Benjamin D. Pedigo

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I am currently a PhD Student in the Department of Biomedical Engineering at Johns Hopkins University. My research is in the NeuroData lab, where I am advised by Dr. Joshua T. Vogelstein and co-advised by Dr. Carey E. Priebe. My work focuses on using statistical and computational techniques to help understand nanoscale connectomes. Currently, I am collaborating with Dr. Marta Zlatic and Dr. Albert Cardona's groups to analyze the first nanoscale connectome of the *Drosophila* larva brain.

Education & Training

08/18 – now **PhD Student**, *Department of Biomedical Engineering*, Johns Hopkins University.
Highlighted courses: Neuro Data Design, Matrix Theory, Neuroscience and Cognition, Probability and Statistics.

09/14 – 06/18 **Undergraduate Student**, *Department of Bioengineering*, University of Washington.
Highlighted courses: Neural Coding and Computation, Neural Engineering, Neural Tech Studio, Computational Methods of Data Analysis, Data Structures and Algorithms, High Performance Scientific Computing.

Positions Held

Current Position

08/18 – now **PhD Student**, *Department of Biomedical Engineering*, Supervised by Dr. Joshua T. Vogelstein and co-supervised by Dr. Carey E. Priebe, Johns Hopkins University.
Research: Analysis of nanoscale connectomes, network statistics, Python development.

Previous Positions

06/17 – 09/17 **Computational Neuroanatomy Intern**, *Neural Coding Group*, Supervised by Dr. Nuno da Costa, Allen Institute for Brain Science.
Research: Nanoscale connectomes, quality control for image alignment, Python development.

07/16 – 06/18 **Undergraduate Researcher**, *Center for Sensorimotor Neural Engineering*, Supervised by Dr. Chet Moritz and Dr. Sarah Mondello, University of Washington.
Research: Optogenetic spinal cord stimulation after spinal cord injury.

07/15 – 07/16 **Undergraduate Researcher**, *Department of Biology*, Supervised by Dr. Emily Carrington and Dr. Matthew N. George, University of Washington.
Research: Biomechanical properties of marine mussel attachments.

Awards & Honors

2020 **NSF Graduate Research Fellowship**.

2018 **Summa Cum Laude**, University of Washington.
Top 0.5% of graduating class.

2017 **Levinson Emerging Scholars Award**, University of Washington.

2017 **UW Institute for Neuroengineering Undergraduate Fellowship**, University of Washington.

2016 **Center for Sensorimotor Neural Engineering Undergraduate Fellowship**, University of Washington.

2016 **Mary Gates Research Scholarship**, University of Washington.

2015 **Mary Gates Research Scholarship**, University of Washington.

2014 - 2018 **Dean's List**, University of Washington.

Peer-reviewed Journal Publications

† *denotes equal contribution.*

[J1] Jaewon Chung,† **Benjamin D. Pedigo,**† Eric W. Bridgeford, Bijan K Varjavand, Hayden S Helm, and Joshua T. Vogelstein,, *Graspy: Graph statistics in Python*, Journal of Machine Learning Research, 2019.

[J2] Joshua T. Vogelstein, Eric W. Bridgeford, **Benjamin D. Pedigo,** Jaewon Chung, Keith Levin, Brett Mensh, Carey E. Priebe, *Connectal coding: discovering the structures linking cognitive phenotypes to individual histories*, Current Opinion in Neurobiology, 2019.

[J3] Matthew N. George, **Benjamin D. Pedigo,** Emily Carrington, *Hypoxia weakens mussel attachment by interrupting DOPA cross-linking during adhesive plaque curing*, Journal of The Royal Society Interface, 2018.

Poster Presentations

[P1] **Benjamin D. Pedigo,** Jaewon Chung, Eric W. Bridgeford, Bijan Varjavand, Carey E. Priebe, and Joshua T. Vogelstein, *GraSPy: an Open Source Python Package for Statistical Connectomics*, Max Planck/HHMI Connectomics Meeting, Berlin, 2019.

[P2] **Benjamin D. Pedigo,** Sarah E. Mondello, Amanda E. Fischedick and Chet T. Moritz, *Optimization of optogenetic spinal cord stimulation*, UW Undergraduate Research Symposium, Seattle, WA , 2017.

[P3] **Benjamin D. Pedigo,** Sarah E. Mondello, Amanda E. Fischedick and Chet T. Moritz, *Investigation of optogenetic-induced damage to the rat spinal cord*, Center for Sensorimotor Neural Engineering Summer Symposium, Seattle, WA , 2017.

[P4] **Benjamin D. Pedigo,** Sarah E. Mondello, Amanda E. Fischedick and Chet T. Moritz,, *Effects of environmental factors on Mytilus mussel adhesion*, UW Undergraduate Research Symposium, Seattle, WA, 2016.

Software

GraSPy, *graspy.neurodata.io*, Co-lead developer.
A Python package for statistical analysis of network data

Mentoring

Summer '19 **Kareef Ullah**, *High School Summer Intern*, BME, JHU.

Summer '19 **Kiki Zhang**, *High School Summer Intern*, BME, JHU.

Teaching

Fall/Spring '19 **NeuroData Design I**, *EN.580.237/437/637*, TA.
Johns Hopkins University

Spring '18 **Biomedical Signals and Sensors**, *BIOEN 316*, TA.
University of Washington

Spring '17 **Biomedical Signals and Sensors**, *BIOEN 316*, TA.
University of Washington

Service

2017 - 2018 **President and Founder**, *Synaptech*, University of Washington.
Student organization for undergraduates in neural engineering

2017 - 2018 **Undergraduate Representative**, *Center for Sensorimotor Neural Engineering*, University of Washington.

2017 - 2018 **President**, *Bird Club*, University of Washington.

2016 - 2017 **Treasurer**, *Bird Club*, University of Washington.
2017 - 2018 **Mentor**, *BioExpo*, Northwest Association for Biomedical Research.

Languages

Proficient **English, Python, MATLAB, LaTeX**.
Inproficient **R, C++, Java, Blender, HTML**.