

BEN LONNQVIST

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EDUCATION

- 2020- Ph.D. Candidate, COMPUTATIONAL NEUROSCIENCE
EPFL (Swiss Federal Institute of Technology in Lausanne) | Lausanne, Switzerland
- Advisors: Prof. Michael H. Herzog, Prof. Martin Schrimpf
 - Primary interests: neural network modelling of vision; computational neuroscience, psychophysics
- 2016-2020 M.A. Hons, ECONOMICS and FINANCE
University of Aberdeen | Aberdeen, Scotland
- First-class Honours degree; thesis: Optimal search in multi-armed bandit problems
 - Relevant coursework: Econometrics, Mathematical and Statistical Methods in Economics, Stochastic processes, Understanding Statistics, Proof-based Microeconomics

RESEARCH

Publications

2021 **Lonnqvist, B.**, Bornet, A., Doerig, A., Herzog, M. H. (2021). A comparative biology approach to DNN modeling of vision: A focus on differences, not similarities. Publisher: *Journal of Vision*. DOI: <https://doi.org/10.1167/jov.21.10.17>

2020 **Lonnqvist, B.**, Clarke, A. D. F., Chakravarthi, R. (2019). Crowding in humans is unlike that in convolutional neural networks. Publisher: *Neural Networks*. DOI: <https://doi.org/10.1016/j.neunet.2020.03.021>

Pre-prints

2023 **Lonnqvist, B.***, Wu, Z.*, Herzog, M. H. (2023). Latent Noise Segmentation: How Neural Noise Leads to The Emergence of Segmentation and Grouping. *Under review at ICML*. <https://arxiv.org/abs/2309.16515>.

2022 **Lonnqvist, B.**, Machiraju, H., Herzog, M. H. (2022). A comment on Guo et al. (2022). arXiv preprint. DOI: <https://doi.org/10.48550/arXiv.2208.01456>.

2020 **Lonnqvist, B.**, Elsner, M., Hunt, A. R., Clarke, A. D. F. (2020). Modeling individual variation in visual search with reinforcement learning. PsyArXiv. DOI: <https://doi.org/10.31234/osf.io/suj28>.

Conference oral presentations

2023 **Lonnqvist, B.**, Wu, Z., Herzog, M. H. (2023). How object segmentation and perceptual grouping emerge in noisy variational autoencoders. Oral presentation at the *MODVIS Workshop of the 23rd Annual Meeting of the Vision Sciences Society (VSS)*.

2022 **Lonnqvist, B.**, Bornet, A., Doerig, A., Herzog, M. H. (2022). Global Information Processing in Feedforward Deep Networks. Oral presentation at the *22nd Annual Meeting of the Vision Sciences Society (VSS)*.

2019 **Lonnqvist, B.**, Clarke, A. D. F., Chakravarthi, R. (2019). Object Recognition in Deep Convolutional Neural Networks is Fundamentally Different to That in Humans. Oral presentation at the *18th annual meeting of the Scottish Vision Group (SVG)*.

Conference poster presentations

2023 **Lonnqvist, B.**, Wu, Z., Herzog, M. H. (2023). How object segmentation and perceptual grouping emerge in noisy variational autoencoders. Poster presentation at the *23rd Annual Meeting of the Vision Sciences Society (VSS)*.

2021 **Lonnqvist, B.**, Doerig, A., Bornet, A., Francis, G., Schmittwilken, L., Herzog, M. H. (2021). How crowding challenges (feedforward) convolutional neural networks. Poster presented at the *21st Annual Meeting of the Vision Sciences Society (VSS)*. DOI: <https://doi.org/10.1167/jov.21.9.2039>.

Invited talks

2023 INCC, Université Paris Cité & CNRS Vision Group Symposium, Paris, France

2019 Psychology & Computer Science Research Groups, University of Essex, Britain, UK

RESEARCH WORK EXPERIENCE

- Aug - 2020** EPFL (SWISS FEDERAL INSTITUTE OF TECHNOLOGY IN LAUSANNE) | Doctoral Assistant
- Doctoral Research Assistant in the NeuroAI Laboratory, and the Laboratory of Psychophysics
 - Core contributor to the open-source Python project Brain-Score: <https://github.com/brain-score>
 - Focus on deep learning and psychophysics
- Mar - May 2018 - 2020** ABERDEEN SCHOOL OF PSYCHOLOGY | Undergraduate Research Assistant
- Voluntary research assistant in the Consciousness, Attention, and Perception Lab
 - First-authored a paper that has now been published in *Neural Networks*
 - Using Python, Keras and NumPy, programmed several architectures of Deep Neural Networks and wrote testing environments to produce novel research on visual crowding in convolutional NNs
 - Used SSH tunneling to access a Linux high-power computing cluster
- May - Aug 2019 - 2019** ABERDEEN SCHOOL OF PSYCHOLOGY | Research Intern
- Summer research intern at the Eye Movements and Attention Lab
 - Using Python, modeled Bayes-optimal eye movements parameterized by human visual search data
 - Using MATLAB and PsychToolbox, wrote a visual search psychophysical experiment
 - Ran 65 participant-hours of eye tracking experiments using EyeLink hardware

SELECTED AWARDS AND FUNDING

- Rank Prize Foundation Optoelectronics Studentship**
- 2019** A £3000 studentship awarded for a summer research project.

TEACHING AND STUDENTS

2023-2024	Understanding Statistics	Teaching assistant (<i>MSc course on statistics</i>)
2021	Real Analysis	Teaching assistant (<i>BSc course on mathematics</i>)
2020	Real Analysis	Teaching assistant
2023-2024	Maya van Holk	MSc thesis (<i>co-advised with Elsa Scialom</i>)
2023-2024	Maisa Ben Salah	MSc thesis (<i>co-advised with Martin Schrimpf</i>)
2023	Clémentine Lévy-Fidel	MSc thesis
2023	Ismail Sahbane	ML4Science project (<i>MSc CS course project</i>)
2023	Jad Tala	ML4Science project
2023	Olena Zavertiaiva	ML4Science project
2023	Pauline Verchinine	ML4Science project
2023	Jennifer Ayer	ML4Science project
2023	Laurent Brock	ML4Science project
2022-2023	Zhengqing Wu	MSc Computational Neuroscience Minor Thesis
2022-2023	Merkourios Simos	MSc Semester Project

ACADEMIC SERVICE

- Reviewing**
- JOURNALS** *Neural Networks, Neural Computation, Vision Research*