

# Robert S. Utterback

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## CONTACT INFORMATION

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## EDUCATION

**2017**                      PhD in Computer Science  
Washington University in St. Louis  
GPA: 3.96  
**Dissertation Title**  
Easier Parallel Programming with Provably-Efficient Runtime Schedulers  
**Advisors**  
Kunal Agrawal, Angelina Lee

**2012**                      BS in Mathematics and Computer Science  
Truman State University  
GPA: 4.0

## PROFESSIONAL APPOINTMENTS

**2017 — present**    **Assistant Professor**  
Department of Mathematics, Statistics, & Computer Science  
Monmouth College

## TEACHING EXPERIENCE

Spring 2019            *Object-Oriented Programming; Operating Systems*  
Fall 2018              *Computer Organization and Design; Data Structures; Applied Machine Learning*  
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]

## TEACHING DEVELOPMENT

August 2018            New Computer Science Faculty Teaching Workshop  
NSF-Funded workshop for teaching-oriented computer science faculty  
Fall 2017 — Spring 2018 “Motivating Students” faculty reading group

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

## RESEARCH INTERESTS

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

## PUBLICATIONS

Robert Utterback, Kunal Agrawal, Jeremy Fineman, I-Ting Angelina Lee. “Efficient Race Detection with Futures”. In *Proceedings of the Symposium on Principles and Practices of Parallel Programming (PPoPP)* 2019. Acceptance rate: 19%

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. Acceptance rate: 33%

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. Acceptance rate: 22%

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. Acceptance rate: 24%

## OTHER RESEARCH ARTIFACTS

Kunal Agrawal, Jeremy Fineman, Brendan Sheridan, Jim Sukha, Robert Utterback. Poster: “Provably Good Scheduling for Parallel Programs that Use Data Structures through Implicit Batching”. In the *Proceedings of the Symposium on Principles and Practices of Parallel Programming (PPoPP)* 2014.

Software for “Efficient Race Detection with Futures,” a race detection system for use with futures: <https://github.com/wustl-pctg/futurerd.git>.

[Include official artifacts as well as open source repositories here.]

## GRANTS AND FELLOWSHIPS

November 2018      NVidia GPU Grant  
NVidia Corporation donated a Titan V GPU to support research on work-stealing scheduling.

## 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

Machine Learning: Clustering and Retrieval

(Coursera Machine Learning courses)

2016

The Data Scientist's Toolbox;

R Programming;

Getting and Cleaning Data;

Exploratory Data Analysis

(Coursera Data Science courses)

## MONMOUTH COLLEGE SERVICE

2018-Present

Member of New Faculty Orientation Committee

2018-Present

Member of Campus Technology Futures Group

2017-Present

Assisted in administering department capstone course

## **GENERAL EXPERIENCE**

### **Programming Languages (in alphabetical order)**

Bash, C/C++, Java, L<sup>A</sup>T<sub>E</sub>X, 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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### **Kunal Agrawal**

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### **Angelina Lee**

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### **Ben Moseley**

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