Ronghui Gu

CONTACT INFORMATION

Department of Computer Science
Yale University
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INTERESTS

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.

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

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 key 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.

SELECTED 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.*

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.*

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.*

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.*

Selected Manuscripts

Language and Compiler Support for Building Certified Concurrent Abstraction Layers.
(with Z. Shao, X. Wu, J. Kim, J. Koenig, T. Ramananandro, V. Sjöberg, 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 Lock—Layer 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 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

Selected Awards

Nomination for ACM Dissertation Award, Yale University	Aug. 2016
Robert Willets Carle Scholarship, Yale University	Feb. 2016
Travel Grant for POPL'15, 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
	Outstanding Student Leader, Tsinghua University	Mar. 2010
	Ticket Master Scholarship, Tsinghua University	Oct. 2009
	Outstanding Social Work Scholarship, Tsinghua University	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

Selected Presentations	OSDI, GA	Nov. 2016
	Yale Programming Languages Day, CT	Nov. 2015
	New England Programming Languages and Systems Symposium, CT	June 2015
	High Confidence Software and Systems Conference, Maryland	May 2015
	POPL, Mumbai, India	Jan 2015

Professional Activities

Member: CPS-VO
Reviewer: TACAS'15

Media Coverage

Yale Daily News, International Business Times UK, Yale News