John Hatcliff

Curriculum Vitae
December 2022

University Distinguished Professor
Lucas-Rathbone Professor of Engineering
Department of Computing
and Information Sciences
Kansas State University
Manhattan, KS 66506
USA

Phone: (785) 532-6350
FAX: (785) 532-7353
email: hatcliff@ksu.edu
WWW: http://people.cs.ksu.edu/~hatcliff

Education

Ph.D.: Computer Science, *Kansas State University*, Manhattan, Kansas, USA (1991-1994)

M.Sc.: Computer Science, *Queen's University*, Kingston, Ontario, Canada (1989-1991)

B.A.: Computer Science/Mathematics, *Mount Vernon Nazarene College*, Mount Vernon, Ohio, USA (1984-88)

Interests

Research Interests

Safety- and security-critical systems, network-enabled medical devices and critical communication infrastructure, cyber-physical systems, risk management, regulatory policy for safety and security-critical systems, distributed system modeling and simulation, formal methods in software engineering, software verification, embedded systems, middleware, model-integrated computing, software architecture, static analyses of programs, concurrent and distributed systems, semantics of programming languages, logics and type theory.

Teaching Interests

Safety-critical systems, foundations of programming languages, software specification and verification, logic and set theory, construction of concurrent systems, compiler construction, formal language theory, software engineering, functional programming, logic programming.

Employment

2011–present University Distinguished Professor, Department of Computing and Information Science, Kansas State University.

2005–2011: Professor, Department of Computing and Information Science, Kansas State University.

2001–2005: Associate Professor, Department of Computing and Information Science, Kansas State University.

1998–2000: Assistant Professor, Department of Computing and Information Science, Kansas State University.

1996–1998: Assistant Professor, Computer Science Department, Oklahoma State University.

1994–1996: Visiting Assistant Research Professor, Computer Science Department, Copenhagen University (DIKU).

1991–1994: Research assistant, Department of Computing and Information Science, Kansas State University.

1990–1991: Research assistant, Computer and Information Sciences Department, Queen's University, Kingston, Ontario.

1989–1990: Teaching assistant, Computer and Information Sciences Department, Queen's University, Kingston, Ontario.

Awards and Honors

2018: 2018 KSU Engineering Research Award – given to one Kansas State College of Engineering faculty member each year for sustained and consistent research excellence.

2010: International Conference on Software Engineering (ICSE) ten-year retrospective *Most Influential Paper Award* for the paper "Bandera: extracting finite-state models from Java source code" published in ICSE 2000. The Most Influential Paper Award is given jointly by ACM & IEEE and the world's premier software engineering conference (ICSE) to the paper that is judged to have had the most influence on the theory and practice of software engineering during the ten years since its original publication. According to the ACM Digital Library statistics, this paper is the most highly cited paper from among all papers that have appeared in the world's largest and most prestigious software engineering conference series since its inception in 1975.

2010: Association for Computing Machinery (ACM) Special Interest Group on Software Engineering (SIGSOFT) *Impact Paper Award* for "Bandera: extracting finite-state models from Java source code". ACM is the world's largest educational and scientific computing society. The ACM SIGSOFT award is presented annually by the world's primary professional organization of software engineers, to the author(s) of a paper presented at a SIGSOFT sponsored or co-sponsored conference that is judged to have had the most influence on the theory and practice of software engineering during the 10 years since its original publication. According to Google Scholar, this paper currently has more than 1300 citations.

2004: Kansas State University's College of Engineering Researcher of the Year award given annually to the College of Engineering faculty with the most outstanding research contributions during the past five years.

2003: NASA Turning Goals Into Reality Award (one of 15 such awards given annually by NASA). Member of Java Path Finder research team which received the award for its ground-breaking work on sofware verification using model checking technology.

1997: NSF Early Career Award

Grants

1. Principal Investigator (with co-PI Robby). MAILLE-Information Flow Control for Micorkernels. US Air Force Research Labs - SBIR Phase II (with Adventium Labs). KSU Portion: $347,000.00 Duration: 05/17/2021 - 4/19/2023

2. Principal Investigator (with co-PI Robby). Grand Unified Modeling of Behavior Operators (GUMBO) Phase II. US Army - SBIR Phase II (with Adventium Labs). KSU Portion: $202,955.00 Duration: 8/31/2020 - 8/31/2022.

3. co-PI (with PI Robby). Software Implementation from Rigorous Formal Usable Requirements (SIRFUR) DARPA - SBIR Phase II (with Adventium Labs). KSU Portion: $231,000.00. Duration: 10/30/2020 - 12/31/2022

4. co-PI (with PI Robby). High Assurance Model Based System Engineering for Safety and Security. Collins Aerospace (Phase II). Total Award to KSU: $550,000.00 Duration: 8/13/2020 - 1/31/2022.

5. co-PI (with PI Robby). High Assurance Model Based System Engineering for Safety and Security. Collins Aerospace (Sabbatical Funding). Total Award to KSU:$589,909 Duration: 5/1/2019 - 8/15/2020.

6. co-PI (with PI Robby). CASE - Cyber-Assured Systems Engineering. DARPA (subcontract to Adventium Labs, Collins Aerospace). KSU Portion: $204,006.00 + $72,422 increment. Duration: 8/24/2018 - 7/31/2020.

7. Principal Investigator (with co-PI Robby). Grand Unified Modeling of Behavior Operators (GUMBO). US Army - SBIR Phase I (with Adventium Labs). KSU Portion: $10,000. Duration: 4/22/2019 - 8/15/2019.

8. Principal Investigator (with co-PI Robby). Information Flow Control for Micro-kernels. KSU Portion: $46,724. Air Force Research Labs (AFRL) - SBIR Phase I (with Adventium Labs). Duration: 6/1/2019 - 2/29/2020

9. Principal Investigator (with co-PI Robby and Eugene Vasserman) AADL Analyses and Modeling Strategies for Safety and Security. Software Engineering Institute. Total Award $420,000. Duration: 3/18/2019 - 9/30/2020

10. Principal Investigator (with co-PI Robby and Eugene Vasserman) Fault Injection and Analysis for Safety and Security. Software Engineering Institute. Total Award $105,000. Duration: 2/1/2018 - 12/31/2018

11. KSU Lead Investigator (with co-PIs Robby and Eugene Vasserman, Adventium Labs – lead organization). Methodologies and Tools for Securing Medical Device Systems in Integrated Clinical Environments. DoD SBIR USA Med Research Acq Activity. Total Award: $999,974.04, (KSU Portion: $339,187.00). Duration: 9/26/2016 – 9/25/2018

12. Principal Investigator (with co-PI Robby and Venkatesh Ranganath) FDA SIR: Architecturally-Integrated Hazard Analyses for Medical Application Platforms (NSF Award# 1565544). Total Amount: $160,000. Duration: 8/1/2016 7/31/2018

13. KSU Lead Investigator (with co-PI Eugene Vasserman, Adventium Labs – lead organization). Intrinsically Secure, Open, and Safe Control of Essential LayErS (ISOSCELES) [High-integrity open

source platform for network-enabled medical devices], Department of Homeland Security. Total Amount: $ 2,200,000 (KSU Portion: $ 450,000) Duration: 02/01/2016 - 01/30/2019

14. co-Principal Investigator (with PI Masaaki Mizuno, and co-PIs Mitch Neilsen, Simon Ou (USF), and Raj Rajagopalan (Honeywell)). Modeling Security/Safety Interactions in Buildings for Compositional Security/Safety Control, Department of Homeland Security. Total Amount: $ 914,353 (KSU Portion: $ 264,015) Duration: 10/01/2015 - 09/30/2018

15. KSU Lead Investigator (with co-PI with Eugene Vasserman) Methodologies and Tools for Securing Medical Device Systems in Integrated Clinical Environments. DoD SBIR with Adventium Labs, Inc. KSU Portion: $ 46,000.00. Duration: 09/30/15 - 04/29/16

16. Principal Investigator (with co-PIs Robby and Venkatesh Ranganath) FDA SIR: Compositional Approaches to Safety and Risk Management for Medical Application Platforms. – CNS 1446544 Total Amount: $ 80,000 Duration: 3/1/2015 - 2/29/2016

17. Principal Investigator (with co-PIs Patrice Chalin and Steve Warren). FDA SIR: Risk Assessment Techniques for Apps & Devices within Interoperable Medical Frameworks, National Science Foundation. – CNS 1355778 Total Amount: $ 80,000 Duration: 10/1/2013 - 9/30/2014

18. co-Principal Investigator (with PI Simon Ou and co-PIs Scott Deloach and Robby) Enhancing the Cybersecurity and Information Assurance Research and Education Infrastructure at Kansas State University, US Department of Defense. Total Amount: $605,650.00 Duration: 9/30/2013 - 9/29/2014

19. co-Principal Investigator (with PI Eugene Vasserman and co-PI Dan Andresen) TWC TTP: Small: Security, Privacy, and Trust for Systems of Coordinating Medical Devices – CNS 1224007. Total Amount: $ 482,125.00 Duration: 09/01/12 - 8/31/15

20. Principal Investigator (with co-PIs Patrice Chalin, Robby, Eugene Vasserman, and Steve Warren). CPS: Synergy: Collaborative Research: Trustworthy Composition of Dynamic App-Centric Architectures for Medical Application Platforms. (US National Science Foundation – CNS 1239543). NSF Collaborative Grant with the University of Pennsylvania. Total Amount: $1,000,000, KSU Portion: $880,000. Duration: October 2012 – September 2015.

21. Co-Principal Investigator (with PI Simon Ou, and co-PIs Eugene Vasserman, Scott Deloach, Gurdip Singh) Building the National Cyber Workforce: New SFS Program at Kansas State University – DUE 1241721. Total Amount: $ 851,328.00 Duration: 01/01/13 - 12/31/17

22. co-Principal Investigator (with PI Patrice Chalin, and co-PI Robby) FDA SIR: Tools, Processes, and Artifacts for Certifiable Clinical Applications in Interoperable Medical Device Frameworks. (US National Science Foundation – NSF FDA Scholar in Residence Postdoctoral Funding – CNS 1238431). Amount: $80,000. Duration: October 2012 – September 2013.

23. Team Member (with PI Julian Goldman (Mass General Hospital, Harvard Medical School, Partners HealthCareOrg.) and others from industry and academia) Development of a Prototype Healthcare Intranet for Improved Health Outcomes. (US National Institutes of Health (NIH) / National Institute of Biomedical Imaging and Bioengineering (NIBIB) – Quantum Grant Program). *The prestigious NIH Quantum program funds projects that are viewed as "medical moonshoots" that can potentially achieve a profound (quantum) improvement in health care. Prof. Hatcliff will lead project efforts related to system architecture, software validation, and certification.* Total Amount: $9.8million, KSU Portion: $375,000 Duration: October 2010 – October 2015.

24. Principal Investigator (with co-PIs Robby, Gurdip Singh, Virg Wallentine, Steve Warren) Robby, Steve Warren). An Integrated Development and Certification Environment for a Medical Device Coordination Framework. (US National Science Foundation – NSF FDA Scholar in Residence Postdoctoral Funding – CNS 1065887). Amount: $80,000. Duration: October 2010 – October 2011.

25. Principal Investigator (with co-PIs Daniel Andresen, Robby, Steve Warren). Infrastructure and Technology Innovations for Medical Device Coordination. (US National Science Foundation – CNS 0932289). NSF Collaborative Grant with the University of Pennsylvania. Total Amount: $1,500,000, KSU Portion: $839,548. Duration: September 2009 – August 2012.

26. Principal Investigator (with co-PIs Torben Amtoft, Anindya Banerjee, Robby, Simon Ou, Andrew Appel (Princeton University)). Evidence-based Trust in Large-scale MLS Systems (US Air Force Office of Scientific Research – Contract Number FA9550-09-1- 0138). Amount: $3,000,000. Duration: May 2009 – August 2014.

27. Principal Investigator (with co-PIs Torben Amtoft, Simon Ou, and Robby) A Domain Specific Language for Defining High-Assurance Secure-Network Guards (Phase II) (Rockwell Collins Advanced Technology Center). Amount: $85,000. Duration: September 2009 – August 2010.

28. Principal Investigator. Automatic Analysis Techniques for Discovering Information Flow Properties of Cryptographic Controllers (Rockwell Collins Advanced Technology Center). Amount: $85,000. Duration: October 2008 – August 2009.

29. Principal Investigator (with co-PIs Torben Amtoft, Simon Ou, and Robby) A Domain Specific Language for Defining High-Assurance Secure-Network Guards (Rockwell Collins Advanced Technology Center). Amount: $85,000. Duration: September 2008 – August 2009.

30. Principal Investigator. Conditional Information Flow Modeling for High-assurance Systems (Rockwell Collins Advanced Technology Center). Amount: $25,000. Duration: October 2008 – November 2008.

31. Co-Principal Investigator (with Scott DeLoach (PI), Gurdip Singh, David Gustafson) A Testbed for Intelligent, Mobile Sensor Experiments. Air Force Office of Scientific Research (AFOSR/NM). Amount: $219,140. Duration: 2007 – 2008.

32. Principal Investigator (with co-PIs Dan Andresen, Robby, Steve Warren). Development of an Open Test-bed for Application of Formal Methods to Plug and Play Medical Devices. (National Science Foundation CNS-0734204). Amount: $55,000. Duration: September 2007 – August 2008.

33. Principal Investigator on Radical Innovations in Testing. (Lockheed Martin Advanced Technology Labs). Amount: $60,000. Duration: Jan 2007 – December 2007

34. Principal Investigator (with co-PI Torben Amtoft) on Information Flow Modeling Analysis (Formalization and Supporting Tools for Secure Information Flow Certification of Industrial Applications). (Rockwell Collins Advanced Technology Center). Amount: $50,000. Duration: Jan 2007 – December 2007

35. Principal Investigator on Principles and Tools for Rigorous Development and Integration of Component-based Systems. (Lockheed Martin Advanced Technology Laboratory). Amount: $125,000. Duration: Jan 2006 – November 2006

36. Principal Investigator (with co-PIs Torben Amtoft and Anindya Banerjee) on An Integrated Specification and Verification Environment for Component-based Architectures of Large-scale Distributed Systems (Air Force Office of Scientific Research (AFOSR)). Amount: $448,530. Duration: April 2006 – March 2009

37. co-Principal Investigator (with PI Gregg Rothermel, and co-PIs Matthew Dwyer, Sebastian Elbaum, Greg Rothermel) on CRI: Collaborative Research : A Community Resource to Support Controlled Experimentation with Program Analysis and Software Testing Techniques (NSF CNS 0454203). Amount: $1,106,576. Duration: August 2005 – July 2009

38. Principal Investigator (with PI Matthew Dwyer, and co-PIs Sebastian Elbaum, Greg Rothermel) on Collaborative Research: Program Analysis Techniques to Support Dependable RTSJ Applications. NSF/NASA CCF-0429141. Amount: $320,000. Duration: September 2004 – August 2007

39. Co-Principal Investigator (with co-PIs Matthew Dwyer, Dan Andresen, and Virgil Wallentine) on Parallel Analysis of Models for Distributed Real-Time Embedded Systems. Department of Defense (DURIP) Amount: $394,991. Equipment Grant.

40. Principal Investigator (with co-PIs Matthew Dwyer and Gurdip Singh) on Integration of Tools for Model-driven Embedded System Designs with Next-Generation Real-Time Middleware. Subcontract to Lockheed-Martin on DARPA PCES. Amount: $180,000. Duration: May 2004 – December 2004.

41. Principal Investigator (with co-PIs Matthew Dwyer and Gurdip Singh) on "Technologies, Development Tools, and Patterns for Automatic Generation and Customization of Adaptable DRE Middleware. DARPA - Program Composition for Embedded Systems." Amount: $1,161,215. Duration: two years, beginning May 2003.

42. Principal Investigator (with co-PIs Matthew Dwyer and Gurdip Singh) on Verification Tools for Model-driven Embedded System Designs. Subcontract to Lockheed-Martin on DARPA PCES. Amount: $180,000. Duration: June 2003 – December 2003.

43. Co-Principal Investigator (with Matthew Dwyer (PI)) on "An Extensible Software Model-checking Framework". NSF CCR-0306607. Amount: $179,999. Duration: two years, begginning in June 1, 2003

44. Co-Principal Investigator (with Matthew Dwyer (PI) and George Avrunin) on "Integrated Software Model-checking", Army Research Office, Amount: $3,000,000. Duration: Five years, beginning Summer 2001.

45. Principal Investigor "Automatic Customization of Avionics Software", Rockwell-Collins Advanced Technology Center. Amount: $25,000. Duration: 1.25 years, beginning Fall 2001.

46. Principal Investigor "Educational Environment for Software Model-checking", Rockwell-Collins University Grant. Amount: $15,000. Duration: one year, beginning Fall 2002.

47. Co-Principal Investigator (with Matthew Dwyer (PI), Masaaki Mizuno, Mitch Neilson, Gurdip Singh) on "Automatic Derivation, Integration and Verification of Synchronization Aspects in Object-Oriented Design Methods" DARPA Order K203/AFRL Contract F33615-00-C-3044 Amount: $1,097,093. Duration: Four years, beginning Summer 2000.

48. Co-Principal Investigator (with Matthew Dwyer and Dave Schmidt (PI)) on "Automatic Model Construction for Finite-state Verification Applying Abstract Interpretation and Partial Evaluation Techniques". DARPA/NASA Award NAG-02-1209 Amount: $450,000. Duration: Two years, beginning Fall 1998.

49. Principal Investigator (with co-PIs Matthew Dwyer and Dave Schmidt) on "Automatic Model Construction for Finite-state Verification Applying Abstract Interpretation and Partial Evaluation Techniques". NSF Post-doctoral Fellowship Amount: $66,000. Duration: Two years, beginning Fall 1999.

50. Co-Principal Investigator (with Matthew Dwyer and Dave Schmidt (PI)) on "Integrating Platforms for Finite-State Verification". NSF International Travel Award. Amount: $15,467. Duration: Two years, beginning Fall 1999.

51. Principal Investigator on "A Partial Evaluation Tool Set for Automatically Customizing Adaptable Software", *National Science Foundation Early Career Award*. Amount: $200,000. Duration: Four years beginning Summer, 1997.

Publications

Edited Books/Proceedings

1. SAIRP 2013 (*Semantics, Abstract Interpretation, and Reasoning about Programs: Essays Dedicated to David A. Schmidt on the Occasion of his Sixtieth Birthday*). EPTCS 129, 2013. Anindya Banerjee, Olivier Danvy, Kyung-goo Doh, John Hatcliff.

2. *Proceedings of the Fourth Workshop on Software Engineering in Health Care*, June 2012, A workshop affiliated with the 2012 International Conference on Software Engineering, Zurich, Switzerland. Ruth Breu and John Hatcliff (editors).

3. *Formal Techniques for Distributed Systems*, Proceedings of the Joint 12th IFIP WG6.1 International Conference, FMOODS 2010 and 30th IFIP WG6.1 International Conference, FORTE 2010, Amsterdam, The Netherlands, June 2010. John Hatcliff and Elena Zucca (editors) Lecture Notes in Computer Science (LNCS) 2619, Springer, 2010.

4. *Proceedings of the Ninth Annual Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2003)*, Warsaw, Poland. April 2003. Hubert Garavel and John Hatcliff (editors) Lecture Notes in Computer Science (LNCS) 2619, Springer-Verlag, 2003.

5. *Proceedings of the DIKU 1998 International Summerschool on Partial Evaluation*, Copenhagen, Denmark. John Hatcliff, Torben Mogensen, Peter Thiemann (editors). Lecture Notes in Computer Science (LNCS) 1706, Springer-Verlag, 1998.

Edited Journal Issues

1. Special Issue of *International Journal for Software Tools for Technology Transfer (STTT)* (Springer) (Volume 8, Number 1 / February, 2006) dedicated to selected papers from Ninth Annual Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2003), Hubert Garavel and John Hatcliff (editors)

2. Special Issue of *Theoretical Computer Science* (Volume 354, Issue 2) dedicated to selected papers from Ninth Annual Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2003), Hubert Garavel and John Hatcliff (editors)

Invited papers and book chapters

1. John Hatcliff. Challenges and Directions for Lifecycle Processes Supporting Conformity Assessment of Interoperable Medical Products. In Compliance Magazine. July 2020.

2. John Hatcliff, Brian Larson, Todd Carpenter, Paul Jones, Yi Zhang, Joseph Jorgens. "The open PCA pump project: an exemplar open source medical device as a community resource." ACM SIGBED Review 16 (2), 8-13.

3. "Certifiably Safe Software-Dependent Systems: Challenges and Directions", John Hatcliff, Alan Wassyng, Tim Kelly, Cyrille Comar, and Paul Jones. in *Future of Software Engineering, 2014 International Conference on Software Engineering (ICSE 2014).*

4. "Specification and Checking of Software Contracts for Conditional Information Flow (extended version)", Torben Amtoft, John Hatcliff, Edwin Rodriguez, Robby, Jonathan Hoag, and David Greve. Invited book chapter in *Design and Verification of Microprocessor Systems for High-Assurance Applications*, pp. 341–380. Springer, 2010. ISBN 978-1-4419-1538-2.

5. "Foundations of the Bandera Abstraction Tools", John Hatcliff, Matthew B. Dwyer, Corina S.Puasuareanu, Robby. pp. 172 – 203. In "The Essence of Computation – Essays dedicted to Neil Jones". Lecture Notes in Computer Science 2566. Editors: Torben Mogensen, Hal Sudborough, Dave Schmidt

6. "Partial Evaluation", Olivier Danvy, John Hatcliff, *Encyclopedia of Computer Science* Nature Publishing Group, UK, 2000.

7. "An Integrated Model-Driven Development Environment for Composing and Validating Distributed Real-Time and Embedded Systems", Gabriele Trombetti, Aniruddha Gokhale, Douglas C. Schmidt, Jesse Greenwald, John Hatcliff, Georg Jung, Gurdip Singh, In *Model-Driven Software Development*, Beydeda, Sami; Book, Matthias; Gruhn, Volker (Eds.) 2005, ISBN: 3-540-25613-X, pp. 329–362.

Refereed Publications in Journals

1. Mahsa Zarneshan, Fatemeh Ghassemi, Ehsan Khamespanah, Marjan Sirjani, John Hatcliff. "Specification and Verification of Timing Properties in Interoperable Medical Systems", Logical Methods in Computer Science. 18(2) (2022)

2. Jason Belt, John Hatcliff, Robby, John Shackleton, Jim Carciofini, Todd Carpenter, Eric Mercer, Isaac Amundson, Junaid Babar, Darren Cofer, David Hardin, Karl Hoech, Konrad Slind, Ihor Kuz, Kent Mcleod. "Model-Driven Development for the seL4 Microkernel Using the HAMR Framework". Accepted for publication in Journal of Systems Architecture.

3. Darren Cofer, Isaac Amundson, Junaid Babar, David Hardin, Konrad Slind, Perry Alexander, John Hatcliff, Robby, Gerwin Klein, Corey Lewis, Eric Mercer, John Shackleton. "Cyber Assured Systems Engineering at Scale". IEEE Security and Privacy, vol. 20, no. 3, pp. 52-64, May-June 2022

4. Hariharan Thiagarajan, John Hatcliff, Robby. "Awas: Aadl information flow and error propagation analysis framework" . Innovations in Systems and Software Engineering, pages 120, 2021

5. Todd Carpenter, Steve Harp, John Hatcliff. "A Reference Architecture for Secure Medical Devices". AAMI Biomedical Instramentation and Technology (AAMI BIT). Volume 52, Issue 5 (September/October 2018).

6. Brian R. Larson, Paul Jones, Yi Zhang, and John Hatcliff, "Principles and Benefits of Explicitly Designed Medical Device Safety Architecture". Biomedical Instrumentation and Technology. Sept./Oct. 2017, Vol. 51, No. 5, pp. 380-389.

7. Brian R. Larson, Yi Zhang, Stephen C. Barrett, John Hatcliff, Paul L. Jones, "Enabling Safe Interoperation by Medical Device Virtual Integration". IEEE Design and Test 32(5): 74-88 (2015)

8. John Hatcliff, Gary T. Leavens, K. Rustan M. Leino, Peter Mller, Matthew J. Parkinson. "Behavioral interface specification languages." ACM Comput. Surv. 44(3): 16 (2012)

9. Insup Lee, Oleg Sokolsky, S. Chen, John Hatcliff, E. Jee, B. Kim, Andrew King, M. Fortino-Mullen, S. Park, A. Roederer, and K. K. Venkatasubramanian, "Challenges and Research Directions in Medical Cyber-Physical Systems", In Proceedings of the IEEE, 100 (1), pp. 75 - 90, January 2012.

10. Georg Jung and John Hatcliff. "A Type-centric Framework for Specifying Heterogeneous, Large-scale, Component-oriented, Architectures", Science of Computer Programming, 75 (1) July 2010, pp. 615-637.

11. "A New Foundation For Control-Dependence and Slicing for Modern Program Structures", Venkatesh Prasad Ranganath, Torben Amtoft, Anindya Banerjee, Matthew B. Dwyer, and John Hatcliff. ACM Transactions of Programming Languages and Systems. Volume 29, Issue 5, August 2007.

12. "An Event Correlation Framework for the CORBA Component Model", Georg Jung, and John Hatcliff, *Journal of Software Tools for Technology Transfer* (Springer), 9 (5) October 2007, pp. 417-427.

13. "Slicing Concurrent Java Programs using Indus and Kaveri", *Journal of Software Tools for Technology Transfer* (Springer), 9 (5) October 2007, pp. 489-504.

14. "High-Confidence Medical Device Software and Systems", Insup Lee, George J. Pappas, Rance Cleaveland, John Hatcliff, Bruce Krogh, Peter Lee, Harvey Rubin, and Lui Sha. *IEEE Computer*, Vol. 39, No. 4, April, 2006, pp. 33-39.

15. "CALM and Cadena: Meta-modeling for Component-Based Product-Line Development", Adam Childs, Jesse Greenwald, Georg Jung, Matthew Hoosier, and John Hatcliff, *IEEE Computer*, Vol. 39, No. 2, February, 2006, pp. 42-50.

16. "Exploiting Object Escape and Locking Information in Partial Order Reductions for Concurrent Object-Oriented Programs", Matthew Dwyer, John Hatcliff, Venkatesh Ranganath, and Robby, *Journal of Formal Methods in System Design*, 25(2), Sep 2004, pp. 199-240.

17. "Translating Java for Multiple Model Checkers: the Bandera Back-End", Radu Iosif, Matthew Dwyer, and John Hatcliff, *Journal of Formal Methods in System Design* (Kluwer), Volume 26, Issue 2 (March 2005), pp. 137–180.

18. "Expressing Checkable Properties of Dynamic Systems: The Bandera Specification Language", James Corbett, Matthew Dwyer, John Hatcliff, Robby. *Journal of Software Tools for Technology Transfer*, 4(1):34-56, 2002. Springer-Verlag

19. "Weak Normalization Implies Strong Normalization in Generalized Non-dependent Pure Type Systems", Gilles Barthe, John Hatcliff, Morten Heine Soerensen, *Journal of Theoretical Computer Science*, 269(1-2): 317–361, 2001.

20. "An Induction Principle for Pure Type Systems", Gilles Barthe, John Hatcliff, Morten Heine Soerensen, *Journal of Theoretical Computer Science*, 266(1-2): 773-818, 2001.

21. "Slicing Software for Model Construction", John Hatcliff, Matthew B. Dwyer, Hongjun Zheng, *Journal of Higher-order and Symbolic Computation*, 13(4), pp. 315–353, June, 2000. A special issue containing selected papers from the 1999 ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation.

22. "Foundations for Partial Evaluation of Functional Languages with Computational Effects", John Hatcliff, *1998 Symposium on Partial Evaluation, ACM Computing Surveys 30(3es)*, Sept, 1998.

23. "Using Partial Evaluation to Enable Verification of Concurrent Software", Matthew B. Dwyer, John Hatcliff, and Muhammad Nanda, *1998 Symposium on Partial Evaluation, ACM Computing Surveys 30(3es), Sept, 1998.*

24. "CPS Translations and Applications: the Cube and Beyond", Gilles Barthe, John Hatcliff, Morten Heine Soerensen, *Journal of Higher-order and Symbolic Computation* 12(2), pp. 129 – 170, September, 1999.

25. "A Computational Formalization for Partial Evaluation", John Hatcliff and Olivier Danvy, *Journal of Mathematical Structures in Computer Science*, vol 7, 1997, pp. 507 – 541. Special issue dedicated to the workshop on *Logic, Domains, and Programming Languages*, Darmstadt, Germany, May 1995.

26. "CPS Transformation after Strictness Analysis," Olivier Danvy and John Hatcliff, *ACM Letters on Programming Languages and Systems*, 1(3):195-212, 1993.

27. "Thunks (continued)," Olivier Danvy and John Hatcliff, *Proceedings of the Workshop on Static Analysis WSA '92*. Bigre Journal, 81-82:3-11, 1992.

28. "Thunks and the λ-calculus," John Hatcliff and Olivier Danvy, *Journal of Functional Programming*, 7(3), 1997, pp. 303 – 319.

Refereed Publications in Conference and Workshop Proceedings

1. John Hatcliff, Jerome Hugues, Danielle Stewart, and Lutz Wrage. "Formalization of the AADL Run-Time Services". 11th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISoLA 2022) LNCS 13702. pp 105-134.

2. John Hatcliff, Danielle Stewart, Jason Belt, Robby, August Schwerdfeger, "An AADL Contract Language Supporting Integrated Model- and Code-Level Verification", Proceedings of the 2022 ACM Workshop on High-Integrity Language Technology (HILT 2022).

3. Jerome Hugues, Lutz Wrage, John Hatcliff and Danielle Stewart. "Mechanization of a large DSML, an experiment with AADL and Coq", Proceedings of 20th ACM-IEEE International Conference on Formal Methods and Models for System Design (MEMOCODE).

4. Robby, John Hatcliff. "Slang: The Sireum Programming Language". Proceedings of the 10th International Symposium on Leveraging Applications of Formal Methods (ISoLA 2021), Rhodes, Greece, October 17-29, 2021, Lecture Notes in Computer Science 13036, Springer 2021, pp. 253-273.

5. John Hatcliff, Jason Belt, Robby, Todd Carpenter. "HAMR: An AADL Multi-platform Code Generation Toolset". Proceedings of the 10th International Symposium on Leveraging Applications

of Formal Methods (ISoLA 2021), Rhodes, Greece, October 17-29, 2021, Lecture Notes in Computer Science 13036, Springer 2021, pp. 274-295.

6. Hariharan Thiagarajan, John Hatcliff, Robby. "Awas: AADL Information Flow and Error Propagation Analysis Framework". In: Muccini H. et al. (eds) Software Architecture. ECSA 2020. Communications in Computer and Information Science, vol 1269. Springer, Cham.

7. Hariharan Thiagarajan, Brian Larson, John Hatcliff, Yi Zhang. "Model-Based Risk Analysis for an Open-Source PCA Pump Using AADL Error Modeling". In Proceedings of the 7th International Symposium on Model-Based Safety and Assessment (IMBSA 2020), Portugal, September 1416, 2020.

8. John Hatcliff. "Challenges and Directions for Lifecycle Processes Supporting Conformity Assessment of Interoperable Medical Products." 2019 IEEE International Symposium on Product Compliance Engineering (ISPCE). May, 2019.

9. John Hatcliff, Yi Zhang, Julian Goldman. "Risk Management Objectives for Distributed Development of Interoperable Medical Products." 2019 IEEE Symposium on Product Compliance Engineering (SPCE). November, 2019.

10. John Hatcliff, Eugene Vasserman, Todd Carpenter, Rand Whillock. "Challenges of Distributed Risk Management for Medical Application Platforms". Proceedings of the 2018 IEEE Symposium on Product Safety Engineering, May 2018. [nominated for best paper award].

11. John Hatcliff, Brian R. Larson, Jason Belt, Robby, Yi Zhang. "A Unified Approach for Modeling, Developing, and Assuring Critical Systems." ISoLA (1) 2018: 225-245

12. Robby, John Hatcliff, Jason Belt. "Model-Based Development for High-Assurance Embedded Systems." ISoLA (1) 2018: 539-545

13. Yi Zhang, Brian R. Larson, John Hatcliff. "Assurance Case Considerations for Interoperable Medical Systems". SAFECOMP Workshops 2018: 42-48.

14. Xiaolong Wang, Richard Habeeb, Xinming Ou Siddharth Amaravadi, John Hatcliff, Masaaki Mizuno, Mitchell Neilsen, S. Raj Rajagopalan, Srivatsan Varadarajan, "Enhanced Security of Building Automation Systems Through Microkernel-Based Controller Platforms", Proceedings of the 2017 IEEE 37th International Conference on Distributed Computing Systems Workshops, At Atlanta, GA.

15. Sam Procter, Eugene Y. Vasserman, John Hatcliff, "SAFE and Secure: Deeply Integrating Security in a New Hazard Analysis.", Fourth International Workshop on Software Assurance: 66:1-66:10, ARES '17 Proceedings of the 12th International Conference on Availability, Reliability and Security.

16. Zhi Zhang, Robby, John Hatcliff, Yannick Moy, Pierre Courtieu, "Focused Certification of an Industrial Compilation and Static Verification Toolchain", Proceedings of Software Engineering in Formal Methods (SEFM) 2017: 17-34.

17. Todd Carpenter, John Hatcliff, and Eugene Y. Vasserman. "A reference separation architecture for mixed-criticality medical and IoT devices." In Proceedings of the ACM Workshop on the Internet of Safe Things (SafeThings), 2017.

18. Andrew L. King, Lu Feng, Sam Procter, Sanjian Chen, Oleg Sokolsky, John Hatcliff, Insup Lee, "Towards Assurance for Plug and Play Medical Systems." Proceedings of the International Conference on Computer Safety, Reliability, and Security (SAFECOMP) 2015, 228-242.

19. Sam Procter, John Hatcliff, Sandy Weininger, Anura Fernando. "Error Type Refinement for Assurance of Families of Platform-Based Systems". International Workshop on Assurance Cases for Software-Intensive Systems (ASSURE) at the International Conference on Computer Safety, Reliability, and Security (SAFECOMP), 2015.

20. Venkatesh-Prasad Ranganath, Yu Jin Kim, John Hatcliff, Robby, "Communication Patterns for Interconnecting and Composing Medical Systems". Proceedings of the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015), pp. 1711-1716, Milan, Italy.

21. Yu Jin Kim, John Hatcliff, Venkatesh-Prasad Ranganath, Robby, Sandy Weininger, "Integrated Clinical Environment Device Model: Stakeholders and High Level Requirements". Proceedings of the 2015 Medical Cyber-Physical Systems Workshop (MedCPS 2015).

22. Yu Jin Kim, Sam Procter, John Hatcliff, Venkatesh-Prasad Ranganath, Robby, "Ecosphere Principles for Medical Application Platforms." Proceedings of the International Conference on Healthcare Informatics (ICHI 2015), 193-198.

23. Sam Procter, John Hatcliff. "An Architecturally-Integrated, Systems-Based Hazard Analysis for Medical Applications." Proceedings of the International Conference on Formal Methods and Models for System Design (MEMOCODE 2014), October 2014.

24. Sam Procter, John Hatcliff, Robby. "Towards an AADL-Based Definition of App Architecture for Medical Application Platforms." Proceedings of the 2014 Software Engineering in Healthcare (SEHC) Workshop at the International Symposium on Foundations of Health Information Engineering and Systems (FHIES 2014), July 2014.

25. Eugene Y. Vasserman, John Hatcliff, "Foundational Security Principles for Medical Application Platforms", Information Security Applications 2013, pp. 213-217.

26. Brian Larson, John Hatcliff, Kim Fowler, Julien Delange. "Illustrating the AADL Error Modeling Annex (v. 2) Using a Simple Safety-Critical Medical Device", Proceedings of the 2013 ACM Conference on High Integrity Language Technology (HILT 2013), Philadelphia, PA. November, 2013.

27. Brian Larson, John Hatcliff, Patrice Chalin. "Open Source Patient-Controlled Analgesic Pump Requirements Documentation", Proceedings of the 2013 ICSE Workshop on Software Engineering in Health Care, San Francisco, CA. May, 2013.

28. Brian R. Larson, Patrice Chalin, John Hatcliff "BLESS: Formal Specification and Verification of Behaviors for Embedded Systems with Software". Proceedings of the 2013 NASA Formal Methods Conference, pp. 276-290.

29. John Hatcliff, Robby, Patrice Chalin, and Jason Belt. 2013. "Explicating symbolic execution (xSymExe): an evidence-based verification framework." In Proceedings of the 2013 International Conference on Software Engineering (ICSE '13). IEEE Press, Piscataway, NJ, USA, 222-231.

30. Brian Larson, John Hatcliff, Sam Procter, Patrice Chalin. "Requirements specification for apps in medical application platforms", Fourth International Workshop on Software Engineering in Health Care, pp. 26-32, June, 2012.

31. John Hatcliff, Andrew King, Insup Lee, Alisdair Macdonald, Anura Fernando, Michael Robkin, Eugene Vasserman, Sandy Weininger, Julian Goldman. "Rationale and Architecture Principles for Medical Application Platforms", Proceedings of the 2012 International Conference on Cyber-Physical Systems, pp. 3-12, April, 2012.

32. Jason Belt, Robby, Patrice Chalin, John Hatcliff and Xianghua Deng. "Efficient Symbolic Execution of Value-based Data Structures for Critical Systems" . Proceedings of the 4th NASA Formal Methods Symposium, pp. 295-309. April, 2012.

33. Torben Amtoft, Josiah Dodds, Zhi Zhang, Andrew Appel, Lennart Beringer, John Hatcliff, Xinming Ou, Andrew Cousino. "A Certificate Infrastructure for Machine-Checked Proofs of Conditional Information Flow" Proceedings of the 2012 Conference on Principles of Security and Trust (to appear), March 2012.

34. Kejia Li, Steve Warren and John Hatcliff, "Component-Based App Design for Platform-Oriented Devices in a Medical Device Coordination Framework", Proceedings of the 2012 ACM SIGHIT International Health Informatics Symposium (IHI 2012), January 2012.

35. Jason Belt, John Hatcliff, Robby, Patrice Chalin, David Hardin, and Xianghua Deng. "Enhancing spark's contract checking facilities using symbolic execution." In Proceedings of the 2011 ACM annual international conference on Special interest group on the Ada programming language (SIGAda '11). ACM, New York, NY, USA, pp. 47-60.

36. Jason Belt and John Hatcliff and Robby and Patrice Chalin and David Hardin and Xianghua Deng. "Bakar Kiasan: Flexible Contract Checking for Critical Systems Using Symbolic Execution" Proceedings of the 3rd NASA Formal Methods Symposium, M. Bobaru et al. (Eds.): NFM 2011, LNCS 6617, pp. 58–72. April, 2011.

37. Torben Amtoft, John Hatcliff, and Edwin Rodriguez, "Precise and Automated Contract-based Reasoning for Verification and Certification of Information Flow Properties of Programs with Arrays", Proceedings of the 2010 European Symposium on Programming (ESOP 2010), LNCS 6012, pp. 43–63, March 2010.

38. Andrew King, David Arney, Insup Lee, Oleg Sokolsky, John Hatcliff, and Sam Procter, "Prototyping closed loop physiologic control with the medical device coordination framework", Proceedings of the 2010 ICSE Workshop on Software Engineering in Health Care, pp. 1–11, May 2010,

39. Andrew King, Sam Procter, Dan Andresen, John Hatcliff, Steve Warren, William Spees, Raoul Jetley, Paul Jones, Sandy Weininger. "A Publish-Subscribe Architecture and Component-based Programming Model for Medical Device Coordination and Integration", SIGBED Review, Volume 6, Number 2, July 2009 Special Issue on the 2nd Joint Workshop on High Confidence Medical Devices, Software, and Systems (HCMDSS) and Medical Device Plug-and-Play (MD PnP) Interoperability.

40. Andrew King, Sam Procter, Dan Andresen, John Hatcliff, Steve Warren, William Spees, Raoul Jetley, Paul Jones, Sandy Weininger. "An Open Test Bed for Medical Device Integration and Coordination", *Proceedings of International Conference on Software Engineering (ICSE 2009)*, (Software Engineering in Practice Track). ICSE-Companion 2009. 31st International Conference on Software Engineering, May 2009, pp. 141 - 151. IEEE Press, May 2009.

41. Torben Amtoft, John Hatcliff, Edwin Rodriguez, Robby, Jonathan Hoag, and David Greve, "Specification and Checking of Software Contracts for Conditional Information Flow", Proceedings of the 2008 International Conference on Formal Methods (FM '08), LNCS 5014, May 2008.

42. Georg Jung and John Hatcliff. "A Type-centric Framework for Specifying Heterogeneous, Large-scale, Component-oriented, Architectures", Proceedings of the 6th International Conference on Generative Programming and Component Engineering, Salzburg, Austria. October, 2007. pp. 33–42.

43. "Kiasan/KUnit: Automatic Test Case Generation and Analysis Feedback for Open Object-oriented Systems", Xianghua (William) Deng, Robby, John Hatcliff. Proceedings of the 2007 International Conference on Testing: Academic and Industrial Conference: Practice and Research Techniques, Windsor, England, pp. 3–12, IEEE Press, September 2007.

44. "Towards A Case-Optimal Symbolic Execution Algorithm for Analyzing Strong Properties of Object-Oriented Programs", Xianghua Deng, Robby, and John Hatcliff. Proceedings of the 2007 International Conference on Software Engineering and Formal Methods, London, England, pp. 273–282, September 2007.

45. "Formal Software Analysis : Emerging Trends in Software Model Checking", Matthew B. Dwyer, John Hatcliff, Robby, Corina S. Psreanu, Willem Visser. Future of Software Engineering Track. Proceedings of the 2007 International Conference on Software Engineering (ICSE 2007). May, 2007.

46. "Bogor: A Flexible Framework for Creating Software Model Checkers", Robby, Matthew Dwyer, and John Hatcliff, Proceedings of the International Conference on Testing: Academic and Industrial Conference: Practice and Research Techniques, IEEE Press, August 2006.

47. "An Overview of the Indus Framework for Analysis and Slicing of Concurrent Java Software", Venkatesh Ranganath, John Hatcliff, Proceedings of the 2006 IEEE Workshop on Source Code Analysis and Manipulation (SCAM). IEEE Press, September 2006.

48. "Context-Specific Middleware Specialization Techniques for Optimizing Software Product-line Architectures", Arvind S. Krishna, Aniruddha Gokhale, Douglas C. Schmidt, John Hatcliff, and Venkatesh Prasad Ranganath, Proceedings of EuroSys 2006, Leuven, Belgium, April 18-21, 2006.

49. "A Case Study in Domain-Customized Model Checking for Real-Time Component Software", Matthew Hoosier, Matthew B. Dwyer, Robby, and John Hatcliff, *Proceedings of the 2004 International Symposium on Leveraging Applications in Formal Methods (ISOLA 2004)*, Paphos, Cyprus, Lecture Notes in Computer Science (4313), pp. 161–180.

50. "Evaluating the Effectiveness of Slicing for Model Reduction of Concurrent Object-Oriented Programs", Matthew B. Dwyer, John Hatcliff, Matthew Hoosier, Venkatesh Ranganath, Robby, and Todd Wallentine, *Proceedings of the International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2006)*, Vienna, Austria, March, 2006, Lecture Notes in Computer Science (3920), pp. 73 – 89.

51. "A New Foundation For Control-Dependence and Slicing for Modern Program Structures", Venkatesh Prasad Ranganath, Torben Amtoft, Anindya Banerjee, Matthew B. Dwyer, and John Hatcliff. *Proceedings of the European Symposium On Programming (ESOP'05)*, Edinburg, Scotland, April 2005, Lecture Notes in Computer Science (3444), pp. 77–93.

52. "Kaveri: Delivering Indus Java Program Slicer to Eclipse Ganeshan Jayaraman, Venkatesh Prasad Ranganath, and John Hatcliff". *Proceedings of the International Symposium on Fundamental Approaches to Software Engineering (FASE'05)* Edinburg, Scotland, April 2005, Lecture Notes in Computer Science (3442), pp. 269–272.

53. "Building Your Own Software Model Checker Using The Bogor Extensible Model Checking Framework", Matthew B. Dwyer, John Hatcliff, Matthew Hoosier, Robby. *Proceedings of 17th Conference on Computer-Aided Verification (CAV 2005)*, Edinburgh, Scotland, July 2005, Lecture Notes in Computer Science (3576), pp. 148–152.

54. "Extending JML for Modular Specification and Verification of Multi-Threaded Programs", Edwin Rodrguez, Matthew B. Dwyer, Cormac Flanagan, John Hatcliff, Gary T. Leavens, Robby. *Proceedings of 19th European Conference on Object-Oriented Programming (ECOOP 2005)*, Glasgow, Scotland, July 2005, Lecture Notes in Computer Science (3586), pp. 148–152.

55. "Checking Strong Specifications Using an Extensible Software Model-checking Framework", Robby, Edwin Rodriguez, Matthew Dwyer, and John Hatcliff, *Proceedings of the International Conference on Tools and Algorithms for Construction and Analysis of Systems*, April, 2004. Lecture Notes in Computer Science (2988), pp. 404–420.

56. "SyncGen : An Aspect-oriented Framework for Automatically Generating Synchronization Implementations from High-level Specifications" John Hatcliff, William Deng, Matthew Dwyer, Masaaki Mizuno, *Proceedings of the International Conference on Tool and Algorithms for Construction and Analysis of Systems*, April, 2004. Lecture Notes in Computer Science (2988), pp. 158–162.

57. "An Event Correlation Framework for the CORBA Component Model", Georg Jung, John Hatcliff, and Venkatesh Ranganath, *Proceedings of the International Conference on Fundamental Aspects of Software Engineering*, April, 2004. Lecture Notes in Computer Science (2984), pp. 144–159.

58. "Cadena : An Integrated Development Environment for Analysis, Synthesis, and Verification of Component-based Systems", Adam Childs, Jesse Greenwald, Venkatesh Ranganath, Xinhua Deng, Matthew Dwyer, John Hatcliff, Georg Jung, Prashant Shanti Kumar, Gurdip Singh, *Proceedings of the International Conference on Fundamental Aspects of Software Engineering*, April, 2004. Lecture Notes in Computer Science (2984), pp. 160–164.

59. "Pruning Interference and Ready Dependence the Slicing Concurrent Java Programs", Venkatesh Ranganath and John Hatcliff, *Proceedings of the International Conference on Compiler Construction*, April, 2004. Lecture Notes in Computer Science (2985), pp. 39–56.

60. "A Flexible Framework for the Estimation of Coverage Metrics in Explicit State Software Model Checking", Edwin Rodrguez, Matthew B. Dwyer, John Hatcliff, Robby. *Proceedings of the 2004 International Workshop on Construction and Analysis of Safe, Secure, and Interoperable Smart Devices (CASSIS 2004)*, June 2004. Lecture Notes in Computer Science.

61. "Verifying Atomicity Specifications for Concurrent Object-Oriented Software using Model-Checking", John Hatcliff, Robby, and Matthew Dwyer, *Proceedings of the 5th International Conference on Verification, Model Checking and Abstract Interpretation*, Venice, Italy. January, 2004.

62. "Space Reductions for Model Checking Quasi-cyclic Systems", Matthew Dwyer, Robby, John Hatcliff, and Xinhua Deng, *Proceedings of the 3rd International Conference on Embedded Software* (EMSOFT 2003), Lecture Notes in Computer Science, Springer-Verlag, Oct., 2003.

63. "Bogor: An Extensible and Highly-Modular Model Checking Framework", Robby, Matthew B. Dwyer, John Hatcliff. *Proceedings of the 2003 ACM Conference on Foundations of Software Engineering.* Helsinki, Finland, September 2003.

64. "Space-Reduction Strategies for Model Checking Dynamic Software", Robby, Matthew Dwyer, John Hatcliff, and Radu Iosif in Proceedings of the 2nd Workshop on Software Model Checking, Electronic Notes in Computer Science, 89.3, June, 2003

65. "Model-checking Middleware-based Event-driven Real-time Embedded Software", William Deng, Matthew B. Dwyer, John Hatcliff, Georg Jung, Robby, Gurdip Singh. *Proceedings of the 2002 International Conference on Formal Methods for Components and Objects (FMCO 2002).* Leiden, The Netherlands, November 2002 (invited paper).

66. "Slicing and Partial Evaluation of CORBA Component Model Designs for Avionics Systems", John Hatcliff, William Deng, Matthew Dwyer, Georg Jung, Venkatesh Ranganath, and Robby in Proceedings of the 2003 ACM SIGPLAN workshop on Partial evaluation and semantics-based program manipulation, June, 2003.

67. "Cadena: An Integrated Development, Analysis, and Verification Environment for Component-based Systems", John Hatcliff, William Deng, Matthew Dwyer, Georg Jung, Venkatesh Prasad. *Proceedings of the International Conference on Software Engineering (ICSE 2003).* IEEE Press. Portland, Oregon, May 2003.

68. "Invariant-based Specification, Synthesis, and Verification of Synchronization in Concurrent Programs", Xianghua Deng, Matthew B. Dwyer, John Hatcliff, and Masaaki Mizuno. *Proceedings of International Conference on Software Engineering (ICSE 2002)*, IEEE Press, May 2002.

69. "Using the Bandera Tool Set to Model-check Properties of Concurrent Java Software", John Hatcliff and Matthew Dwyer. *Proceedings of 12th International Conference on Concurrency Theory (CONCUR 2001)*, August 2001, LNCS 2154, Springer-Verlag, pp. 39 – 58 (invited paper).

70. "Tool-supported Program Abstraction for Finite-state Verification", Matthew Dwyer, John Hatcliff, Corina Pasareanu, Robby, Willem Visser, Hongjun Zheng. *Proceedings of the Internation Conference on Software Engineering (ICSE 2001)*, May 2001, IEEE Press.

71. "Bandera : Extracting Finite-state Models from Java Source Code", James Corbett, Matthew Dwyer, John Hatcliff, Corina Pasareanu, Robby, Shawn Laubach, Hongjun Zheng. *Proceedings of the Internation Conference on Software Engineering (ICSE 2000)*, May 2000, IEEE Press.

72. "A Language Framework For Expressing Checkable Properties of Dynamic Software", James Corbett, Matthew Dwyer, John Hatcliff, Robby, *Proceedings of the 2000 Spin Workshop.* August, 2000. Stanford, CA, USA. LNCS 1885, pp. 205 – 223.

73. "Slicing Software for Model Construction", John Hatcliff, Matthew B. Dwyer. Proceedings of the ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation.

74. "A Formal Study of Slicing for Multi-threaded Programs with JVM Concurrency Primitives", John Hatcliff, James C. Corbett, Matthew B. Dwyer, Stefan Sokolowski, and Hognjun Zheng, *Proceedings of the International Symposium on Static Analysis (SAS'99).* Venice, Italy, September, 1999, LNCS 1694, pp. 1– 18.

75. "Staging Static Analyses Using Abstraction-based Program Specialization", John Hatcliff, Matthew Dwyer, Shawn Laubach. *Proceedings of the 1998 Symposium on Programming Languages, Implementations, Logics and Programs (PLILP'98).* Pisa, Italy, September, 1998. LNCS 1490, pp. 134 – 151.

76. "Introduction to Partial Evalutation Using a Simple Flowchart Language", John Hatcliff, *Proceedings of the DIKU 1998 International Summerschool on Partial Evaluation.* LNCS 1706.

77. "Monadic Type Systems: Pure Type Systems for Impure Settings", Gilles Barthe, John Hatcliff, and Peter Thiemann, *Proceedings of the Second HOOTS Workshop* (editors A. Gordon and A. Pitts and C. Talcott), Stanford University, Palo Alto, CA. December, 1997. Electronic Notes in Computer Science, Volume 10.

78. "Reflections on Reflections", Gilles Barthe, John Hatcliff, Morten Heine Soerensen, *Proceedings of the Ninth International Symposium on Programming Languages, Implementations, Logics and Programs (PLILP'97)*, (editors H. Glaser, P. Hartel, and H. Kuchen) Pisa, Italy, September, 1997. LNCS 1292, pp. 241 – 258.

79. "An Approach to Classical Pure Type Systems", Gilles Barthe, John Hatcliff, Morten Heine Soerensen, *Proceedings of The Thirteenth Annual Conference on Mathematical Foundations of Programming Language Semantics (MFPS XIII)* (S. Brookes and M. Mislove, editors), Pittsburgh, PA, March, 1997. Electronic Notes and Theoretical Computer Science, Volume 6.

80. "Reasoning about Hierarchies of Online Specialization Systems", John Hatcliff and Robert Glück, *Proceedings of the Dagstuhl Seminar on Partial Evaluation*, February 1996, pp. 161–182. LNCS 1110.

81. "Generalization in Hierarchies of Online Program Specialization Systems", Robert Glück, John Hatcliff, and Jesper Joergensen, *Proceedings of 1999 Conference on Logic-Based Program Synthesis and Transformation* (P. Flener, editor), pp. 197–198. LNCS 1559.

82. "Mechanically Verifying the Correctness of an Off-line Partial Evaluator," John Hatcliff, *Proceedings of the Seventh International Symposium on Programming Languages, Implementations, Logics and Programs*, Utrecht, The Netherlands. September, 1995. Lecture Notes in Computer Science, Number 982.

83. "A Generic Account of Continuation-Passing Styles," John Hatcliff and Olivier Danvy, *Proceedings of the 21st annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, Portland, Oregon, 1994.

84. "On the Transformation between Direct and Continuation Semantics," Olivier Danvy and John Hatcliff, *Proceedings of the 9th Conference on Mathematical Foundations of Programming Semantics*, New Orleans, April 1993. Lecture Notes in Computer Science, Number 802.

Ph.D. Students Supervised (degree completed)

1. Robby (2004), Current Employment: Professor, Kansas State University
2. Venkatesh Ranganath (2006), Current Employment: Assistant Professor, Kansas State University
3. Georg Jung (2007), Current Employment: Lecturer, University of Potsdam (Germany)

4. William Deng (2007), Current Employment: Google (Mountain View, California)
5. Samuel Procter (2016), Current Employment: Software Engineering Institute (Pittsburg, PA)
6. Zhi Zhang (2016), Current Employment: Coverity / Synopsys (California)
7. Hariharan Thiagarajan (2022), Current Employment: Zoox [Amazon subsidiary] (California)

Professional Activities

Journal Editorial Boards

1. co-Editor-in-Chief of the Springer journal *Software Tools for Technology Transfer* (2009–current)
2. Editorial board *Software Tools for Technology Transfer* (2007–2009)

Conference Steering Committees

1. High Confidence Systems and Software (HCSS) (2014-current)
2. Software Engineering in Health (SEHC) (2012-2018)
3. Software Certification Consortium – an international body devoted to the advancing the practice of certification for critical systems (2008-current)
4. IFIP WG 6.1 International Conference on Formal Techniques for Distributed System (2010-2016)
5. ACM Symposium on Partial Evaluation and Program Manipulation (PEPM) (2005-2012)
6. Joint European Conference on Theory and Practice of Software (ETAPS) (2002)
7. Conference on Tools and Algorithms for the Construction and Analysis of Systems (2004)

Industry/Government Service

1. Chair (2014-2019) of Architecture Work Group of AAMI/UL 2800 Family of Safety/Security Standards for Medical Device Interoperability. The Association for the Advancement of Medical Instrumentation (AAMI) is the primary US professional organization for medical device manufacturer. Underwriters Laboratory (UL) is an international certification and standards development organization. AAMI/UL 2800 is a new family of standards that aims to enable the development of safe and secure interoperable medical systems, including systems built using middleware and platform technologies. The Architecture Work Group which I chair is the primary technical workgroup of AAMI/UL 2800.
2. Medical Device Safety Interoperability Working Group.

Conference/Event Program Chairs/Organizer

Erika Abraham (RWTH Aachen University, Germany), Stefan Hallerstede (Aarhus University, Denmark), Danielle Stewart (Galois Minneapolis, USA)

1. Co-chair (with Erika Abraham (RWTH Aachen University, Germany), Stefan Hallerstede (Aarhus University, Denmark), Danielle Stewart (Galois Minneapolis, USA)) Dagstuhl Seminar – Integrated Rigorous Analysis in Cyber-Physical Systems Engineering (January 23-27, 2023)

2. Co-chair (with Kathleen Fisher, Tufts University) of NSA's High Confidence Systems and Software (HCSS) Conference – May 5 – 7, 2015, Annapolis, Maryland.

3. Co-chair (with Byron Cook, Microsoft) of NSA's High Confidence Systems and Software (HCSS) Conference – May 6 – 8, 2014, Annapolis, Maryland.

4. co-organizer of SAIRP 2013 (Semantics, Abstract Interpretation, and Reasoning about Programs: Essays Dedicated to David A. Schmidt on the Occasion of his Sixtieth Birthday).

5. co-organizer of Dagstuhl Seminar on Software Certification: Methods and Tools – January 27 to February 1, 2013, Dagstuhl Seminar 13051, Warden, Germany.

6. 2012 Software Engineering in Health Care, Zurich Switzerland – **co-chair** with Ruth Breau.

7. 2010 IFIP WG 6.1 International Conference on Formal Techniques for Distributed Systems (FORTE/FMOODS) (Amsterdam, The Netherlands) – **co-chair** with Elana Zucca (University of Genoa, Italy)

8. 2008 ACM Workshop on Partial Evaluation and Program Manipulation (General Chair)

9. 2006 ACM Workshop on Partial Evaluation and Program Manipulation (PEPM 2006) (Charleston, SC) – **co-chair** with Frank Tip (IBM USA).

10. 2006 International School on Tools for Rigorous Enginneering of Software Systems (STRESS), Dortmund Germany – **co-organizer** with Bernhard Steffen (Univ. Dortmund)

11. 2006 RTAS Workshop on Innovative Techniques for Certification of Embedded Systems (ITCES '06) San Jose, California, April 4, 2006.

12. 2003 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2003) (Warsaw, Poland) – **co-chair** with Hubert Garavel (INRIA).

Program Committees

1. 2023 NSA High-Confidence Systems and Software (HCSS 2023)

2. 2022 ACM Workshop on High-Integrity Language Technology (HILT 2022)

3. 2022 NSA High-Confidence Systems and Software (HCSS 2022)

4. 2021 NSA High-Confidence Systems and Software (HCSS 2021)

5. 2020 NSA High-Confidence Systems and Software (HCSS 2020)

6. 2019 NSA High-Confidence Systems and Software (HCSS 2019)

7. 2018 NSA High-Confidence Systems and Software (HCSS 2018)

8. 2018 ICSE Workshop on Software Engineering in Health Systems (SEHS 2018)

9. 2017 NSA High-Confidence Systems and Software (HCSS 2017)

10. 2016 NSA High-Confidence Systems and Software (HCSS 2016)

11. 2015 ACM/IEEE International Conference on Software Engineering (ICSE)

12. 2014 Conference on Integrated Formal Methods (iFM 2014)
13. 2012 NASA Conference on Formal Methods
14. 2012 Conference on Verified Software: Theories, Tools, Experiments (VSTTE) 2012
15. 2011 IFIP Conferences on Formal Methods for Open Object-based Distributed Systems (FMOODS) and International Conference on FORmal TEchniques for Networked and Distributed Systems (FORTE) Reykjavik, Iceland, June 6-9, 2011.
16. High Confidence Medical Device Systems and Software (HCMDSS 2011), Chicago, Illinois, April 11, 2011. International Conference on Software Engineering (ICSE 2011), Waikiki, Hawaii
17. Workshop on Software Engineering in Health Care (SEHC 2011),Waikiki, Hawaii, May 2011
18. 2011 ACM/IEEE International Conference on Software Engineering (ICSE) May 2011, Waikiki, Hawaii
19. 2011 NASA Conference on Formal Methods
20. 2010 International Conference on Run-time Verification (RV), Malta
21. 2010 International Symposium on Verified Software: Theories, Tools, Experiments (VSTTE), Edinburg, Scotland.
22. 2010 Workshop on Software Engineering in Health Care (SEHC 2010), Cape Town, South Africa, May 2010
23. 2009 - 7th International Conference on integrated Formal Methods (iFM 2009), Duesseldorf, Germany.
24. 2008 - 15th International SPIN Workshop on Model Checking of Software (SPIN 2008), August 10-12, 2008, Los Angeles, USA.
25. 2008 - 10th IFIP International Conference on Formal Methods for Open Object-based Distributed Systems (FMOODS'08), June 4-6, 2008, Oslo, Norway.
26. 2007 ACM Symposium on Principles of Programming Languages (POPL 2007)
27. 2007 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2007) – part of the ETAPS 2007 Joint Conference, Braga, Portugal
28. 2006 International Summer School on Tool for Rigorous Engineering of Software Systems (STRESS), Dortmund, Germany, May 18-24, 2006. (co-chair with Bernhard Steffen, University of Dortmund)
29. 2006 RTAS Workshop on Innovative Techniques for Certification of Embedded Systems (ITCES '06)San Jose, California, April 4, 2006 (co-chair (with Oleg Sokolsky and Insup Lee from U Penn)
30. 2006 ACM SIGPLAN 2006 Workshop on Partial Evaluation and Program Manipulation (PEPM '06) Charleston, South Carolina, January 9-10, 2006. (co-chair with Frank Tip from IBM T.J. Watson Research Center)
31. 2006 TAIC PART – Testing: Academia and Industrial Conference - Practice and Research Techniques. Cumberland Lodge, Windsor, UK, 29th-31st August, 2006

32. 2005 Workshop on High Confidence Medical Device Software and Systems (HCMDSS), June 2-3, Philadelphia, PA.

33. 2005 International Workshop on Leveraging Applications of Formal Methods (ISoLA 2005), Sept. 24-25, Columbia, Maryland, USA.

34. 2005 International Workshop on Formal Techniques for Java-like Programs (FTfJP'2005). July 26, 2005. Glasgow, Scotland.

35. 2005 Workshop on Software Model Checking (SMC'05)

36. 2005 International Conference on Computer-Aided Verification (CAV'05)

37. 2005 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2005) (Edinburgh, Scotland)

38. Model Driven and Real-Time Embedded Systems track at 11th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2005), San Francisco, March 7-10, 2005.

39. International Symposium on Leveraging Applications of Formal Methods (ISoLA 2004)

40. 2004 ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2004)

41. 2004 ACM SIGPLAN Symposium on Partial Evaluation and Program Manipulation (PEPM 2004)

42. 2004 ACM Conference on Foundations of Software Engineering (FSE)

43. 2004 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2004) (Barcelona, Spain)

44. SPIN'2004 Workshop (Barcelona, Spain)

45. 2003 ACM Symposium on Programming Languages Design and Implementation (PLDI'2003) (San Diego, CA)

46. 2003 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2003) – **co-chair** (Warsaw, Poland)

47. 2002 International Conference on Computer-Aided Verification (CAV'02) (Copenhagen, Denmark)

48. SPIN'2002 Workshop (Grenoble, France)

49. 2001 Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'2001) (Genova, Italy)

50. SPIN'2000 Workshop (Palo Alto, California)

51. 2000 ACM SIGPLAN Workshop on Partial Evaluation and Semantics-Based Program Manipulation (PEPM 2000) (Boston, Mass)

52. Twelfth International Conference on Software Engineering and Knowledge Engineering (SEKE 2000)

53. ICSE 2000 Workshop on Program Analysis, Testing and Verification (Limerick, Ireland)

54. Third ACM SIGPLAN Workshop on Continuations (CW'01) (Paris, France)

Keynote Talks, Invited Talks, and Tutorials

1. Invited Tutorial, "Model-based Code Generation for seL4", Trusted Computing Center of Excellence Summit, January 2022.

2. Invited lecture, SEI Chief Technical Officer Lecture Series "HAMR - High-Assurance Modeling and Rapid Engineering for Embedded Systems Using AADL", Software Engineering Institute, Carnegie Mellon University, July 2019.

3. Keynote Address, "A Reference Architecture for Mixed-Criticality Medical Devices with an Exemplar PCA Pump Device", Venue: Medical Cyper-Physical Systems. Affliliated workshop of CPS Week. April 2018.

4. Keynote Address, "Overview of the AAMI/UL 2800 Family of Standards for Interoperable Medical Device Safety and Security", Venue: Software Certification Consortium, Affliliated meeting with High-Confidence Systems and Software Conference, May 2017.

5. Invited Talk, "Safety and Security Standards for Medical Application Platforms" US/Germany Standards Meeting", Washington, DC, April 11 13, 2016

6. Keynote Address, "Architecture Principles and Certification Approaches for Medical Application Platforms". Venue: Layered Assurance Workshop (University City, CA). Affiliated workshop of the Annual Computer Security Applications Conference (ACSAC). December 7, 2015.

7. Keynote Address, "Architectural and Assurance Principles for Safety-Critical Composition-on-Demand Systems". Venue: NSA Cyberlinx4 Conference (Assurance) April 13, 2015

8. Talk Title: "Interoperable Medical Device Interface Safety – Future Directions". Venue: American College of Clinical Engineers webinar. September 11, 2014.

9. Talk Title: Medical Application Platforms Rationale, Architectural Principles, and Certification Challenges. Venue High Confidence Software and Systems (HCSS) Coordinating Group of the National Coordination Office for Networking and Information Technology Research and Development (NITRD). Nov. 5, 2014.

10. ACM SIGSOFT Impact Paper Award Lecture, ACM Conference on Foundations of Software Engineering, Sante Fe, New Mexico, November, 2010.

11. Most Influential Paper Award Lecture, International Conference on Software Engineering (ICSE), Cape Town, South Africa, 2010.

12. Tenth International Conference on Formal Engineering Methods (ICFEM 2008) (one of three keynote speakers), Kitakyushu, Japan, October 27-31, 2008.

13. 2006 TAIC PART – Testing: Academia and Industrial Conference - Practice and Research Techniques. Cumberland Lodge, Windsor, UK, 29th-31st August, 2006. Talk topic: Model-checking concurrent software systems with Bogor. (Keynote Talk)

14. Sixth IEEE International Workshop on Source Code Analysis and Manipulation, Philadelphia, PA, USA, 27th-29th September 2006. Talk topic: Slicing concurrent Java programs with Indus. (Keynote Talk)

15. Programming Language Design and Implementation (PLDI 2005). Half-day tutorial on "Domain-specific model-checking with Bogor." (with Matt Dwyer and Robby). Chicago, USA, June 2005.

16. Estonian Summer School in Computer and System Science (ESSCaSS), August 2004 (one of four invited lectures – 6 hours of lectures on Analysis and Verification of Embedded Software).

17. European Joint Conferences on Theory and Practice of Software (ETAPS 2004). Half-day tutorial on "Model-checking Software Systems with Bogor." (with Matt Dwyer and Robby). Barcelona, Spain, April 2004.

18. ACM SIGPLAN Symposium on Partial Evaluation and Program Manipulation (PEPM 2003) (one of two keynote speakers).

19. International Symposium on Formal Methods for Components, Objects, and their Implementation (FMCO 2002). Leiden, The Netherlands, November, 2002. (one of fifteen invited research talks)

20. Schools on Formal Methods (SFM). September, 2002, Bertino, Italy. "Software Model-checking". (invited three hour lecture – one of eleven invited lecturers for a one-week international Ph.D. school)

21. European Joint Conferences on Theory and Practice of Software (ETAPS 2002). Full-day tutorial on "The Bandera Tool Set for Model-checking Concurrent Java Programs". (with Matt Dwyer and Willem Visser)

22. International Conference on Mathematical Foundations of Programming Language Semantics (MFPS'02). March, 2002, New Orleans, LA. "Model-checking Concurrent Java Software Using the Bandera Tool Set" (one of six key-note talks)

23. University of California at Berkeley. "Model-checking Concurrent Java Software Using the Bandera Tool Set". November, 2001.

24. CONCUR 2001: 12th International Conference on Concurrency Theory, Aalborg, Denmark, August 2001. (one of two invited 1.5 hour tutorials)

25. JavaCard Verification Project Meeting, August, 2001. INRIA, France. "Model-checking Concurrent Java Software Using the Bandera Tool Set" (invited talk)

26. Workshop on Software Model-checking. July, 2001, Paris, France. "Model-checking Concurrent Java Software Using the Bandera Tool Set" (one of two key-note talks)

27. BRICS, Aarhus University, Denmark, BRICS mini-course (six lectures) on software model-checking, October, 2000.

28. Danish Information and Technical University, Copenhagen, Denmark, "Model-checking Java Software with the Bandera Tool Set", October, 2000.

29. University of Copenhagen, Copenhagen, Denmark, "Model-checking Java Software with the Bandera Tool Set", October, 2000.

30. Carnegie-Mellon University, Pittsburgh, PA. "Model-checking Java Software with the Bandera Tool Set", September, 2000.

31. Microsoft Research, Redmond, Washington. "Slicing and Abstraction in the Bandera Tool Set", March, 2000.

32. Max Planck Institute Ringberg Workshop on Model-checking and Static Analysis, "Model-checking Java Software with the Bandera Tool Set", Schloss Ringberg, Germany. February, 2000.

33. University of Massachussetts, “Object Flow Analysis for Java”, June, 1999.

34. INRIA, Sophia Antipolis, France, “A Formal Presentation of Slicing for a Language with Java Concurrency Primitives”, September, 1999.

35. NASA Ames Research Lab, “Slicing and Abstraction in the Bandera Tool Set”, November, 1999.

36. Invited Speaker for European Research Consortium for Informatics and Mathematics (ERCIM) working group on ”Programming Language Technologies” Kickoff Meeting. Pisa, Italy. September, 1998.

37. Invited Lecturer for 1998 DIKU International Summer School on Partial Evaluation, Unversity of Copenhagen, Denmark. July, 1998.

38. University of Copenhagen, “Reflections on Reflections”, June 1997.

39. University of Kansas, “Automatically Customizing Adaptable Software Using Partial Evaluation”, January, 1997.

40. Kansas State University, “Automatically Customizing Adaptable Software Using Partial Evaluation”, March, 1997.

41. On-Line Library Corporation, Columbus, Ohio, “Partial Evaluation and Program Specialization”, March, 1996.

42. Invited participant 1996 Dagstuhl Seminar on Partial Evaluation, Dagstuhl, Germany, February, 1996, “Reasoning about Hierarchies of Online Specialization Systems”.

43. BRICS, Aarhus University, Denmark. “The Structure of Continuation-Passing Styles,” October, 1994.

44. Indiana University, “Aspects of Evaluation Orders in Continuation-Passing Syle,”, November, 1993.

45. Carnegie-Mellon University, “On the Transformation between Direct and Continuation Semantics,” June, 1993.