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 September 2019, according to Google Scholar, I have over 4,900 citations and an h-index of 29.

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

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*.

Positions Held

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)*.

Academic Affiliations

09/19 – now **Joint Appointment**, *Department of Biostatistics*, Johns Hopkins University (JHU).

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*.

Awards & Honors

2014 **F1000 Prime Recommended**, *Vogelstein et al. (2014)*.

2013 **Spotlight**, *Neural Information Processing Systems (NIPS)*.

2011 **Trainee Abstract Award**, *Organization for Human Brain Mapping*.

2008 **Spotlight**, *Computational and Systems Neuroscience (CoSyNe)*.

2002 **Dean's List**, *Washington University*.

Peer-Reviewed Journal Publications

(52 articles published/accepted; top 10 cited 2,944 times; H-index 29)

J1 J. T. Vogelstein, E. W. Bridgeford, B. D. Pedigo, J. Chung, K. Levin, B. Mensh, and C. E. Priebe, "Connectal coding: Discovering the structures linking cognitive phenotypes to individual histories," *Current Opinion in Neurobiology*, april 2019. [Online]. Available: https://doi.org/10.1016/j.conb.2019.04.005

J2 C. E. Priebe, Y. Park, J. T. Vogelstein, J. M. Conroy, V. Lyzinskic, M. Tang, A. Athreya, J. Cape, and E. Bridgeford, "On a 'two truths' phenomenon in spectral graph clustering," *PNAS*, Feb 2019. [Online]. Available: https://www.pnas.org/content/early/2019/03/07/1814462116.short

J3 J. J. Son, J. C. Clucas, C. White, J. T. Vogelstein, M. P. Milham, and A. Klein, "Thermal sensors improve wrist-worn position tracking," *npj digital medicine*, Feb 2019. [Online]. Available: https://doi.org/10.1038/s41746-019-0092-2

J4 C. Shen, C. E. Priebe, M. Maggioni, Q. Wang, and J. T. Vogelstein, "Discovering and Deciphering Relationships Across Disparate Data Modalities," *eLife*, Jan 2019. [Online]. Available: https://elifesciences.org/articles/41690

J5 R. Tang, M. Ketcha, A. Badea, E. D. Calabrese, D. S. Margulies, J. T. Vogelstein, C. E. Priebe, and D. L. Sussman, "Connectome smoothing via low-rank approximations," *Transactions in Medical Imaging*, Dec 2018. [Online]. Available: https://ieeexplore.ieee.org/document/8570772

J6 C. Shen, C. E. Priebe, and J. T. Vogelstein, "From Distance Correlation to Multiscale Graph Correlation," *Journal of the American Statistical Association*, Oct 2018. [Online]. Available: https://www.tandfonline.com/doi/full/10.1080/01621459.2018.1543125

J7 J. T. Vogelstein, R. Burns, E. Perlman, A. Baden, W. G. Roncal, B. Falk, V. Chandrashekhar, F. Collman, S. Seshamani, J. Patsolic, K. Lillaney, M. Kazhdan, R. Hider, D. Pryor, J. Matelsky, T. Gion, P. Manavalan, B. Wester, M. Chevillet, E. T. Trautman, K. Khairy, E. Bridgeford, D. M. Kleissas, D. J. Tward, A. K. Crow, M. A. Wright, M. I. Miller, S. J. Smith, R. J. Vogelstein, and K. Deisseroth, "A Community-Developed Open-Source Computational Ecosystem for Big Neuro Data," *Nature Methods*, October 2018. [Online]. Available: https://www.nature.com/articles/s41592-018-0181-1

J8 Y. Lee, C. Shen, and J. T. Vogelstein, "Network Dependence Testing via Diffusion Maps and Distance-Based Correlations," *Biometrika*, Sep 2019. [Online]. Available: https://doi.org/10.1093/biomet/asz045

J9 A. Athreya, D. E. Fishkind, M. Tang, C. E. Priebe, Y. Park, J. T. Vogelstein, K. Levin, V. Lyzinski, Y. Qin, and D. L. Sussman, "Statistical Inference on Random Dot Product Graphs: a Survey," *Journal of Machine Learning Research*, vol. 18, May 2018. [Online]. Available: http://jmlr.org/papers/v18/17-448.html

J10 J. D. Cohen, L. Li, Y. Wang, C. Thoburn, B. Afsari, L. Danilova, C. Douville, A. A. Javed, F. Wong, A. Mattox, R. H. Hruban, C. L. Wolfgang, M. G. Goggins, M. D. Molin, T.-L. Wang, R. Roden, A. P. Klein, J. Ptak, L. Dobbyn, J. Schaefer, N. Silliman, M. Popoli, J. T. Vogelstein, J. D. Browne, R. E. Schoen, R. E. Brand, J. Tie, P. Gibbs, H.-L. Wong, A. S. Mansfield, J. Jen, S. M. Hanash, M. Falconi, P. J. Allen, S. Zhou, C. Bettegowda, L. Diaz, C. Tomasetti, K. W. Kinzler, B. Vogelstein, A. M. Lennon, and N. Papadopoulos, "Detection and localization of surgically resectable cancers with a multi- analyte blood test," *Science*, vol. 3247, feb 2018. [Online]. Available: http://science.sciencemag.org/content/early/2018/01/17/science.aar3247

J11 D. Durante, D. B. Dunson, and J. T. Vogelstein, "Rejoinder: Nonparametric Bayes Modeling of Populations of Networks," *Journal of the American Statistical Association*, vol. 112, oct 2017. [Online]. Available: https://doi.org/10.1080/01621459.2017.1395643

J12 G. Kiar, K. J. Gorgolewski, D. Kleissas, W. G. Roncal, B. Litt, B. Wandell, R. A. Poldrack, M. Wiener, R. J. Vogelstein, R. Burns, and J. T. Vogelstein, "Science in the cloud (SIC):

A use case in MRI connectomics," *GigaScience*, vol. 6, may 2017. [Online]. Available: https://academic.oup.com/gigascience/article-lookup/doi/10.1093/gigascience/gix013

J13 S. Chen, K. Liu, Y. Yang, Y. Xu, S. Lee, M. Lindquist, B. S. Caffo, and J. T. Vogelstein, "An M-estimator for reduced-rank system identification," *Pattern Recognition Letters*, vol. 86, jan 2017. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0167865516303671

J14 N. Binkiewicz, J. T. Vogelstein, and K. Rohe, "Covariate-assisted spectral clustering," *Biometrika*, vol. 104, 2017. [Online]. Available: https://doi.org/10.1093/biomet/asx008

J15 D. Durante, D. B. Dunson, and J. T. Vogelstein, "Nonparametric Bayes Modeling of Populations of Networks," *Journal of the American Statistical Association*, 2017. [Online]. Available: https://doi.org/10.1080/01621459.2016.1219260

J16 D. G. C. Hildebrand, M. Cicconet, R. M. Torres, W. Choi, T. M. Quan, J. Moon, A. W. Wetzel, A. S. Champion, B. J. Graham, O. Randlett, and Others, "Whole-brain serial-section electron microscopy in larval zebrafish," *Nature*, vol. 545, 2017. [Online]. Available: https://doi.org/10.1038/nature22356

J17 C. Shen, J. T. Vogelstein, and C. E. Priebe, "Manifold matching using shortest-path distance and joint neighborhood selection," *Pattern Recognition Letters*, vol. 92, 2017. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S016786551730106X

J18 A. K. Simhal, C. Aguerrebere, F. Collman, J. T. Vogelstein, K. D. Micheva, R. J. Weinberg, S. J. Smith, and G. Sapiro, "Probabilistic fluorescence-based synapse detection," *PLoS Computational Biology*, vol. 13, 2017. [Online]. Available: https://doi.org/10.1371/journal.pcbi.1005493

J19 Q. Wang, M. Zhang, T. Tomita, J. T. Vogelstein, S. Zhou, N. Papadopoulos, K. W. Kinzler, and B. Vogelstein, "Selected reaction monitoring approach for validating peptide biomarkers," *Proceedings of the National Academy of Sciences*, 2017. [Online]. Available: http://www.pnas.org/content/114/51/13519.short

J20 D. Zheng, D. Mhembere, V. Lyzinski, J. T. Vogelstein, C. E. Priebe, and R. Burns, "Semi-External Memory Sparse Matrix Multiplication for Billion-Node Graphs," *IEEE Transactions on Parallel and Distributed Systems*, vol. 28, 2017. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/7593270

J21 D. Koutra, N. Shah, J. T. Vogelstein, B. Gallagher, and C. Faloutsos, "Deltacon: Principled massive-graph similarity function with attribution," *ACM Transactions on Knowledge Discovery from Data*, vol. 10, feb 2016. [Online]. Available: http://doi.acm.org/10.1145/2824443

J22 V. Lyzinski, D. E. Fishkind, M. Fiori, J. T. Vogelstein, C. E. Priebe, and G. Sapiro, "Graph Matching: Relax at Your Own Risk," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 38, jan 2016. [Online]. Available: http://doi.org/10.1109/TPAMI.2015.2424894

J23 R. D. Airan, J. T. Vogelstein, J. J. Pillai, B. Caffo, J. J. Pekar, and H. I. Sair, "Factors affecting characterization and localization of interindividual differences in functional connectivity using MRI," *Human Brain Mapping*, vol. 37, 2016. [Online]. Available: http://dx.doi.org/10.1002/hbm.23150

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J25 E. L. Dyer, W. G. Roncal, H. L. Fernandes, D. Gürsoy, V. De Andrade, R. Vescovi, K. Fezzaa, X. Xiao, J. T. Vogelstein, C. Jacobsen, K. P. Körding, and N. Kasthuri, "Quantifying mesoscale

neuroanatomy using x-ray microtomography," *eNeuro*, vol. 4, 2016. [Online]. Available: https://doi.org/10.1523/ENEURO.0195-17.2017

J26 C. E. Priebe, D. L. Sussman, M. Tang, and J. T. Vogelstein, "Statistical Inference on Errorfully Observed Graphs," *Journal of Computational and Graphical Statistics*, vol. 24, oct 2015. [Online]. Available: https://doi.org/10.1080/10618600.2014.951049

J27 L. Chen, J. T. Vogelstein, V. Lyzinski, and C. E. Priebe, "A Joint Graph Inference Case Study: the C.elegans Chemical and Electrical Connectomes," *Worm*, vol. 5, 2015. [Online]. Available: http://arxiv.org/abs/1507.08376

J28 K. M. Harris, J. Spacek, M. E. Bell, P. H. Parker, L. F. Lindsey, A. D. Baden, J. T. Vogelstein, and R. Burns, "A resource from 3D electron microscopy of hippocampal neuropil for user training and tool development," *Scientific Data*, vol. 2, 2015. [Online]. Available: https://doi.org/10.1038/sdata.2015.46

J29 N. Kasthuri, K. J. Hayworth, D. R. Berger, R. L. Schalek, J. A. Conchello, S. Knowles-Barley, D. Lee, A. Vázquez-Reina, V. Kaynig, T. R. Jones, M. Roberts, J. L. Morgan, J. C. Tapia, H. S. Seung, W. G. Roncal, J. T. Vogelstein, R. Burns, D. L. Sussman, C. E. Priebe, H. Pfister, and J. W. Lichtman, "Saturated Reconstruction of a Volume of Neocortex," *Cell*, vol. 162, 2015. [Online]. Available: https://doi.org/10.1016/j.cell.2015.06.054

J30 V. Lyzinski, D. L. Sussman, D. E. Fishkind, H. Pao, L. Chen, J. T. Vogelstein, Y. Park, and C. E. Priebe, "Spectral clustering for divide-and-conquer graph matching," *Parallel Computing*, vol. 47, 2015. [Online]. Available: https://doi.org/10.1016/j.parco.2015.03.004

J31 J. T. Vogelstein, J. M. Conroy, V. Lyzinski, L. J. Podrazik, S. G. Kratzer, E. T. Harley, D. E. Fishkind, R. J. Vogelstein, and C. E. Priebe, "Fast Approximate Quadratic programming for graph matching," *PLoS ONE*, vol. 10, 2015. [Online]. Available: http://dx.doi.org/10.1371/journal.pone.0121002

J32 J. T. Vogelstein and C. E. Priebe, "Shuffled Graph Classification: Theory and Connectome Applications," *Journal of Classification*, vol. 32, 2015. [Online]. Available: https://doi.org/10.1007/s00357-015-9170-6

J33 W. R. Gray Roncal, D. M. Kleissas, J. T. Vogelstein, P. Manavalan, K. Lillaney, M. Pekala, R. Burns, R. J. Vogelstein, C. E. Priebe, M. A. Chevillet, and G. D. Hager, "An automated images-to-graphs framework for high resolution connectomics," *Frontiers in Neuroinformatics*, vol. 9, 2015. [Online]. Available: http://journal.frontiersin.org/article/10.3389/fninf.2015.00020

J34 D. E. Carlson, J. T. Vogelstein, Qisong Wu, Wenzhao Lian, Mingyuan Zhou, C. R. Stoetzner, D. Kipke, D. Weber, D. B. Dunson, and L. Carin, "Multichannel Electrophysiological Spike Sorting via Joint Dictionary Learning and Mixture Modeling," *IEEE Transactions on Biomedical Engineering*, vol. 61, jan 2014. [Online]. Available: http://ieeexplore.ieee.org/document/6571240/

J35 E. M. Sweeney, J. T. Vogelstein, J. L. Cuzzocreo, P. A. Calabresi, D. S. Reich, C. M. Crainiceanu, and R. T. Shinohara, "A comparison of supervised machine learning algorithms and feature vectors for MS lesion segmentation using multimodal structural MRI," *PLoS ONE*, vol. 9, 2014. [Online]. Available: https://doi.org/10.1371/journal.pone.0095753

J36 J. T. Vogelstein, Y. Park, T. Ohyama, R. A. Kerr, J. W. Truman, C. E. Priebe, and M. Zlatic, "Discovery of Brainwide Neural-Behavioral Maps via Multiscale Unsupervised Structure Learning," *Science*, vol. 344, 2014. [Online]. Available: https://science.sciencemag.org/content/344/6182/386

J37 N. C. Weiler, F. Collman, J. T. Vogelstein, R. Burns, and S. J. Smith, "Synaptic molecular imaging in spared and deprived columns of mouse barrel cortex with array tomography," *Scientific Data*, vol. 1, 2014. [Online]. Available: http://www.nature.com/articles/sdata201446

J38 R. C. Craddock, S. Jbabdi, C. G. Yan, J. T. Vogelstein, F. X. Castellanos, A. Di Martino, C. Kelly, K. Heberlein, S. Colcombe, and M. P. Milham, "Imaging human connectomes at the macroscale," *Nature Methods*, vol. 10, 2013. [Online]. Available: https://doi.org/10.1038/nmeth.2482

J39 D. Dai, H. He, J. T. Vogelstein, and Z. Hou, "Accurate prediction of AD patients using cortical thickness networks," *Machine Vision and Applications*, vol. 24, 2013. [Online]. Available: https://doi.org/10.1007/s00138-012-0462-0

J40 C. E. Priebe, J. Vogelstein, and D. Bock, "Optimizing the quantity/quality trade-off in connectome inference," *Communications in Statistics - Theory and Methods*, vol. 42, 2013. [Online]. Available: https://doi.org/10.1080/03610926.2011.630768

J41 J. T. Vogelstein, W. G. Roncal, R. Jacob Vogelstein, and C. E. Priebe, "Graph classification using signal-subgraphs: Applications in statistical connectomics," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 35, 2013. [Online]. Available: https://doi.org/10.1109/TPAMI.2012.235

J42 W. R. Gray, J. A. Bogovic, J. T. Vogelstein, B. A. Landman, J. L. Prince, and R. J. Vogelstein, "Magnetic Resonance Connectome Automated Pipeline: An Overview," *IEEE Pulse*, vol. 3, mar 2012. [Online]. Available: http://ieeexplore.ieee.org/document/6173097/

J43 D. E. Fishkind, D. L. Sussman, M. Tang, J. T. Vogelstein, and C. E. Priebe, "Consistent adjacency-spectral partitioning for the stochastic block model when the model parameters are unknown," *SIAM Journal on Matrix Analysis and Applications*, vol. 34, 2012. [Online]. Available: http://arxiv.org/abs/1205.0309

J44 N. J. Roberts, J. T. Vogelstein, G. Parmigiani, K. W. Kinzler, B. Vogelstein, and V. E. Velculescu, "The predictive capacity of personal genome sequencing," *Science Translational Medicine*, vol. 4, 2012. [Online]. Available: https://doi.org/10.1126/scitranslmed.3003380

J45 S. B. Hofer, H. Ko, B. Pichler, J. Vogelstein, H. Ros, H. Zeng, E. Lein, N. A. Lesica, and T. D. Mrsic-Flogel, "Differential connectivity and response dynamics of excitatory and inhibitory neurons in visual cortex," *Nature Neuroscience*, vol. 14, 2011. [Online]. Available: https://doi.org/10.1038/nn.2876

J46 Y. Mishchencko, J. T. Vogelstein, and L. Paninski, "A Bayesian approach for inferring neuronal conectivity from calcium fluorescent imaging data," *The annals of applied statistics*, vol. 5, 2011. [Online]. Available: https://doi.org/10.1214/09-AOAS303

J47 J. T. Vogelstein, R. J. Vogelstein, and C. E. Priebe, "Are mental properties supervenient on brain properties?" *Scientific Reports*, vol. 1, 2011. [Online]. Available: https://doi.org/10.1038/srep00100

J48 L. Paninski, Y. Ahmadian, D. G. Ferreira, S. Koyama, K. Rahnama Rad, M. Vidne, J. Vogelstein, and W. Wu, "A new look at state-space models for neural data," *Journal of Computational Neuroscience*, vol. 29, 2010. [Online]. Available: https://doi.org/10.1007/s10827-009-0179-x

J49 J. T. Vogelstein, A. M. Packer, T. A. Machado, T. Sippy, B. Babadi, R. Yuste, and L. Paninski, "Fast non-negative deconvolution for spike train inference from population calcium imaging," *Journal of Neurophysiology*, vol. 104, 2009. [Online]. Available: https://doi.org/10.1152/jn.01073.2009

J50 J. T. Vogelstein, B. O. Watson, A. M. Packer, R. Yuste, B. Jedynak, and L. Paninskik, "Spike inference from calcium imaging using sequential Monte Carlo methods," *Biophysical Journal*, vol. 97, 2009. [Online]. Available: https://doi.org/10.1016/j.bpj.2008.08.005

J51 R. J. Vogelstein, U. Mallik, J. T. Vogelstein, and G. Cauwenberghs, "Dynamically reconfigurable silicon array of spiking neurons with conductance-based synapses," *IEEE Transactions on Neural Networks*, vol. 18, 2007. [Online]. Available: https://doi.org/10.1109/TNN.2006.883007

J52 J. T. Vogelstein, L. H. Snyder, and D. E. Angelaki, "Accuracy of saccades to remembered targets as a function of body orientation in space." *Journal of neurophysiology*, vol. 90, 2003. [Online]. Available: https://doi.org/10.1152/jn.00141.2003

Pre-Prints

P1 M.-A. Schulz, B. T. Yeo, J. T. Vogelstein, J. Mourao-Miranada, J. N. Kather, K. Kording, B. Richards, and D. Bzdok, "Deep learning for brains?: Different linear and nonlinear scaling in uk biobank brain images vs. machine-learning datasets," *bioRxiv*, September 2019. [Online]. Available: https://www.biorxiv.org/content/early/2019/09/06/757054

P2 R. Guo, C. Shen, and J. T. Vogelstein, "Estimating information-theoretic quantities with random forests," *arXiv*, July 2019. [Online]. Available: https://arxiv.org/abs/1907.00325

P3 S.-J. Hong, J. T. Vogelstein, G. Gozzi, B. C. Bernhardt, T. B. Yeo, M. P. Milham, and A. Di Martino, "Towards neurosubtypes in autism," *bioRxiv*, July 2019.

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P5 D. Mhembere, D. Zheng, J. T. Vogelstein, C. E. Priebe, and R. Burns, "Graphyti: A semi-external memory graph library for flashgraph," *arXiv*, July 2019. [Online]. Available: https://arxiv.org/abs/1907.03335

P6 A. Nikolaidis, A. S. Heinsfeld, T. Xu, P. Bellec, J. T. Vogelstein, and M. Milham, "Bagging improves reproducibility of functional parcellation of the human brain," *bioRxiv*, July 2019. [Online]. Available: https://www.biorxiv.org/content/10.1101/343392v3

P7 S. Panda, S. Palaniappan, J. Xiong, A. Swaminathan, S. Ramachandran, E. W. Bridgeford, C. Shen, and J. T. Vogelstein, "mgcpy: A comprehensive high dimensional independence testing python package," *arXiv*, July 2019. [Online]. Available: https://arxiv.org/abs/1907.02088

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P10 J. Arroyo, A. Athreya, J. Cape, G. Chen, C. E. Priebe, and J. T. Vogelstein, "Inference for multiple heterogenous networks with a common invariant subspace," *arXiv*, June 2019. [Online]. Available: https://arxiv.org/abs/1906.10026

P11 H. Helm, J. V. Vogelstein, and C. E. Priebe, "Vertex classification on weighted networks," *arXiv*, June 2019. [Online]. Available: https://arxiv.org/abs/1906.02881

P12 J. Xiong, C. Shen, J. Arroyo, and J. T. Vogelstein, "Graph independence testing," *arXiv*, June 2019. [Online]. Available: https://arxiv.org/abs/1906.03661

P13 J. Chung, B. D. Pedigo, E. W. Bridgeford, B. K. Varjavand, and J. T. Vogelstein, "Graspy: Graph statistics in python," *Journal of Machine Learning Research*, april 2019. [Online]. Available: https://arxiv.org/abs/1904.05329

P14 D. Mhembere, D. Zheng, C. E. Priebe, J. T. Vogelstein, and R. Burns, "clusternor: A numa-optimized clustering framework," *arxiv*, Feb 2019. [Online]. Available: https://arxiv.org/abs/1902.09527

P15 A. Branch, D. Tward, J. T. Vogelstein, Z. Wu, and M. Gallagher, "An optimized protocol for idisco+ rat brain clearing, imaging, and analysis," *bioRxiv*, 2019. [Online]. Available: https://www.biorxiv.org/content/early/2019/05/17/639674

P16 C. Shen and J. T. Vogelstein, "Decision forests induce characteristic kernels," *arXiv*, Dec 2018. [Online]. Available: https://arxiv.org/abs/1812.00029

P17 D. S. Greenberg, D. J. Wallace, K.-M. Voit, S. Wuertenberger, U. Czubayko, A. Monsees, T. Handa, J. T. Vogelstein, R. Seifert, Y. Groemping, and J. N. Kerr, "Accurate action potential inference from a calcium sensor protein through biophysical modeling," *bioRxiv*, nov 2018. [Online]. Available: https://www.biorxiv.org/content/early/2018/11/29/479055

P18 J. T. Vogelstein, E. Bridgeford, M. Tang, D. Zheng, R. Burns, and M. Maggioni, "Geometric dimensionality reduction for subsequent classification," *arXiv*, vol. 1050, p. 21, Nov 2018. [Online]. Available: https://arxiv.org/abs/1709.01233

P19 T. M. Tomita, J. Browne, C. Shen, C. E. Priebe, R. Burns, M. Maggioni, and J. T. Vogelstein, "Random Projection Forests," *arXiv*, Oct 2018. [Online]. Available: http://arxiv.org/abs/1506.03410

P20 Z. Wang, H. Sair, C. Crainiceanu, M. Lindquist, B. A. Landman, S. Resnick, J. T. Vogelstein, and B. S. Caffo, "On statistical tests of functional connectome fingerprinting," *bioRxiv*, Oct 2018. [Online]. Available: https://www.biorxiv.org/content/early/2018/10/15/443556

P21 C. Shen and J. T. Vogelstein, "The Exact Equivalence of Distance and Kernel Methods for Hypothesis Testing," *arXiv*, July 2018. [Online]. Available: https://arxiv.org/abs/1806.05514

P22 G. Kiar, E. Bridgeford, W. G. Roncal, C. f. R. (CoRR), Reproducibliity, V. Chandrashekhar, D. Mhembere, S. Ryman, X.-N. Zuo, D. S. Marguiles, R. C. Craddock, C. E. Priebe, R. Jung, V. Calhoun, B. Caffo, R. Burns, M. P. Milham, and J. Vogelstein, "A High-Throughput Pipeline Identifies Robust Connectomes But Troublesome Variability," *bioRxiv*, apr 2018. [Online]. Available: https://www.biorxiv.org/content/early/2018/04/24/188706

P23 S. Wang, C. Shen, A. Badea, C. E. Priebe, and J. T. Vogelstein, "Signal Subgraph Estimation Via Vertex Screening," *arXiv*, Jan 2018. [Online]. Available: https://arxiv.org/abs/1801.07683

P24 G. Kiar, E. Bridgeford, V. Chandrashekhar, D. Mhembere, R. Burns, W. R. G. Roncal, and J. T. Vogelstein, "A comprehensive cloud framework for accurate and reliable human connectome estimation and meganalysis," *bioRxiv*, p. 188706, Sep 2017. [Online]. Available: https://www.biorxiv.org/content/early/2017/09/14/188706

P25 G. Franca, M. L. Rizzo, and J. T. Vogelstein, "Kernel k-groups via hartigan's method," *arXiv*, Aug 2017. [Online]. Available: https://arxiv.org/abs/1710.09859

P26 R. Tang, M. Tang, J. T. Vogelstein, and C. E. Priebe, "Robust Estimation from Multiple Graphs under Gross Error Contamination," *arXiv*, Jul 2017. [Online]. Available: https://arxiv.org/abs/1707.03487

P27 S. Wang, J. Arroyo, J. T. Vogelstein, and C. E. Priebe, "Joint Embedding of Graphs," *arXiv*, mar 2017. [Online]. Available: http://arxiv.org/abs/1703.03862

Talks

Invited Talks

I1 J. Chung. Statistical methods for population of connectomes. Organization of Human Brain Mapping, June 2019.

I2 J. T. Vogelstein. Open access to the brain: a computer "connectome" links brain images in fine detail. JHM Boot Camp, June 2019.

I3 J. T. Vogelstein. Big biomedical data science. Sol Goldman International Conference, April 2019.

I4 J. T. Vogelstein. Connectal coding. Dipy Workshop, March 2019.

I5 J. T. Vogelstein. Connectome coding. Society for Neuroscience, november 2018.

I6 J. T. Vogelstein. A community-developed open-source computational ecosystem for big neuro data. Princeton, Aug 2018.

I7 E. W. Bridgeford. A high-throughput pipeline identifies robust connectomes but troublesome variability. Organization of Human Brain Mapping, july 2018.

I8 E. Perlman. Neurodata: Embracing open source for big data neuroscience. NSF NeuroNex Workshop on Super 3DEM, july 2018.

I9 J. T. Vogelstein. Using big data science to understand what goes on in our heads. SOHOP Faculty Spotlight, Apr 2018.

I10 J. T. Vogelstein. Discovering relationships and their geometry across disparate data modalities. Yale, january 2018.

I11 J. T. Vogelstein. Discovering relationships and their geometry across disparate data modalities. Stanford, August 2017.

I12 J. T. Vogelstein. Challenges and opportunities in big data for neuroscientists. Society for Neuroscience: DC Metro Area Chapter Keynote Address, 2017.

I13 J. T. Vogelstein. Using big data science to understand what goes on in our heads, 2017.

I14 J. T. Vogelstein. Opportunities and Challenges in Big Data Neuroscience. Society for Neuroscience, 2017.

I15 J. T. Vogelstein. NeuroData: Enabling Terascale Neuroscience for Everyone. Keystone Symposia: State of the Brain, 2016.

I16 J. T. Vogelstein. Using big data science to understand what goes on in our heads, 2016.

I17 J. T. Vogelstein. The International Brain Station (TIBS). Kavli Foundation, 2016.

I18 J. T. Vogelstein and L. Paninski. Spike inference from calcium imaging using sequential monte carlo methods. AMSI Program on Sequential Monte Carlo, 2015.

I19 J. T. Vogelstein. Top Challenges of Big Data Neuroscience. BRAIN Initiative Workshop, Dec 2014.

I20 J. T. Vogelstein. Big (Neuro) Statistics. Kavli Salon, 2014. Big Data: Practice Across Disciplines.

I21 J. T. Vogelstein. Statistical Inference on Graphs. University of Michigan, 2013.

I22 J. T. Vogelstein. Statistical Inference on Graphs. Scientific Computing Institute, University of Utah, 2013.

I23 J. T. Vogelstein. Beyond Little Neuroscience. Beyond Optogenetics workshop at Cosyne, 2013.

I24 J. T. Vogelstein. BIG NEURO. Theory and Neurobiology, Duke University, 2012.

I25 J. T. Vogelstein. Statistical Connectomics. Harvard University Connectomics Labs, 2011.

I26 J. T. Vogelstein. What can Translational neuroimaging Research do for Clinical Practice. Child Mind Institute, 2011.

I27 J. T. Vogelstein. Connectome Classification: Statistical Graph Theoretic Methods for Analysis of MR-Connectome Data. Organization for Human Brain Mapping, 2011.

I28 J. T. Vogelstein. Consistent Connectome Classification. Math/Bio Seminar, Duke University, 2011.

I29 J. T. Vogelstein. Once we get connectomes, what the %#* are we going to do with them? Krasnow Institute for Advanced Study at George Mason Univeristy, 2011.

I30 J. T. Vogelstein. Once we get connectomes, what the %#* are we going to do with them? Institute of Neuroinformatics, 2011.

I31 J. T. Vogelstein. Inferring spike trains from Calcium Imaging. Redwood Center for Theoretical Neuroscience, University of California, Berkeley, 2008.

I32 J. T. Vogelstein. Inferring spike trains from Calcium Imaging. Cambridge University, Gatsby Unit, and University College London, 2008.

I33 J. T. Vogelstein. Inferring Spike Trains Given Calcium-Sensitive Fluorescence Observations. Statistical Analysis of Neural Data, 2008.

Other Talks

T1 *Data Intensive Brain Science*, Kavli Neuroscience Discovery Institute, June 2018.

T2 James Browne. Forest packing: Fast parallel, decision forests. SIAM International Conference on Data Mining, May 2019.

T3 Gregory Kiar. Science in the cloud (sic): A use-case in mri connectomics. Open Science Special Interest Group, 2017.

T4 Gregory Kiar. Connectome coding: what is it, how do we do it, and why do we care? Data science in Neuroscience Symposium, June 2018.

T5 Youjin Lee. Network Dependence Testing via Diffusion Maps and Distance-Based Correlations. Joint Statistical Meetings, 2017.

T6 Disa Mhembere. knor: a numa-optimized in-memory, distributed and semi-external-memory k-means library. HPDC, June 2017.

T7 Disa Mhembere. knor: K-means numa optimized routines library. High-Performance Parallel and Distributed Computing, 2017.

T8 C. Shen. Local distance correlation for testing independence. Temple University, November 2015.

T9 C. Shen. Multiscale generalized correlation. Joint Statistical Meeting, August 2016.

T10 C. Shen. The exact equivalence of distance and kernel methods for hypothesis testing. Joint Statistical Meeting, August 2018.

T11 T. M. Tomita. Roflmao: Robust oblique forests with linear matrix operations. SIAM International Conference on Data Mining 2017, 2017.

T12 Daniel Tward. Brain mapping tools for neuroscience research. NeuroNex, May 2019.

T13 Joshua T Vogelstein. Inferring spike times given typical time-series fluorescence observations. Department of Applied Mathematics and Statistics, Johns Hopkins University, 2008.

T14 Joshua T Vogelstein. Towards Inference and Analaysis of Neural Circuits Inferred from Population Calcium Imaging. Guest Lecture in Schnitzer Lab, 2009.

T15 Joshua T Vogelstein. Neurocognitive Graph Theory. national Security Agency, 2009.

T16 Joshua T Vogelstein. Towards Inferring Neural Circuits from Calcium Imaging. Guest Lecture in Yuste Lab, 2009.

T17 Joshua T Vogelstein. OOPSI: A Family of Optimal OPtical Spike Inference Algorithms for Inferring Neural Connectivity from Population Calcium Imaging. Dissertation Defense, 2009.

T18 Joshua T Vogelstein. Sequential Monte Carlo in Neuroscience. SAMSI Program on Sequential Monte Carlo, Tracking Working Group, 2009.

T19 Joshua T Vogelstein. Consistent Graph Classification. Guest Lecture in Deisseroth Lab, Stanford University, 2011.

T20 Joshua T Vogelstein. Are mental properties supervenient on brain properties. NIPS workshop on Philosophy and Machine Learning, 2011.

T21 Joshua T Vogelstein. Decision Theoretic Approach to Statistical Inference. guest Lecture in Current Topics in Machine Learning, Johns Hopkins University, 2012.

T22 Joshua T Vogelstein. Open Connectome Project. Academic Medical Center, Amsterdam, 2012.

T23 Joshua T Vogelstein. Statistical Models and Inference for big Brain-Graphs. NIPS Workshop on Acquiring and analyzing the activity of large neural ensembles, 2013.

T24 Joshua T Vogelstein. Open Problems in Neuropsychiatry. Data Seminar, Duke University, 2013.

T25 Joshua T Vogelstein. Big Statistics for Brain Sciences. Baylor College of Medicine, Department of Neuroscience, May 2014.

T26 Joshua T Vogelstein. Big (Neuro) Statistics. Kavli Salon, 2014. Big Data: Practice Across Disciplines.

T27 Joshua T. Vogelstein. big time (series data in neuroscience). figshare, 2015.

T28 Joshua T Vogelstein. Research Computing Support for Neuroscience and Other Life Sciences. CASC, 2015.

T29 Joshua T Vogelstein. Open Connectome Project: Lowering the Barrier to Entry of Big Data Neuroscience. Institute for Computational Medicine at Johns Hopkins University, 2015.

T30 Joshua T Vogelstein. Law of Large Graphs. DARPA Graphs, 2015.

T31 Joshua T Vogelstein. From RAGs to Riches: Utilizing Richly Attributed Graphs to Reason from Heterogeneous Data. SIMPLEX Kickoff, 2015.

T32 Joshua T Vogelstein. Opportunities and Challenges in Big Data Neuroscience. DoE, 2015.

T33 Joshua T Vogelstein. From RAGs to Riches: Utilizing Richly Attributed Graphs to Reason from Heterogeneous Data: Part 1, 2015.

T34 Joshua T Vogelstein. From RAGs to Riches: Utilizing Richly Attributed Graphs to Reason from Heterogeneous Data: Part 2, 2015.

T35 Joshua T Vogelstein. Special Symposium: Neuroscience in the 21st Century. Kavli, 2015.

T36 Joshua T. Vogelstein. Open source platform for heterogenous brain data. figshare, 2015.

T37 Joshua T. Vogelstein. NeuroData:Enabling Terascale Neuroscience. JHU Kavli Neuroscience Discovery Institute, 2016.

T38 Joshua T. Vogelstein. The International Brain Station (TIBS). Kavli Foundation, 2016.

T39 Joshua T. Vogelstein. NeuroData 2016. NeuroData Lab Retreat, 2016.

T40 Joshua T. Vogelstein. Global Brain Workshop 2016. Global Brain Workshop NSF+JHU at Kavli, 2016.

T41 Joshua T. Vogelstein. Global Brain Workshop 2016. Kavli Neuroscience Discovery Institute & Center for Imaging Science, 2016.

T42 Joshua T. Vogelstein. NeuroData:Enabling Terascale Neuroscience. Kavli Neuroscience Discovery Institute & Center for Imaging Science, 2016.

T43 Joshua T. Vogelstein. Learning a Data-Driven Nosology:Progress, Challenges & Opportunities. Kavli Neuroscience Discovery Institute & Center for Imaging Science, 2016.

T44 Joshua T Vogelstein. Challenges and opportunities in big data for neuroscientists. Society for Neuroscience: DC Metro Area Chapter Keynote Address, 2017.

T45 Joshua T. Vogelstein. NeuroData. 2017.

T46 Joshua T. Vogelstein. The International Brain Station (TIBS). JHU BME and Tsinghua University, 2017.

T47 Joshua T. Vogelstein. Connectome Coding. Schmidt Sciences, 2017.

T48 Joshua T. Vogelstein. NeuroStorm. Global Brain Workshop 2 JHU, 2017.

T49 Joshua T. Vogelstein. Engineering the Future of Medicine: Data Intensive Biomedical Science. Johns Hopkins University Biomedical Engineering, March 2018.

T50 Joshua T. Vogelstein. Lifelong Learning Forests. Darpa L2M PI Meeting, June 2018.

T51 Joshua T Vogelstein. Multiscale graph correlation: A knowledge representation system for discovering latent geometric structure. DARPA SIMPLEX PI Review Meeting, august 2018.

T52 Joshua T. Vogelstein. Neurodata: A community-developed open-source computational ecosystem for big neuro data. NeuroNex, october 2018.

T53 Joshua T. Vogelstein. Big data and the life sciences. Sloan Foundation, May 2019.

T54 Joshua T. Vogelstein. Biomedical big data and data science. JHU BME, February 2019.

T55 Joshua T. Vogelstein. Journey to here. JHU BMES talks, April 2019.

T56 Joshua T. Vogelstein. Lifelong learning forests. L2M, March 2019.

T57 Joshua T. Vogelstein. Neurodata (science). Kavli, April 2019.

T58 Joshua T. Vogelstein. Neurodata tools. NeuroData Hackashop, March 2019.

T59 Joshua T. Vogelstein and Randal Burns. Data science core. Harvard University, July 2019.

T60 Joshua T. Vogelstein and Vikram Chandrashekhar. NeuroNex + Stanford. NeuroNex-Stanford, July 2018.

T61 Joshua T. Vogelstein, Hayden Helm, Ronak Mehta, Carey E. Priebe, and Raman Arora. A theory and practice of the lifelong learnable. L2M, September 2019.

T62 Joshua T. Vogelstein, Michael I. Miller, and Richard Hunganir. Global Brain Workshop 2016. Kavli Institute for Neuroscience Discovery Center for Imaging Science @ JHU, 2016.

Posters

A1 B. Falk and J. T. Vogelstein. Neurodata's open data cloud ecosystem. Harvard University, July 2019.

A2 J. Browne, D. Mhembere, T. M. Tomita, J. T. Vogelstein, and R. Burns. Forest packing: Fast parallel decision forests. SIAM International Conference on Data Mining, 2019.

A3 J. Chung, B. D. Pedigo, C. E. Priebe, and J. T. Vogelstein. Clustering multi-modal connectomes. OHBM 2019, 2019.

A4 J. Chung, B. D. Pedigo, C. E. Priebe, and J. T. Vogelstein. Human structural connectomes are heritable. BME data science poster session, 2019.

A5 B. D. Pedigo, J. Chung, E. W. Bridgeford, B. Varjavand, C. E. Priebe, and J. T. Vogelstein. Graspy: an open source python package for statistical connectomics. Max Planck /HHMI Connectomics Meeting Berlin, 2019.

A6 A. Baden, E. Perlman, F. Collman, S. Smith, J. T. Vogelstein, and R. Burns. Processing and analyzing terascale conjugate array tomography data. Berlin, 2017.

A7 E. Perlman. Neurodata: Enabling big data neuroscience. Kavli, 2017.

A8 S. Chen, K. Liu, Y. Yuguang, L. Seonjoo, M. Lindquist, B. Caffo, and J. T. Vogelstein. A sparse high dimensional state-space model with an application to neuroimaging data. Figshare, 2015.

A9 S. Chen, J. T. Vogelstein, S. Lee, M. Lindquist, and B. Caffo. High dimensional state space model with l-1 and l-2 penalties. ENAR 2015, 2015.

A10 F. Collman, R. Serafin, S. Davis, O. Gliko, T. M. Keenan, K. Parker, O. E. Linnaea, and S. J. Smith. An integrated imaging and staining platform for cubic millimeter scale array tomography. Society for Neuroscience, 2015.

A11 E. L. Deyer, H. L. Fernandes, W. G. Roncal, D. Gursoy, J. T. Vogelstein, X. Xiao, C. Jacobsen, K. P. Kording, and N. Kasthuri. X-brain: Quantifying mesoscale neuroanatomy using x-ray microtomography. Figshare, 2015.

A12 S. J. Smith, R. Burns, M. Chevillet, E. Lein, G. Sapiro, W. Seeley, J. Trimmer, J. T. Vogelstein, and R. Weinberg. The open synaptome project: Toward a microscopy-based platform for single-synapse analysis of diverse populations of cns synapses. Society for Neuroscience, 2015.

A13 J. T. Vogelstein. Open connectome project & neurodata: Enabling data-driven neuroscience at scale. Society for Neuroscience, 2015.

A14 S. Wang, Z. Yang, X.-N. Zuo, M. Milham, C. Craddock, C. E. Priebe, and J. T. Vogelstein. Optimal design for discovery science: Applications in neuroimaging. Figshare, 2015.

A15 S. Sikka, B. Cheung, R. Khanuja, S. Ghosh, C. Yan, Q. Li, J. T. Vogelstein, R. Burns, S. Colcombe, C. Craddock, et al. Towards automated analysis of connectomes: The configurable pipeline for the analysis of connectomes (c-pac). volume 10, 5th INCF Congress of Neuroinformatics, Munich, Germany, 2014.

A16 R. D. Airan, J. T. Vogelstein, et al. Reproducible differentiation of individual of individual subjects with minimal acquisition time via resting state fmri. page 1932, Proc ISMRM, 2013.

A17 C. Craddock et al. Towards Automated Analysis of Connectomes: The Configurable Pipeline for the Analysis of Connectomes. OHBM, 2013.

A18 W. R. Gray et al. Towards a fully automatic pipeline for connectome estimation from high-resolution em data. OHBM, 2013.

A19 D. Koutra, Y. Gong, S. Ryman, R. Jung, J. T. Vogelstein, and C. Faloutsos. Are all brains wired equally? volume 1, page 3, Proceedings of the 19th Annual Meeting of the Organization for Human Brain Mapping (OHBM), 2013.

A20 D. Mhembere et al. Multivariate invariants from massive brain-graphs. OHBM, 2013.

A21 E. A. Pnevmatikakis et al. Rank-penalized nonnegative spatiotemporal deconvolution and demixing of calcium inaging data. COSYNE, 2013.

A22 Y. Qin et al. Robust clustering of adjacency spectral embeddings of brain graph data via lq-likelihood. OHBM, 2013.

A23 N. Sismanis et al. Feature clustering from a brain graph for voxel-to-region classification. 5th Panhellic Conference on Biomedical Technology, 2013.

A24 D. Sussman et al. Massive diffusion mri graph structure preserves spatial information. OHBM, 2013.

A25 J. T. Vogelstein and C. E. Priebe. Nonparametric two-sample testing on graph-valued data. Duke Workshop on Sensing and Analysis of HighDimensional Data, 2013.

A26 J. T. Vogelstein et al. Anomaly Screening and Clustering of Multi-OBject Movies via Multiscale Structure Learning. DARPA XDATA Colloquium, 2013.

A27 W. R. Gray et al. Towards a fully automatic pipeline for connectome estimation from high-resolution em data. Cold Spring Harbor Laboratory, Neuronal Circuits, 2012.

A28 J. T. Vogelstein et al. Statistical connectomics. Janelia Farm conference, Statistical Inference and Neuroscience, 2012.

A29 J. T. Vogelstein et al. Brainstorm towards clinically and scientifically useful neuroimaging analytics. Neuroinformatics, 2012.

A30 W. R. Gray, J. A. Bogovic, J. T. Vogelstein, C. Ye, B. A. Landman, J. L. Prince, and R. J. Vogelstein. Magnetic resonance connectome automated pipeline and repeatability analysis. Society for Neuroscience, 2011.

A31 J. T. Vogelstein, D. E. Fishkind, D. L. Sussman, and C. E. Priebe. Large graph classification: theory and statistical connectomics applications. IMA conference on Large Graphs, 2011.

A32 J. T. Vogelstein, W. Gray, J. G. Martin, G. C. Coppersmith, M. Dredze, J. Bogovic, J. L. Prince, S. M. Resnick, C. E. Priebe, and R. J. Vogelstein. Connectome classification using statistical graph theory and machine learning. Society for Neuroscience, 2011.

A33 J. T. Vogelstein, W. R. Gray, R. J. Vogelstein, J. Bogovic, S. Resnick, J. Prince, and C. E. Priebe. Connectome classification: Statistical graph theoretic methods for analysis of mr-connectome data. Organization for Human Brain Mapping, 2011.

A34 J. T. Vogelstein, E. Perlman, D. Bock, W. C. Lee, M. Chang, B. Kasthuri, M. Kazhdan, C. Reid, J. Lichtman, R. Burns, and R. J. Vogelstein. Open connectome project: collectively reverse engineering the brain one synapse at a time. *Neuroinformatics*, 2011.

A35 J. T. Vogelstein, D. L. Sussman, M. Tang, D. E. Fishkind, and C. E. Priebe. Dot product embedding in large (errorfully observed) graphs with applications in statistical connectomics. IMA conference on Large Graphs, 2011.

A36 W. R. Gray, J. T. Vogelstein, J. Bogovic, A. Carass, J. L. Prince, B. Landman, D. Pham, L. Ferrucci, S. M. Resnick, C. E. Priebe, and R. J. Vogelstein. Graph-theoretical methods for statistical inference on mr connectome data. DARPA Neural Engineering, Science and Technology Forum, 2010.

A37 J. T. Vogelstein, J. Bogovic, A. Carass, W. Gray, J. Prince, B. Landman, D. Pham, L. Ferrucci, S. Resnick, C. E. Priebe, and R. Vogelstein. Graph-theoretical methods for statistical inference on mr connectome data. Organization for Human Brain Mapping, 2010.

A38 J. T. Vogelstein, Y. Mishchenki, A. Packer, T. Machado, R. Yuste, and L. Paninski. Towards confirming neural circuit inference from population calcium imaging. COSYNE, 2010.

A39 J. T. Vogelstein, Y. Mishchenki, A. Packer, T. Machado, R. Yuste, and L. Paninski. Towards inferring neural circuit inference from population calcium imaging. COSYNE, 2010.

A40 J. T. Vogelstein, C. E. Priebe, R. Burns, R. J. Vogelstein, and J. Lichtman. Measuring and reconstructing the brain at the synaptic scale: towards a biofidelic human brain in silico. DARPA Neural Engineeering, Science and Technology Forum, 2010.

A41 J. T. Vogelstein, R. Vogelstein, and C. E. Priebe. A neurocognitive graph-theoretical approach to understanding the relationship between minds and brains. CSHL conference on Neural Circuits, 2010.

A42 J. T. Vogelstein, Y. Mishchchenko, A. M. Packer, T. A. Machado, R. Yuste, and L. Paninski. Towards confirming neural circuits from population calcium imaging. NIPS Workshop on Workshop on Connectivity Infernence in Neuroimaging, 2009.

A43 J. T. Vogelstein, Y. Mishchenki, A. Packer, T. Machado, R. Yuste, and L. Paninski. Towards inferring neural circuit inference from population calcium imaging. COSYNE, 2009.

A44 B. Vogelstein, Joshua T Babadi and L. Paninski. Model-based optimal inference of spike-times and calcium dynamics given noisy and intermittent calcium-fluorescence imaging. COSYNE, 2008.

A45 J. T. Vogelstein, B. Babadi, B. Watson, R. Yuste, and L. Paninski. From calcium sensitive fluorescence movies to spike trains. Society for Neuroscience, 2008.

A46 J. T. Vogelstein and L. Paninski. Inferring spike trains, learning tuning curves, and estimating connectivity from calcium imaging. Integrative Approaches to Brain Complexity, 2008.

A47 J. T. Vogelstein, B. Jedynak, K. Zhang, and L. Paninski. Inferring spike trains, neural filters, and network circuits from in vivo calcium imaging. Society for Neuroscience, 2007.

A48 J. T. Vogelstein, K. Zhang, B. Jedynak, and L. Paninski. Maximum likelihood inference of neural dynamics under noisy and intermittent observations using sequential monnte carlo em algorithms. COSYNE, 2007.

A49 J. T. Vogelstein and K. Zhang. A novel theory for simultaneous representation of multiple dynamic states in hippocampus. Society for Neuroscience, 2004.

A50 J. T. Vogelstein, L. Snyder, M. Warchol, and D. Angelaki. Up-down asymmetry in memory guided saccadic eye movements are independent of head orientation in space. Society for Neuroscience, 2002.

Current Funding

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

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

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

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

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

11/17 – 10/21 **Lifelong Learning Forests**, *DARPA*, This work is graciously supported by the Defense Advanced Research Projects Agency (DARPA) Lifelong Learning Machines program through contract FA8650-18-2-7834, Vogelstein (PI).

11/17 – 10/21 **Continual Learning Across Synapses, Circuits, and Brain Areas**, *DARPA*, This research has been supported by the Lifelong Learning Machines (L2M) program of the Defence Advanced Research Projects Agency (DARPA) via contract number HR0011-18-2-0025, Tolias (PI).

7/18 – 6/21 **SemiSynBio: Collaborative Research: YeastOns: Neural Networks Implemented in Communication Yeast Cells**, *NSF*, Shulman (PI).

7/17 – 6/19 (Extended) **NeuroNex Innovation Award: Towards Automatic Analysis of Multi-Terabyte Cleared Brains**, *NSF, 16-569 Neural System Cluster*, Vogelstein (PI) 1707298.

Past Funding

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

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.

12/09 – 1/13 **National Center for Applied Neuroscience Project**, *NSF*, RJ Vogelstein (PI).

Mentoring

Post-Doctoral Fellows

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

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

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

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

PhD Students

08/19 – now **Michael Powell, MSE**, *PhD advisee*, BME, JHU.

06/19 – now **Jaewon Chung, MSE**, *PhD advisee*, BME.

08/18 – now **Benjamin Pedigo, BSE**, *PhD advisee*, BME, JHU.

08/18 – now **Tommy Athey, BSE**, *PhD advisee*, BME, JHU.

08/18 – now **Eric Bridgeford, BSE**, *PhD advisee*, Department of Biostatistics, JHU.

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

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

Masters Students

06/19 – now **Bijan Varjavand**, *MS advisee*, BME, JHU.

06/19 – now **Ronak Mehta**, *MS advisee*, BME, JHU.

06/19 – now **Sambit Panda**, *MS advisee*, BME, JHU.

06/19 – now **Varun Kotharkar**, *MS advisee*, AMS, JHU.

06/18 – now **Drishti Mannan**, *MS advisee*, BME, JHU.

08/14 – 06/17 **Greg Kiar, MSE**, BME, JHU.

Undergraduate Students

06/19 – now **Ronan Perry**, *BSE*, BME, JHU.

08/14 – 08/18 **Eric Bridgeford, BSE**, BME, 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.

Summer Interns

06/19 – 08/19 **Kareef Ullah**, *Summer Intern*, BME, JHU.
06/19 – 08/19 **Shunan Wu**, *Summer Intern*, BME, JHU.
06/19 – 08/19 **Shiyu Sun**, *Summer Intern*, BME, JHU.
06/19 – 08/19 **Sander Shulhoff**, *Summer Intern*, BME, JHU.
06/19 – 08/19 **Kiki Zhang**, *Summer Intern*, BME, JHU.
06/18 – 08/18 **Papa Kobina Van Dyck**, *Summer Intern*, BME, JHU.

Teaching

Fall 2019 **NeuroData Design I**, *EN.580.437*, Johns Hopkins University.
Spring 2019 **NeuroData Design II**, *EN.580.437*, Johns Hopkins University.
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.

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*.

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 2019 **Organizer**, *NeuroData Workshop*, https://neurodata.devpost.com.

March 2019 **Organizer**, *Neuro Reproducibility Hackashop*, https://brainx3.io/.

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.

Languages

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

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