Kristopher Torp Jensen

University of Cambridge
Computational and Biological Learning Lab

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Education

2019 - present **PhD Computational Neuroscience**
University of Cambridge
Supervisor: Dr Guillaume Hennequin
- Development of Bayesian latent variable models for neural population recodings.
- Analysis and modeling of neural dynamics for navigation and motor control.
- Continual learning in biological motor circuits and for AI.
- Planning and replay for reinforcement learning in biological and artificial agents.

2018 - 2019 **MPhil Computational Biology**
University of Cambridge & Harvard Center for Brain Science
Dissertation: "Long-Term Stability of Neural Dynamics Underlying Stereotyped Behavior"
Result: Distinction   (89.1/100; 1st of 19 students)

2015 - 2018 **BA Natural Sciences**
University of Cambridge
Specialization: Molecular Biology & Theoretical Chemistry
Result: First Class Honors   (82.7/100; 1st of 112 students)

Research

2019 - present **Harvard Center for Brain Science**
Supervisor: Professor Bence Ölveczky
- Analysis of the neural stability of motor memories from extracellular recordings.
- Training of GLMs and recurrent network models of representational stability and drift.

2018 - 2019 **Janelia Research Campus**
Supervisor: Professor Vivek Jayaraman
- Analysis of electron miscroscopy & RNAseq data from the fly head direction circuit.
- Development of experimentally inspired biophysical and recurrent network models.

2017 - 2018 **Cambridge Centre for Computational Chemistry**
Supervisor: Dr Alex Thom
- Development of a Hartree Fock-based method for modeling electron transfer reactions.
- Characterization of the electronic states in a computational model of a solar cell.

2016 - 2017 **Aarhus University Department of Biomedicine**
Supervisor: Dr Yonglun Luo
- Investigation of factors affecting the efficiency of CRISPR/Cas9 for genome editing.
- Design of new CRISPR-based tools for improved genomic and epigenomic control.

Invited Talks

2021 **MIT Brain and Cognitive Sciences tutorial**
Learning what we know and knowing what we learn: GP priors for neural data analysis

2021 **Ölveczky lab (Harvard)**
Scalable Bayesian GPFA

2021 **Cambridge Engineering Division F Conference**
Manifold GPLVMs for discovering non-Euclidean latent structure in neural data

Teaching

2021	Neuromatch academy – Teaching Assistant, computational neuroscience
2020 - 2021	University of Cambridge – Supervisor (Teaching Assistant), 3rd year mathematical biology
2018 - 2020	University of Cambridge – Supervisor (Teaching Assistant), 3rd year theoretical chemistry

Awards

Fellowships & scholarships

2019 - present	Cambridge Gates Scholarship
2016 - 2019	Scholar of Magdalene College, Cambridge
2018	Janelia Undergraduate Scholar
2015	*British Chamber of Commerce in Denmark* Scholar

Prizes

2015 - 2018	GWHP Memorial Prize for best performance in undergraduate chemistry
	Gill, Bundy & B.C. Saunders prizes for excellence in university examinations
	BP Prize for the best performance in practical chemistry
2014 & 2015	Silver medal – The International Chemistry Olympiad

Programming

Python (PyTorch, Jax, TensorFlow), Julia (Zygote, Flux), R, Matlab.

Reviewing

Nature Neuroscience, Neuron, Nature Methods, Nature Communications, Current Biology

Publications

2021 — **Kristopher T. Jensen***, Ta-Chu Kao*, Jasmine T. Stone, and Guillaume Hennequin.
Scalable Bayesian GPFA with automatic relevance determination and discrete noise models.
bioRxiv.

2021 — Ta-Chu Kao*, **Kristopher T. Jensen***, Alberto Bernacchia, and Guillaume Hennequin.
Natural continual learning: success is a journey, not (just) a destination. *arXiv.*

2020 — **Kristopher T. Jensen**, Ta-Chu Kao, Marco Tripodi, and Guillaume Hennequin.
Manifold GPLVMs for discovering non-Euclidean latent structure in neural data.
Advances in Neural Information Processing Systems.

2020 — Daniel B. Turner-Evans, **Kristopher T. Jensen***, Saba Ali*, Tyler Paterson*, Arlo Sheridan*, Robert P. Ray, Tanya Wolff, Gerald M. Rubin, Davi D. Bock, and Vivek Jayaraman.
The neuroanatomical ultrastructure and function of a biological ring attractor. *Neuron.*

2018 — **Kristopher T. Jensen**, Raz L. Benson, Salvatore Cardamone, and Alex J. W. Thom.
Modeling electron transfers using quasidiabatic Hartree-Fock states.
Journal of Chemical Theory and Computation.

2017 — **Kristopher T. Jensen**, Lasse Fløe, Trine S. Petersen, Jinrong Huang, Fengping Xu, Lars Bolund, Yonglun Luo, and Lin Lin.
Chromatin accessibility and guide sequence secondary structure affect CRISPR-Cas9 gene editing efficiency. *FEBS Letters.*

Conferences

2021 — **Computational and Systems Neuroscience (Cosyne)** *(poster).*
Beyond the Euclidean brain: inferring non-Euclidean latent trajectories from spike trains.

2020 — **From Neuroscience to Artificially Intelligent System** *(poster).*
Self-supervised learning for multisensory integration in biologically inspired networks.

2020 — **Bernstein Conference** *(contributed talk).*
mGPLVM – Beyond the Euclidean brain.

2018 — **Janelia Undergraduate Scholars Symposium** *(poster).*
Angular velocity integration in *Drosophila melanogaster.*