Joshua T. Vogelstein

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I am currently an Assistant Professor of Biomedical Engineering in the Whiting School of Engineering at Johns Hopkins University, where I co-direct the NeuroData lab, whose mission is to flourish together by extending and fusing statistical machine learning and big data science to address the most important brain science and mental health questions of our time. As of February 2019, according to Google Scholar, I have over 4,100 citations and an h-index of 28.

Our website, neurodata.io, has the most up to date information regarding our team's publications, talks, posters, awards, press, funding, and blog.

Current Experience

Academic Positions

08/14 – now **Assistant Professor**, *Department of Biomedical Engineering*, Johns Hopkins University (JHU).

08/14 – now **Core Faculty**, *Institute for Computational Medicine & Center for Imaging Science (CIS)*.

10/15 – now **Steering Committee Member & Associate Member**, *Kavli Neuroscience Discovery Institute*.

08/15 – now **Joint Appointment**, *Department of Applied Mathematics and Statistics*.

08/14 – now **Joint Appointment**, *Department of Neuroscience*.

08/14 – now **Joint Appointment**, *Department of Computer Science*.

08/14 – now **Assistant Research Faculty**, *Human Language Technology Center of Excellence*.

10/12 – now **Affiliated Faculty**, *Institute for Data Intensive Engineering and Sciences*.

Academic Activities

08/18 – now **Director of Biomedical Data Science Focus Area**.

05/16 – now **Visiting Scientist**, *Howard Hughes Medical Institute*, Janelia Research Campus.

01/11 – now **Co-Founder & Co-Director**, *NeuroData (formerly Open Connectome Project)*.

Commercial Experience

10/18 – now **Advisory Board**, *Mind-X*.

01/17 – now **Co-Founder**, *gigantum*.

01/17 – now **Advisory Board**, *PivotalPath*.

01/16 – now **Co-Founder**, *d8alab*.

Previous Experience

08/14 – 08/18 **Director of Undergraduate Studies**, *Institute for Computational Medicine*.

05/15 – 07/17 **Co-Founder and Faculty Advisor**, *MedHacks*.

10/12 – 08/14 **Endeavor Scientist**, *Child Mind Institute*.

08/12 – 08/14 **Senior Research Scientist**, *Dept's of Statistical Sciences & Mathematics & Neurobiology*.

08/12 – 08/14 **Affiliated Faculty**, *Kenan Institute for Ethics*.
Duke University

08/12 – 08/14 **Adjunct Faculty**, *Department of Computer Science*.

01/11 – 08/12 **Assistant Research Professor**, *Department of Applied Mathematics and Statistics*.

12/09 – 01/11 **Post-Doctoral Fellow**, *Department of Applied Mathematics and Statistics*, Supervised by Carey E. Priebe.
Johns Hopkins University

07/04 – 07/12 **Chief Data Scientist**, *Global Domain Partners, LLC*.

06/01 – 09/01 **Research Assistant**, *Prof. Randy O'Reilly, Dept. of Psychology.*
University of Colorado

06/00 – 09/00 **Clinical Engineer**, *Johns Hopkins Hospital.*

06/99 – 08/99 **Research Assistant under Dr. Jeffrey Williams**, *Dept. of Neurosurgery, Johns Hopkins Hospital.*

06/98 – 08/98 **Research Assistant under Professor Kathy Cho**, *Dept. of Pathology, Johns Hopkins School of Medicine.*

Education

2003 – 2009 **Ph.D in Neuroscience**,
Johns Hopkins School of Medicine, Supervised by Eric Young,
Dissertation: OOPSI: a family of optical spike inference algorithms for inferring neural connectivity from population calcium imaging .

2009 – 2009 **M.S. in Applied Mathematics & Statistics**, *Johns Hopkins University.*

1998 – 2002 **B.A. in Biomedical Engineering**, *Washington University, St. Louis.*

06/08 – 07/08 **Molecular Biology Summer Workshop**, *Smith College, Mass, USA.*

07/08 – 07/08 **Advanced Techniques in Molecular Neuroscience**, *Cold Spring Harbor, New York, USA.*

06/05 – 07/05 **Imaging Structure and Function of the Nervous System (audited)**, *Cold Spring Harbor, New York, USA.*

06/04 – 07/04 **Advanced Course in Computational Neuroscience**, *Obidos, Portugal.*

Teaching

Fall 2018 **NeuroData Design I**, *EN.580.437*, Johns Hopkins University.

Spring 2017 **NeuroData Design II**, *EN.580.437*, Johns Hopkins University.

Fall 2017 **NeuroData Design I**, *EN.580.437*, Johns Hopkins University.

Spring 2016 **Upward Spiral of Science**, *EN.580.468*, Johns Hopkins University.

Fall 2016 **NeuroData Design I**, *EN.580.437*, Johns Hopkins University.

Spring 2015 **Statistical Connectomics**, Johns Hopkins University.

Winter 2015 **Statistical Connectomics**, Neuroimaging Specialization, Coursera.

Fall 2015 **Introduction to Computational Medicine**, Co-Teaching, Johns Hopkins University.

Advising

Current Advisees

08/18 – now **Benjamin Pedigo**, *PhD candidate*, BME.

08/16 – now **Vikram Chandrashekhar**, *PhD candidate*, BME, JHU.

05/18 – now **Drishtee Mannan**, *MS*, BME, JHU.

06/18 – now **Jaewon Chung**, *MS Candidate*, BME.

08/18 – now **Jesús Arroyo**, *Post-doctoral Fellow*, CIS, JHU.

08/14 – now **Eric Bridgeford**, *PhD candidate*, Department of Biostatistics, JHU.

Past Advisees

09/16 – 08/18 **Cencheng Shen**, *Post-doctoral Fellow*, CIS, JHU.

08/14 – 01/18 **Tyler Tomita**, *PhD*, BME, JHU.

08/14 – 06/17 **Greg Kiar**, *Research Analyst*, CIS, JHU.

05/16 – 06/17 **Leo Duan**, *Post-doctoral Fellow*, CIS, JHU.

06/16 – 07/17 **Guilherme Franca**, *Post-doctoral Fellow*, CIS, JHU.

08/15 – 08/16 **Albert Lee**, *BSE*, BME, JHU.

06/15 – 12/15 **Ron Boger**, *BSE*, BME, JHU.

05/15 – 05/16 **Jordan Matelsky**, *BSE*, CS and Neuroscience, JHU.

02/15 – 05/16 **Ivan Kuznetsov**, *BSE*, BME, JHU.

Conference and Journal Activities

Reviewer

Annals of Applied Statistics (AOAS), Bioinformatics, Biophysical Journal, IEEE International Conference on eScience, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), IEEE Global Conference on Signal and Information Processing (GlobalSIP), IEEE Signal Processing Letters, IEEE Transactions on Signal Processing, International Conference on Learning Representations (ICLR), Frontiers in Brain Imaging Methods, Journal of Machine Learning Research (JMLR), Journal of Neurophysiology, Journal of the Royal Statistical Society B (JRSSB), Nature Communications, Nature Methods, Nature Reviews Neuroscience, Network Science, Neural Computation, Neural Information Processing Systems (NIPS), NeuroImage, Neuroinformatics, PLoS One, PLoS Computational Biology, Current Opinion in Neurobiology.

Editorial Board

Guest Associate Editor, *PLoS Computational Biology*.

Editor, *Neurons, Behavior, Data analysis, and Theory*.

Events

Summer 2017 **Organizer**, *NeuroStorm*, https://brainx2.io.

Spring 2016 **Organizer**, *Global Brain Workshop*, http://brainx.io.

Fall 2015 **Co-Organizer**, *BigNeuro2015: Making Sense of Big Neural Data, NIPS Workshop*, http://neurodata.io/bigneuro2015.

Winter 2015 **Organizer**, *Hack@NeuroData*, http://hack.neurodata.io/.

2015 - 2017 **Faculty Superviser**, *MedHacks*, http://medhacks.org/.

Fall 2012 **Co-Organizer**, *Scaling up EM Connectomics Conference*, https://openwiki.janelia.org/wiki/download/attachments/8687459/final+agenda+EM+Connectomics+100512.pdf.

Past Funding

1/19 – 12/20 **Scalable Cyberinfrastructure to Accelerate Learning the Rules Governing Brain Morphome-Connectome from Genome via Data Integration and Analyses Across Species, Scales and Modalities**, *NSF*, Miller (PI), Pending.

8/18 – 7/21 **SemiSynBio: Collaborative Research: YeastOns: Neural Networks Implemented in Communication Yeast Cells**, *NSF*, Schuman (PI), Pending.

1/19 – 1/22 **NCS-FO Simplified and Generic Knowledge-Extraction for Big Multi-Modal Brain Data**, *NSF*, Burns (PI), Pending.

11/17 – 10/21 **Continual Learning Across Synapses, Circuits, and Brain Areas**, *DARPA*, Tolias (PI), FA8650-18-2-7834.

11/17 – 10/21 **Lifelong Learning Forests**, *DARPA*, Vogelstein (PI), FA8650-18-2-7834.

1/18 – 12/19 **Connectome Coding at the Synaptic Scale**, *Schmidt Science*, Vogelstein (PI).

10/17 – 9/18 **Brain Ark**, *Dog Star Technologies*, Vogelstein (PI), 90074647.

9/17 – 8/22 **Sensorimotor processing, decision making, and internal states: towards a realistic multi-scale circuit model of the larval zebrafish brain**, *NIH*, Engert (PI), 1U19NS104653-01.

10-16 – 9/20 **What Would Tukey Do?**, *DARPA*, Priebe (PI) FA8750-17-2-0112.

7/17 – 6/19 **NeuroNex Technology Hub: Towards The International Brain Station for Accelerating and Democratizing Neuroscience Data Analysis and Modeling**, *NSF*, Vogelstein (PI), 1707298.

7/17 – 6/20 **CRCNS US-German Res Prop: functional computational anatomy of the auditory cortex**, *NIH*, Ratnanather (PI), 1R01DC016784-01.

5/17 – 4/20 **Multiscale Generalized Correlation: A Unified Distance-Based Correlation Measure for Dependence Discovery**, *NSF*, Cencheng (PI), 1712947.

1/17 – 10/18 **Brain Comp Infra: EAGER: BrainLab CI: Collaborative, Community Experiments with Data-Quality Controls through Continuous Integration**, *NSF*, Burns (PI), ACI-1649880.

5/15 – 8/18 **From RAGs to Riches: Utilizing Richly Attributed Graphs to Reason from Heterogenous Data**, *DARPA*, Vogelstein (PI), N66001-15-C-4041.

9/14 – 6/19 **Synaptomes of Mouse and Man**, *NIH*, Smith (PI), Allen Institute, R01NS092474.

5/14 – 2/16 **Scalable Brain Graph Analyses Using Big-Memory, High-IOPS Compute Architectures**, *DARPA (GRAPHS)*, Burns (PI), DARPA-BAA-13-15.

3/13 – 1/16 **Computational infrastructure for massive neuroscience image stacks**, *NIH/NSF (BIG-DATA)*, Mitra (PI), 1R01DA036400.

2/13 – 9/15 **Endeavor Scientists Training Fellowship**, Child Mind Institute, Vogelstein (PI).

9/12 – 8/15 **Data Sharing: The EM Open Connectome Project**, NIH/NIBIB (CRCNS), Burns (PI), 1R01EB016411.

1/14 – 12/14 **Data Readiness Level**, *Laboratory for Analytic Sciences*, Harer (PI).

1/12 – 10/13 **Graph-Based Scalable Analytics for Big Data**, DARPA (XDATA), Andrews (PI), FA8750-12-C-0239.

12/9 – 1/13 **National Center for Applied Neuroscience Project**, *NSF*, RJ Vogelstein (PI).

Languages

Proficient **English, Hebrew, Love, MATLAB, LaTeX**.

Inproficient **R, Python, HTML, CSS**.