

Robert S. Utterback

CONTACT INFORMATION

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EDUCATION

2017	Washington University in St. Louis GPA: 3.96 Dissertation Title Easier Parallel Programming with Provably-Efficient Runtime Schedulers Advisors Kunal Agrawal, Angelina Lee	PhD in Computer Science
2012	Truman State University GPA: 4.0	BS in Mathematics and Computer Science

TEACHING EXPERIENCE

August 2018 New Computer Science Faculty Teaching Workshop
NSF-Funded workshop for teaching-oriented computer science faculty

Spring 2018 *Object-Oriented Programming; Analysis of Algorithms*

Fall 2017 *Computer Organization and Design; Data Structures; Programming Languages*

Spring 2017 *Analysis of Algorithms*

Fall 2016 *Parallel Algorithms* (Guest Lecturer)

Fall 2014 *Parallel Algorithms* (Teaching Assistant)
[Received 6.0/7.0 overall rating from students]

Spring 2013 *Parallel Algorithms* (Teaching Assistant, weekly recitation)
[Received 6.3/7.0 overall rating from students]

2013 — 2016 Teaching Center pedagogical workshops:
Designing Inclusive STEM Materials (2016)
Structuring Opportunities for Active Learning During Lectures (2016)
Mentoring Undergraduate Research (2016)
Teaching in Review Sessions and Office Hours (2013)
Designing and Facilitating Group Work (2013)

PROFESSIONAL SERVICE

2018	Poster Review Committee ACM Richard Tapia Celebration of Diversity in Computing
2016	Artifact Evaluation Committee

- 2016 Symposium on Principles and Practices of Parallel Programming 2017 (PPoPP)
(Sub)Reviewer
- 2013 Symposium on Principles and Practices of Parallel Programming 2017 (PPoPP)
(Sub)Reviewer
- Supercomputing Conference (SC)

RESEARCH INTERESTS

Parallel Computing, Algorithms and Data Structures, Parallel Scheduling, Dynamic Multi-threading, Computational Complexity

PUBLICATIONS

Kunal Agrawal, Joseph Devietti, Jeremy Fineman, I-Ting Angelina Lee, Robert Utterback, Changming Xu. “Race Detection and Reachability in Nearly Series-Parallel DAGs”. In *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms* 2018.

Robert Utterback, Kunal Agrawal, I-Ting Angelina Lee, Milind Kulkarni. “Processor-Oblivious Record and Replay”. In the *Proceedings of the Symposium on Principles and Practices of Parallel Programming (PPoPP)* 2017.

Robert Utterback, Kunal Agrawal, Jeremy Fineman, I-Ting Angelina Lee. “Provably Good and Practically Efficient Parallel Race Detection for Fork-Join Programs”. In the *Proceedings of the Symposium on Parallelism in Algorithms and Architectures (SPAA)* 2016.

Kunal Agrawal, Jeremy Fineman, Kefu Lu, Brendan Sheridan, Jim Sukha, Robert Utterback. “Provably Good Scheduling for Parallel Programs that Use Data Structures through Implicit Batching”. In the *Proceedings of the Symposium on Parallelism in Algorithms and Architectures (SPAA)* 2014.

TECHNICAL TALKS

- 2017 “Processor-Oblivious Record and Replay”
Symposium on Principles and Practices of Parallel Programming (PPoPP)
- 2016 “Provably good and practically efficient parallel race detection”
Symposium on Parallelism in Algorithms and Architectures (SPAA)
- 2016 “Parallel Divide and Conquer Algorithms”
Lecture for Parallel Algorithms
- 2016 “Luby’s Algorithm for Maximal Independent Set”
Lecture for Parallel Algorithms
- 2015 “Detecting Race Conditions in Parallel”
Doctoral Student Seminar
- 2014 “Detecting Race Conditions in Parallel”
Doctoral Student Seminar
- 2013 “Implicitly Batching Parallel Data Structure Operations”
Doctoral Student Seminar

RESEARCH EXPERIENCE

2012 — 2017 Research assistant
Washington University in St. Louis
Parallel Computing Technologies Group
St. Louis, MO
Advisors: Kunal Agrawal and Angelina Lee

Projects: Designed and developed several runtime systems to ease parallel programming.

Batcher is a runtime scheduler that allows programmers to write batched data structures but use them as traditional concurrent data structures by implicitly grouping data structure operations and scheduling them efficiently.

CRacer is a runtime system and instrumentation tool to detect determinacy races in Cilk Plus programs. It is asymptotically optimal and efficient in practice.

PORRidge is a record and replay system designed to handle critical sections in fork-join programs. It is processor-oblivious, i.e. recording may use more or less cores than replay, and is nearly asymptotically optimal for both recording and replaying.

2015 Research Intern
Huawei
Santa Clara, CA
Researched techniques for applying the actor programming model
Built a C pre-processor to handle actor model syntax and applied to a distributed computing framework

AWARDS AND HONORS

2017 SIGPLAN PAC Student Travel Grant
2016 SPAA Student Travel Grant
2014 SPAA Student Travel Grant
2012 Outstanding Senior in Computer Science
Truman State University, Department of Math and Computer Science
2012 Departmental Honors
Truman State University, Department of Math and Computer Science
2008 Truman Leadership Scholarship

FORMAL STUDY

2018 Participant
New Computer Science Faculty Teaching Workshop
2018 Machine Learning Foundations;
Machine Learning: Regression;
Machine Learning: Classification

2016 (Coursera Machine Learning courses)
The Data Scientist's Toolbox;
R Programming;
Getting and Cleaning Data;
Exploratory Data Analysis
(Coursera Data Science courses)

GENERAL EXPERIENCE

Programming Languages (in alphabetical order)

Bash, C/C++, Java, L^AT_EX, Make, Python, R

Software technologies and systems

Compilers (GCC, LLVM, flex, bison), Linux, Cilk Plus runtime

NONACADEMIC WORK

2011 Software Engineering Intern
Cerner Corporation
Developed unit testing and continuous integration framework

PROFESSIONAL MEMBERSHIPS OR AFFILIATIONS

ACM

Member

REFERENCES

Logan Mayfield

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