HENRY LI

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EDUCATION

Yale University *January 2020 - Present*
PhD Student in the Applied Mathematics Program
Department of Mathematics

University of California, San Diego *August 2018 - December 2019*
Graduate Student in Computer Science GPA: 3.83
Department of Computer Science Engineering

Yale University *September 2013 - May 2017*
Bachelor of Science in Computer Science and Math GPA: 3.73
Department of Computer Science and Department of Math

SUBMITTED AND PUBLISHED WORKS

Neural Inverse Transform Sampler Henry Li, Yuval Kluger, *International Conference on Machine Learning*, 2022.

Support recovery with stochastic gates: Theory and application for linear models Soham Jana, Henry Li, Yutaro Yamada, Ofir Lindenbaum, *Mathematical and Scientific Machine Learning*, 2021.

Phase retrieval with holography and untrained priors: Tackling the challenges of low-photon nanoscale imaging Hannah Lawrence, David Barmherzig, Henry Li, Michael Eickenberg, Marylou Gabrie, *Mathematical and Scientific Machine Learning*, 2021.

Detection of differentially abundant cell subpopulations in scRNA-seq data Jun Zhao, Ariel Jaffe, Henry Li, Ofir Lindenbaum, Xiuyuan Cheng, Richard Flavell, Yuval Kluger, *Proceedings of the National Academy of Sciences*, 2020.

Variational Diffusion Autoencoders for Random Walk Sampling
Henry Li*, Ofir Lindenbaum*, Xiuyuan Cheng, Alexander Cloninger, *European Conference on Computer Vision*, 2020.

SpectralNet: Spectral Clustering Using Deep Neural Networks
Uri Shaham*, Kelly Stanton*, Henry Li*, Boaz Nadler, Ronen Basri, and Yuval Kluger, *International Conference on Learning Representations*, 2018.

RESEARCH EXPERIENCE

Flatiron Institute 2020
CCM Summer Research Intern

· Explored deep image prior-based techniques for enhancing phase retrieval in low-photon settings at the Center for Computational Mathematics (CCM) at Flatiron Institute. Published results at MSML 2021.

Yale / UCSD 2019
Summer Research Fellow

· Studied manifold-based machine learning techniques for manifold-valued data generation. Presented Variational Diffusion Autoencoders at ECCV 2020, which proposes an algorithm that generates manifold-valued data via Monte-Carlo based simulation of random walks on manifolds. The dynamics of these random walks are approximated by deep neural networks.

Kluger Lab, Yale University 2017-2018
Research Fellow

· Investigated novel ways to use neural networks in applied mathematics and on medical data, including mammograms and pap test microscopy imagery. We presented a novel technique for learning Laplacian Eigenmaps using a variational method at ICLR 2018.

Lab126, Amazon.com 2016
Software Engineering Intern

· Developed an app prediction algorithm for pre-emptively starting apps to reduce user-perceived latency on Amazon FireOS (their tablet and smartphone operating system). I proposed an improvement to the pre-existing in-house algorithm that halved memory usage and run-time. (The previous algorithm was very close to an n-gram language model; I improved the algorithm by optimizing the size of the n-gram dictionary, and picking n (the main parameter in n-gram models) properly after observing collected user data.)

Institute for Computational Engineering and Sciences, UT Austin 2015
Summer Research Fellow

· Designed and implemented an image segmentation method (a combination of normalized cuts, convolutions, and a modified watershed segmentation) to label TEM imagery — this automated a process that previously required a high degree of manual input.