

Atish Agarwala

CONTACT INFORMATION	Address: 575 S. Rengstorff Avenue, Apt. 22, Mountain View, CA, 94040	Phone: (408) 759 1344 atishagarwala@gmail.com
EDUCATION	Stanford University , Stanford, CA <i>PhD in Physics</i>	September 2013 – September 2019
	Swarthmore College , Swarthmore, PA <i>Bachelors degree in Physics and Math (Highest honors)</i>	August 2009 – May 2013
WORK EXPERIENCE	Google Research , Mountain View, CA <i>AI Resident</i>	October 2019 – Present
HONOURS AND AWARDS	CEHG Fellow, 2018-2019 Stanford Bowes BioX Fellow, 2015-2018 William C. Elmore Prize, Swarthmore Physics Department, 2013 Finalist for 2013 Hertz Foundation Fellowship	
RESEARCH EXPERIENCE	Google Research , Mountain View, CA <i>AI Resident</i>	October 2019 – Present
	Derived theoretical guarantees for learning analytical functions with neural networks. Performed theoretical analysis of learning dynamics in classification problems and suggested architectural tweaks to improve network performance. Currently studying use of machine learning for protein design, using data-driven models to simulate entire protein design workflow and developing best-practices for data collection and model selection in collaboration with biotech industry partners.	
	Stanford University , Stanford, CA <i>Graduate student</i>	September 2013 – August 2019
	Studied evolutionary dynamics with Daniel Fisher in Applied Physics. Research consists of a mixture of analytical and computational explorations of stochastic dynamics of evolutionary processes. Projects include studies of epistasis and ecological dynamics. Also analyzed data from laboratory evolution experiments in collaboration with Gavin Sherlock in Genetics and Dmitri Petrov in Biology.	
	Google Brain , Mountain View, CA <i>Research intern</i>	June 2018 – August 2018
	Studied early learning in neural networks using mean field theory. Developed a formalism to compute optimal learning rates after network initialization and demonstrated validity by training hundreds of thousands of networks.	
	Okinawa Institute of Science and Technology , Okinawa, Japan <i>Summer Researcher</i>	May 2012 – August 2013
	Computationally investigated metamaterial device with potential applications in all-optical switching.	
PROGRAMMING	Python, JAX, Tensorflow, Matlab, C++. Use UNIX/Linux and Google cloud compute.	
SELECTED PUBLICATIONS	A. Agarwala et. al., “One Network Fits All? Modular versus Monolithic Task Formulations in Neural Networks.” <i>To appear in ICLR 2021.</i> (2021). A. Agarwala et. al., “Temperature check: theory and practice for training models with softmax-cross-entropy losses.” arXiv preprint arXiv:2010.07344 (2020).	

A. Agarwala et. al., “Learning the gravitational force law and other analytic functions.” arXiv preprint arXiv:2005.07724 (2020).

M. T. Pearce, **A. Agarwala**, and D. S. Fisher, “Stabilization of extensive fine-scale diversity by ecologically driven spatiotemporal chaos.” Proceedings of the National Academy of Sciences (2020).

A. Agarwala, and D. S. Fisher, “Adaptive walks on high-dimensional fitness landscapes and seascapes with distance-dependent statistics.” Theoretical Population Biology 130 (2019): 13-49.

Y. Li, S. Venkataram, **A. Agarwala**, et. al., “Hidden complexity of adaptation under ‘simple’ serial-dilution conditions in yeast”, Current Biology, Volume 28, Issue 4, 19 February 2018, Pages 515-525.e6

S. Venkataram, B. Dunn, Y. Li, **A. Agarwala**, et. al., “Development of a Comprehensive Genotype-to-Fitness Map of Adaptation-Driving Mutations in Yeast”, Cell, Volume 166, Issue 6, 1585 - 1596.e22