Samuel McCauley

Education

Stony Brook University
Stony Brook, NY, USA
PhD, Computer Science, 2016
Advised by Prof. Michael Bender

Tufts University
Medford, MA, USA
BS, Computer Science and Mathematics, 2010
Advised by Prof. Lenore Cowen

Professional Experience

Assistant Professor, Williams College	2019–present
Visiting Research Scholar, Carnegie Melon University	2022
Zuckerman Postdoctoral Fellow, Bar-Ilan University	2018–2019
Postdoctoral Fellow, Wellesley College	2018
Post Doc, IT University of Copenhagen	2016–2018

Teaching Experience

Williams College:

CSCI 256: Algorithm Design and Analysis	Fall 2020, Spring 2024
CSCI 136: Data Structures and Advanced Programming	Fall 2019, Spring 2021 & 2022
CSCI 358: Applied Algorithms	Fall 2021, Spring 2020
CSCI 15: An Introduction to the Modern Internet	Winter 2020

Wellesley College:

CS 115: Computing for the Socio-Technic Web	Fall 2018

IT University of Copenhagen:

Algorithm Design Project	Spring 2017, Spring 2018
Applied Algorithms	Fall 2016, Fall 2017

Advising

Rachel Nguyen	BA, Williams College	Spring 2023
Christopher Chung	BA, Williams College	Spring 2022
Peter Zhao	BA, Williams College	Spring 2021
David Lee	BA, Williams College (coadvisor)	Spring 2021
Irina Alina Gabriela Luca	MS, IT University of Copenhagen	Fall 2017
Viktor Joenson	MS, IT University of Copenhagen	Spring 2017

Grants

NSF CRII: AF: RUI: New Approaches for Space-Efficient Similarity Search (ID: 2103813)	2021–2023

Awards and Fellowships

NeurIPS Spotlight Poster	2023
Zuckermann STEM Leadership Fellowship	2018–2019
Chateaubriand Fellowship	2015–2016
IPDPS Best Paper	2015
NSF EAPSI Fellowship	2014

Publications in Conference Proceedings

ESA	**Improved Space-Efficient Approximate Nearest Neighbor Search Using Function Inversion** S. McCauley	2024
ICML	**Incremental Topological Ordering and Cycle Detection with Predictions** S. McCauley, B. Moseley, A. Niaparast, and S. Singh	2024
SPAA	**Brief Announcement: Root-to-Leaf Scheduling in Write-Optimized Trees** C. Chung, W. Jannen, S. McCauley, and B. Simon	2024
SEA	**SPIDER: Improved Succinct Rank and Select Performance** M. D. Laws, J. Bliven, K. Conklin, E. Laalai, S. McCauley, and Z. S. Sturdevant	2024
NeurIPS	**Online List Labelling With Predictions** S. McCauley, B. Moseley, A. Niaparast, and S. Singh **NeurIPS Spotlight**	2023
ESA	**Telescoping Filter: A Practical Adaptive Filter** D. J. Lee, S. McCauley, S. Singh, and M. Stein	2021
WADS	**Support Optimality and Adaptive Cuckoo Filters** T. Kopelowitz, S. McCauley, and E. Porat	2021
ICDT	**Approximate Similarity Search Under Edit Distance Using Locality-Sensitive Hashing** S. McCauley	2021
ESA	**Non-Cooperative Rational Interactive Proofs** J. Chen, S. McCauley, and S. Singh	2019
FOCS	**Bloom Filters, Adaptivity, and the Dictionary Problem** M. A. Bender, M. Farach-Colton, M. Goswami, R. Johnson, S. McCauley, and S. Singh	2018
SAGT	**Efficient Rational Proofs with Strong Utility-Gap Guarantees** J. Chen, S. McCauley, and S. Singh	2018
PODS	**Set Similarity Search for Skewed Data** S. McCauley, J. W. Mikkelsen, and R. Pagh	2018
BEYONDMR	**Adaptive MapReduce Similarity Joins (extended abstract)** S. McCauley and F. Silvestri	2018

SPAA	**Minimizing Total Weighted Flow Time With Calibrations** V. Chau, M. Li, S. McCauley, and K. Wang	2017
APDCM	**Minimizing I/Os in Out-of-Core Task Tree Scheduling** L. Marchal, S. McCauley, B. Simon, and F. Vivien	2017
SPAA	**Cache-Adaptive Analysis** M. A. Bender, E. D. Demaine, R. Ebrahimi, J. T. Fineman, R. Johnson, A. Lincoln, J. Lynch, and S. McCauley	2016
FUN	**Resource Optimization for Program Committee Members: A Subreview Article** M. A. Bender, S. McCauley, B. Simon, S. Singh, and F. Vivien	2016
PODS	**Anti-Persistence on Persistent Storage: History-Independent Sparse Arrays and Dictionaries** M. A. Bender, J. Berry, R. Johnson, T. M. Kroger, S. McCauley, C. A. Phillips, B. Simon, S. Singh, and D. Zage	2016
LATIN	**The I/O Complexity of Computing Prime Tables** M. A. Bender, R. Chowdhury, A. Conway, M. Farach-Colton, P. Ganapathi, R. Johnson, S. McCauley, B. Simon, and S. Singh	2016
ITCS	**Rational Proofs with Multiple Provers** J. Chen, S. McCauley, and S. Singh	2016
ISAAC	**Run Generation Revisted: What Goes Up May or May Not Come Down** M. A. Bender, S. McCauley, A. McGregor, S. Singh, and H. Vu	2015
WAOA	**Scheduling Parallel Jobs Online with Convex and Concave Parallelizability** R. Ebrahimi, S. McCauley, and B. Moseley	2015
IPDPS	**Two-Level Main Memory Co-Design: Multi-Threaded Algorithmic Primitives, Analysis, and Simulation** M. A. Bender, J. Berry, S. D. Hammond, K. S. Hemmert, S. McCauley, B. Moore, B. Moseley, C. A. Phillips, D. Resnick, and A. Rodrigues **Selected as Best Paper**	2015
COCOON	**The Range 1 Query (R1Q) Problem** M. A. Bender, R. Chowdhury, P. Ganapathi, S. McCauley, and Y. Tang	2014
SODA	**Cache-Adaptive Algorithms** M. A. Bender, R. Ebrahimi, J. T. Fineman, G. Ghasmiesfeh, R. Johnson, and S. McCauley	2014
SPAA	**Efficient Scheduling to Minimize Calibrations** M. A. Bender, D. P. Bunde, V. J. Leung, S. McCauley, and C. A. Phillips	2013
FUN	**The Kissing Problem: How to End a Gathering When Everyone Kisses Everyone Else Goodbye** M. A. Bender, R. Bose, R. Chowdhury, and S. McCauley	2012

Journal Publications

IFJCS	**Minimizing I/Os in Out-of-Core Task Tree Scheduling** L. Marchal, S. McCauley, B. Simon, and F. Vivien	2023
JPDC	**Two-Level Main Memory Co-Design: Multi-Threaded Algorithmic Primitives, Analysis, and Simulation** M. A. Bender, J. Berry, S. D. Hammond, K. S. Hemmert, S. McCauley, B. Moore, B. Moseley, C. A. Phillips, D. Resnick, and A. Rodrigues	2017
TOCS	**Scheduling Parallel Jobs Online with Convex and Concave Parallelizability** R. Ebrahimi, S. McCauley, and B. Moseley	2016
TCS	**The Range 1 Query (R1Q) Problem** M. A. Bender, R. Chowdhury, P. Ganapathi, S. McCauley, and Y. Tang	2016
SUSCOM	**Simulation and Optimization of HPC Job Allocation for Reducing Communication and Cooling Costs** J. Meng, S. McCauley, F. Kaplan, V. Leung, and A. K. Coskun	2014
TOCS	**The Kissing Problem: How to End a Gathering When Everyone Kisses Everyone Else Goodbye** M. A. Bender, R. Bose, R. Chowdhury, and S. McCauley	2013

Program Committees

Workshop on Models and Algorithms for Planning and Scheduling Problems	(MAPSP)	2024
Applied and Computational Discrete Algorithms	(ACDA)	2023
Applied and Computational Discrete Algorithms	(ACDA)	2021
Symposium on Algorithm Engineering and Experiments	(ALENEX)	2021
European Sympsium on Algorithms, Track B	(ESA)	2019
International Parallel and Distributed Processing Symposium	(IPDPS)	2019
International Parallel and Distributed Processing Symposium	(IPDPS)	2018
International Conference on Parallel Processing	(ICPP)	2017