# Connor Brennan

*Perelman School of Medicine, University of Pennsylvania*
*brenco@pennmedicine.upenn.edu*
*sharsnik2.github.io/website/*
*sharsnik2*

## Education

2016–2021 (expected) **PhD**, *University of Pennsylvania*, Philadelphia, PA.
- PI: Alex Proekt

2016–2018 **MS**, *University of Pennsylvania*, Philadelphia, PA.
- PI: Alex Proekt

2014–2016 **BS**, *University of Washington*, Seattle, WA.

2009–2010 **Information-Technology Engineers Examination**, *HAL Tokyo College of Technology and Design*, Tokyo, Japan.

## Publications

submitted **Topological Models of Neural Population Dynamics are Predictive, Interpretable, and Generalizable**, *Connor Brennan, Adeeti Aggarwal, Rui Pei, David Sussillo, Alex Proekt*, Nature Neuroscience.

2019 **Duration of EEG suppression does not predict recovery time or degree of cognitive impairment after general anaesthesia in human volunteers**, *BP Shortal, LB Hickman, RA Mak-McCully, W Wang, C Brennan, H Ung, ...*, British journal of anaesthesia.

2019 **A quantitative model of conserved macroscopic dynamics predicts future motor commands**, *C Brennan, A Proekt*, Elife.

2019 **Coherence of visual-evoked gamma oscillations is disrupted by propofol but preserved under equipotent doses of isoflurane**, *A Aggarwal, C Brennan, B Shortal, D Contreras, MB Kelz, A Proekt*, Frontiers in systems neuroscience.

2018 **A Model of Conserved Global Neuronal Dynamics Predicts Future Behaviors in Caenorhabditis Elegans**, *C Brennan, A Proekt*, Available at SSRN.

2017 **Universality of macroscopic neuronal dynamics in Caenorhabditis elegans**, *C Brennan, A Proekt*, arXiv preprint arXiv:.

2016 **SuperSegger: robust image segmentation, analysis and lineage tracking of bacterial cells**, *S Stylianidou, C Brennan, SB Nissen, NJ Kuwada, PA Wiggins*, Molecular microbiology.

2014 **An audit of block documentation for spinal anaesthesia for caesarean section: 32**, *F Corcoran, C Brennan*, Anaesthesia.

## Research Experience

2016–Present **Research fellow**, *Proekt Lab*, Philadelphia, PA.
- Developing methods for predicting future timing of behavior switches based on calcium imaging in C. elegans
- Developing methods to model dynamics of biological and artificial networks
- Assisting with electrophysiological recordings in mouse
- Building machine learning algorithms for decoding neuronal data

2016 **Laboratory Technician**, *Wiggin's Biophysics Lab*, Seattle, WA.
- In charge of computer and network maintenance, laboratory upkeep, ordering and maintaining laboratory supplies and equipment

2015 **Undergraduate Research Assistant**, *Wiggin's Biophysics Lab*, Seattle, WA.
- Wrote a massively parallel graphics processing unit based Escherichia coli simulator for modeling the MinE/MinD interaction
- Worked my own project detailing the dynamics of F-Plasmid conjugation in E. coli
- Assisted in a project on E. coli cytoplasmic dynamics
- Several in-lab presentations on my work

## Teaching Experience

2019–2020 **Graduate Teaching Assistant**, *University of Pennsylvania*, Philadelphia, PA.
- PHYS 585/ BE 530 Theoretical and Computational Neuroscience
- Ran office hours, advised students and wrote a machine learning based homework assignment

2016 **Instructor**, *iD Tech*, Villanova, PA.
- Worked with high school children teaching C++, Arduino and game design

2008–2009 **Undergraduate Teaching Assistant**, *Edmonds Community College*, Edmonds, WA.
- Worked with a class of Japanese students studying english

## Grants

Aug 2020 **Google PhD Fellowship**.
- Up to three years of tuition and $35,000 stipend.

## Presentations

### Research Talks

Apr 2020 **LOOPER: Modeling neuronal dynamics**, *Mahoney Institute for Neuroscience "Year of Brain Science Technology"*, Philadelphia, PA (Online).

Mar 2020 **LOOPER: Modeling neuronal dynamics**, *Invited speaker for Stephen's Lab*, Amsterdam, Netherlands (Online).

### Posters

Feb 2020 **LOOPER: A tool for the semi-supervised extraction of behaviorally relevant dynamics from observations of neural data.**, *Cosyne 2020*, Denver, CO.

Nov 2017 **Topologically invariant manifolds of C. elegans pan-neuronal activity.**, *Society for Neuroscience*, Washington, D.C.

Aug 2017 **Topologically invariant manifolds of C. elegans pan-neuronal activity.**, *Philadelphia Chapter of Society for Neuroscience*, Philadelphia, PA.

## Industry experience

2012–2015 **Project Leader/Owner**, *Fractal Entertainment*, Edmonds, WA.

- Team leader, business manager and lead programmer
- Worked with a team of full time employees and contract workers
- Dealt with all aspects of business: financials, product design, workflow, marketing and team communication

2011–2012 **Software Engineer**, *Polygon Magic*, Tokyo, Japan.

- Helped build and maintain a multi-million dollar game Sengoku Kingdom
- Entrusted with several key game systems to implement and maintain with autonomy
- Heavy use of PHP, MySQL and HTML
- Worked and communicated entirely in Japanese