Lin Yang

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Employment

2017-Present **Princeton University**
Postdoc Research Associate
Department of Operations Research and Financial Engineering
Supervisor: Prof. Mengdi Wang

Education

2017 Johns Hopkins University
Ph.D. in Computer Science (Advisor: Prof. Vladimir Braverman)
Ph.D. in Physics (Advisor: Prof. Alexander Szalay)

2015 Johns Hopkins University
MS.E. in Computer Science

2011 Tsinghua University
B.S. in Math & Physics (with high honors)

Preprints and Publications

Preprints

- **Graph Sparsification via ℓ_1 Lewis Weights Sampling**
  Ruosong Wang, **Lin Yang** and Hanrui Zhang (*Alphabetical order*)
  In Submission.
- **Universal Streaming on Subset norms**
  Vladimir Braverman, Robert Krauthgamer, **Lin Yang** (*Alphabetical order*)
  In Submission.
- **Sketching Transformed Matrices from Streaming Data**
  Yingyu Liang, Mengdi Wang, Zhao Song, **Lin Yang** (*Alphabetical order*)
  In Submission.
- **Efficient Sensitivity Score Estimation of Large Datasets**
  Yingyu Liang, Mengdi Wang, **Lin Yang**, Peilin Zhong (*Alphabetical order*)
  In Submission.
- **Variance Reduction Methods for Sublinear Reinforcement Learning**
  Sham Kakade, Mengdi Wang, **Lin Yang**, (*Alphabetical order*)
  In Preparation.
- **Nearly Optimal Sketch for Dynamic Time Warping Distance**
  Vladimir Braverman, Moses Charika, William Henry Kuszmaul, David Woodruff, **Lin Yang**, (*Alphabetical order*)
  In Submission.
- **Regression using Symmetric Norm**
  Zhao Song, **Lin Yang**, Peiling Zhong (*Alphabetical order*)
  In Submission.

- **Nearly Optimal Coreset for k-clustering in Dynamic Data Streams**
  Zhao Song, **Lin Yang**, Peiling Zhong (*Alphabetical order*)
  In Submission.

Peer-Reviewed Conference Publications

- **Towards a Theoretical Understanding of Hashing-Based Neural Nets**
  Yibo Lin, Zhao Song, **Lin Yang**, (*Alphabetical order*)
  *The 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2019*

- **Near-Optimal Time and Sample Complexities for for Solving Discounted Markov Decision Process with a Generative Mode**
  Aaron Sidford, Mengdi Wang, Xian Wu, **Lin Yang**, Yinyu Ye (*Alphabetical order*)
  *The 32nd Annual Conference on Neural Information Processing Systems (**NIPS**), 2018*, Acceptance Rate 20.8%; **Best poster award** in Princeton Day of Optimization, 2018.

- **The Physical Systems Behind Optimization Algorithms**
  Lin Yang, Raman Arora, Vladimir Braverman, and Tuo Zhao
  *The 32nd Annual Conference on Neural Information Processing Systems (**NIPS**), 2018*, Acceptance Rate 20.8%.

- **Dimensionality Reduction for Stationary Time Series via Stochastic Nonconvex Optimization**
  Minshuo Chen, **Lin Yang**, Mengdi Wang and Tuo Zhao
  *The 32nd Annual Conference on Neural Information Processing Systems (**NIPS**), 2018*, Acceptance Rate 20.8%.

- **Revisiting Frequency Moment Estimation in Random Order Streams**
  Vladimir Braverman, Emanuele Viola, David Woodruff, **Lin Yang** (*Alphabetical order*)
  *The 45th International Colloquium on Automata, Languages, and Programming (**ICALP**), 2018*, Acceptance Rate 24%.

- **Approximate Convex Hull of Data Streams**
  Avrim Blum, Vladimir Braverman, Ananya Kumar, Harry Lang, **Lin Yang** (*Alphabetical order*)
  The 25th Fall Workshop on Computational Geometry (FWCG) 2017;
  *The 45th International Colloquium on Automata, Languages, and Programming (**ICALP**), 2018*, Acceptance Rate 24%.

- **Matrix Norms in Data Streams: Faster, Multi-Pass and Row-Order**
  Vladimir Braverman, Stephen R Chestnut, Robert Krauthgamer, Yi Li, David P. Woodruff, **Lin Yang** (*Alphabetical order*)
  *The 35th International Conference on Machine Learning (**ICML**), 2018* , Acceptance Rate 25.1%.

- **Online Generalized Eigenvalue Decomposition: Primal Dual Geometry and Stochastic Optimization Algorithm without Matrix Inversion**
  Zhehui Chen*, Xinguo Li*, **Lin Yang***, Jarvis Haupt, Tuo Zhao (** Equal contribution*)
  *The 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2019*.
  *The 31st Annual Conference on Neural Information Processing Systems (**NIPS**), Workshop on Optimization for Machine Learning, 2017*.

- **Online Factorization and Partition of Complex Networks From Random Walks**
  Lin Yang, Vladimir Braverman, Tuo Zhao, Mengdi Wang
  *The 31st Annual Conference on Neural Information Processing Systems (**NIPS**), Workshop on Optimization for Machine Learning, 2017*.

- **On Quadratic Convergence of DC Proximal Newton Algorithm in Nonconvex Sparse Learning**

Xingguo Li, **Lin Yang**, Jarvis Haupt, and Tuo Zhao
*The 31st Annual Conference on Neural Information Processing Systems (**NIPS**), 2017*, Acceptance Rate 21%.

- **Online Multiview Learning: Dropping Convexity for Better Efficiency**
  Zhehui Chen, **Lin Yang**, Chris Li, and Tuo Zhao
  *The 34th International Conference on Machine Learning (**ICML**), 2017*, Acceptance Rate 25.9%.

- **Clustering High Dimensional Dynamic Data Streams**
  Vladimir Braverman, Gereon Frahling, Christian Sohler, Harry Lang, and **Lin Yang** (*Alphabetical order*)
  *The 34th International Conference on Machine Learning (**ICML**), 2017*, Acceptance Rate 25.9%.

- **Streaming Symmetric Norms via Measure Concentration**
  Jarosław Błasiok, Vladimir Braverman, Stephen R. Chestnut, Robert Krauthgamer, and **Lin Yang** (*Alphabetical order*)
  *The 49th ACM Symposium on Theory of Computing (**STOC**), 2017*, Acceptance Rate 24.4%.

- **Streaming Space Complexity of Nearly All Functions of One Variable on Frequency Vectors**
  Vladimir Braverman, and Stephen R. Chestnut and David P. Woodruff and **Lin Yang** (*Alphabetical order*)
  *Symposium on Principles of Database Systems (**PODS**)*, 2016, Acceptance Rate 20%.

- **New Bounds for The CLIQUE-GAP Problem Using Graph Decomposition Theory**
  Vladimir Braverman, Zaoxing Liu, Tejasvam Singh, NV Vinodchandran, and **Lin Yang** (*Alphabetical order*)
  *International Symposium on Mathematical Foundations of Computer Science (**MFCS**)*, 2015, Acceptance Rate 41%.

- **Streaming Algorithms for Halo Finders**
  Zaoxing Liu, Nikita Ivkin, **Lin Yang**, Mark Neyrinck, Gerard Lemson, Alexander Szalay, Vladimir Braverman, Tamas Budavari, Randal Burns, and Xin Wang
  *International Conference on e-Science (**e-Science**)*, 2015, Acceptance Rate 25%.

- **New Time-Space Upperbounds for Directed Reachability in High-genus and H-minor-free Graphs**
  Diptarka Chakraborty, A. Pavan, Raghunath Tewari, N. V. Vinodchandran, and **Lin Yang** (*Alphabetical order*)
  *International Conference on Foundation of Software Technology and Theoretical Computer Science (**FSTTCS**)*, 2014, Acceptance Rate 29%.

- **A GPU-Based Visualization Method for Computing Dark Matter Annihilation Signal**
  Lin Yang, Alexander Szalay
  Astronomical Data Analysis Software and Systems (ADASS) XXII, 2013

Journal Publications

- **Misspecified Nonconvex Statistical Optimization for Phase Retrieval**
  Lin Yang*, Zhuoran Yang*, Tuo Zhao, Zhaoran Wang, Matey Neykov (** Equal contribution*)
  Accepted by *Math Programing*.

- **Scalable streaming tools for analyzing N-body simulations: Finding halos and investigating excursion sets in one pass**
  N. Ivkin, Z. Liu, **Lin Yang**, S.S. Kumar, G. Lemson, M. Neyrinck, A. Szalay, V. Braverman, T. Budavari
  Astronomy and Computing, 23 (2018) 166-179

- **Warmth elevating the depths: shallower voids with warm dark matter**
  Lin Yang, Mark C Neyrinck, Miguel A Aragón-Calvo, Bridget Falck, Joseph Silk
  Monthly Notices of the Royal Astronomical Society (MNRAS), 451 (4):3606-3614, 2015

- **The Hierarchical Nature of The Spin Alignment of Dark Matter Haloes in Filaments**
  M. A. Aragón-Calvo and **Lin Yang**
  Monthly Notices of the Royal Astronomical Society (MNRAS), 440 (1): L46-L50, 2014

- **Dark Matter Contribution to Galactic Diffuse Gamma Ray Emission**
  Lin F Yang, Joseph Silk, Alexander S Szalay, Rosemary FG Wyse, Brandon Bozek, Piero Madau
  Physical Review D, 89 (6): 063530, 2014

- **Ringing the Initial Universe: the Response of Overdensity and Transformed-density Power Spectra to Initial Spikes**
  Mark C Neyrinck, **Lin Yang**
  Monthly Notices of the Royal Astronomical Society (MNRAS), 433 (2): 1628-1633, 2013

- **The Optical Counterpart of NGC 1313 X-1**
  Lin Yang, Hua Feng, and Philip Kaaret
  The Astrophysical Journal (ApJ), 733 (2), 118, 2011

Invited Talks

10/2018	*Near-Optimal Time and Sample Complexities for for Solving Discounted Markov Decision Process with a Generative Mode*, IBM New York, Theory Seminar
08/2018	*Clustering High Dimensional Dynamic Data Streams*, Chinese Academy of Sciences, Theory Seminar
08/2018	*Clustering High Dimensional Dynamic Data Streams*, Shanghai University of Finance and Economics, Theory Seminar
07/2018	*Matrix Norms in Data Streams: Faster, Multi-Pass and Row-Order*, Stockholm, ICML
03/2018	*Variance Reduction Methods for Sublinear Reinforcement Learning*, Google Deepmind London, Theory Seminar
03/2018	*Clustering High Dimensional Dynamic Data Streams*, University of Warrick, Workshop of Data Summarization
02/2018	*Clustering High Dimensional Dynamic Data Streams*, Carnegie Mellon University, Theory Lunch
11/2017	*Clustering High Dimensional Dynamic Data Streams*, Columbia University, Theory Lunch
08/2017	*Online Multiview Learning: Dropping Convexity for Better Efficiency*, Sydney, ICML
06/2017	*Streaming Symmetric Norms via Measure Concentration*, Montreal, STOC
11/2016	*Streaming Symmetric Norms via Measure Concentration*, University of California at Berkeley, Theory Lunch
11/2016	*Streaming Symmetric Norms via Measure Concentration*, Google Research, Theory Seminar
09/2016	*Streaming Symmetric Norms via Measure Concentration*, University of Maryland, Theory Seminar
02/2016	*Streaming Symmetric Norms via Measure Concentration*, Rutgers University, DIMACS Theory Seminar
12/2015	*Streaming Symmetric Norms via Measure Concentration*, Massachusetts Institute of Technology, Theory Seminar

Affiliations

2017-Present	Post-doctoral Research Associate, Department of Operations Research and Financial Engineering, Princeton University
2017	Visiting Scientist, Simon's Institute for Theoretical Computing, University of California, Berkeley
2017	Summer Internship at IBM Research, Host: David Woodruff
2017	Visiting Student, Department of Operations Research and Financial Engineering, Princeton University
2017	Visiting Student, GaTech
2015-2017	Graduate Student, Department of Computer Science, Johns Hopkins University
2012-2017	Member, IDIES, Johns Hopkins University
2011-2017	Graduate Student, Department of Physics & Astronomy, Johns Hopkins University

Academic Service

Reviewers for

- The 10th Innovations in Theoretical Computer Science (ITCS), 2019
- ACM-SIAM Symposium on Discrete Algorithms (SODA), 2019
- Operations Research, 2018
- The ACM Transactions on Algorithms (TALG), 2018
- The 45th International Colloquium on Automata, Languages, and Programming (ICALP), 2018
- Theoretical Computer Science, 2018
- Latin American Theoretical Informatics (LATIN), 2018
- Journal of Computer and System Sciences (JCSS), 2017
- ACM-SIAM Symposium on Discrete Algorithms (SODA), 2018
- IEEE Symposium on Foundations of Computer Science (FOCS), 2017
- The 44th International Colloquium on Automata, Languages, and Programming (ICALP), 2017
- The 20th International Workshop on Randomization and Computation (RANDOM), 2017
- The 25th Annual European Symposium on Algorithms (ESA), 2017
- The 36th ACM SIGMOD-SIGACT-SIGAI Symposium on Principles of Database Systems, (PODS), 2017
- IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), 2016
- IEEE Symposium on Foundations of Computer Science (FOCS), 2016
- The 48th ACM Symposium on Theory of Computing (STOC), 2016
- Quantum Information & Computation, 2016
- The 19th International Workshop on Randomization and Computation (RANDOM'2015)
- ACM Transactions on Algorithms
- Monthly Notices of the Royal Astronomical Society (MNRAS), 2015

Honors and Awards

2018	NIPS Travel Award; Best poster award of Princeton Day of Optimization (2018)
2017	NIPS Travel Award; ICML Travel Award; and STOC Travel Award
2015	The Dean Robert H. Roy Fellowship, Johns Hopkins University
2011	Global Winner (2nd) of Microsoft "Imagine Cup" Embedded Dev. Competition
2011	Outstanding College Graduate Award, Tsinghua University

2011	Ye Qisun Award (Highest Honor of the Math & Physics Program)
2008-2010	Academic Excellence Scholarships (Multiple Times)

REFERENCES

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