

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 MIT INSTITUTE FOR FOUNDATIONS OF DATA SCIENCE July, 2018 – June, 2019
Postdoctoral Associate.
Advisor: Prof. Piotr Indyk.

CORNELL UNIVERSITY Aug, 2012 – May, 2018
Ph.D. 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 (α - β) denotes alphabetical ordering. * denotes equal contribution.

An Alternative View: When Does SGD Escape Local Minima?
Robert Kleinberg, Yuanzhi Li and Yang Yuan, (α - β)
ICML 2018.

YATES: Rapid Prototyping for Traffic Engineering Systems,
Praveen Kumar, Chris Yu, Yang Yuan, Nate Foster, Robert Kleinberg, Robert Soulé,
SOSR 2018.

Semi-Oblivious Traffic Engineering: The Road Not Taken,
Praveen Kumar, Yang Yuan, Chris Yu, Nate Foster, Robert Kleinberg, Petr Lapukhov, Chiun
Lin Lim and Robert Soulé,
NSDI 2018.

Hyperparameter Optimization: A Spectral Approach,
Elad Hazan, Adam Klivans and Yang Yuan, (α - β)
NIPS DLTP Workshop 2017 (oral).

Convergence Analysis of Two-layer Neural Networks with ReLU Activation,
Yuanzhi Li and Yang Yuan, (α - β)
NIPS 2017.

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 Richtárik and Yang Yuan, (α - β)
ICML 2016.

Improved SVRG for Non-Strongly-Convex or Sum-of-Non-Convex Objectives,
Zeyuan Allen-Zhu and Yang Yuan, (α - β)
ICML 2016.

Optimization Algorithms for Computational Geometry,
Zeyuan Allen-Zhu, Zhenyu Liao and Yang Yuan, (α - β)
ICALP 2016.

Simultaneous Nearest Neighbor Search,
Piotr Indyk, Robert Kleinberg, Sepideh Mahabadi and Yang Yuan, (α - β)
SoCG 2016.

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

(Conference version:)

Combinatorial Multi-Armed Bandit: General Framework, Results and Applications,
Wei Chen, Yajun Wang and Yang Yuan, (α - β)
ICML 2013.

Escaping From Saddle Points – Online Stochastic Gradient for Tensor Decomposition,
Rong Ge, Furong Huang, Chi Jin and Yang Yuan, (α - β)
COLT 2015.

Optimal Auctions vs. Anonymous Pricing,
Saeed Alaei, Jason Hartline, Rad Niazadeh, Emmanouil Pountourakis and Yang Yuan, (α - β)
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, (α - β)
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.

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|------------------------|---|---|
| MiniCourse | Minicourse for Theoretical Machine Learning Website: http://www.callowbird.com/mini-course.html Topic: 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 |
| Internship | Research Intern, Twitter Supervisors: Ashish Goel and Reid Andersen. Topic: Mechanism Comparison at Twitter | Jun, 2014 – Aug, 2014 |
| | Research Intern, Theory Group, Microsoft Research Asia Supervisors: Wei Chen and Yajun Wang. Topic: A general framework for combinatorial multi-armed bandit problem | Sep, 2011 – Jun, 2012 |
| Talks | Convergence Analysis of Two-layer Neural Networks with ReLU Activation, <ul style="list-style-type: none"> • Cornell CS Theory Seminar, 2017 • China Theory Week, 2017 Escaping From Saddle Points – Online Stochastic Gradient for Tensor Decomposition <ul style="list-style-type: none"> • Cornell CS Theory Tea, 2015 Simple and Near-Optimal Mechanisms for Market Intermediation <ul style="list-style-type: none"> • WINE 2014, Beijing On the ratio of revenue to welfare in single parameter mechanism design <ul style="list-style-type: none"> • EC 2013, Philadelphia Combinatorial multi-armed bandit problem <ul style="list-style-type: none"> • STEM Grad Student Summer Colloquium, Cornell, 2013 Fast algorithm for Treewidth <ul style="list-style-type: none"> • ICTAI 2011, Florida | |
| Awards | Amazon AWS Research Award (\$10,000) Microsoft Azure Research Award (\$20,000) Jeff Hawkins & Janet Strauss Fellowship Pivot of Merit Student Tung OOCL Scholarship Kwang-Hua Scholarship Huaying Scholarship | 2017 2017 2012 2011 2010 2009 2007 – 2008 |
| Computer Skills | C & C++, JAVA, Scala, Python, Pytorch, Torch (Lua), Matlab, TikZ | |