

Yang P. Liu

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Education

Stanford University, Stanford, CA

Ph.D. in Mathematics

2018 - present

Massachusetts Institute of Technology, Cambridge, MA

Bachelor of Science in Mathematics

2015 - 2018

Papers and Preprints

Gao, Y., Liu, Y. P., and Peng, R. (2021). Fully dynamic electrical flows: sparse maxflow faster than goldberg-rao. In *FOCS 2021*. Available at <https://arxiv.org/abs/2101.07233>

Liu, Y. P., Sah, A., and Sawhney, M. (2021). A gaussian fixed point random walk. <https://arxiv.org/abs/2104.07009>

Forster, S., Goranci, G., Liu, Y. P., Peng, R., Sun, X., and Ye, M. (2021). Minor sparsifiers and the distributed laplacian paradigm. In *FOCS 2021*. Available at <https://arxiv.org/abs/2012.15675>

Brand, J. v. d., Lee, Y. T., Liu, Y. P., Saranurak, T., Sidford, A., Song, Z., and Wang, D. (2021). Minimum cost flows, mdps, and ℓ_1 -regression in nearly linear time for dense instances. In *STOC 2021*

Alweiss, R., Liu, Y. P., and Sawhney, M. (2021). Discrepancy minimization via a self-balancing walk. In *STOC 2021*

Best Student Paper

Liu, Y. P. and Sidford, A. (2020a). Faster divergence maximization for faster maximum flow. In *FOCS 2020*. <https://arxiv.org/pdf/2003.08929.pdf>

Invited to the Special Issue

Liu, Y. P. and Sidford, A. (2020b). Faster energy maximization for faster maximum flow. In *Proceedings of the 52nd Annual ACM SIGACT Symposium on Theory of Computing*, pages 803–814

Checkik, S., Liu, Y. P., Rotem, O., and Sidford, A. (2020). Constant girth approximation for directed graphs in subquadratic time. In *Proceedings of the 52nd Annual ACM SIGACT Symposium on Theory of Computing*, pages 1010–1023

Liu, Y. P., Peng, R., and Sellke, M. (2019a). Vertex sparsifiers for c-edge connectivity. *arXiv preprint arXiv:1910.10359*

Axelrod, B., Liu, Y. P., and Sidford, A. (2020). Near-optimal approximate discrete and continuous submodular function minimization. In *Proceedings of the Fourteenth Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 837–853. SIAM

Jambulapati, A., Liu, Y. P., and Sidford, A. (2019). Parallel reachability in almost linear work and square root depth. In *2019 IEEE 60th Annual Symposium on Foundations of Computer Science (FOCS)*, pages 1664–1686. IEEE

Liu, Y. P. and Zhao, Y. (2019). On the upper tail problem for random hypergraphs. *Random Structures & Algorithms, to appear*

Liu, Y. P., Sachdeva, S., and Yu, Z. (2019b). Short cycles via low-diameter decompositions. In *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 2602–2615. SIAM

Grossman, O. and Liu, Y. P. (2019). Reproducibility and pseudo-determinism in log-space. In *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 606–620. SIAM

Gur, T., Liu, Y. P., and Rothblum, R. D. (2018). An exponential separation between MA and AM proofs of proximity. In *45th International Colloquium on Automata, Languages, and Programming (ICALP 2018)*. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik

Liu, Y., Park, P. S., and Song, Z. Q. (2017). Bounded gaps between products of distinct primes. *Research in Number Theory*, 3(1):26

Liu, Y., Park, P. S., and Song, Z. Q. (2016). The Riemann Hypothesis is true for period polynomials of almost all newforms. *Research in the Mathematical Sciences*, 3(1):31

Invited Talks

ETH Zurich Algorithms and Complexity Seminar

Fully Dynamic Electrical Flows: Sparse Maxflow Faster Than Goldberg-Rao
April 2021

MIT Algorithms & Complexity Seminar

Fully Dynamic Electrical Flows: Sparse Maxflow Faster Than Goldberg-Rao
March 2021

TCS+

Faster Algorithms for Unit Maxflow
December 2020

Georgia Tech Combinatorics Seminar

Discrepancy Minimization via a Self-Balancing Walk

August 2020

Microsoft Research Talk Series

Discrepancy Minimization via a Self-Balancing Walk

August 2020

Honors and Awards

Best Student Paper, STOC 2021

National Defense Science and Engineering Graduate Fellowship, 2018 - 2023

Gold Medal, International Math Olympiad 2014, 2015

Work Experience

Trading Intern at Jane Street Capital, May 2017 - August 2017

Service

Subreviewer for SODA 2022, FOCS 2021, SODA 2021, APPROX 2020, ICALP 2020, SODA 2020, ICALP 2019