

ASHOK CUTKOSKY

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EDUCATION

Stanford University, Stanford, CA

Ph.D Computer Science, 2018. Thesis: Algorithms and Lower-Bounds for Parameter-free Online Learning. Advised by Kwabena Boahen.

M.S. Medicine 2016.

M.S. Computer Science 2016.

Harvard University, Cambridge, MA

A.B. Mathematics Magna cum Laude, Secondary in Computer Science, 2013.

AWARDS

2017 Best Student Paper Award at Conference on Learning Theory (COLT)

2013 NSF Graduate Research Fellowship

2013 Stanford Graduate Fellowship - Benchmark Fellow

2013 Hertz Foundation Finalist

2013 Captain Jonathan Fay Prize - most imaginative and original undergraduate thesis.

2013 Hoopes Prize - outstanding undergraduate thesis

2008 Siemens Competition in Math Science and Technology: 5th Place National Winner

PUBLICATIONS

Ashok Cutkosky *Combining Online Learning Guarantees*, Conference on Learning Theory (COLT), 2019.

Ashok Cutkosky *Artificial Constraints and Lipschitz Hints for Unconstrained Online Learning*, Conference on Learning Theory (COLT), 2019.

Ashok Cutkosky, *Anytime Online-to-Batch, Optimism, and Acceleration*, International Conference on Machine Learning (ICML), 2019.

Ashok Cutkosky and Tamas Sarlos, *Matrix-Free Preconditioning in Online Learning*, International Conference on Machine Learning (ICML), 2019.

Zhenxun Zhuang, Ashok Cutkosky, and Francesco Orabona, *Surrogate Losses for Online Learning of Stepsizes in Stochastic Non-Convex Optimization*, International Conference on Machine Learning (ICML), 2019.

Ashok Cutkosky and Robert Busa-Fekete, *Distributed Stochastic Optimization via Adaptive SGD*, Advances in Neural Information Processing Systems (NeurIPS), 2018.

Ashok Cutkosky and Francesco Orabona, *Black-Box Reductions for Parameter-free Online Learning in Banach Spaces*, Conference on Learning Theory (COLT), 2018.

Ashok Cutkosky and Kwabena Boahen, *Stochastic and Adversarial Online Learning Without Hyperparameters*, Advances in Neural Information Processing Systems (NeurIPS), 2017.

Ashok Cutkosky and Kwabena Boahen, *Online Learning Without Prior Information*, Conference on Learning Theory (COLT), 2017.

Ashok Cutkosky and Kwabena Boahen, *Online Convex Optimization with Unconstrained Domains and Losses*, Advances in Neural Information Processing Systems (NeurIPS), 2016.

Ashok Cutkosky and Kwabena Boahen, *Bloom Features*, IEEE International Conference on Computation Science and Computational Intelligence, 2015.

Sanborn et.al *Chromatin extrusion explains key features of loop and domain formation in wild-type and engineered genomes*, Proceedings of the National Academy of Sciences (PNAS), 2015.

PRESENTATIONS AND OTHER MEDIA

Ashok Cutkosky, *Polymer Simulations and DNA Topology*, Undergraduate Thesis, 2013

Ashok Cutkosky and Erez Lieberman Aiden. *Simulated Fractal Globule Formation*, Poster at 2012 Topological Dynamics in Biology conference, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK.

Leon Furchtgott, Ashok Cutkosky, Najeeb Tarazi and Erez Lieberman Aiden, Presentation at 2012 APS March Meeting: In silico simulations of polymer condensation: the fractal globule as a metastable state.

Ashok Cutkosky, *Associated Primes of the Square of the Alexander Dual of Hypergraphs*, www.arXiv.org e-print, arXiv:0901.1678 [math.AC], 2009

EXPERIENCE

Google Research

Research Scientist

July 2018 - Present

Mountain View, CA

I work on problems related to machine learning for theoretical research and practical use at Google.

Boahen Lab

Machine Learning and Optimization Algorithms Research

June 2014 - Present

Stanford, CA

My PhD research focused primarily on optimization algorithms, particularly on online learning algorithms and hyperparameter free optimization. As part of my research I have proved a full characterization of the worst-case complexity of hyperparameter-free online convex optimization and designed algorithms that exhibit good theoretical and practical performance without hyperparameter tuning.

Yahoo! Research

Research Intern

June 2017 - September 2017

New York City, NY

I designed and implemented a communication-efficient distributed stochastic optimization algorithm for large-scale machine learning. I created a novel reduction allowing for parallelization of any serial stochastic gradient descent algorithm while achieving the optimal communication complexity. I then implemented this algorithm in the Spark framework, and achieved significant improvements in both final loss and runtime over prior methods on large-scale ad-click prediction datasets.

Heap Analytics

Software Engineering Intern

June 2016 - August 2016

San Francisco, CA

I built internal tooling to manage customer information, rearchitected part of the backend to remove a single point of failure and significantly reduce disk space usage. I worked in Node, client-side JS and Scala.

Aiden Lab

Undergraduate Research on DNA Topology

Summer 2010 - Spring 2013

Cambridge, MA

I developed a package to create 3d movies of polymer simulations and wrote GPU-accelerated molecular dynamics software to simulate polymer collapses in bad solvents. I created a number of images and movies and gave presentations on molecular dynamics results at two conferences. I wrote my senior thesis on DNA topology and double strand breaks, which won Harvard's Hoopes price (one of forty) and Captain Jonathan Fay Prize (one of three).

PROGRAMMING LANGUAGES: Python, C, C++, Javascript, Java, CUDA

MISCELLANEOUS SKILLS: Astonishing Card Magic, Secrets of the Medical Profession