# Calvin Beideman

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USA

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| Education: | **University of Illinois at Urbana Champaign**, 08/2023<br>PhD in Computer Science advised by Karthekeyan Chandrasekaran<br>Thesis title: Cuts and Partitions, Solving, Counting, and Enumerating |
| | **Carnegie Mellon University**, 05/2018<br>B.S. in Computer Science, & Discrete Math and Logic (Double Major)<br>Dean's List—F14, S15, F15, S16, S17, S18 |

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Teaching: **Texas A&M University, College Station, TX**
Instructional Assistant Professor of Computer Science                    August 2023-Present

**University of Illinois**, Urbana, IL

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| Instructor for CS173 "Discrete Structures" | June 2022-August 2022 |
| Head TA for CS374 "Algorithms and Models of Computation" | August 2022-December 2022 |
| TA for CS586 "Combinatorial Optimization" | January 2022-May 2022 |
| TA for CS374 "Algorithms and Models of Computation" | January 2021-May 2021 |
| | August 2019-December 2019 |
| | August 2018-December 2018 |
| TA for CS473 "Algorithms" | August 2020-December 2020 |
| TA for CS173 "Discrete Structures" | January 2019-May 2019 |

**Carnegie Mellon University,** Pittsburgh, PA

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| Head TA for 15-251 "Great Theoretical Ideas in CS" | August 2017-May 2018 |
| Teaching Assistant for 15-251 | August 2015-May 2017 |

Research: Broadly interested in CS Theory, particularly combinatorial optimization as well as graph theory and algorithms.

Publications: **Approximate minimum cuts and their enumeration**
(with Karthekeyan Chandrasekaran and Weihang Wang)
- Symposium on Simplicity in Algorithms (SOSA), 2023

**Approximate Representation of Symmetric Submodular Functions via Hypergraph Cut Functions**
(with Karthekeyan Chandrasekaran, Chandra Chekuri, and Chao Xu)
- Foundations of Software Technology and Theoretical Computer Science  (FSTTCS), 2022

**Counting and enumerating optimum cut sets for hypergraph k-partitioning problems for fixed k**
(with Karthekeyan Chandrasekaran and Weihang Wang)
- International Colloquium on Automata, Languages and Programming (ICALP), 2022

**Faster Connectivity in Low-rank Hypergraphs via Expander Decomposition**
(with Karthekeyan Chandrasekaran, Sagnik Mukhopadhyay, and Danupon Nanongkai)

- Integer Programming and Combinatorial Optimization (IPCO), 2022

**Deterministic enumeration of all minimum k-cut-sets in hypergraphs for fixed k**
(with Karthekeyan Chandrasekaran and Weihang Wang)
- ACM-SIAM Symposium on Discrete Algorithms (SODA), 2022

**Multicritera Cuts and Size-Constrained k-cuts in Hypergraphs**
(with Karthekeyan Chandrasekaran and Chao Xu)
- Mathematical Programming, 2022 (Preliminary version in RANDOM 2020)

**The Sprague-Grundy Function for Some Selective Compound Games**
(with Matthew Bowen, and Alp Müyesser)
- Integers, 2020

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| Employment: | **Dropbox**, San Francisco, CA |

Software Engineering Intern
May 2017 – August 2017
- Improve the reliability and speed of the Webhooks system
- Improve data collection and logging for Webhooks

**ChemImage Corporation**, Pittsburgh PA
Software Intern Summer 2011-2015
- Improved the effectiveness and efficiency of C# algorithms for ink analysis
- Researched, developed, and implemented algorithms for biomedical applications
- Translated automated ink discrimination algorithms from MATLAB to C#
- Optimized image processing functions for speed and memory use

Honors:
**List of Teachers Ranked as Excellent by Their Students:**
CS 173 "Discrete Structures"                                                        Summer 2022
CS 374 (Spring 2021)
CS 374 (Fall 2019)

**Saburo Muroga Endowed Fellowship** (Awarded to up to 5 UIUC CS grad students per year)
**Alan J. Perlis Undergraduate Student Teaching Awar**d (awarded to one CMU CS student per year)
**Carnegie Mellon Senior Leadership recognition** (for contributions to 15-251)

Talks:
**Faster Connectivity in Low-rank Hypergraphs via Expander Decomposition**           2022
Integer Programming and Combinatorial Optimization (IPCO '22). Eindhoven, NL.

**Deterministic enumeration of all minimum k-cut-sets in hypergraphs for fixed k**    2020
ACM-SIAM Symposium on Discrete Algorithms (SODA '22). Online.

**Multicritera Cuts and Size-Constrained k-cuts in Hypergraphs**                      2020
International Conference on Randomization and Computation (RANDOM '20). Online.

Skills:          Python, C#, Java, C, SML, OCaml, LaTeX

Service:         Organized UIUC Theory Seminar                                      Spring 2022

External reviewer for ACM Transactions on Algorithms (2022), STOC 2022