

ASHOK CUTKOSKY

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EDUCATION

Stanford University, Stanford, CA

Ph.D Computer Science, expected graduation Spring 2018.

M.S. Computer Science 2016.

M.S. Medicine 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 and Kwabena Boahen, *Stochastic and Adversarial Online Learning Without Hyperparameters*, Advances in Neural Information Processing Systems (NIPS), 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 (NIPS), 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

Boahen Lab

Machine Learning and Optimization Algorithms Research

June 2014 - Present

Stanford, CA

My PhD research focuses 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

Large-Scale Optimization Algorithms

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

June 2016 - August 2016

Software Engineering Intern

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

Summer 2010 - Spring 2013

Undergraduate Research on DNA Topology

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).

Valiant Lab

Summer 2012

Research Project on Multi-Core Sorting Algorithms

Cambridge, MA

I worked on developing fast multi-core sorting algorithms using a generalized model of multi-core processing. By using this generalized model, algorithms can maintain high performance across different machine architectures by fitting the model to the machine.

National Security Agency

Summer 2011

Director's Summer Program Intern

Ft. Meade, MD

I developed and optimized algorithms in computational algebraic geometry, developed an efficient implementation of a new public-key agreement system, and published a reviewed technical paper for internal use.

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

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