

## General Information

Affiliation *Institute for Adaptive and Neural Computation, Informatics, University of Edinburgh.*  
Supervisors Dr. Matthias Hennig and Dr. Arno Onken.  
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## Education

- 2019 **Summer course**, *MLSS 2019: London*, UCL, Covers topics ranging from optimization and Bayesian inference to deep learning, reinforcement learning and Gaussian processes.
- 2018 **Summer course**, *OCNC: OIST Computational Neuroscience Course*, OIST, Covers methods, neurons, networks, and behavior. Two week project on deep spiking neural networks.
- 2017–Present **PhD**, *ANC, Informatics Forum*, University of Edinburgh, UK, Development, standardisation and evaluation of spike sorting pipelines for large scale extracellular recordings.
- 2013–2017 **BA Logic, Information, and Computation**, *University of Pennsylvania*, Philadelphia, Minor in Mathematics and Computer Science, Summa cum laude.

## Papers

- **Cole Hurwitz**, Kai Xu, Akash Srivastava, Alessio Buccino, and Matthias Hennig. *Scalable Spike Source Localization in Extracellular Recordings using Amortized Variational Inference*. NeurIPS 2019.
- Matthias Hennig, **Cole Hurwitz**, and Martino Sorbaro. *Scaling Spike Detection and Sorting for Next Generation Electrophysiology*, In Vitro Neuronal Networks - From Culturing Methods to Neuro-Technological Applications, In press.
- Alessio Buccino\*, **Cole Hurwitz**<sup>c</sup>, Jeremy Magland, Samuel Garcia, Joshua Siegle, Roger Hurwitz, and Matthias Hennig. *SpikeInterface, a unified framework for spike sorting* Preprint. bioRxiv. \* - Equal Contribution, <sup>c</sup> - Corresponding Author.

## In preparation

- Jeremy Magland, James Jun, Elizabeth Lovero, **Cole Hurwitz**, Alessio Buccino Samuel Garcia, Alex Barnett. *SpikeForest: reproducible web-facing ground-truth validation of automated neural spikesorters*.
- **Cole Hurwitz**, Klara Gerlei, Matthew Nolan, Alessio Buccino, Jeremy Magland, Samuel Garcia, Klara Gerlei, Matthias Hennig. *Evaluating differences in spike sorters on the functional analyses of neuronal populations*.

## Repositories/Organizations

- [SpikeInterface](#): A unified framework for spike sorting. Author.

- [Decay Model](#): Code and examples for the manuscript: Scalable Spike Source Localization in Extracellular Recordings using Amortized Variational Inference. Author.
- [HS2](#): A spike sorting algorithm for dense multielectrode arrays. Real-time speeds for datasets from >4000 electrodes. Developer.

## Experience

### Academic

- 2019 **Organizer**, University of Edinburgh, Edinburgh.  
Workshop: "Spike Sorting and Reproducibility for Next Generation Electrophysiology".
- 2016–2016 **Teaching Assistant**, University of Pennsylvania, Philadelphia.  
Taught recitations and graded assignments/tests for introductory calculus course.
- 2014–2016 **Athlete Tutor**, University of Pennsylvania, Philadelphia.  
Tutored student-athletes in introductory calculus and physics.

## Awards and Honors

- PhD NeurIPS travel award (£1400)
- PhD OCNC travel award (£500)
- BA Thouron Award – Two year UK postgraduate study fellowship
- BA Phi Beta Kappa
- BA CSCAA Scholar All-American
- BA 2016 USA Swimming Olympic Trials Qualifier
- BA 2013-2017 Ivy League Championship Swimming Finalist

## Programming Languages and Tools

- Languages Python, c++, Julia
- Tools PyTorch, Turing (Julia), scikit-learn, scipy, SpikeInterface

## Collaborators

- Akash Srivastava MIT–IBM Watson AI Lab, Boston, United States
- Joshua Siegle Allen Institute for Brain Science, Seattle, United States
- Jeremy Magland Center for Computational Biology (CCM), Flatiron Institute, New York, United States
- Ryan Ly Data Analytics and Visualization, University of Berkeley, United States
- Ben Dichter Data Science Consultant, Stanford University, United States
- Alessio Paolo Buccino Department of Informatics, University of Oslo, Oslo, Norway
- Samuel Garcia Centre de Recherche en Neurosciences de Lyon (CRNL), Lyon, France
- Matthew F. Nolan Centre for Discovery Brain Sciences, University of Edinburgh, Edinburgh, Scotland
- Klara Gerlei Centre for Discovery Brain Sciences, University of Edinburgh, Edinburgh, Scotland
- Kai Xu School of Informatics, University of Edinburgh, Edinburgh, Scotland