

# Yang Yuan

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## Research Interests

I am interested in theory for machine learning and optimization. Previously, I also worked on game theory and mechanism design.

## Education

CORNELL UNIVERSITY Aug, 2012 – present  
Ph.D. student in Computer Science.  
Advisor: Prof. Robert Kleinberg.

PRINCETON UNIVERSITY Sep, 2016 – Dec, 2016  
Visiting student  
Advisor: Prof. Elad Hazan.

MICROSOFT RESEARCH NEW ENGLAND Sep, 2014 – June, 2015  
Visiting student  
Advisor: Prof. Robert Kleinberg.

PEKING UNIVERSITY Sep, 2008 – Jun, 2012  
B.S. *summa cum laude* in Computer Science (honors track). GPA: 3.77/4.0, Rank: 2/138.  
Thesis title: Design and Implementation of a Token-based Approach to Code Clone Detection.  
Thesis advisor: Prof. Yao Guo. With Distinguished Dissertation Award (top 3%).

## Publications

( $\alpha$ - $\beta$ ) denotes alphabetical ordering. \* denotes equal contribution.

Hyperparameter Optimization: A Spectral Approach,  
Elad Hazan, Adam Klivans and Yang Yuan, ( $\alpha$ - $\beta$ )  
Preprint.

Convergence Analysis of Two-layer Neural Networks with ReLU Activation,  
Yuanzhi Li and Yang Yuan, ( $\alpha$ - $\beta$ )  
NIPS 2017.

Kulfi: Robust Traffic Engineering Using Semi-Oblivious Routing,  
Praveen Kumar, Yang Yuan, Chris Yu, Nate Foster, Robert Kleinberg and Robert Soul,  
In Submission.

Exploiting the Structure: Stochastic Gradient Methods Using Raw Clusters,  
Zeyuan Allen-Zhu\*, Yang Yuan\* and Karthik Sridharan,  
NIPS 2016.

Even Faster Accelerated Coordinate Descent Using Non-Uniform Sampling,  
Zeyuan Allen-Zhu, Zheng Qu, Peter Richtrik and Yang Yuan, ( $\alpha$ - $\beta$ )  
ICML 2016.

Improved SVRG for Non-Strongly-Convex or Sum-of-Non-Convex Objectives,  
Zeyuan Allen-Zhu and Yang Yuan, ( $\alpha$ - $\beta$ )  
ICML 2016.

Optimization Algorithms for Computational Geometry,  
Zeyuan Allen-Zhu, Zhenyu Liao and Yang Yuan, ( $\alpha$ - $\beta$ )  
ICALP 2016.

Simultaneous Nearest Neighbor Search,  
Piotr Indyk, Robert Kleinberg, Sepideh Mahabadi and Yang Yuan, ( $\alpha$ - $\beta$ )  
SoCG 2016.

Combinatorial Multi-Armed Bandit and Its Extension to Probabilistically Triggered Arms,  
Wei Chen, Yajun Wang, Yang Yuan and Qinshi Wang, ( $\alpha$ - $\beta$ )  
JMLR 2016.

(Conference version:)

Combinatorial Multi-Armed Bandit: General Framework, Results and Applications,  
Wei Chen, Yajun Wang and Yang Yuan, ( $\alpha$ - $\beta$ )  
ICML 2013.

Escaping From Saddle Points Online Stochastic Gradient for Tensor Decomposition,  
Rong Ge, Furong Huang, Chi Jin and Yang Yuan, ( $\alpha$ - $\beta$ )  
COLT 2015.

Optimal Auctions vs. Anonymous Pricing,  
Saeed Alaei, Jason Hartline, Rad Niazadeh, Emmanouil Pountourakis and Yang Yuan, ( $\alpha$ - $\beta$ )  
FOCS 2015.

Simple and Near-Optimal Mechanisms for Market Intermediation,  
Rad Niazadeh, Yang Yuan and Robert Kleinberg,  
WINE 2014.

On the Ratio of Revenue to Welfare in Single-Parameter Mechanism Design,  
Robert Kleinberg and Yang Yuan, ( $\alpha$ - $\beta$ )  
EC 2013.

Boreas: An Accurate and Scalable Token-based Approach to Code Clone Detection,  
Yang Yuan and Yao Guo,  
ASE 2012.

A Fast Parallel Branch and Bound Algorithm for Treewidth,  
Yang Yuan,  
ICTAI 2011.

<b>MiniCourse</b>	Minicourse for Theoretical Machine Learning <b>Website:</b> <a href="http://www.callowbird.com/mini-course.html">http://www.callowbird.com/mini-course.html</a> <b>Topic:</b> Recent papers on theory, optimization and machine learning, including general properties of SGD, convergence of neural network and theory for hyperparameter tuning. 6 Lectures, 75 minutes each.	Aug, 2017 – Oct, 2017
<b>Internship</b>	Research Intern, Twitter Supervisors: Ashish Goel and Reid Andersen. <b>Topic:</b> Mechanism Comparison at Twitter	Jun, 2014 – Aug, 2014
	Research Intern, Theory Group, Microsoft Research Asia Supervisors: Wei Chen and Yajun Wang.	Sep, 2011 – Jun, 2012

**Topic:** A general framework for combinatorial multi-armed bandit problem

**Talks**

Convergence Analysis of Two-layer Neural Networks with ReLU Activation,

- Cornell CS Theory Seminar, 2017
- China Theory Week, 2017

Escaping From Saddle Points – Online Stochastic Gradient for Tensor Decomposition

- Cornell CS Theory Tea, 2015

Simple and Near-Optimal Mechanisms for Market Intermediation

- WINE 2014, Beijing

On the ratio of revenue to welfare in single parameter mechanism design

- EC 2013, Philadelphia

Combinatorial multi-armed bandit problem

- STEM Grad Student Summer Colloquium, Cornell, 2013

Fast algorithm for Treewidth

- ICTAI 2011, Florida

**Awards**

Amazon AWS Research Award (\$10,000)	2017
Microsoft Azure Research Award (\$20,000)	2017
Jeff Hawkins & Janet Strauss Fellowship	2012
Pivot of Merit Student	2011
Tung OOCL Scholarship	2010
Kwang-Hua Scholarship	2009
Huaying Scholarship	2007 – 2008

**Computer Skills**

C & C++, JAVA, Scala, Python, Pytorch, Torch (Lua), Matlab, TikZ