

# WILLIAM L. HARRISON, P.H.D

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## Education

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May 2001. Ph.D., Computer Science, University of Illinois, Urbana, IL.

Dissertation: "Modular Compilers and Their Correctness Proofs."

Committee Chairman: Samuel Kamin

June 1992. M.S., Computer Science, University of California, Davis, CA.

Thesis: "Mechanizing the Axiomatic Semantics for a Programming Language with Asynchronous Send and Receive in HOL."

June 1986. B.A., Mathematics, University of California, Berkeley, CA.

## Academic Appointments & Professional Experience

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August 2017–December 2017. **Visiting Research Scientist**, Oak Ridge National Laboratory, Cyber & Information Security Research Group (CISR).

August 2013–July 2014. **Visiting Scientist**, National Security Agency.

April 2011–present. **Director**, The Center for High Assurance Computing at the University of Missouri.

Sept. 2003–present. **Associate Professor**, Department of Computer Science, University of Missouri at Columbia, Columbia, Missouri. Started as assistant professor; earned promotion and tenure 5/26/2009.

Sept. 2010–August 2013. **Research Associate**, Pro-telligent, Inc. Arlington, Virginia.

June 2000–August 2003. **Senior Research Associate & Adjunct Professor**, Computer Science Department, OGI School of Science & Engineering, Oregon Health & Sciences University.

Sept. 2000–Dec. 2000. **Senior Compiler Engineer (consultant)**, Reservoir Laboratories, Portland, Oregon.

August 1999–May 2000. **Visiting Lecturer**, Department of Computer Science, Indiana University, Bloomington, IN 47401.

Spring 1999. **Visiting Lecturer**, Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL.

## Research Interests

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Computer security and language-based methods in security; Trustworthy computing; Formal methods (particularly with respect to hardware/software codesign); Programming language design and implementation.

## Personal Information

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I am a US citizen.

I am married to Amber Bradshaw, who is a ceramic artist.

We have two children: Tegan and Caden (twins, 8 years old).

## Funding History

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### *Proposals Under Submission*

- **Agency:** Office of Naval Research.  
**Title:** High Assurance FPGA Design.  
**Proposed Budget:** \$2,980,000.  
**Role:** Collaborative research proposal with Dr. Gerard Allwein (US Naval Research Laboratory) and Professor Jason Bakos (University of South Carolina, Computer Science & Engineering).
- **Agency:** National Science Foundation. Industry-University Cooperative Research Centers (IUCRC) Program.  
**Title:** IUCRC Pre-proposal Planning: Center for Memory-Centric Computing (MCC).  
**Proposed Budget:** \$15,000.  
**Role:** Collaborative research center planning proposal with Professor David Andrews (University of Arkansas, Computer Science & Computer Engineering) and Professor Jason Bakos (University of South Carolina, Computer Science & Engineering).

### *Active Grants and Contracts*

1. **Agency:** US Naval Research Laboratory.  
**Title:** Mechanizing the Metatheory of the ReWire Language with Applications.  
**Amount:** \$720,000.  
**Period:** May 2016 – August 2019.  
**Role:** Sole Principal investigator.

### *Completed Grants and Contracts*

2. **Agency:** US Naval Research Laboratory.  
**Title:** Type-Based Analysis of Security Flows in ReWire Circuit Specifications.  
**Amount:** \$99,999.  
**Period:** October 2014 – October 2015.  
**Role:** Sole Principal investigator.
3. **Agency:** National Security Agency.  
**Title:** Inter-agency Personnel Agreement.  
**Amount:** \$144,190.00  
**Period:** August 2013 – August 2014.

4. **Agency:** Department of Defense, Federal Voting Assistance Program (FVAP).  
**Title:** Secure Ballot Delivery to UOCAVA Voters (Uniformed, Overseas, Citizens Absentee Voters).  
**Amount:** \$550,000.  
**Period:** May 1, 2012 – April 30, 2015.  
**Role:** Collaborative research with Dr. Dale Musser of MU's Information Technology Program and Dr. Keith Politte of MU's Reynolds School of Journalism.
5. **Agency:** Department of Education.  
**Title:** Graduate Assistance in Areas of National Need (GAANN) Fellowships.  
**Amount:** \$240,000.  
**Period:** September 1, 2011 – May 15, 2015.  
**Role:** Co-Investigator. Two of my Ph.D students (Adam Procter and Christopher Hathorn) were GAANN fellows.
6. **Agency:** National Science Foundation.  
**Title:** CAREER: Automated Synthesis of High Assurance Security Kernels.  
**Amount:** \$450,000.  
**Period:** June 1, 2008 – May 31, 2013.  
**Role:** Sole Principal Investigator.
7. **Agency:** Office of the Asst. Secretary of Defense for Research and Development (ASD(R&E)).  
**Title:** Understanding Security Flows in the Many Core Era.  
**Amount:** \$1,370,000.  
**Period:** January 2012 – July 2015.  
**Role:** Principal Investigator. Collaborative Research with Dr. David Andrews (University of Arkansas) and Dr. Gerard Allwein (NRL).
8. **Agency:** US Naval Research Laboratory.  
**Title:** MILS Hardware and Its Formal Methods-based Security.  
**Amount:** \$810,000.  
**Period:** April 2008 – April 2011.  
**Role:** Principal Investigator. Collaborative Research with Dr. David Andrews (University of Arkansas) and Dr. Gerard Allwein (NRL).
9. **Agency:** Department of Defense through OHSU/OGI.  
**Title:** System Information Assurance II  
**Amount:** \$31,703  
**Period:** July 1, 2004 – July 31, 2006  
**Role:** Principal Investigator
10. **Agency:** University of Missouri-Columbia Research Council.  
**Title:** Big Twelve Faculty Fellowship  
**Amount:** \$2,400  
**Period:** June 1, 2005 – August 31, 2005  
**Role:** Sole Principal Investigator

## Publications

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### *Book Chapters*

Gerard Allwein and William L. Harrison. Distributed Modal Logic. *J. Michael Dunn on Information Based Logics, Book Chapter, pages 331-362, Springer Verlag, 2016.*

### *Journal Publications*

Thomas Reynolds, Adam Procter, William L. Harrison, and Gerard Allwein. High Assurance Hardware via Pure Functional Languages. *ACM Transactions on Embedded Computing Systems*, 25 pages (to appear).

Gerard Allwein, William L. Harrison, and Thomas Reynolds. Distributed Relation Logic. *Logic and Logical Philosophy*, volume 26, number 1, March 2017, pages 19-61.

Adam Procter, William L. Harrison, Ian Graves, Michela Becchi, and Gerard Allwein. A Principled Approach to Secure Multi-Core Processor Design with ReWire. *ACM Transactions on Embedded Computing Systems*, volume 16, number 2, Article 33 (January 2017).

Gerard Allwein, William Harrison and David Andrews. Simulation logic. *Logic and Logical Philosophy*, vol. 26, no. 3, 2014.

G. Allwein, Y. Yang, and W. L. Harrison. Qualitative decision theory via channel theory. *Logic and Logical Philosophy*, Volume 20, Number 1-2 (2011), pages 81–110.

W. L. Harrison and J. Hook. Achieving information flow security through monadic control of effects. *Journal of Computer Security*, 17:599–653, October 2009.

X. Z. Fu, H. Wang, W. L. Harrison, and R. Harrison. RNA pseudoknot prediction using term rewriting. *International Journal of Data Mining and Bioinformatics*, 2(1):78-93, February 2008.

W. L. Harrison and R. B. Kieburtz. The logic of demand in Haskell. *Journal of Functional Programming*, 15(6):837–891, 2005.

W. L. Harrison. Cheap (but functional) threads. 44 pages. Accepted for publication in: *Higher-Order Symbolic Computation*.

### *Under Submission*

Gerard Allwein, William Harrison and Thomas Reynolds. Channel Theory and Information Flow. *Journal of Applied Non-classical Logic*, 2017.

### *Peer-reviewed Conference Publications*

William L. Harrison and Gerard Allwein. Semantics-directed Prototyping of Hardware Runtime Monitors. *Proceedings of the 29th International Symposium on Rapid System Prototyping (RSP) (RSP18)*, to appear.

Thomas N. Reynolds, Adam Procter, William L. Harrison, and Gerard Allwein. A Core Calculus for Secure Hardware: Its Formal Semantics and Proof System. *Proceedings of the 15th ACM-IEEE International Conference on Formal Methods and Models for System Design (MEMOCODE17)*, 2017.

William L. Harrison, Adam Procter, and Gerard Allwein. Model-driven Design & Synthesis of the SHA-256 Cryptographic Hash Function in ReWire. *Proceedings of the 27th International Symposium on Rapid System Prototyping (RSP)*, 2016.

William L. Harrison, Adam Procter, Ian Graves, Michela Becchi, and Gerard Allwein. A Programming Model for Reconfigurable Computing Based in Functional Concurrency. *Proceedings of the 11th International Symposium on Reconfigurable Communication-centric Systems-on-Chip (ReCoSoC 2016)*.

Ian Graves, Adam Procter, William L. Harrison, and Gerard Allwein. Provably Correct Development of reconfigurable hardware designs via equational reasoning. *Proceedings of the 2015 International Conference on Field-Programmable Technology (FPT '15)*.

Adam Procter, William L. Harrison, Ian Graves, Michela Becchi, and Gerard Allwein. Semantics driven hardware design, implementation, and verification with ReWire. *ACM SIGPLAN/SIGBED Conf. on Languages, Compilers, Tools and Theory for Embedded Systems (LCTES)*, 2015.

Ian Graves, Adam Procter, William L. Harrison, Michela Becchi and Gerard Allwein. Hardware Synthesis from Functional Embedded Domain-Specific Languages. *Proceedings of the 2015 11th International Symposium on Applied Reconfigurable Computing*.

Adam Procter, William L. Harrison, Ian Graves, Michela Becchi and Gerard Allwein. Semantics-directed Machine Architecture in ReWire. *Proceedings of the 2013 International Conference on Field Programmable Technology*.

Robert Harrison and William L. Harrison. Quantitative Analysis of Error Injection Covert Channels. *Proceedings of the International Workshop on Quantitative Aspects in Security Assurance (QASA 2013)*.

William L. Harrison, Adam Procter and Gerard Allwein. The Confinement Problem in the Presence of Faults. *Proceedings of the 2012 International Conference on Formal Engineering Methods*.

Chris Hathhorn, Michela Becchi, William L. Harrison and Adam Procter Formal Semantics of Heterogeneous CUDA-C: A Modular Approach with Applications. *Proceedings of the 2012 Systems Software Verification Conference*.

Gerard Allwein, William L. Harrison and David Andrews. Simulation Logic. *Proceedings of the 2012 Conference on Non-Classical Logics*.

Adam Procter, William L. Harrison and Aaron Stump. The Design of a Practical Proof Checker for a Lazy Functional Language. *Proceedings of the 2012 Trends in Functional Programming Conference*.

W. L. Harrison, B. Schulz, A. Procter, A. Lukefahr, and G. Allwein. Towards semantics-directed system design and synthesis. In *Proceedings of the 2011 International Conference on Engineering Reconfigurable Systems and Algorithms (ERSA11)*, 2011.

G. Allwein and W. L. Harrison. A channel theoretic account of separation security. In *Proceedings of the 2011 International Conference on Engineering Reconfigurable Systems and Algorithms (ERSA11)*, 2011.

G. Allwein, Y. Yang, and W. L. Harrison. Decision theory via channel theory. In *Proceedings of the Logic in Cognitive Science Conference*. The Nicolaus Copernicus University Press, 2010.

G. Allwein and W. L. Harrison. Partially-ordered modalities. In *Proceedings of the Advances in Modal Logic (AiML) Conference*, pages 1–21, 2010.

W. L. Harrison, A. Procter, J. Agron, G. Kimmel, and G. Allwein. Model-driven engineering from modular monadic semantics: Implementation techniques targeting hardware and software. In *DSL '09: Proc. of the IFIP TC 2 Working Conference on Domain-Specific Languages*, pages 20–44, 2009.

W. L. Harrison, G. Allwein, A. Gill, and A. Procter. Asynchronous exceptions as an effect. In *Proceedings of the Mathematics of Program Construction (MPC08)*, pages 153–176, 2008.

P. S. Kariotis, A. M. Procter, and W. L. Harrison. Making monads first-class with template haskell. In *Proceedings of the first ACM SIGPLAN Symposium on Haskell, Haskell '08*, pages 99–110, New York, NY, USA, 2008. ACM.

W. L. Harrison. The essence of multitasking. In *11th International Conference on Algebraic Methodology and Software Technology (AMAST 2006)*, pages 158–172, July 2006.

W. L. Harrison. Proof abstraction for imperative languages. In *Proceedings of the 4th Asian Symposium on Programming Languages and Systems (APLAS06)*, pages 97–113, 2006.

W. L. Harrison and J. Hook. Achieving information flow security through precise control of effects. In *18th IEEE Computer Security Foundations Workshop (CSFW05)*, pages 16–30, Aix-en-Provence, France, June 2005.

W. L. Harrison. A simple semantics for polymorphic recursion. In *Proceedings of the 3rd Asian Symposium on Programming Languages and Systems (APLAS05)*, pages 37–51, Tsukuba, Japan, November 2005.

X. Z. Fu, H. Wang, W. L. Harrison, and R. Harrison. RNA pseudoknot prediction using term rewriting. In *Proceedings of IEEE Fifth Symposium on Bioinformatics and Bioengineering (BIBE05)*, pages 169–176, Minneapolis, MN, October 2005.

W. L. Harrison and R. W. Harrison. Domain specific languages for cellular interactions. In *Proceedings of the 26th Annual IEEE International Conference on Engineering in Medicine and Biology (EMBC04)*, September 2004.

W. L. Harrison, M. Tullsen, and J. Hook. Domain separation by construction. In *LICS03 Satellite Workshop on Foundations of Computer Security (FCS03)*, June 2003. 21 pages.

W. L. Harrison, T. Sheard, and J. Hook. Fine control of demand in Haskell. In *6th International Conference on the Mathematics of Program Construction (MPC02)*, Dagstuhl, Germany, volume 2386 of *Lecture Notes in Computer Science*, pages 68–93. 2002.

W. L. Harrison and R. Kieburtz. Pattern-driven reduction in haskell. In *2nd International Workshop on Reduction Strategies in Rewriting and Programming (WRS02)*, Copenhagen, Denmark, 2002.

W. L. Harrison and T. Sheard. Dynamically adaptable software with metacomputations in a staged language. In *Proceedings of the Second International Workshop on Semantics, Applications, and Implementation of Program Generation (SAIG)*, volume 2196 of *Lecture Notes in Computer Science*, pages 163–182, Florence, Italy, 2001. Springer-Verlag.

W. L. Harrison and S. Kamin. Metacomputation-based compiler architecture. In *5th International Conference on the Mathematics of Program Construction, Ponte de Lima, Portugal*, volume 1837 of *Lecture Notes in Computer Science*, pages 213–229. Springer-Verlag, 2000.

W. L. Harrison and S. N. Kamin. Modular compilers based on monad transformers. In *Proceedings of the 1998 International Conference on Computer Languages*, pages 122–131. IEEE Computer Society Press, 1998.

W. L. Harrison, K. Levitt, and M. Archer. An HOL mechanization of the axiomatic semantics of a simple distributed programming language. In *Proceedings of the International Workshop on Higher-Order Logic Theorem Proving and Its Applications*, pages 347–358, Leuven, Belgium, September 1992.

W. L. Harrison and K. Levitt. Mechanizing security in HOL. In *Proceedings of the 1991 International Workshop on the HOL Theorem Proving System and its Applications*, pages 63–66, Davis, California, 1991. IEEE Computer Society Press.

#### *Dissertation and Master's Thesis*

W. L. Harrison. *Modular Compilers and Their Correctness Proofs*. PhD thesis, University of Illinois at Urbana-Champaign, 2001.

W. L. Harrison. *Mechanizing the axiomatic semantics for a programming language with asynchronous send and receive in HOL*. Master's thesis, University of California, Davis, 1992.

#### *Technical Reports*

Gerard Allwein and William L. Harrison. Distributed Logics. Technical Report NRL/MR/5540-14-9565, US Naval Research Laboratory, 2014.

W. L. Harrison. Mechanizing the Axiomatic Semantics for a Programming Language with Asynchronous Send and Receive in HOL. Technical Report CSE-92-20, University of California at Davis, 1992.

W. Harrison, K. Levitt, and M. Archer. Towards a Verified Code Basis for a Secure Distributed Operating System. Technical Report CSE-92-19, University of California at Davis, 1992.

#### Selected Honors, Memberships, and Service

- Program Committee member, 30th International Conference on Computer Aided Verification (CAV), 2018.
- Selected for Intel Corporation's 2017 Hardware Accelerator Research Program.
- Program Chair for Seventh Workshop on Design, Modeling and Evaluation of Cyber Physical Systems (CyPhy'17).

- Organized special session entitled *The Confluence of Secure Hardware and Programming Languages* for the International Conference on Engineering of Reconfigurable Systems and Algorithms (ERSA 11).
- Recipient, National Science Foundation CAREER award (CyberTrust program) in 2008.
- Received *Certificate of Appreciation* from the University of Missouri College of Engineering Graduating Seniors on December 11, 2009 for teaching excellence.
- Member of ACM and IEEE.
- Lead successful effort to earn the University of Missouri accreditation as a National Security Agency Center of Academic Excellence in 2007.
- Invited participant to the NSF High-Confidence Software Platforms for Cyber-Physical Systems (HCSP-CPS) Workshop, November 30-December 1, 2006 in Alexandria, Virginia.
- Summer Faculty Fellow to the 2006 Office of Naval Research/ASEE Summer Faculty Research Program. Research performed in the Software Engineering Section of the Naval Research Laboratory's Center for High Assurance Computer Systems in Washington, DC.
- Member of the program committees for the *Colloquium for Information Systems Security Education* (CISSE 2011, 2012), *ACM Symposium on the Implementation of Functional Languages* (IFL11), *ACM SIGPLAN 2008 Haskell Symposium* (Haskell08), the *7th International Conference on the Mathematics of Program Construction* (MPC06).
- Reviewer for the *Journal of Computer Security* (JCS), the *Journal of Functional Programming* (JFP), the *ACM Transactions on Programming Languages and Systems* (TOPLAS), the *Theoretical Computer Science* (TCS), the *Journal of Software Testing, Verification and Reliability*, the *ACM Journal of Experimental Algorithmics* (JEA), and the *American Medical Informatics Association Symposium 2005* (AMIA 2005).
- Received *Big Twelve Faculty Fellowship*, University of Missouri, Columbia; visited University of Kansas System Level Design (SLDG) and Hybrid Threads groups.
- University of Missouri nominee for 2005 *Microsoft New Faculty Fellowship* for Bioinformatics research.
- Frequent invitations to serve and participation (usually once or twice per year) on National Science Foundation review panels.
- Chaired recruiting committee that ultimately resulted in the hiring of Drs. Rohit Chadha and Prasad Calyam in the MU Computer Science department.
- Currently chairing recruiting committee for the area of "High Assurance Cyber Physical Systems" in the MU Computer Science department. Expect to hire 2-3 faculty.

## Invited Talks and Conference Presentations

*Why Functional Hardware Description Matters.* Oak Ridge National Laboratory, Oak Ridge TN, 3/13/2017.



*Model-driven Design & Synthesis of the SHA-256 Cryptographic Hash Function in ReWire.* The 27th International Symposium on Rapid System Prototyping (RSP), 2016.

*A Programming Model for Reconfigurable Computing Based in Functional Concurrency.* The 11th International Symposium on Reconfigurable Communication-centric Systems-on-Chip (Re-CoSoC 2016).

*Provably Correct Development of reconfigurable hardware designs via equational reasoning.* The 2015 International Conference on Field-Programmable Technology (FPT '15).

*High Assurance Hardware with ReWire: Just Say No! to Semantic Archaeology.* The Technical Cooperation Program (TTCP) workshop, Defence Science & Technology Organization (DSTO), Adelaide Australia, 5/18/2015.

*High Assurance Hardware with ReWire: Just Say No! to Semantic Archaeology.* High Confidence Software and Systems (HCSS) NSA workshop, Annapolis MD, 5/6/2015.

*High Assurance Hardware with ReWire: Just Say No! to Semantic Archaeology.* Oak Ridge National Laboratory, Oak Ridge TN, 3/3/2015.

*The Confinement Problem in the Presence of Faults.* Proceedings of the 2012 International Conference on Formal Engineering Methods.

*Towards semantics-directed system design and synthesis.* International Conference on Engineering Reconfigurable Systems and Algorithms (ERSA), 7/19/2011.

*Understanding Security Flows in the Many Core Era.* National Security Agency, Information Assurance Directorate, 10/14/2010, Sponsor: Brad Martin.

*An Academic Response to National Science and Technology Challenges.* Department of Defense Intelligence Information Systems (DoDIIS) Worldwide Conference, 5/26/2010.

*Model-driven Synthesis of High Assurance Secure Systems.* University of Iowa, 10/23/09, Sponsor: Professor Aaron Stump.

*Model-driven Synthesis of High Assurance Secure Systems.* Galois, Inc., 5/20/08, Sponsor: John Launchbury.

*Compiling for Security.* Missouri Institute of Technology (formerly University of Missouri, Rolla), 4/28/08, Sponsor: Professor Bruce McMillen.

*Proof Abstraction for Imperative Languages.* The 4th Asian Symposium on Programming Languages and Systems (APLAS06), Sydney, Australia, 11/8/2006.

*The Essence of Multitasking.* The 11th International Conference on Algebraic Methodology and Software Technology (AMAST06), Kuuresaare, Estonia, 7/5/06.

*Domain-specific Languages for Cellular Interactions.* University of Kansas, 4/29/05, Sponsor: Professor Perry Alexander.

*A Simple Semantics for Polymorphic Recursion.* , Proceedings of the 3rd Asian Symposium on Programming Languages and Systems (APLAS05), Tsukuba, Japan, 11/3/2005.

*Achieving Information Flow Security Through Precise Control of Effects.* The 18th IEEE Computer Security Foundations Workshop (CSFW05), Aix-en-Provence, France, 7/20/05.

*Information-flow Security & Monadic Effects*. University of Illinois at Urbana-Champaign, 4/18/2005, Sponsor: Professor José Meseguer.

*Domain-specific Languages for Cellular Interactions*. The 26th Annual IEEE International Conference on Engineering in Medicine and Biology, San Francisco, California, 9/3/04.

*Domain-specific Languages for Biology*. Georgia State University, 5/26/2004, Sponsor: Professor Yi Pan.

*Domain Separation by Construction*. LICS03 Satellite Workshop on Foundations of Computer Security (FCS03), Ottawa, Canada, 6/26/03.

*Prospects for Modular Compilation*. Rice University, 12/11/2002, Sponsor: Professor Walid Taha.

*Domain-specific Languages for Compilation*. University of Alabama, 11/22/2002, Sponsor: Professor Joel Jones.

*Pattern-driven Reduction in Haskell*. Second International Workshop on Reduction Strategies in Rewriting and Programming, Copenhagen, Denmark, 7/21/02.

*Fine Control of Demand in Haskell*. The Sixth International Conference on the Mathematics of Program Construction (MPC02), Dagstuhl, Germany, 7/8/02.

*Dynamically Adaptable Software with Metacomputations in a Staged Language*. The Second Workshop on the Semantics, Applications and Implementation of Program Generation (SAIG01), Florence, Italy, 9/6/01.

*Metacomputation-based Compiler Architecture*. The Fifth International Conference on the Mathematics of Program Construction (MPC00), Ponte de Lima, Portugal. 7/5/00.

*Modular Compilers Based on Monad Transformers*. The IEEE International Conference on Computer Languages (ICCL98), Chicago, Illinois. 5/16/98.

## Students & Postdocs Supervised

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### *Postdoctoral Researchers Supervised*

Adam Procter. 1/2015-5/2016.

Soumya Sanyal. 9/2013-9/2015.

### *Graduated Ph.D Students*

Adam Procter. GAANN fellow. Graduated: 12/2014.

Dissertation: *Semantics-directed Design and Implementation of High Assurance Hardware*.

Ian Graves. Graduated: 12/2015.

Dissertation: *Device-level Composition in ReWire*.

Christopher Hathhorn. GAANN Fellow. Graduated: 12/2017.

Dissertation: *Defining the Undefinedness of C11: Practical Semantics-based Program Analysis*.

### *Current Ph.D Students*

Thomas Reynolds. Started Fall semester 2014.

Qianli Zhang. Started Fall semester 2016.

### *Graduated MS Students*

Zolbayer Magsar. Graduated: 5/2016.

Richard Wallen. Graduated: 12/2015.

Mohammed Alharbi. Graduated: 5/2013.

Jared Kvanvig. Thesis: Compiler Infrastructure for the Cheap Threads Compiler. Graduated: 12/2009.

Ajay Nagar. Non-thesis. Graduated: 5/2009.

Megha Rao. Thesis: Physical Security in a Nuclear Environment. Graduated: 12/2008.

Pericles S. Kariotis. Thesis: Making Monads First-class Using Template Haskell. Graduated: 12/2008.

### References

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Professor David Andrews  
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Center for High Confidence Systems  
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