

Dheeraj Mysore Nagaraj

CONTACT INFORMATION	E17-476B Massachusetts Institute of Technology 50 Ames Street Cambridge, MA, 02142 USA	e-mail: dheeraj@mit.edu
EDUCATION	Ph.D. in EECS, Massachusetts Institute of Technology. Advisor: Guy Bresler	September 2016 — present
	M.Tech in VLSI and Microelectronics, IIT Madras.	August 2011 — May 2016
	B.Tech in Electrical Engineering, IIT Madras.	August 2011 — May 2016
RESEARCH INTERESTS	Stochastic Optimization Algorithms, Neural Networks theory, Markov Chains, High Dimensional Discrete Models, High Dimensional Statistics.	
INDUSTRY EXPERIENCE	PhD Research Intern at Microsoft Research, Redmond. Mentor: Sébastien Bubeck	June 2020 — August 2020
	Description: My work centered around understanding the trade off between robustness and size in neural networks.	
	PhD Research Intern at Microsoft Research, India. Mentors: Praneeth Netrapalli and Prateek Jain	June 2018 — August 2018
	Description: I worked on various problems regarding of stochastic gradient descent for convex problems and bridged several gaps between theory and practice.	
TEACHING EXPERIENCE	Teaching Assistant for Algorithms for Inference Teaching Assistant for Quantum Information and Quantum Computation	MIT, Fall 2018 IIT Madras, Fall 2015
AWARDS	Michael Athans Fellowship, 2016 Philips India Prize, 2016 Todai IIT Scholarship, 2012 KVPY Fellowship (Kishore Vaidyanik Protsahan Yojana), 2009	
MANUSCRIPTS	Sébastien Bubeck, Yuanzhi Li and Dheeraj Nagaraj. A Law of Robustness for Two-Layers Neural Networks. <i>arXiv preprint (2020)</i>	
JOURNAL PUBLICATIONS	Matthew Brennan, Guy Bresler and Dheeraj Nagaraj. Phase Transitions for Detecting Latent Geometry in Random Graphs. <i>Probability Theory and Related Fields (2020)</i>	
	Guy Bresler and Dheeraj Nagaraj. Stein’s Method for Stationary Distributions of Markov Chains and Application to Ising Models. <i>Annals of Applied Probability (2019)</i> .	
	Dheeraj M N and Todd A Brun. Continuous Limit of Discrete Quantum Walks. <i>Physical Review A (2015)</i> .	
CONFERENCE PUBLICATIONS	Guy Bresler, Prateek Jain, Dheeraj Nagaraj, Praneeth Netrapalli and Xian Wu. Least Squares Regression with Markovian Data: Fundamental Limits and Algorithms. <i>NeurIPS 2020</i>	

Guy Bresler and Dheeraj Nagaraj. Sharp Representation Theorems for ReLU Networks with Precise Dependence on Depth. *NeurIPS 2020*

Guy Bresler and Dheeraj Nagaraj. A Corrective View of Neural Networks: Representation, Memorization and Learning. *COLT 2020*

Prateek Jain, Dheeraj Nagaraj and Praneeth Netrapalli. Making the Last Iterate of SGD Information Theoretically Optimal. *COLT 2019*

Prateek Jain, Dheeraj Nagaraj and Praneeth Netrapalli. SGD without Replacement: Sharper Rates for General Smooth Convex Functions. *ICML 2019*

Guy Bresler and Dheeraj Nagaraj. Optimal Single Sample Tests for Structured versus Unstructured Network Data. *COLT 2018*

PROGRAMMING
SKILLS

Python, Matlab, C, Verilog.

GRADUATE
COURSES

Mathematics: Theory of Probability, High Dimensional Probability, Stochastic Calculus, Measure Theory, Functional Analysis, Advanced Discrete Probability, Abstract Algebra, Topology.

Electrical Engineering and Computer Science: Algorithms for Inference, Optimization Methods, Inference and Information

Physics: Quantum Mechanics II, Quantum Field Theory, Advanced Statistical Physics, Physical Applications of Stochastic Processes, Quantum Information and Quantum Computation