

Wentao Cai

COMPUTER SCIENCE DEPARTMENT · UNIVERSITY OF ROCHESTER

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Second year PhD student interested in concurrent algorithms, memory persistency, and software transactional memory (STM).
Experience in 3D rendering, computer vision, and data mining.

Education

University of Rochester

M.S. and Ph.D. Student in Computer Science

- Advisor: Prof. Michael L. Scott
- GPA: 3.93/4.00

Rochester, NY

Sep. 2016 - Present

Xidian University

B.E. in Computer Science and Technology

- GPA: 3.62/4.00

Xi'an, China

Aug. 2012 - Jul. 2016

Publications

Interval-Based Memory Reclamation

Haosen Wen, Joseph Izraelevitz, Wentao Cai, H. Alan Beadle, and Michael L. Scott

Proceedings of the 23rd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), 1-13.

Vienna, Austria

Feb. 2018

Projects

Nonblocking Persistent Memory Allocator

Supervised by Prof. Michael L. Scott

- Designing a nonblocking persistent memory allocator for non-volatile memory (NVM).

University of Rochester

Aug. 2018 - Present

Benchmark Suite for Persistent STM

Supervised by Prof. Michael L. Scott

- Developing a benchmark suite to analyze the performance of failure atomicity mechanisms for NVM.
- Adapting concurrent data structures, transactional applications, in-memory databases, and key-value stores.

University of Rochester

Mar. 2018 - Present

Persistent Word-Based STM

Supervised by Prof. Michael L. Scott

- Building a persistent word-based STM that is nonblocking.
- Integrated benchmarks and other systems we are comparing against to evaluate our new STM.

University of Rochester

Mar. 2018 - Present

Interval-Based Memory Reclamation

Supervised by Prof. Michael L. Scott

- Designed nonblocking reclamation schemes that avoid unbounded memory reservation with low overhead.
- Set up experiments and coauthored a paper in PPoPP'2018.

University of Rochester

Jan. 2017 - Aug. 2017

Synchronization Framework for Building Ordered Maps

Supervised by Prof. Michael L. Scott

- Helped develop a framework in C++ for building nonblocking trees.
- Investigated and implemented various concurrent data structures.

University of Rochester

Jan. 2017 - Present

Personalized Computerized Cognitive Training (CCT) Program

Supervised by Prof. Jiebo Luo

- Investigated the correlation between ECGs and performance in CCT.

University of Rochester

Jan. 2017 - Apr. 2017

3D Rendering System

Bachelor's Thesis

- Developed a 3D interactive rendering system in C++ for STL files.
- Designed a topological reconstructing algorithm to correct facet normals.

Xidian University

Jan. 2016 - Jun. 2016

Human Age Estimation from Face Images

Supervised by Dr. Haihong Zheng

- Studied in human age estimation, and implemented an estimation system.

Xidian University

Sep. 2014 - Dec. 2014

Teaching Assistant

CSC 2/454: Programming Language Design & Implementation

University of Rochester

Led by Professor Chen Ding

Fall 2018

Led by Professor Michael L. Scott

Fall 2017

- It introduces the design and implementation of programming languages, including semantic analysis, code generation, functional languages, OO programming, type systems, storage management, and concurrency.

CSC 2/478: Computer Security Foundations

University of Rochester

Led by Professor John Criswell

Spring 2018

- It covers the foundation of computer security, including access controls, information flow, attacks, and malware.

Skills

- C/C++, OCaml, Python, MATLAB, C#, SQL, UNIX Shell Scripting, LaTeX
- Parallel Programming, Object-Oriented Programming

Honors & Awards

2016 **Outstanding Graduate**, Xidian University

Xi'an, China

2015 **Second Prize Scholarship**, Xidian University

Xi'an, China

2014 **Second Prize**, Xidian ACM/ICPC

Xi'an, China

2013 **Top10**, 2013 National Tencent Innovation Clubs Logo Design Competition

China

2013 **Second Prize Scholarship**, Xidian University

Xi'an, China

Extracurricular Activity

Xidian Multimedia Studio

Xi'an, China

Manager & Technical Advisor

Sep. 2012 - Sep. 2014

- Maintained network, audio and lighting systems in the Xidian Little Theater.

Xidian Tencent Innovation Club (XDTIC)

Xi'an, China

Designer & Member

Sep. 2012 - Jan. 2014

Qiudi Literature Society

Xi'an, China

Vice Director & Editor

Sep. 2012 - Sep. 2014