

# John Gregory Morrisett

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Computing and Information Sciences  
Cornell University  
Ithaca, New York 14853

## EDUCATION

Ph.D. (computer science) 1995, Carnegie Mellon University. Dissertation: *Compiling with Types*.  
M.S. (computer science) 1991, Carnegie Mellon University.  
B.S. (mathematics & computer science) 1989, University of Richmond.

## PROFESSIONAL EXPERIENCE

Cornell University, Dean for Computing and Information Sciences, 2015-present.  
Harvard University, Director, Center for Research on Computation and Society 2012-2014.  
Harvard University, Associate Dean for Computer Science & Engineering, 2007-2010.  
Harvard University, Allen B. Cutting Professor of Computer Science, 2004-2015.  
Microsoft Research, Ltd., Visiting Researcher, 2002-2003.  
Cornell University, Associate Professor of Computer Science, 2002-2004.  
Cornell University, Assistant Professor of Computer Science, 1996-2002.  
Digital Research Laboratory, Research Assistant, 1992.  
AT&T Bell Laboratories, Research Assistant 1991.

## HONORS

Harvard College Professor, 2014.  
Fellow of the Association of Computing Machinery (ACM), 2014.  
Presidential Early Career Award for Scientists and Engineers, 2000.  
Allen Newell Medal of Research Excellence, 2001.  
National Science Foundation Career Award, 1999.  
Alfred P. Sloan Fellow, 1998.  
IBM Faculty Fellowship, 2010.  
Ralph Watts Excellence in Teaching Award, 2000-2001.  
Best Paper: Usenix Security Symposium (2006).  
Most Influential Paper: ACM Symposium on Principles of Programming Languages (1998).  
Most Influential Paper: ACM Conf. on Programming Language Design and Implementation (1996).  
Best Paper: ACM International Conference on Functional Programming (1999).  
Best Paper: European Association for Programming Languages and Systems (2016).

## JOURNAL ARTICLES

M.Sun, G.Tan, J.Siefers, B.Zeng, and G.Morrisett. Bringing Java's Wild Native World Under Control. *ACM Transactions on Information and System Security*, 16(3):1-28, 2013.  
G.Malecha, G.Morrisett, and R.Wisnesky. Trace Based Verification of Imperative Programs with I/O. In D.Ballis and T.Kutsia, Ed., Special Issue on Automated Specification and Verification of Web Systems. *Journal of Symbolic Computation*. 46(2):95-118, 2010.  
G. Morrisett. Technical perspective: a compiler's story. *Commun. ACM*, 52(7):106-106, 2009.  
A.Nanevski, G.Morrisett, and L.Birkedal. Hoare Type Theory, Polymorphism and Separation. *Journal of Functional Programming*, 18(5&6):865-911, 2008.

- A.Ahmed, M.Fluet, and G.Morrisett. L3: A Linear Language with Locations. In P.Urzyczyn editor, Special Issue on Typed Lambda Calculi and Applications 2005, *Fundamenta Informaticae*, 77(4):397-449, June 2007.
- M.Fluet and G.Morrisett. Monadic Regions. *Journal of Functional Programming*, 16(4-5):485-545, July 2006.
- N.Swamy, M.Hicks, G.Morrisett, D.Grossman, and T.Jim. Safe Manual Memory Management in Cyclone. *Science of Computer Programming*, 62(2):122-144, October 2006.
- K.Hamlen, G.Morrisett, and F.B.Schneider. Computability Classes for Enforcement Mechanisms. *ACM Transactions on Programming Languages and Systems*, 28(1): 175-205, 2006.
- F.Smith, D.Grossman, G.Morrisett, L.Hornoff, and T.Jim. Compiling for Runtime Code Generation. *Journal of Functional Programming* 13(3):677-708, May 2003.
- G.Morrisett, K.Crary, N.Glew, and D.Walker. Stack-Based Typed Assembly Language. *Journal of Functional Programming*, 12(1):43-88, January 2002.
- S.Zdancewic, D.Grossman, and G.Morrisett. Syntactic Type Abstraction. *ACM Transactions on Programming Languages and Systems*, 22(6):1037-1080, November 2002.
- K.Crary, S.Weirich, and G.Morrisett. Intensional Polymorphism in Type-Erasure Semantics. *Journal of Functional Programming*, 12(6):567-600, November 2002.
- G.McGraw and G.Morrisett. Attacking Malicious Code: A Report to the INFOSEC Research Council. *IEEE Software*, 17(5), September/October 2001.
- D.Walker, K.Crary, and G.Morrisett. Typed Memory Management via Static Capabilities. *ACM Transactions on Programming Languages and Systems*, 22(4):701-771, July 2000.
- G.Morrisett, D.Walker, K.Crary, and N.Glew. From System-F to Typed Assembly Language. *ACM Transactions on Programming Languages and Systems*, 21(3):527-568, May 1999.
- N.Haines, D.Kindred, J.G.Morrisett, S.M.Nettles, and J.M.Wing. Composing First-Class Transactions. *ACM Transactions on Programming Languages and Systems*, Short Communication, November 1994.

## REFEREED CONFERENCE PUBLICATIONS

- D. Huang, J.B. Tristan, and G. Morrisett. Compiling Markov Chain Monte Carlo Algorithms for Probabilistic Modeling. In *ACM Conference on Programming Language Design and Implementation (PLDI)*, June 18-23, 2017.
- G. Tan and G. Morrisett. Bidirectional Grammars for Machine-Code Decoding and Encoding. In *8th Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE)*, 2017. To appear.
- D. Huang and G. Morrisett. An Application of Computable Distributions to the Semantics of Probabilistic Programming Languages. In *European Symposium on Programming Languages and Systems (ESOP)*, pp. 337-363, Springer Berlin Heidelberg, April 2016.
- A.Petcher and G.Morrisett. A Mechanized Proof of Security for Searchable Symmetric Encryption. In *28th IEEE Computer Security Foundations Symposium (CSF)*, July 2015.
- A.Petcher and G.Morrisett. The Foundational Cryptographic Framework. In *4th Conference on Principles of Security and Trust (POST)*, April 2015.
- E. Gan, J. Tov, and G. Morrisett. Type Classes for Lightweight Substructural Types. In *Third International Workshop on Linearity (Linearity 2014)*, July 2014.
- S.Chiricescu, A.DeHon, D.Demange, S.Iyer, A.Kliger, G.Morrisett, B.C.Pierce, H.Reubenstein, J.M.Smith, G.T.Sullivan, A.Thomas, J.Tov, C.M.White, and D.Wittenberg. SAFE: A clean-slate architecture for secure systems. In *2013 IEEE International Conference on Technologies for Homeland Security (HST)*, November 2013.
- C. Hritcu, M. Greenberg, B. Karle, B. C. Pierce, and G. Morrisett. All your IFCEException are belong to us. In *Proceedings of the 34th IEEE Symposium on Security and Privacy (Oakland)*, May 2013.

- A. P. Randles, D. Rand, C. Lee, G. Morrisett, J. Sircar, M. Nowak, and H. Pfister. Massively parallel model of extended memory use in evolutionary game dynamics. In *27th IEEE International Parallel and Distributed Processing Symposium*, May 2013.
- D.Huang and G.Morrisett. Formalizing the SAFECode type system. In *Certified Programs and Proofs*, January 2013.
- U. Dhawan, A. Kwon, E. Kadric, C. Hritcu, B. C. Pierce, J. M. Smith, G. Malecha, G. Morrisett, T. F. Knight, Jr., A. Sutherland, T. Hawkins, A. Zyxnfryx, D. Wittenberg, P. Trei, S. Ray, G. Sullivan, and A. DeHon. Hardware support for safety interlocks and introspection. In *SASO Workshop on Adaptive Host and Network Security*, Sept. 2012.
- G. Morrisett, G. Tan, J. Tassarotti, J.-B. Tristan, and E. Gan. Rocksalt: better, faster, stronger sfi for the x86. In *Proceedings of the 33rd ACM SIGPLAN Conference on Programming Language Design and Implementation*, PLDI '12, pages 395-404, New York, NY, USA, 2012. ACM.
- D. Huang and G. Morrisett. Formalizing the SAFECode Type System. In *International Conference on Certified Programs and Proofs*, pp. 211-226, December 2011.
- A. Dehon, B. Karel, B. Montagu, B. Pierce, J. Smith, T. Knight, S. Ray, G. Sullivan, G. Malecha, G. Morrisett, R. Pollack, R. Morisset, and O. Shivers. Preliminary design of the SAFE platform. In *Proceedings of the 6th Workshop on Programming Languages and Operating Systems (PLOS 2011)*. ACM, Oct. 2011.
- B. Zeng, G. Tan, and G. Morrisett. Combining control-flow integrity and static analysis for efficient and validated data sandboxing. In *18th ACM Conference on Computer and Communications Security*. ACM, Oct. 2011.
- J.-B. Tristan, P. Govereau, and G. Morrisett. Evaluating value-graph translation validation for LLVM. In *Proceedings of the ACM SIGPLAN Conference on Programming Design and Implementation (PLDI)*, New York, NY, USA, 2011. ACM.
- J.Siefers, G.Tan, and G.Morrisett. Robusta: Taming the native beast of the JVM. In *17th ACM Conference on Computer and Communications Security (CCS)*, New York, NY, USA, Nov. 2010.
- G. Malecha and G. Morrisett. Mechanized verification with sharing. In *7th International Colloquium on Theoretical Aspects of Computing*, Sept. 2010.
- G. Mainland and G. Morrisett. Nikola: Embedding compiled GPU functions in Haskell. In *Proceedings of the 2010 ACM SIGPLAN Symposium on Haskell (Haskell'10)*, New York, NY, USA, Sept. 2010.
- G. Malecha, G. Morrisett, A. Shinnar, and R. Wisnesky. Toward a verified relational database management system. In *POPL '10: Proceedings of the 37th annual ACM SIGPLAN-SIGACT symposium on Principles of Programming Languages*, pages 237-248, New York, NY, USA, 2010.
- A. Chlipala, G. Malecha, G. Morrisett, A. Shinnar, and R. Wisnesky. Effective interactive proofs for higher-order imperative programs. In *ICFP '09: Proceedings of the 14th ACM SIGPLAN International Conference on Functional Programming*, September 2009.
- R. Wisnesky, G. Malecha, and G. Morrisett. Certified web services in Ynot. In *5th International Workshop on Automated Specification and Verification of Web Systems*, July 2009.
- A. Nanevski, P. Govereau, and G. Morrisett. Towards type-theoretic semantics for transactional concurrency. In *ACM SIGPLAN Workshop on Types in Language Design and Implementation*, January 2009.
- A.Nanevski, G.Morrisett, A.Shinnar, P.Govereau, and L.Birkedal. Ynot: Reasoning with the Awkward Squad. In *Proceedings of the 13th ACM SIGPLAN International Conference on Functional Programming*, Victoria, British Columbia, September 2008.
- G.Mainland, G.Morrisett, and M.Welsh. Flask: Staged Functional Programming for Sensor Networks. In *Proceedings of the 13th ACM SIGPLAN International Conference on Functional Programming*, Victoria, British Columbia, September 2008.
- R.L.Petersen, L.Birkedal, A.Nanevski, and G.Morrisett. A Realizability Model for Impredicative Hoare Type Theory. In *European Symposium on Programming*, Budapest, Hungary, April 2008.

- R.Newton, G.Morrisett, and M.Welsh. The Regiment Macroprogramming System. In *Proceedings of the 6th International Conference on Information Processing in Sensor Networks*, Cambridge, MA, April 2007.
- A.Nanevski, G.Morrisett, and L.Birkedal. Polymorphism and Separation in Hoare Type Theory. In *2006 International Conference on Functional Programming*, Portland, Oregon, October 2006.
- S.McCamant and G.Morrisett. Evaluating SFI for a CISC Architecture. In *2006 Usenix Security Symposium*, Vancouver, British Columbia, July 2006.
- K.Hamlen, G.Morrisett, and F.B.Schneider. Certified In-Lined Reference Monitoring on .NET. In *ACM Workshop on Programming Languages and Analysis for Security*, Ottawa, Canada, June 2006.
- M.Fluet, G.Morrisett, and A.Ahmed. Linear Regions are All You Need. *European Symposium on Programming*, Vienna, Austria, March 2006.
- A.Ahmed, M.Fluet, and G.Morrisett. A Step-Indexed Model of Substructural State. *2005 International Conference on Functional Programming*, Tallinn, Estonia, September 2005.
- G.Morrisett, M.Fluet, and A.Ahmed. L3: A Linear Language with Locations. In *Seventh International Conference on Typed Lambda Calculi and Applications*, Nara, Japan, April 2005.
- M.Hicks, G.Morrisett, D.Grossman, and T.Jim. Experience with Safe Manual Memory-Management in Cyclone. In *2004 International Symposium on Memory Management*, Vancouver, British Columbia, October, 2004.
- M.Fluet and G.Morrisett. Monadic Regions. In *2004 International Conference on Functional Programming*, Park City, Utah, September 2004.
- T.Jim, G.Morrisett, D.Grossman, M.Hicks, J.Cheney, and Y.Wang. Cyclone: A Safe Dialect of C. In *Usenix Annual Technical Conference*, Monterey, California, June 2002.
- D.Grossman, G.Morrisett, T.Jim, M.Hicks, Y.Wang, and J.Cheney. Region-Based Memory Management in Cyclone. In *ACM Conference on Programming Language Design and Implementation*, Berlin, Germany, June 2002.
- F.B.Schneider, G.Morrisett, and R.Harper. A Language-Based Approach to Security. *Informatics: 10 Years Back, 10 Years Ahead, Lecture Notes in Computer Science*, Vol. 2000, Springer-Verlag, Heidelberg, 86-101.
- D.Walker and G.Morrisett. Alias Types for Recursive Data Structures. In *2000 ACM SIGPLAN Workshop on Types in Compilation*, Montreal, Canada, September 2000.
- D.Grossman and G.Morrisett. Scalable Certification for Typed Assembly Language. In *2000 ACM SIGPLAN Workshop on Types in Compilation*, Montreal, Canada, September 2000.
- F.Smith, D.Walker, and G.Morrisett. Alias Types. In the *European Symposium on Programming*, Berlin, Germany, March 2000.
- S.Zdancewic, D.Grossman, and G.Morrisett. Principals in Programming Languages: ASyntactic Proof Technique. In the *1999 International Conference on Functional Programming*, pages 197-207, Paris, France, September 1999.
- G.Morrisett, K.Crary, N.Glew, D.Grossman, R.Samuels, F.Smith, D.Walker, S.Weirich, and S.Zdancewic. TALx86: A Realistic Typed Assembly Language. In *1999 ACM SIGPLAN Workshop on Compiler Support for System Software*, pages 25-35, Atlanta, GA, USA, May 1999.
- G.Morrisett and K.Crary. Type Structure for Low-Level Programming Languages. *1999 International Colloquium on Automata, Languages, and Programming*.
- N.Glew and G.Morrisett. Type-Safe Linking and Modular Assembly Language. In *Twenty-Sixth ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, pages 250-261, San Antonio, TX, USA, January 1999.
- K.Crary, D.Walker, and G.Morrisett. Typed Memory Management in a Calculus of Capabilities. In *Twenty-Sixth Symposium on Principles of Programming Languages*, pages 262-275, San Antonio, TX, USA, January 1999.
- G.Morrisett, K.Crary, N.Glew, and D.Walker. Stack-Based Typed Assembly Language. In *1998 Workshop on Types in Compilation*, Kyoto, Japan, March 1998. Published in Xavier Leroy and Atsushi Ohori, editors, *Lecture Notes in Computer Science*, volume 1473, pages 28-52. Springer-Verlag, 1998.

- G.Morrisett, D.Walker, K.Crary, and N.Glew. From System F to Typed Assembly Language. In *Twenty-Fifth ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, pages 85-97, San Diego, USA, January 1998.
- F.Smith and G.Morrisett. Comparing Mostly-Copying and Mark-Sweep Conservative Collection. In *1998 International Symposium on Memory Management*, pages 68-78, Vancouver, Canada, October 1998.
- K.Crary, S.Weirich, and G.Morrisett. Intensional Polymorphism in Type-Erasure Semantics. *1998 International Conference on Functional Programming*, pages 301-312, Baltimore, September 1998.
- G.Morrisett and R.Harper. Typed Closure Conversion for Recursively-Defined Functions (Extended Abstract). *Proceedings of Higher-Order Operational Techniques in Semantics (HOOTS) II*.
- A.Basu, M.Hayden, G.Morrisett, and T.von Eiken. A Language-Based Approach to Protocol Construction, *Proceedings of the ACM SIGPLAN Workshop on Domain Specific Languages (WDSL)*, Paris, France, January 1997.
- D.Tarditi, G.Morrisett, P.Cheng, C.Stone, R.Harper, and P.Lee. TIL: A Type-Directed Optimizing Compiler for ML. *1996 SIGPLAN Conference on Programming Language Design and Implementation*, pages 181-192, Philadelphia, May 1996.
- G.Morrisett, D.Tarditi, P.Cheng, C.Stone, R.Harper, and P.Lee. The TIL/ML Compiler: Performance and Safety Through Types. *Workshop on Compiler Support for Systems Software*. Tucson, February 1996.
- Y.Minamide, G.Morrisett, and R.Harper. Typed Closure Conversion. *ACM Symposium on Principles of Programming Languages*. St. Petersburg, pages 271-283, January, 1996.
- G.Morrisett, M.Felleisen, and R.Harper. Abstract Models of Memory Management. *Conference on Functional Programming Languages and Computer Architecture*. San Diego, pages 66-77, June 1995.
- R.Harper and G.Morrisett. Compiling Polymorphism Using Intensional Type Analysis, *ACM Symposium on Principles of Programming Languages*, San Francisco, pages 130-141, January 1995.
- J.G.Morrisett. Refining First-Class Stores. *Proceedings of the ACM SIGPLAN Workshop on State in Programming Languages*, Copenhagen, Denmark, June 1993.
- A.Tolmach and G.Morrisett. Procs and Locks: A Portable Multiprocessing Platform for Standard ML of New Jersey, *Proceedings of the Fourth ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, San Diego, May 1993.

## BOOK CHAPTERS

- G.Morrisett. Typed Assembly Language. In Benjamin C. Pierce, editor, *Advanced Topics in Types and Programming Languages*, MIT Press, 2005.

## INVITED LECTURES

- Challenges in Compiling Coq. Invited talk. International Symposium on Principles and Practice of Declarative Programming, Edinburgh, Scotland, September 2016.
- From Crypto to Code. John Mitchel Feschrift, Palo Alto, California, May 2016.
- From Crypto to Code. Royal Society, London, England, April 2016.
- The Highs and Lows of a Language Researcher. Invited Talk. Programming Languages Mentoring Workshop, January 2016.
- Coq as a Programming Environment? Facebook, Inc., November 2015.
- Securing Code in a More Trustworthy Fashion. Invited talk. Technical University of Darmstadt, Germany, November 2014.
- Securing Code in a More Trustworthy Fashion. Invited talk. CyberSecurity Day at Boston University, Boston, Massachusetts, November 2014.
- Formalizing the x86. Invited talk. University of Massachusetts, Amherst, Massachusetts, October 2014.
- Retrospective on Cyclone. Invited talk. Facebook, Inc. Palo Alto, California, October 2014.

Robobees: A convergence of body, brain, and colony. Imperial College, London, United Kingdom, October 2014.

Trustworthy Software Systems. Invited talk. UK Cyber Security Research Conference, London, United Kingdom, October 2014.

An Algebraic Regular Parser Generator. Invited talk. Chinese Academy of Sciences. Beijing, China, April 2014.

The Challenges of Securing Systems Software. Keynote speaker. Tsinghua Software Day. Beijing, China, April 2014.

Trustworthy Hardened Code. Invited talk. Dartmouth College, Hanover, New Hampshire, April 2014.

Trustworthy Hardened Code. Invited talk. Brown University, Providence, Rhode Island, February 2014.

Compiling Coq. Oracle Research Labs, Burlington, Massachusetts, February 2014.

Past, present, and future of in-lined reference monitors. Invited talk. Cornell University, Ithaca, New York, December 2013.

Trustworthy Hardened Code. Distinguished lecture. University of California, San Diego, California, October 2013.

Defining, testing, and reasoning about an x86 decoder. Invited talk. 24th International Conference on Automated Deduction, Lake Placid, New York, June 2013.

Verified Software-Based Fault Isolation. Keynote presentation. High Confidence Software and Systems Conference, Annapolis, Maryland, May 2013.

Hardening Code without a Large Trusted Computing Base. Invited talk. George Washington University, Washington, D.C., March 2013.

Proof Engineering for Software Security. Invited talk. ASE/IEEE International Conference on Cyber Security, Washington, D.C., December 2012.

Scalable Formal Machine Models. Keynote speaker. 10th Asian Symposium on Programming Languages and Systems held in conjunction with the Second International Conference on Certified Programs and Proofs, Kyoto, Japan, December 2012.

Hardening Legacy C/C++. Keynote address. High Integrity Language Technology (HILT), Boston, Massachusetts, December 2012.

Robobees. Keynote address. 26th European Conference on Object Oriented Programming (ECOOP), Beijing, China, June 2012.

Robobees. Hollins College, Roanoke, Virginia, March 2011.

Integrating Types and Specifications for Secure Software Development. Invited talk. Fifth International Conference on Mathematical Methods and Computer Network Security, St. Petersburg, Russia, September 2010.

Two “PL meets DB” Stories. Keynote speaker. International Workshop on Relations and Data Integrity Constraints and Languages (RADICAL), Cambridge, United Kingdom, May 2010.

Verifying Systems Software. Invited seminar talk. Microsoft Research/University of Trento Center for Computational and Systems Biology, Trento, Italy, December 2009.

Grand Challenges in Programming Languages. Invited Panelist. 36th Annual Symposium on Principles of Programming Languages, San Diego, California, January 2009.

Ynot: Integrating Effects with Dependent Types. Invited talk. University of Nottingham, United Kingdom, December 2008.

Ynot: Programming with Effects in Coq. Invited talk. Ninth International Conference on Mathematics of Program Construction, Marseille, France, July 2008.

An Ultimate Type System. Distinguished Lecture. University of California, Los Angeles, California, May 2008.

Ynot: Integrating Effects with Dependent Types. Invited talk. Max Planck Institute for Software Systems, Kaiserslautern, Germany, March 2008.

Ynot: Integrating Effects with Dependent Types. Invited talk. Jane Street Capital, New York City, New York, February 2008.

An Ultimate Type System. Distinguished lecture. University of Illinois, Urbana-Champaign, January 2008.

Static Extended Checking for Cyclone. Invited talk. 12th Nordic Workshop on Secure IT Systems, Reykjavik, Iceland, October 2007.

Unifying Disparate Tools in Software Security. Invited talk. National Academy of Engineering, Washington, D.C., September 2007.

The Marriage of Dependent Types and Effects. Invited talk. Typed Lambda Calculi and Applications 2007, Paris, France. June 2007.

Static Extended Checking: Cyclone and Ynot. Distinguished lecture. University of Massachusetts, Amherst, Massachusetts, May 2007.

Static Extended Checking for Cyclone. Distinguished lecture. Toyota Technical Institute, Chicago, Illinois, December 2006.

Static Extended Checking for Cyclone. Distinguished lecture. IBM, September 2006.

SEXC: Static EXtended Checking for Cyclone. Invited talk. Copenhagen Programming Language Seminar. DIKU, Copenhagen, Denmark, May 2006.

Static Extended Checking for Cyclone. Keynote speaker. International Conference on Verification, Model-Checking, and Abstract Interpretation, Charleston, SC, January 2006.

Making C Type-Safe. Distinguished lecture. Purdue University, West Lafayette, Indiana, October 2005.

The next ML? Keynote speaker. ACM Sigplan Workshop on ML, Tallin, Estonia, September 2005.

Open Problems for Certifying Compilation. Keynote speaker. 14th Annual Usenix Security Symposium, Baltimore, MD, August 2005.

Simplifying Regions. Invited talk. Carnegie Mellon University, Pittsburgh, Pennsylvania, March 2005.

A Type-Safe Dialect of C. Invited talk. 5th Annual High Confidence Software and Systems Conference, March 2005.

What's next for an Academic PL Researcher? Distinguished lecture. University of Pennsylvania, Philadelphia, Pennsylvania, November 2004.

Towards Type-Safe C. Invited talk. Williams College, Williamstown, Massachusetts, May 2004.

Implementing a Garbage Collector in Cyclone. Invited talk, The Church Seminar, Boston University, Boston, Massachusetts, March 2004.

Towards Type-Safety for Low-Level Code. Invited talk. Danish Technical Institute, Copenhagen, Denmark, January 2004.

Achieving Type-Safety for Low-Level Code. Keynote speaker. Asian 2003, 8th Asian Programming Language Conference, Bombay, India, December 2003.

Beyond Regions in Cyclone. Keynote speaker. New Jersey Programming Language Seminar, Princeton, NJ, September 2003.

Type-Safe Memory Management in Cyclone. Invited talk. Air Force Research Laboratory, Rome, NY, August 2003.

Regions and Beyond in Cyclone. Invited talk. Yale University, New Haven, Connecticut, June 2003.

Tutorial on Language-Based Security. Invited tutorial. ACM Conference on Programming Language Design and Implementation, San Diego, California, June 2003.

Cyclone Memory Management. Keynote address. UK Workshop on Memory Management, University of Kent, Canterbury, United Kingdom, May 2003.

An Introduction to Typed Assembly Language. Invited talk. University of Cambridge, Cambridge, United Kingdom, May 2003.

Cyclone Memory Management. Invited talk. University of Edinburgh, Edinburgh, United Kingdom, May 2003.

Cyclone: A Type-Safe Dialect of C. Invited talk. Queen Mary College, London, United Kingdom, March 2003.

Cyclone: A Type-Safe Dialect of C. Invited talk. University of Birmingham, Birmingham, United Kingdom, February 2003.

Cyclone: A Type-Safe Dialect of C. Invited talk. University of Kent, Canterbury, United Kingdom, February 2003.

Analysis Issues for Cyclone. Keynote speaker. ACM Conference on Program Analysis for Software Tools and Engineering, Charleston, South Carolina, November 2002.

Memory Management in Cyclone. Invited talk. Microsoft Research Center, Cambridge, United Kingdom, October 2002.

Type Checking Systems Code. Keynote speaker. 11th Annual European Symposium on Programming, Grenoble, France, April 2002.

Type Checking Systems Code. Invited talk. Yale University, New Haven, Connecticut, February 2002.

Typed Assembly Language. Invited talk. Intel Research Laboratory, Santa Clara, California, December 2001.

Next Generation Type Systems. Invited talk. Microsoft Research Retreat, Seattle, Washington, August 2001.

Towards Next-Generation Low-Level Languages. Distinguished lecture. Cornell University, Ithaca, New York, February 2001.

Next Generation Low-Level Languages. Invited talk. Semantics, Programming Analysis, and Computing Environments for Memory Management (SPACE 2001), London, United Kingdom, January 2001.

Proofs, Types, and Safe Mobile Code. Invited talk. 23rd International Symposium on Mathematical Foundations of Computer Science, Brno, Czech Republic, August 1998.

## PROFESSIONAL RESPONSIBILITIES

- Chief Editor, *Journal of Functional Programming*, 2004-2008.
- Co-Chief Editor, *Communications of the ACM Research Highlights*, 2009-present.
- Associate Editor, *Information Processing Letters*, 2005-2013.
- Associate Editor, *Journal of the ACM*, 2010-2013.
- Associate Editor, *ACM Transactions on Programming Languages and Systems*, 2003-2007.
- National Science Foundation CISE Advisory Board, 2008-2011.
- Microsoft Technical Advisory Board, 2012-2015.
- Microsoft Trustworthy Computing Academic Advisory Board, 2002-2014.
- Intel/Berkeley Science and Technology Center (SCRUB) Advisory Board, 2011-present.
- DARPA ISAT Advisory Board, 2006-2009.
- Max Planck Institute for Software Systems Scientific Advisory Board, 2008-present.
- Co-Chair, National Science Foundation CISE/CCF Committee of Visitors, 2008.
- Member, IFIP Working Group 2.8 on Functional Programming, 1999-present.
- National Academy of Engineering Study on Software Producibility, 2006-2011.
- IARPA Study on Software of Unknown Provenance, 2008.
- DARPA Study on Machine Learning and Multi-Core, 2007.
- ACM SIGPLAN Executive Committee, Member at Large, 2007-2009.
- Program Chair, ACM Principles of Programming Languages, 2003.
- General Chair, ACM Principles of Programming Languages, 2006.
- General Chair, ACM International Conference on Functional Programming, 2013.
- General Chair, ACM International Symposium on Memory Management, 2007.
- Program Chair, ACM SIGPLAN Workshop on ML, 1998.
- Fortify, Inc. Technical Advisory Board, 2005-2009.
- Board Member, Murty Classical Library of India, 2010-2013.
- INRIA PVP Evaluation Committee, 2011.



- Yale Computer Science Visiting Committee, 2010.
- Brown Computer Science Visiting Committee, 2010.
- University of Pennsylvania Computer Science Visiting Committee, 2013.
- University of Maryland Computer Science Visiting Committee, 2014.
- Purdue Computer Science Evaluation Committee, 2016.
- University of California at San Diego Computer Science Evaluation Committee, 2017.
- External Advisory Board for EPSRC Grant "Rigorous Engineering for Mainstream Systems," 2012-present.
- External Advisory Board for DARPA Grant "CRASH-worthy Trustworthy Systems R&D," 2011-present.
- Co-Chair, Harvard Faculty of Arts and Sciences Standing Committee on Information Technology, 2012-present.
- Steering Committee, ACM Workshop on Types in Language Design and Implementation.
- Steering Committee, ACM International Conference on Functional Programming.
- ACM Heidelberg Forum Committee, 2012-present.
- SNAPL Workshop Steering Committee.
- Army Research Lab's Information Science Panel, 2015-present.
- Computing Community Consortium (CCC), 2017-present.

## **PROGRAM COMMITTEES**

- LangSec Workshop, 2015.
- Program Co-Chair - Summit on Advances in Programming Languages, 2015.
- IEEE Symposium on Security and Privacy (S&P) 2015.
- International Workshop on Aliasing, Capabilities, and Ownership (IWACO), 2014.
- IEEE Symposium on Security and Privacy (S&P) 2014.
- Principles of Programming Languages (POPL) 2013 - external review committee.
- Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2013 - external review committee.
- Principles of Programming Languages (POPL) 2012.
- Higher-Order Programming with Effects (HOPE) 2012.
- Mathematical Methods, Models and Architectures for Computer Network Security (MMM-ACNS) 2012.
- Object Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2012 - external review committee.
- Program Co-Chair - SecurIT 2012.
- Types in Language Design and Implementation (TLDI) 2012.
- International Conference on Availability, Reliability (ARES) 2012.
- Verification, Model Checking and Abstract Interpretation (VMCAI) 2012.
- Programming Language Design and Implementation (PLDI) 2011.
- Syntax and Semantics of Low-Level Languages (LOLA) 2011.
- Computer Security Foundations (CSF) 2011.
- Interactive Theorem Proving (ITP) 2011.
- New Ideas and Emergent Results (NIER) 2011.
- Programming Languages meet Program Verification (PLPV) 2011.
- Runtime Verification (RV) 2011.
- Mathematically Structured Functional Programming (MSFP) 2010.

- Foundations of Software Engineering (FSE SDP) 2010.
- European Symposium on Programming (ESOP) 2009.
- Workshop on LINEARITY 2009.
- Software Security Process 2009.
- Computer Science Symposium in Russia (CSR) 2009.
- IEEE Symposium on Security and Privacy (IEEE S&P) 2009.
- Virtual Execution Environments (VEE) 2008.
- Programming Language Approaches to Concurrency and Communication-cEntric Software (PLACES) 2008.
- Programming Languages and Analysis for Security (PLAS) 2008.
- Virtual Machines and Intermediate Languages (VMIL) 2008.
- Third Types in Language Design and Implementation TLDI 2007 - Steering Committee.
- Workshop on Heap Analysis and Verification 2007.
- Foundations of Software Technology and Theoretical Computer Science FSTTCS 2007.
- ACM Sigplan Workshop on ML 2007.
- ESORICS Workshop on Run-time Enforcement (REM) 2007.
- General Chair - Principles of Programming Languages (POPL) 2006.
- International Conference on Compiler Construction (CC) 2006.
- International Conference on Functional Programming (ICFP) 2006.
- International Symposium on Memory Management (ISMM) 2006.
- Programming Language Support for Operating Systems (PLOS) 2006.
- European Symposium on Programming (ESOP) 2005.
- General Chair - Types in Language Design and Implementation (TLDI) 2005.
- Object Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2005.
- Foundations of Aspect Oriented Languages (FOAL) 2005.
- Program Chair - Principles of Programming Languages (POPL) 2003.
- Principles of Programming Languages (POPL) 2002.
- Principles of Programming Languages (POPL) 2001
- International Conference on Functional Programming (ICFP) 2000.
- Principles and Practice of Declarative Programming (PPDP) 2000.
- International Symposium on Memory Management (ISMM) 2000.
- Latin American Conference on Functional Programming 1999.
- Program Chair - Workshop on ML 1998.
- Programming Language Design and Implementation (PLDI) 1998.
- Fourth annual Asian Computing Science Conference (ASIAN) 1998.
- Types in Compilation (TIC) 1997.

## **POST DOCTORAL ADVISEES**

- Amal Ahmed (Ph.D. Princeton), now at Northeastern University.
- Abhishek Anand (Ph.D. Cornell).
- Adam Chlipala (Ph.D. Berkeley), now at MIT.
- Michael Hicks (Ph.D. University of Pennsylvania), now at University of Maryland.
- Aleksander Nanevski (Ph.D. Carnegie Mellon), now at Microsoft Research, Ltd.
- Suman Saha (Ph.D. INRIA).
- Matthieu Sozeau (Ph.D. Paris XI University – Orsay), now at INRIA.

- Jean-Baptiste Tristan (Ph.D. INRIA), now at Oracle Labs.
- Jesse Tov (Ph.D. Northeastern University), now at Northeastern University.

### **PhD ADVISEES**

- James Cheney, now at University of Edinburgh.
- Ulfar Erlingsson (joint with Fred Schneider), now at Google.
- Matthew Fluet, now at Rochester Institute of Technology.
- Neal Glew (joint with Dexter Kozen), now at Google.
- Paul Govereau, now at Potamus Trading LLC.
- Daniel Grossman, now at University of Washington.
- Kevin Hamlen (joint with Fred Schneider), now at University of Texas at Dallas.
- Daniel Huang.
- Geoffrey Mainland (joint with Matt Welsh), now at Drexel University.
- Gregory Malecha (joint with Adam Chlipala), now Lead Data Scientist at Target.
- Adam Petcher, now at Oracle.
- Frederick Smith, now at Mathworks.
- Avi Shinnar, now at IBM Research.
- David Walker, now at Princeton University.
- Stephanie Weirich, now at University of Pennsylvania.
- Ryan Wisnesky, now a post-doctoral fellow at MIT.

### **TEACHING**

Courses taught include: Computer Organization, Structure and Interpretation of Computer Programs, Principles of Programming Language Compilation, Principles of Programming Language Design and Semantics, Language-Based Security, Topics in Advanced Programming Languages, Topics in Certified Programming with Coq.