Dheeraj Mysore Nagaraj

EDUCATION	Ph.D. in EECS, Massachusetts Institute of Technology.	Sep. 2016 — Dec. 2021
	Advisor: Prof. Guy Bresler	
	M.Tech in VLSI and Microelectronics, IIT Madras.	Aug. 2011 — May 2016
	B.Tech in Electrical Engineering, IIT Madras.	Aug. 2011 — May 2016

RESEARCH INTERESTS
Stochastic Optimization Algorithms, Neural Networks theory, Markov Chains, High Dimensional Discrete Models, High Dimensional Statistics.

INDUSTRY EXPERIENCE

Research Scientist, Google Research, India.   December 2021 — Present

PhD Research Intern at Microsoft Research, Redmond.   June 2020 — August 2020
Mentor: Sébastien Bubeck
Description: My work centered around understanding the trade off between robustness and size in neural networks.

PhD Research Intern at Microsoft Research, India.   June 2018 — August 2018
Mentors: Praneeth Netrapalli and Prateek Jain
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	MIT, Fall 2018
Teaching Assistant for Quantum Information and Quantum Computation	IIT Madras, Fall 2015

AWARDS

Michael Athans Fellowship, 2016

Philips India Prize, 2016

Todai IIT Scholarship, 2012

KVPY Fellowship (Kishore Vaignanik Protsahan Yojana), 2009

MANUSCRIPTS

Naman Agarwal, Syomantak Chaudhuri, Prateek Jain, Dheeraj Nagaraj and Praneeth Netrapalli. Online Target Q-learning with Reverse Experience Replay: Efficiently finding the Optimal Policy for Linear MDPs. *arXiv Preprint (2021)*

JOURNAL PUBLICATIONS

Prateek Jain, Dheeraj Nagaraj and Praneeth Netrapalli. Making the Last Iterate of SGD Information Theoretically Optimal. *accepted at SIOPT (2020+)*

Matthew Brennan, Guy Bresler and Dheeraj Nagaraj. Phase Transitions for Detecting Latent Geometry in Random Graphs. *Probability Theory and Related Fields (2020)*

Guy Bresler and Dheeraj Nagaraj. Stein's Method for Stationary Distributions of Markov Chains and Application to Ising Models. *Annals of Applied Probability (2019).*

Dheeraj M N and Todd A Brun. Continuous Limit of Discrete Quantum Walks. *Physical Review A (2015).*

CONFERENCE PUBLICATIONS

Emmanuel Abbe, Enric Boix-Adsera, Matthew Brennan, Guy Bresler and Dheeraj Nagaraj. The staircase property: How hierarchical structure can guide deep learning. *NeurIPS (2021)*

Prateek Jain, Suhas Kowshik, Dheeraj Nagaraj and Praneeth Netrapalli. Near-optimal Offline and Streaming Algorithms for Learning Non-Linear Dynamical Systems. *NeurIPS (2021)*

Prateek Jain, Suhas Kowshik, Dheeraj Nagaraj and Praneeth Netrapalli. Streaming Linear System Identification with Reverse Experience Replay. *NeurIPS (2021)*

Sébastien Bubeck, Yuanzhi Li and Dheeraj Nagaraj. A Law of Robustness for Two-Layers Neural Networks. *COLT 2021*

Guy Bresler, Prateek Jain, Dheeraj Nagaraj, Praneeth Netrapalli and Xian Wu. Least Squares Regression with Markovian Data: Fundamental Limits and Algorithms. *NeurIPS 2020*

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*