Ronghui Gu *Curriculum vitae*

CONTACT INFORMATION

Department of Computer Science
Yale University
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INTEREST

Programming languages and operating systems, with a focus on language-based support for safety and security, certified system software, certified programming and compilation, formal methods, and concurrency.

EDUCATION

Yale University New Haven, CT

Ph.D. in Computer Science 2011 - 2016

- Advisor: Prof. Zhong Shao
- Thesis: An Extensible Architecture for Building Certified Sequential and Concurrent OS Kernels.
- Nomination for ACM Dissertation Award

M.S. and M.Phil. in Computer Science 2011 - 2014

- GPA: 3.9 / 4

Tsinghua University Beijing, China

B.S. in Computer Science 2007 - 2011

- Advisor: Prof. Yuan Dong and Prof. Shengyuan Wang
- GPA: 91.2 / 100 Rank: 4 / 118
- Graduation with Distinction (top 2 %)

PROFESSIONAL EXPERIENCE

Yale University New Haven, CT

Research Associate 2016 - present

Research Assistant 2011 - 2016

Working on CertiKOS, an extensible architecture for building certified OS kernels. As the lead developer of the project, verified a series of sequential and concurrent OS kernels in Coq with my Yale colleagues. The most realistic one is written in 6,500 lines of C and x86 assembly and runs on stock x86 multicore machines.

Tsinghua University Beijing, China

Research Assistant Spring 2011

Working on verifying the preemptive scheduling and nested interrupt handling of μC/OS-II running on the PowerPC platform.

CONFERENCE PUBLICATIONS

CertiKOS: An Extensible Architecture for Building Certified Concurrent OS Kernels.
(with Z. Shao, H. Chen, X. Wu, J. Kim, V. Sjöberg, and D. Costanzo)
*Proceedings of the 12th USENIX Symposium on Operating Systems Design and Implementation (**OSDI'16**), 2016.*

(Accept rate: **18%**)

End-to-End Verification of Information-Flow Security for C and Assembly Programs.
(with D. Costanzo and Z. Shao)
*Proceedings of the 37th annual ACM SIGPLAN conference on Programming Language Design and Implementation (**PLDI'16**), 2016.*
(Accept rate: **16%**)

Toward Compositional Verification of Interruptible OS Kernels and Device Drivers.
(with C. Hao, X. Wu, Z. Shao, and J. Lockerman)
*Proceedings of the 37th annual ACM SIGPLAN conference on Programming Language Design and Implementation (**PLDI'16**), 2016.*
(Accept rate: **16%**)

Deep Specifications and Certified Abstraction Layers.
(with J. Koenig, T. Ramananandro, Z. Shao, X. Wu, S. Weng, H. Zhang, and Y. Guo)
*Proceedings of the 42nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (**POPL'15**), 2015.*
(Accept rate: **23%**)

Manuscripts

Language and Compiler Support for Building Certified Concurrent Abstraction Layers.
(with Z. Shao, X. Wu, J. Kim, J. Koenig, T. Ramananandro, V. Sj oberg, H. Chen, and D. Costanzo)
Submitted to *the 38th annual ACM SIGPLAN conference on Programming Language Design and Implementation (**PLDI'17**), 2017.*

Safety and Liveness of MCS LockLayer by Layer.
(with V. Sjöberg, J. Kim, and Z. Shao)
Submitted to *the 6th ACM SIGPLAN Conference on Certified Programs and Proofs (**CPP'17**), 2017.*

Teaching Experience

Teaching Assistant at Yale University Fall 2012 - Fall 2015

- CPSC 422/522 Operating System Design and Implementation (Fall 2015)
  Instructor: Prof. Zhong Shao
- CPSC 458/558 Automatic Decision Systems (Fall 2015)
  Instructor: Dr. Stephen Slade
- CPSC 439/539 Software Engineering (Spring 2015 and Spring 2014)
  Instructor: Prof. Ruzica Piskac
- CPSC 424/524 Parallel Programming Techniques (Fall 2014 and Fall 2013)
  Instructor: Dr. Andrew Sherman
- CPSC 112 Introduction to Programming Languages (Spring 2013 and Fall 2012)
  Instructor: Prof. Drew V. McDermott and Prof. Daniel Abadi

Advising Experience

Undergraduate students at Yale University

Hengchu Zhang, senior project on verifying synchronous IPC — Spring 2015

Graduate students at Yale University

Mengqi Liu, research project on verifying real-time CPS — 2015 - present

Selected Presentations

An Extensible Architecture for Building Certified Concurrent OS Kernels.

- University of California, Davis, CA — Dec. 2016
- Columbia University, NY — Dec. 2016
- University of Pennsylvania, PA — Nov. 2016
- Princeton University, NJ — Nov. 2016
- OSDI, GA — Nov. 2016

Deep Specifications and Certified Abstraction Layers.

- Yale Programming Languages Day, CT — Nov. 2015
- New England Programming Languages and Systems Symposium — June 2015
- High Confidence Software and Systems Conference, Maryland — May 2015
- POPL, Mumbai, India — Jan. 2015

Selected Honors

Nomination for ACM Dissertation Award, Yale University	Aug. 2016
Robert Willets Carle Scholarship, Yale University	Feb. 2016
Travel Grant for POPL15, NSF	Jan. 2015
Doctoral Fellowship, Yale University	Aug. 2011
Graduation with Distinction (top 2%), Tsinghua University	Jul. 2011
Outstanding Graduate, Beijing City	Jul. 2011
Outstanding Undergraduate Thesis Award, Tsinghua University	Jul. 2011
Sohu Scholarship, Tsinghua University	Oct. 2010
Ticket Master Scholarship, Tsinghua University	Oct. 2009
Tsinghua Outstanding Social Work Scholarship	Oct. 2008
Elite Youth League Member of Jiangsu Province, China	Apr. 2007
First Prize of National Mathematical Olympiad Competition, China	Oct. 2006
First Prize of National Chemistry Olympiad Competition, China	Oct. 2006

Media Coverage

Yale Daily News	Nov. 2016
International Business Times	Nov. 2016
Yale News	Nov. 2016

Industrial Experience

Google Inc. — Mountain View, CA
Software Engineer — 2016 - present

Ecopia Tech Corporation — Ontario, Canada
Research Intern — Summer 2015

PROFESSIONAL ACTIVITIES

Member: CPS-VO

Reviewer: TACAS'15

CITIZENSHIP

Peoples Republic of China

REFERENCES

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