Patricia Rubisch

General Information

Affiliation *Institute for Adaptive and Neural Computation, Informatics, University of Edinburgh.*

Supervisor Dr. Matthias Hennig

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Education

2019–Present **PhD**, *ANC: Machine Learning, Computational Neuroscience, Computational Biology*, University of Edinburgh, UK, Thesis title : The interplay between voltage-dependent plasticity, inhibition and network structure in spiking neuronal network models.

2018–2019 **MScR**, *ANC: Machine Learning, Computational Neuroscience, Computational Biology* , University of Edinburgh, UK, Master of Science by Research with Distinction.

2015 – 2018 **BSc Cognitive Science**, Eberhard Karls Universität Tübingen, Germany.

Publications

- Geirhos, R., **Rubisch, P.**, Rauber, J., Temme, C. R. M., Michaelis, C., Brendel, W., & Wichmann, F. A. *Inducing a human-like shape bias leads to emergent human-level distortion robustness in CNNs*. In Journal of Vision, 19. 2019
- Otte, S., **Rubisch, P.**, & Butz, M. V. *Gradient-based learning of compositional dynamics with modular RNNs*. In International Conference on Artificial Neural Networks, 2019

Preprints

- Haghiri, S., **Rubisch, P.**, Geirhos, R., Wichmann, F., von Luxburg, U. *Comparison-based framework for psychophysics: Lab versus crowdsourcing*. arXiv. 2019
- Geirhos, R., **Rubisch, P.**, Michaelis, C., Bethge, M., Wichmann, F. A., & Brendel, W. *ImageNet-trained CNNs are biased towards texture; increasing shape bias improves accuracy and robustness*. arXiv. 2018. Published as a conference paper at ICLR 2019

Talks

- **Rubisch, P.**, Hennig, M., *Inhibitory control of plasticity promotes stability and competitive learning in recurrent networks*, Gordon Research Seminar: Inhibition in the CNS 2023, Les Diablerets, Switzerland

Poster Presentations

- **Rubisch, P.**, Hennig, M., *Inhibitory control of plasticity promotes stability and competitive learning in recurrent networks*, presented at: Cosyne 2023, Montreal, Canada
- **Rubisch, P.**, Hennig, M., *Sensitivity to subthreshold fluctuations in membrane potential is central for prediction of synaptic plasticity*, presented at: Bernstein Conference 2022, Berlin, Germany

- **Rubisch, P.**, Hennig, M., *Lateral inhibition regulates Long Term Plasticity and functional specialization*, presented at: SPONT 2022, Alicante, Spain
- **Rubisch, P.**, Hennig, M., *Systematic exploration of neuron type differences in standard plasticity protocols employing a novel pathway based plasticity rule*, presented at: Bernstein Conference 2021, online
- **Rubisch, P.**, Hennig, M., *Systematic exploration of neuron type differences in standard plasticity protocols employing a novel pathway based plasticity rule*, short talk at: Neuromatch Conference 4 2021, online

Grants and Awards

March 2023 **Cosyne Presenter Travel Grant**, Cosyne 2023 in Montreal, Canada

Work Experience

2019–Present **Teaching Assistant**, University of Edinburgh, Scotland.
Teaching Assistant for *Computational Cognitive Neuroscience*, Marker for *Neural Computation* and Tutor, Demonstrator and Marker for INF1:CG (cognitive science undergraduate course)

2015–2018 **Student Research Assistant**, Eberhard Karls Universität Tübingen, AG Neural Information Processing, Prof. Felix Wichmann.
Planning, implementation and conduction of psychophysical experiments.

Additional Education

2022 **Cajal Advanced Neuroscience Training Programme**: Computational neuroscience

2022 **FENS Summer School**: Artificial and natural computations for sensory perception: what is the link?

2020 **Neuromatch Academy**

Honorary Posts

2020 – 2023 Committee member of the Edinburgh University Volleyball Club in the position of Club Secretary (2020–2021), Vice President (2021–2022), Inclusion Officer (2022–2023), awarded with Edinburgh University Sports Union Colours Award (2023)

2016 –2018 Student representative *Study Commission Cognitive Science*

2016 – 2018 Student representative *Board of Examiners Cognitive Science*

Programming Languages

Languages Python, Matlab, Java, R, Scheme