



# BEN LONNQVIST

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 Google Scholar   
 @lonnqvistben 

## EDUCATION

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2020- Ph.D. Candidate, COMPUTATIONAL NEUROSCIENCE  
**EPFL (Swiss Federal Institute of Technology in Lausanne) |** Lausanne, Switzerland

- Advisors: Michael H. Herzog, Martin Schrimpf
- Primary interests: neural network modelling of vision; computational neuroscience, psychophysics
- Teaching: Teaching assistant for Real Analysis 2020, 2021

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
- Quantitative focus in electives
- Relevant coursework: Econometrics, Mathematical and Statistical Methods in Economics, Stochastic processes, Understanding Statistics, Proof-based Microeconomics

## RESEARCH

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### 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
- 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

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- Aug - 2020* - EPFL (SWISS FEDERAL INSTITUTE OF TECHNOLOGY IN LAUSANNE) | Doctoral Assistant
- Doctoral Research Assistant in the Laboratory of Psychophysics
  - 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

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- Rank Prize Foundation Optoelectronics Studentship
- 2019 A £3000 studentship awarded for a summer research project.
- Research visit support by the James S McDonnell Foundation Scholar Award in Human Cognition (PI: Dr A. Hunt)
- 2019 A small undergraduate research visit support for a research visit to the University of Essex in July 2019.

## TEACHING AND STUDENTS

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- MSc Thesis | MSc Student Clémentine Lévy-Fidel
- 2023- Currently advising MSc student Clémentine Lévy-Fidel's MSc thesis on modeling peripheral vision using autoencoder models.
- Semester project | MSc Student Merkourios Simos
- 2022-2023 Supervision of MSc student Merkourios Simos at EPFL on their Computational Neuroscience semester project on doing large-scale psychophysical measurements of deep learning models on the MIT Brain-Score platform.
- Computational Neuroscience Minor Thesis | MSc Student Zhengqing Wu
- 2022-2023 Supervision of MSc student Zhengqing Wu at EPFL on their Computational Neuroscience Minor Project on unsupervised segmentation in variational autoencoders.
- Teaching assistant | Real Analysis
- 2020, 2021 Teaching assistant for the Real Analysis course for undergraduates at EPFL in 2020 and 2021.

## ACADEMIC SERVICE

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