

# Stefan Muller

 smuller |  smuller.github.io |  stefan.muller@uconn.edu

## WORK EXPERIENCE

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Aug. 2025–Present	<b>Assistant Professor</b> School of Computing University of Connecticut
Aug. 2020–Aug. 2025	<b>Gladwin Development Chair Assistant Professor</b> Computer Science Department Illinois Institute of Technology
Oct. 2018–Jul. 2020	<b>Post-Doctoral Researcher</b> Computer Science Department Carnegie Mellon University Supervisor: Jan Hoffmann

## EDUCATION

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2012–2018	PhD in Computer Science Thesis: <i>Responsive Parallel Computation</i> Advisor: Umut A. Acar Thesis Committee: Guy Blelloch, Mor Harchol-Balter, Robert Harper, John Reppy (University of Chicago), Vijay Saraswat (Fidelity Investments)	Carnegie Mellon University
2012–2015	MS in Computer Science	Carnegie Mellon University
2008–2012	AB <i>summa cum laude</i> in Computer Science Senior Thesis: <i>SX10: A Language for Parallel Programming with Information Security</i> Advisor: Stephen Chong	Harvard University

## PUBLICATIONS

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### Peer-Reviewed Conference and Journal Papers

- [POPL '24b] Jatin Arora, **Stefan K. Muller**, and Umut A. Acar. “Disentanglement with Futures, State, and Interaction”. In: *Proc. ACM Program. Lang.* 8.POPL (Jan. 2024).
- [POPL '24a] Francis Rinaldi, june wunder, Arthur Azevedo de Amorim, and **Stefan K. Muller**. “Pipelines and Beyond: Graph Types for ADTs with Futures”. In: *Proc. ACM Program. Lang.* 8.POPL (Jan. 2024).
- [PPoPP '24] **Stefan K. Muller**. “Language-Agnostic Static Deadlock Detection for Futures”. In: *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*. PPoPP 2024. 2024.
- [TOPC] **Stefan K. Muller** and Jan Hoffmann. “Modeling and Analyzing Evaluation Cost of CUDA Kernels”. In: *ACM Trans. Parallel Comput.* 11.1 (Mar. 2024).
- [PLDI '23] **Stefan K. Muller**, Kyle Singer, Devyn Terra Keeney, Andrew Neth, Kunal Agrawal, I-Ting Angelina Lee, and Umut A. Acar. “Responsive Parallelism with Synchronization”. In: *Proc. ACM Program. Lang.* 7.PLDI (June 2023).

- [POPL '22] **Stefan K. Muller**. “Static Prediction of Parallel Computation Graphs”. In: *Proc. ACM Program. Lang.* 6.POPL (Jan. 2022).
- [POPL '21] **Stefan K. Muller** and Jan Hoffmann. “Modeling and Analyzing Evaluation Cost of CUDA Kernels”. In: *Proc. ACM Program. Lang.* 5.POPL (Jan. 2021).
- [PLDI '20] **Stefan K. Muller**, Kyle Singer, Noah Goldstein, Umut A. Acar, Kunal Agrawal, and I-Ting Angelina Lee. “Responsive Parallelism with Futures and State”. In: *Proceedings of the 41st ACM SIGPLAN Conference on Programming Language Design and Implementation*. PLDI 2020. London, UK: Association for Computing Machinery, 2020, pp. 577–591.
- [SPAA '20] Kyle Singer, Noah Goldstein, **Stefan K. Muller**, Kunal Agrawal, I-Ting Angelina Lee, and Umut A. Acar. “Priority Scheduling for Interactive Applications”. In: *Proceedings of the 32nd ACM Symposium on Parallelism in Algorithms and Architectures*. SPAA '20. Virtual Event, USA: Association for Computing Machinery, 2020, pp. 465–477.
- [ICFP '19] **Stefan K. Muller**, Sam Westrick, and Umut A. Acar. “Fairness in Responsive Parallelism”. In: *Proc. ACM Program. Lang.* 3.ICFP (July 2019).
- [ICFP '18] **Stefan K. Muller**, Umut A. Acar, and Robert Harper. “Competitive Parallelism: Getting Your Priorities Right”. In: *Proc. ACM Program. Lang.* 2.ICFP (July 2018).
- [PLDI '17] **Stefan K. Muller**, Umut A. Acar, and Robert Harper. “Responsive Parallel Computation: Bridging Competitive and Cooperative Threading”. In: *Proceedings of the 38th ACM SIGPLAN Conference on Programming Language Design and Implementation*. PLDI 2017. Barcelona, Spain: Association for Computing Machinery, 2017, pp. 677–692.
- [SPAA '16] **Stefan K. Muller** and Umut A. Acar. “Latency-Hiding Work Stealing: Scheduling Interacting Parallel Computations with Work Stealing”. In: *Proceedings of the 28th ACM Symposium on Parallelism in Algorithms and Architectures*. SPAA '16. Pacific Grove, California, USA: Association for Computing Machinery, 2016, pp. 71–82.
- [ICFP '16] Ram Raghunathan, **Stefan K. Muller**, Umut A. Acar, and Guy Blelloch. “Hierarchical Memory Management for Parallel Programs”. In: *Proceedings of the 21st ACM SIGPLAN International Conference on Functional Programming*. ICFP 2016. Nara, Japan: Association for Computing Machinery, 2016, pp. 392–406.
- [SNAPL '15] Umut A. Acar, Guy Blelloch, Matthew Fluet, **Stefan K. Muller**, and Ram Raghunathan. “Coupling Memory and Computation for Locality Management”. In: *1st Summit on Advances in Programming Languages (SNAPL 2015)*. Ed. by Thomas Ball, Rastislav Bodik, Shriram Krishnamurthi, Benjamin S. Lerner, and Greg Morrisett. Vol. 32. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, 2015, pp. 1–14.
- [OOPSLA '12] **Stefan Muller** and Stephen Chong. “Towards a Practical Secure Concurrent Language”. In: *Proceedings of the ACM International Conference on Object Oriented Programming Systems Languages and Applications*. OOPSLA '12. Tucson, Arizona, USA: Association for Computing Machinery, 2012, pp. 57–74.

## Workshop Papers and Technical Reports

- [1] Mark Lou and **Stefan K. Muller**. “Automatic Static Analysis-Guided Optimization of CUDA Kernels”. In: *The 15th International Workshop on Programming Models and Applications for Multicores and Manycores*. PMAM ’24. 2024.
- [2] **Stefan K. Muller**. “Static Prediction of Parallel Computation Graphs (Abstract)”. In: *Proceedings of the 2023 ACM Workshop on Highlights of Parallel Computing*. HOPC ’23. Orlando, FL, USA: Association for Computing Machinery, 2023, pp. 21–22.
- [3] **Stefan K. Muller** and Hannah Ringler. “A Rhetorical Framework for Programming Language Evaluation”. In: *Proceedings of the 2020 ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software*. Onward! 2020. Virtual, USA: Association for Computing Machinery, 2020, pp. 187–194.
- [4] **Stefan K. Muller**. “Responsive Parallel Computation”. Available as CMU Technical Report CMU-CS-18-120. PhD thesis. Carnegie Mellon University, 2018.
- [5] **Stefan K. Muller** and Umut A. Acar. “Coupling Memory and Computation for Locality Management (Extended Abstract)”. In: *1st Summit on Advances in Programming Languages (SNAPL 2015)*. Ed. by Thomas Ball, Rastislav Bodík, Shriram Krishnamurthi, Benjamin S. Lerner, and Greg Morrisett. Vol. 32. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, 2015.
- [6] **Stefan K. Muller**, William A. Duff, and Umut A. Acar. *Practical Abstractions for Concurrent Interactive Programs*. Tech. rep. CMU-CS-15-131. Carnegie Mellon University, 2015.
- [7] **Stefan K. Muller**, William A. Duff, and Umut A. Acar. *Practical and Safe Abstractions for Interactive Computation via Linearity*. Tech. rep. CMU-CS-15-130. Carnegie Mellon University, 2015.
- [8] Umut Acar, Arthur Charguéraud, **Stefan Muller**, and Mike Rainey. *Atomic Read-Modify-Write Operations are Unnecessary for Shared-Memory Work Stealing*. Tech. rep. hal-00910130. Inria, 2013.

## FUNDING

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1. Collaborative Research: SHF: Medium: Responsive Parallelism for Interactive Applications: Theory and Practice  
with Umut Acar (Carnegie Mellon, PI), I-Ting Angelina Li (Wash. U. St. Louis, co-PI), and Kunal Agrawal (Wash. U. St. Louis, PI)  
July 2021–June 2025  
Source: National Science Foundation  
Award Number: [2107289](#)  
Role: PI  
Amount: \$1,079,764  
Amount at Illinois Tech: \$262,890  
Transfer to UConn is in progress

## Prior (at Illinois Tech)

1. Collaborative Research: REU Site: BigDataX: From theory to practice in Big Data computing at eXtreme scales  
with Ioan Raicu (PI), Kyle Hale (co-PI), Zhiling Lan (Mentor), Kyle Chard (U Chicago, PI), Kate Keahey (U Chicago, Mentor)  
July 2022–June 2025  
Source: National Science Foundation  
Award Number: [2150500](#)  
Role: Mentor  
Amount: \$404,437  
Amount at Illinois Tech: \$362,878
2. Collaborative Research: PPoSS: Planning: SEEr: A Scalable, Energy Efficient HPC Environment for AI-Enabled Science  
with Zhiling Lan (Lead PI), Romit Maulik (co-PI), Valerie Taylor (U Chicago, PI), Xingfu Wu (U Chicago, co-PI), and Mike Papka (Northern. Ill. U, PI)  
Oct. 2021–Sep. 2023  
Source: National Science Foundation  
Award Number: [2119294](#)  
Role: Co-PI  
Amount: \$250,000  
Amount at Illinois Tech: \$150,000
3. SHF: Small: Automatic Qualitative and Quantitative Verification of CUDA Code  
with Jan Hoffmann (Carnegie Mellon, Lead PI)  
Oct. 2020–Sep. 2024  
Source: National Science Foundation (Subcontract from Carnegie Mellon)  
Award Number: [2007784](#)  
Role: Subcontractor  
Amount: \$500,000  
Amount at Illinois Tech: \$159,235

## INVITED TALKS

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“Formal Guarantees for Parallel Programs”

University of Connecticut Apr. 2025

“Priodomainslib: Prioritized Fine-grained Parallelism for Multicore OCaml”

OCaml Users and Developers Workshop Sep. 2024

“Static Prediction of Parallel Computation Graphs”

Carnegie Mellon University Nov. 2023

McGill University Mar. 2023

Northwestern University Sep. 2022

“Making Parallelism Abstractions More Practical”

New Jersey Institute of Technology Feb. 2020

Northwestern University Feb. 2020

Illinois Institute of Technology Feb. 2020

Worcester Polytechnic Institute Feb. 2020

University of Rhode Island Feb. 2020

Simon Fraser University Feb. 2020

“Cost Models for Parallel Programs”

Northwestern University Nov. 2019

Washington University in St. Louis Sep. 2018

Harvard University Mar. 2018

Carnegie Mellon University Feb. 2018

## TEACHING

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\* indicates substantial new course development

### Illinois Institute of Technology

CS440	Programming Languages and Translators	Sp21, Sp23
CS443	Compiler Construction*	Fa22, Fa24
CS534	Types and Programming Languages*	Sp24
CS536	Science of Programming	Sp22, Fa23
CS595	Topics and Applications in Programming Languages (Seminar)*	Fa21
CS695	Doctoral Seminar	Sp23

### Carnegie Mellon University

15-150	Principles of Functional Programming	Su18
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## STUDENTS ADVISED

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### Current

PhD (2024–) Alex Friedman

PhD (2024–) Godha Pallavi Bhogadi

at Illinois Tech, with Farzaneh Derakhshan

## Former

PhD (2023)	Puya Pakshad	
MS (2023–2024)	Anusha Sonte Parameshwar	Now at Apple
MS (2023)	Isa Muradli	
MS (2022)	Xiangwei (Shawn) Li	Now at IGT
MCS (2023)	Pranjal Naik	
MCS (2021)	Deepika Padmanabhan	Now at NVIDIA
BS (2023–2025)	Marelle León	
BS (2023–2024)	Edman Alicea-Marrero	
BS (2023–2024)	Baoshu Feng	
BS (2022–2024)	Francis Rinaldi	Now PhD student at UPenn
BS (2023)	My Dinh	Now at Bloomberg
BS (2023)	Mark Lou	Now at American Express
BS (2022)	Aman Luqman	Now at physIQ

## Thesis Committees

PhD (2024)	Brian Richard Tauro (Advisor: Kyle Hale)
PhD (2023)	Boyang Li (Advisor: Zhiling Lan)
PhD (2022)	Yao Kang (Advisor: Zhiling Lan)
PhD (2022)	Poornima Nookala (Advisor: Ioan Raicu)
MS (2024)	Jamison Kerney (Advisors: Ioan Raicu, Kyle Hale)
MS (2023)	Hannah Greenblatt (Advisor: Zhiling Lan)

## SERVICE

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### Department and University (Illinois Tech)

2024–2025	Co-chair, CS PhD Experience and Recruitment Committee
2024–2025	Faculty Search Committee
2023–2024	CS Graduate Studies Committee
2023–2024	CS PhD Experience and Recruitment Committee
2023–2024	CS Strategic and Actionable Planning Committee
2022–2023	CS Dept. Chair Search Committee
2022–2023	Roundtable discussion leader for Camras Scholarship Admissions event
2022	Co-organizer, faculty research talks for students
2021	College of Computing Strategic Working Group (Research)
2021	CS Department <i>ad hoc</i> committee on diversity in hiring
2021–2023	Faculty Search Committee
2020–2021	CS Undergraduate Studies Committee

## Professional

2024	Co-organizer, Midwest PL Summit	MWPLS '24
2023-24	Co-chair, PL Mentoring Workshop	ICFP '23, '24
2023	Program Committee Member	POPL '24
2023	Panelist	NSF
2022	Program Committee Member	IPDPS '23
2022	Panelist	NSF
2021	Program Committee Member	PPoPP '22
2021	External Review Committee	OOPSLA '21
2021	Program Committee Member	ICFP '21
2020	External Review Committee	ICFP '20
2019	Artifact Evaluation Committee	POPL '20