  2024  2023  2023-now  2023  2023  2022 | Teaching Assistant at *Cajal Computational Neuroscience Course*, Lisbon  Workshop organizer for *Multi-regional computations: from data to principles*, at *COSYNE* 2024  Reviewer for *COSYNE* 2024  Organizer of Theory Seminars at Champalimaud Research  Workshop Organizer on *Behavioral flexibility and its neural correlates*, at *Bernstein conference*  Reviewer for 9ᵗʰ European Student Conference on Behavior & Cognition  Reviewer for *COSYNE* 2023 | | |
| 2022 | selected speaker for [**SoapBox**](https://twitter.com/lisbonsoapbox?lang=en) Science Lisbon at the Festival Internacional da Ciência [FICA](https://www.fica.pt/) (science outreach) | | |
| 2022 Jul | Lecturer in Preschool of [**Cajal Computational Neuroscience** course](https://cajal-training.org/on-site/ccn2022/) | | |
| 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** | | |
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| awards | 2024 | SCGB Transition to Independence Award | | |
|  | 2024 | SPN Travel Grant for FENS meeting | | |
|  | 2022  2019-2021 | NYU Dissertation award  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 | Scholarship for Excellence  Department of Psychology, University of Vienna | | |
|  | 2013 | Scholarship for Excellence  Department of Statistics and Operations Research, University of Vienna | | |
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| mentoring | 2024 -now  2023 -now  2023  2023 | Committee member for master student Lucas Piper at Instituto Superior Técnico  Co-supervisor of PhD student Francisco Azevedo at Champalimaud Research  Supervisor of summer intern Anna Freund  Co-supervisor of master student Gauthier Boeshertz | | |
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| relevant courses & trainings | 2023 | Grant Writing Workshop by ProScience, organized at the Champalimaud Centre | | |
| 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 Course in Computational Neuroscience at the Champalimaud Centre for the Unknown, Lisbon | | |
| 2016, May | Paris Neuroscience School in Optical Imaging and Electrophysiology at the Université Paris Descartes and Ecole Normale Supérieure | | |
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| other activities | 2023 -now | Founder of “*Women & Allies in Science*” group at the Champalimaud Centre | | |
| 2014 | Intern at Schuhfried, Psychology Development Department | | |
| 2014 | Intern at *FH Vienna*, University of Applied Science | | |
| 2012 | Volunteer teacher at Pal Ewam Namgyal Monastic School in Pokhara, Nepal | | |
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| languages |  | German (native), English (professional), Spanish (advanced), French (basic) | | |
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| programming |  | Python, Matlab, R | | |
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