Chao Xu

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Research Interests

Combinatorial Optimization · Computational Geometry · Algorithms

Education

2013-2018 PhD in Computer Science, University of Illinois at Urbana-Champaign
Advisors: Karthik Chandrasekaran and Chandra Chekuri.

2009-2013 BS in Mathematics and Applied Mathematics & Statistics with minor in Computer Science, Stony Brook University

Industry Employment

Mar.2020-Mar.2021 **Software Engineer, Voleon**, Berkeley, CA, USA.
Research Engineering.

Sep.2019-Mar.2020 **Senior Software Engineer, Grab**, Bellevue, WA, USA.
Grab Artificial Intelligence Accelerator.

Jun.2018-Aug.2019 **Research Scientist, Yahoo! Research**, New York, NY, USA.
Scalable Machine Learning Group.

Feb.-Aug. 2013 **Software Engineer, Google**, Mountain View, CA, USA.
Google Analytics Backend.

Visiting Positions

Jun.-Aug. 2017 **Visiting Researcher, National Institute of Informatics**, Tokyo, Japan.
Hosted by Ken-ichi Kawarabayashi.

Jun.-Aug. 2015 **Visiting Scholar, New York University**, New York, USA.
Hosted by Boris Aronov.

Conference Publications[1]

2020 C. Beideman, K. Chandrasekaran, and C. Xu. Multicriteria Cuts and Size-Constrained k-Cuts in Hypergraphs. In J. Byrka and R. Meka, editors, *Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques (APPROX/**RANDOM** 2020)*,

[1] By convention in theoretical computer science and mathematics, author orders of all papers are alphabetical.

volume 176 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 17:1–17:21, Dagstuhl, Germany, 2020. Schloss Dagstuhl–Leibniz-Zentrum für Informatik.

2019 C. Chekuri, K. Quanrud, and C. Xu. LP Relaxation and Tree Packing for Minimum k-cuts. In J. T. Fineman and M. Mitzenmacher, editors, *2nd Symposium on Simplicity in Algorithms (**SOSA** 2019)*, volume 69 of *OpenAccess Series in Informatics (OASIcs)*, pages 7:1–7:18, Dagstuhl, Germany, 2018. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik.

2018 K. Chandrasekara, C. Xu, and X. Yu. Hypergraph k-cut in randomized polynomial time. In *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**)*, pages 1426–1438, 2018.

2017 K. Bérczi, K. Chandrasekaran, T. Király, E. Lee, and C. Xu. Global and Fixed-Terminal Cuts in Digraphs. In *Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques (**APPROX**/RANDOM 2017)*, volume 81 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 2:1–2:20, Dagstuhl, Germany, 2017.

2017 K. Koiliaris and C. Xu. A faster pseudopolynomial time algorithm for subset sum. In *Proceedings of the Twenty-Eighth Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**)*, pages 1062–1072. SIAM, 2017.

2017 C. Chekuri and C. Xu. Computing minimum cuts in hypergraphs. In *Proceedings of the Twenty-Eighth Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**)*, pages 1085–1100. SIAM, 2017.

2015 C. Chekuri, T. Rukkanchanunt, and C. Xu. On element-connectivity preserving graph simplification. In N. Bansal and I. Finocchi, editors, *Algorithms - **ESA** 2015*, volume 9294 of *Lecture Notes in Computer Science*, pages 313–324. Springer Berlin Heidelberg, 2015.

2015 H.-C. Chang, J. Erickson, and C. Xu. Detecting weakly simple polygons. In *Proceedings of the Twenty-Sixth Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**)*, pages 1655–1670. SIAM, 2015.

Journal Publications

2020 K.-i. Kawarabayashi and C. Xu. Minimum violation vertex maps and their applications to cut problems. ***SIAM Journal on Discrete Mathematics***, 34(4):2183–2207, 2020.

2020 A. Gharehgozli, C. Xu, and W. Zhang. High multiplicity asymmetric traveling salesman problem with feedback vertex set and its application to storage/retrieval system. ***European Journal of Operational Research***, 2020.

2020 C. Chekuri, K. Quanrud, and C. Xu. LP Relaxation and Tree Packing for Minimum k-Cut. ***SIAM Journal on Discrete Mathematics***, 34(2):1334–1353, 2020.

2019 K. Chandrasekara, C. Xu, and X. Yu. Hypergraph k-cut in randomized polynomial time. ***Mathematical Programming***, 2019.

2019 K. Koiliaris and C. Xu. Faster pseudopolynomial time algorithms for subset sum. ***ACM Trans. Algorithms***, 15(3):40:1–40:20, June 2019.

2018 C. Chekuri and C. Xu. Minimum cuts and sparsification in hypergraphs. ***SIAM Journal on Computing***, 47(6):2118–2156, 2018.

2018 C. Xu and Q. Zhang. The shortest kinship description problem. ***Information Processing Letters***, 138:61 – 66, 2018.

2018 K. Bérczi, K. Chandrasekaran, T. Király, E. Lee, and C. Xu. Beating the 2-approximation factor for global bicut. ***Mathematical Programming***, 177(1):291–320, Sep 2019.

2016 C. Xu. Reconstructing edge-disjoint paths faster. ***Operations Research Letters***, 44(2):174 – 176, 2016.

2013 N. J. Calkin, J. E. Janoski, A. Nelson, S. Ryan, and C. Xu. Champion spiders in the game of Graph Nim. ***Congr. Numer.***, 218:5–19, 2013.

Teaching

F 2016 CS 374 Algorithms and Models of Computation @ UIUC. Teaching Assistant
F 2015 CS 498 DL1 "new " CS 473 Theory II @ UIUC. Teaching Assistant
S 2015 CS 498 DL1 "new " CS 473 Theory II @ UIUC. Teaching Assistant
F 2014 CS 374 Algorithms and Models of Computation @ UIUC. Teaching Assistant
F 2013 CS 373 Introduction to Theory of Computation @ UIUC. Teaching Assistant
F 2010 AMS 345 Computational Geometry @ Stony Brook University. Teaching Assistant

Fellowship/Scholarship

2017 NSF East Asia and Pacific Summer Institute (EAPSI) Fellow
2016-2017 State Farm Companies Foundation Doctoral Scholar
2010-2012 NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)