

# 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

## Employment

- Oct.2021-present **Assistant Professor, UESTC**, Chengdu, China.  
School of Computer Science and Engineering.
- 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<sup>1</sup>

- 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)*, 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***, 289(2):495–507, 2021.
- 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. Chandrasekaran, C. Xu, and X. Yu. Hypergraph  $k$ -cut in randomized polynomial time. ***Mathematical Programming***, 186:85–113, March 2021.
- 2019 K. Koiliaris and C. Xu. Faster pseudopolynomial time algorithms for subset sum. ***ACM Trans. Algorithms***, 15(3):40:1–40:20, June 2019.

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<sup>1</sup>By convention in theoretical computer science and mathematics, author orders of all papers are alphabetical.

- 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)