Borzoo Bonakdarpour

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1. Background

EDUCATION		
◇ **Ph.D., Computer Science**		*January 2009*

Michigan State University, East Lansing, MI, USA
  Dissertation: Automated Revision of Distributed and Real-Time Programs
  (Nominated for the 2009 ACM Doctoral Dissertation Award)

◇ **M.Sc., Computer Science**   *August 2004*
Michigan State University, East Lansing, MI, USA
  Thesis: Mechanical Verification of Automated Synthesis of Fault-Tolerant Programs

◇ **B.Sc., Computer Engineering**   *1999*
University of Esfahan, Iran
  Project: Analysis of Load Balancing for Videoconferencing in Ethernet Networks

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RESEARCH EXPERIENCE

◇ **Assistant Professor**   *2014 - present*
Department of Computing and Software, McMaster University

◇ **Research Assistant Professor**   *2011 - 2014*
School of Computer Science, University of Waterloo

◇ **Post-doctoral Researcher**   *2009 - 2011*
with Prof. Joseph Sifakis
Verimag Laboratory, France

◇ **Visiting Researcher**   *Summer 2006*
Department of Computer Science, University of California-Santa Cruz

◇ **Graduate Research Assistant**   *2003 - 2009*
Department of Computer Science and Engineering, Michigan State University

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PRINCIPAL AREAS OF RESEARCH AND TEACHING

Research
- Runtime monitoring and control
- Distributed Computing
- Dependable cyber-physical systems
- Formal methods and logic

Teaching
- Distributed and real-time systems
- Operating systems
- Software engineering
- Algorithms and data structures
- Discrete math and logic

2. Honors, Awards, and Recognitions

Best Paper Awards	◇ Fathiyeh Faghih and Borzoo Bonakdarpour. SMT-Based Synthesis of Distributed Self-stabilizing Systems, *International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS)*, pp. 165-179, 2014.
	◇ Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf, and Joseph Sifakis. Automated Conflict-Free Distributed Implementation of Component-Based Models, *IEEE International Conference on Industrial Embedded Systems (SIES)*, 2010, pp. 108-117, July 2010.

Scientific Competition	◇ First prize in the 1st International Competition on Software Runtime Verification (C track) for the tool RiTHM (Runtime Time-triggered Heterogeneous Monitoring), 2014.
	◇ Third prize in the 1st International Competition on Software Runtime Verification (offline track) for the tool RiTHM (Runtime Time-triggered Heterogeneous Monitoring), 2014.

Best Paper Award Nominations	◇ Borzoo Bonakdarpour, Marius Bozga, and Jean Quilbeuf. Automated Distributed Implementation of Component-based Models with Priorities, *ACM International Conference on Embedded Software (EMSOFT)*, pp. 59-68, October 2011 (acceptance rate 24%).
	◇ Borzoo Bonakdarpour and Sandeep S. Kulkarni. Compositional Verification of Fault-Tolerant Real-Time Programs. *ACM/IEEE International Conference on Embedded Software (EMSOFT)*, pp. 29-38, October 2009 (acceptance rate %28).
	◇ Borzoo Bonakdarpour and Sandeep S. Kulkarni. Exploiting Symbolic Techniques in Synthesis of Distributed Programs with Large State Space. *IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 3-10, June 2007 (acceptance rate %13).

National Recognitions	◇ Ph.D. dissertation nominated for the *ACM Doctoral Dissertation Award* Title: Automated Revision of Distributed and Real-Time Programs, 2009
	◇ President of Iran outstanding national young researcher medal for the **first prize** at the first *National Scientific Khaarazmi Competition*. Title: Multimedia Communications on Ethernet Networks, 1999.

Teaching	◇ Recognized as one of the top instructors for Fall 2012 semester at the School of Computer Science, University of Waterloo, Canada.

Fellowships	◇ University Graduate Research Fellowship, *Michigan State University*, June 2007.
	◇ University Graduate Research Fellowship, *Michigan State University*, May 2003.

Best Poster Awards	◇ First place at the Department of Computer Science graduate poster contest, *Michigan State University*, April 2006.

Other Honors	◇ Third place in the International Essay Contest, *Michigan State University*, November 2006 (Essay title: A Stranger in Paradise).
	◇ Award certificate for serving as the first vice president of International Students Association, *Michigan State University*, April 2004.

3. Research Grants

AWARDED
GRANTS

◇ **Using UAS Swarms for Optimal Data Acquisition in Large Spatially Distributed Areas**
  · **Sponsor:** Natural Sciences and Engineering Research Council of Canada (NSERC)
  · **Program:** Engage Grants for Universities
  · **Role:** PI
  · **Duration:** 2016
  · **Total amount:** $25,000
  · **Share:** %100

◇ **Rigorous Privacy-enabled Interactions with Online Information**
  · **Sponsor:** Natural Sciences and Engineering Research Council of Canada (NSERC)
  · **Program:** Strategic Project Grants
  · **Role:** co-PI
  · **Other grantees**: Ian Goldberg
  · **Duration:** 2014 - 2017
  · **Total amount:** $600,000
  · **Share:** %42

◇ **Runtime monitoring of swarm of drones**
  · **Sponsor:** CMC Microsystems
  · **Program:** CMC Solutions
  · **Role:** PI
  · **Duration:** 2014 - 2015
  · **Total amount:** $50,000
  · **Share:** %100

◇ **Rigorous Automated Implementation of dependable distributed Real-time System**
  · **Sponsor:** Natural Sciences and Engineering Research Council of Canada (NSERC)
  · **Program:** Strategic Project Grants
  · **Role:** co-PI
  · **Other grantees**: Tom Maibaum and Sebastian Fischmeister
  · **Duration:** 2012 - 2016
  · **Total amount:** $600,000
  · **Share:** %45

◇ **Automated Construction of Dependable Component-based Cyber-physical Systems**
  · **Sponsor:** Natural Sciences and Engineering Research Council of Canada (NSERC)
  · **Program:** Discovery Grants
  · **Role:** PI
  · **Duration:** 2012 - 2018
  · **Total amount:** $135,000
  · **Share:** %100

4. Publications and Dissemination

Source	# of citations of peer-reviewed articles	# of independent publications
Google Scholar	747	75
h-index	16	

Bold indicates supervised student. Publications since starting independent position are indicated with *.

PEER REVIEWED JOURNAL ARTICLES

[1] * **Fathiyeh Faghih** and Borzoo Bonakdarpour. Symbolic synthesis of 2-Phase Fault Recovery in Timed Models, *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Accepted for publication.

[2] Borzoo Bonakdarpour, Stephane Devismes, and Franck Petit. Snap-stabilizing Committee Coordination, *Elsevier Journal of Parallel and Distributed Computing (JPDC)*, volume 87, pp. 26-42, 2016 (impact factor: 1.2).

[3] * **Fathiyeh Faghih** and Borzoo Bonakdarpour. SMT-based Synthesis of Distributed Self-Stabilizing Systems, *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, volume 10, number 3, pp. 21-51, October 2015 (impact factor: 1.286).

[4] * **Ramy Medhat**, Borzoo Bonakdarpour, **Deepak Kumar**, and Sebastian Fischmeister. Runtime Monitoring of Cyber-physical Systems under Timing and Memory Constraints, *ACM Transactions on Embedded Computing Systems (TECS)*, volume 14, number 4 (article no. 79) December 2015 (impact factor: 1.178).

[5] * George Chatzieleftheriou, Borzoo Bonakdarpour, Panagiotis Katsaros, and Scott Smolka. Abstract Model Repair, *Logical Methods in Computer Science (LMCS)*, volume 11, number 3, pp. 1-43 (impact factor: 1.036).

[6] * **Shay Berkovich**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Runtime Verification with Minimal Intrusion through Parallelism, *Springer journal of Formal Methods in System Design (FMSD)*, volume 46, number 3, pp. 317-348, June 2015 (impact factor: 1.132).

[7] * Fuad Abujarad, Yian Lin, Borzoo Bonakdarpour, and Sandeep Kulkarni. The Complexity of Automated Addition of Fault-tolerance Without Explicit Legitimate States, *Springer journal of Distributed Computing (DC)*, Volume 28, number 3, pp. 201-219, February 2015 (impact factor: 1.585).

[8] * Borzoo Bonakdarpour and Sandeep Kulkarni. Synthesizing Bounded-time Phased Recovery, *Springer Journal of Formal Aspects of computing (FAOC)*, volume 27, number 1, pp. 1-31, January 2015 (impact factor: 1.255).

[9] * Borzoo Bonakdarpour, **Samaneh Navabpour**, and Sebastian Fischmeister. Time-triggered Runtime Verification, *Springer Journal of Formal Methods in System Design (FMSD)*, volume 43, number 1, pp. 29-60, August 2013 (impact factor: 1.132).

[10] * Borzoo Bonakdarpour, Marius Bozga, and Jean Quilbeuf. Model-based Implementation of Distributed Systems with Priorities, *Springer Journal of Design Automation for Embedded Systems (DAEM)*, volume 43, number 1, pp. 29-60, July 2013 (impact factor: 0.4).

[11] * Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf, and Joseph Sifakis. A Framework for Automated Distributed Implementation of Component-based Models, *Springer Journal of Distributed Computing (DC)*, volume 25, number 5, pp. 383-409, October 2012 (impact factor: 1.585).

[12] * Borzoo Bonakdarpour, Sandeep Kulkarni, and Fuad Abujarad. Symbolic Synthesis of Masking Fault-tolerant Distributed Programs, *Springer Journal of Distributed Computing (DC)*, volume 25, number 1, pp. 83-108, March 2012 (impact factor: 1.585).

[13] * Borzoo Bonakdarpour, and Sandeep S. Kulkarni. Automated Program Repair for Distributed Systems, *ACM SIGACT News Distributed Computing Column*, volume 43, number 1, pp. 85-107, June 2012.

[14] Borzoo Bonakdarpour, Ali Ebnenasir, and Sandeep S. Kulkarni. Complexity Results in Revising UNITY Programs, *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, volume 4, number 1, pp. 1-28, January 2009 (impact factor: 1.286).

PEER
REVIEWED
CONFERENCE
PAPERS

[1] Borzoo Bonakdarpour, Pierre Fraigniaud, Sergio Rajsbaum, David Rosenbleuth, and Corentin Travers. Decentralized Asynchronous Crash-Resilient Runtime Verification, *International Conference on Concurrency Theory (CONCUR)*, pp. 16:1-16:15, 2016.

[2] * **Shreya Agrawal** and Borzoo Bonakdarpour. Runtime Verification of k-Safety Hyperproperties in HyperLTL, *IEEE Computer Security Foundations Symposium (CSF)*, pp. 239-252, 2016.

[3] **Ramy Medhat**, Borzoo Bonakdarpour, Sebastian Fischmeister, and Yogi Joshi. Accelerated Runtime Verification of LTL Specifications with Counting Semantics, *International Conference on Runtime Verification (RV)*, pp. 251-267, 2016.

[4] Borzoo Bonakdarpour, Pierre Fraigniaud, Sergio Rajsbaum, and Corentin Travers. Challenges in Fault-tolerant Distributed Runtime Verification, *International Symposium On Leveraging Applications of Formal Methods, Verification and Validation (ISoLA)*, 2016, To appear.

[5] * **Fathiyeh Faghih**, Borzoo Bonakdarpour, Sébastien Tixeuil, and Sandeep S. Kulkarni. Specification-Based Synthesis of Distributed Self-Stabilizing Protocols, *IFIP International Conference on Formal Techniques for Distributed Objects, Components, and Systems (FORTE)*, pp. 124–141, 2016.

[6] * **Saba Aflaki**, **Fathiyeh Faghih**, and Borzoo Bonakdarpour. Synthesizing Self-stabilizing Protocols under Average Recovery Time Constraints, *IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 579-588, 2015 (acceptance rate 12%).

[7] * Ahlem Triki, Borzoo Bonakdarpour, Jacques Combaz, and Saddek Bensalem. Automated Conflict-Free Concurrent Implementation of Timed Component-Based Models, *NASA Formal Methods Symposium (NFM)*, pp. 359-374, 2015 (acceptance rate 30%).

[8] * **Ramy Medhat**, Ramesh S., Borzoo Bonakdarpour, and Sebastian Fischmeister. A Framework for Mining Hybrid Automata from Input/Output Traces., *ACM International Conference on Embedded Software (EMSOFT)*, pp. 177-186, 2015, (acceptance rate 25%).

[9] * **Saba Aflaki**, Borzoo Bonakdarpour, and Sebastien Tixeuil. Automated Analysis of Impact of Scheduling on Performance of Self-Stabilizing Protocols, *International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, pp. 156 – 170, 2015.

[10] * **Samaneh Navabpour**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Time-triggered Runtime Verification of Component-Based Multi-core Systems, *International Conference on Runtime Verification (RV)*, pp. 1-16, 2015.

[11] * **Menna Mostafa** and Borzoo Bonakdarpour. Decentralized Runtime Verification of LTL Specifications in Distributed Systems, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2015, pp. 494-503 (acceptance rate 21%).

[12] * **Fathiyeh Faghih** and Borzoo Bonakdarpour. SMT-Based Synthesis of Distributed Self-stabilizing Systems, *International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS)*, pp. 165-179, 2014.
(Received the Best Student Paper Award)

[13] * **Ramy Medhat**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Power-efficient Multiple Producer-Consumer, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 669-678, 2014 (acceptance rate 21%).

[14] * **Ramy Medhat**, **Deepak Kumar**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Sacrificing a Little Space Can Significantly Improve Monitoring of Time-sensitive Cyber-physical Systems, *ACM/IEEE International Conference on Cyber-physical Systems (ICCPS)*, pp. 115-126, 2014 (acceptance rate 24%).

[15] * Borzoo Bonakdarpour, Reza Hajisheikhi, and Sandeep Kulkarni. Knowledge-based Automated Repair of Authentication Protocols, *International Conference on Formal Methods (FM)*, pp. 132-147, 2014 (acceptance rate 28%).

[16] * Ezio Bartocci, Borzoo Bonakdarpour, and Yliès Falcone. First International Competition on Software for Runtime Verification, *International Conference on Runtime Verification (RV)*, pp. 1–9, 2014.

[17] * Saddek Bensalem, Borzoo Bonakdarpour, Marius Bozga, Doron Peled, and Jean Quilbeuf. Performance Evaluation of Process Partitioning using Probabilistic Model Checking, *Haifa Verification Conference (HVC)*, pp. 344-358, November 2013.

[18] * **Narges Fallahi** and Borzoo Bonakdarpour. How Good is Weak-Stabilization?, *International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS)*, pp. 148-162, November 2013 (acceptance rate 29%).

[19] * **Narges Fallahi**, Borzoo Bonakdarpour, and Sebastien Tixeuil. Rigorous Performance Evaluation of Self-stabilization Using Probabilistic Model Checking, *IEEE Symposium on Reliable Distributed Systems (SRDS)*, pp. 153 -162, October 2013 (acceptance rate 29%).

[20] * Yiyan Lin, Borzoo Bonakdarpour, and Sandeep Kulkarni. Automated Addition of Fault-tolerance under Synchronous Semantics, *International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS)*, pp. 266-280, 2013 (acceptance rate 29%).

[21] * **Shay Berkovich**, Borzoo Bonakdarpour, and Sebastian Fischmeister. GPU-based Runtime Verification, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 1025-1036, May 2013 (acceptance rate 21%).

[22] * **Wallace Wu**, **Deepak Kumar**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Reducing Monitoring Overhead by Integrating Event- and Time-triggered Techniques, *International Conference On Runtime Verification (RV)*, pp. 304-321, September 2013 (acceptance rate 39%).

[23] * **Samaneh Navabpour**, **Yogi Joshi**, **Chun Wah Wallace Wu**, **Shay Berkovich**, **Ramy Medhat**, Borzoo Bonakdarpour, and Sebastian Fischmeister. RiTHM: A Tool for Enabling Time-triggered Runtime Verification for C Programs, *ACM Symposium on the Foundations of Software Engineering (FSE)*, pp. 603-606, August 2013.

[24] * Borzoo Bonakdarpour, **Johnson J. Thomas**, and Sebastian Fischmeister. Time-triggered Program Self-monitoring, *IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*, pp. 260-269, August 2012.

[25] * **Samaneh Navabpour**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Path-aware Time-triggered Runtime Verification, *International Conference On Runtime Verification (RV)*, pp. 199-213, September 2012.

[26] * Borzoo Bonakdarpour, Marius Bozga, and Gregor Goessler. A theory of fault recovery for component-based models, *International Symposium on Stabilization, Safety and*

Security of Distributed Systems (SSS), pp. 314-328, October 2012 (acceptance rate 28%).

[27] * George Chatzieleftheriou, Borzoo Bonakdarpour, Scott Smolka, and Panagiotis Katsaros. Abstract Model Repair, NASA Formal Methods Symposium (NFM), April 2012, pp. 341-355.

[28] * Borzoo Bonakdarpour, Marius Bozga, and Jean Quilbeuf. Automated Distributed Implementation of Component-based Models with Priorities, ACM International Conference on Embedded Software (EMSOFT), pp. 59-68, October 2011 (acceptance rate 24%). (Nominated for the best paper award)

[29] * Borzoo Bonakdarpour, Stéphane Devismes, and Franck Petit. Snap-stabilizing Committee Coordination, IEEE International Parallel and Distributed Processing Symposium (IPDPS), pp. 231-242, May 2011 (acceptance rate 17%).

[30] * Borzoo Bonakdarpour, **Samaneh Navabpour**, and Sebastian Fischmeister. Sampling-based Runtime Verification, International Symposium on Formal Methods (FM), LNCS 6664, pp. 88-102, June 2011 (acceptance rate 21%).

[31] * Borzoo Bonakdarpour and Sandeep Kulkarni, Active Stabilization, International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), LNCS 6976, pp. 77-91, October 2011 (acceptance rate 30%).

[32] * Borzoo Bonakdarpour, Marius Bozga, and Gregor Goessler. A Theory of Fault Recovery for Component-Based Models, IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 265-270, 2011 (acceptance rate 30%).

[33] * Borzoo Bonakdarpour, Yiyan Lin, and Sandeep Kulkarni. Automated Addition of Fault Recovery to Cyber-physical Component-based Models, ACM International Conference on Embedded Software (EMSOFT), pp. 127-136, October 2011 (acceptance rate 24%).

[34] * Borzoo Bonakdarpour, and Sebastian Fischmeister. Runtime Monitoring of Time-sensitive Systems [Tutorial Supplement], International Conference On Runtime Verification (RV), pp. 19-33, 2011.

[35] * **Samaneh Navabpour**, **Wallace Wu**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Efficient Techniques for Near-optimal Instrumentation in Time-triggered Runtime Verification, International Conference On Runtime Verification (RV), pp. 208-222, 2011.

[36] * **Samaneh Navabpour**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Optimal Instrumentation of Data-flow in Concurrent Data Structures , International Conference On Principles Of Distributed Systems (OPODIS), pp. 497-512, 2011 (acceptance rate 31%).

[37] * **Samaneh Navabpour**, Borzoo Bonakdarpour, and Sebastian Fischmeister. Software Debugging and Testing using the Abstract Diagnosis Theory, ACM International Conference on Languages, Compilers, Tools and Theory for Embedded Systems (LCTES), pp. 111-120, 2011.

[38] Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf, and Joseph Sifakis. Automated Conflict-Free Distributed Implementation of Component-Based Models, IEEE International Conference on Industrial Embedded Systems (SIES), 2010, pp. 108-117, July 2010. (Received the best paper award)

[39] Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf, and Joseph Sifakis. From High-Level Component-Based Models to Distributed Implementations, ACM International Conference on Embedded Software (EMSOFT), pp. 209-218, 2010 (acceptance rate 28%).

[40] Ananda, Basu, Borzoo Bonakdarpour, Marius Bozga, and Joseph Sifakis. Incremental Component-Based Modeling, Verification, and Performance Evaluation of Distributed Reset, *International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, LNCS 6366, pp. 4-18, September 2010 (acceptance rate 31%).

[41] * Borzoo Bonakdarpour and Sandeep S. Kulkarni. On the Complexity of Synthesizing Relaxed and Graceful Bounded-Time 2-Phase Recovery. *International Symposium on Formal Methods (FM)*, LNCS 5850, pp. 660-675, November 2009 (acceptance rate 26%).

[42] * Borzoo Bonakdarpour and Sandeep S. Kulkarni. Compositional Verification of Fault-Tolerant Real-Time Programs. *ACM/IEEE International Conference on Embedded Software (EMSOFT)*, pp. 29-38, October 2009 (acceptance rate 28%).
(Nominated for the best paper award)

[43] Ananda Basu, Borzoo Bonakdarpour, Marius Bozga, and Joseph Sifakis. Brief Announcement: Incremental Component-Based Modeling, Verification, and Performance Evaluation of Distributed Reset. *International Conference on Distributed Computing (DISC)*, LNCS 5805, pp. 174-175, September 2009 (acceptance rate 27%).

[44] Fuad Abujarad, Borzoo Bonakdarpour, and Sandeep S. Kulkarni. Parallelizing Deadlock Resolution in Symbolic Synthesis of Distributed Programs. *International Workshop on Parallel and Distributed Methods in verifiCation (PDMC)*, pp. 92-106, 2009.

[45] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Revising Distributed UNITY programs is NP-complete. *International Conference on Principles of Distributed Systems (OPODIS)*, LNCS 5401, pp. 408-427, December 2008 (acceptance rate 27%).

[46] Borzoo Bonakdarpour, Sandeep S. Kulkarni, and Anish Arora. Disassembling Real-Time Fault-Tolerant Programs. *ACM/IEEE International Conference on Embedded Software (EMSOFT)*, pp. 169-178, October 2008 (acceptance rate 24%).

[47] Borzoo Bonakdarpour and Sandeep S. Kulkarni. SYCRAFT: A Tool For Automated Synthesis of Fault-tolerant Distributed Programs. *International Conference on Concurrency Theory (CONCUR)*, LNCS 5201, pp. 167-171, August 2008 (acceptance rate 27%).

[48] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Masking Faults While Providing Bounded-Time Phased Recovery. *International Symposium on Formal Methods (FM)*, LNCS 5014, pp. 374-389, May 2008 (acceptance rate 21%).

[49] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Challenges and Demands on Automated Software Revision. *The Sixth NASA Langley Formal Methods Workshop (LFM)*, May 2008.

[50] Sandeep S. Kulkarni and Borzoo Bonakdarpour. Automated Program Maintenance for Automotive CPS. *Workshop on Cyber-Physical Systems Research Challenges*, April 2008.

[51] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Exploiting Symbolic Techniques in Synthesis of Distributed Programs with Large State Space. *IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 3-12, June 2007 (acceptance rate 13%).
(Nominated for the best paper award)

[52] Borzoo Bonakdarpour, Sandeep S. Kulkarni, and Fuad Abujarad. Distributed Synthesis of Fault-Tolerant Programs in the High Atomicity Model. *International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, LNCS 4838, pp.21-36, November 2007 (acceptance rate 30%).

[53] Borzoo Bonakdarpour. Challenges in Transformation of Existing Real-Time Embedded Systems to Cyber-Physical Systems. *The IEEE Real-Time Systems Symposium (RTSS) - Ph.D. Student Forum on Deeply Embedded Real-Time Computing*, December 2007.

[54] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Incremental Synthesis of Fault-Tolerant Real-Time Programs. *International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, LNCS 4280, pp. 122-136, November 2006 (acceptance rate 29%).

[55] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Automated Incremental Synthesis of Timed Automata. *International Workshop on Formal Methods for Industrial Critical Systems (FMICS)*, LNCS 4346, pp. 261-276, August 2006 (acceptance rate 31%).

[56] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Towards Reusing Formal Proofs in Verification of Fault-Tolerance. *International Workshop on Automated Formal Methods (AFM)*, August 2006.

[57] Borzoo Bonakdarpour and Sandeep S. Kulkarni. Automated Revision of Legacy Real-Time Programs: Work-in-Progress. *12th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)*, April 2006.

[58] Borzoo Bonakdarpour, Sandeep S. Kulkarni, and Fuad Abujarad. Distributed Synthesis of Fault-Tolerance. *International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, LNCS 4280, pp. 566-567, November 2006.

[59] Ali Ebnenasir, Sandeep S. Kulkarni, and Borzoo Bonakdarpour. Revising UNITY Programs: Possibilities and Limitations. *International Conference on Principles of Distributed Systems (OPODIS)*, LNCS 3974, pp. 275-290, December 2005 (acceptance rate 27%).

[60] Sandeep S. Kulkarni, Borzoo Bonakdarpour, and Ali Ebnenasir. Mechanical Verification of Automatic Synthesis of Fault-Tolerant Programs. *International Symposium on Logic-Based Program Synthesis and Transformation (LOPSTR)*, LNCS 3573, pp.36-52, August 2004 (acceptance rate 48%).

[61] Sandeep S. Kulkarni, Borzoo Bonakdarpour, and Ali Ebnenasir. Mechanical Verification of Automatic Synthesis of Failsafe Fault-Tolerance. *Emerging Trends in 17th International Conference on Theorem Proving in Higher Order Logics (TPHOLs)*, September 2004.

INVITED TALKS AND COLLOQUIUM PRESENTATIONS

◇ Decentralized Asynchronous Crash-Resilient Runtime Verification, *COST Action Meeting*, Spain, September 2016.

◇ Time-triggered Runtime Verification, *COST Action Summer School on Runtime Verification*, Spain, September 2016.

◇ Decentralized Asynchronous Crash-Resilient Runtime Verification, *Saarland University*, Germany, February 2016.

◇ Runtime Verification of k-safety Hyperproperties, *Carnegie Mellon University*, USA, October 2015.

◇ Decentralized Asynchronous Crash-Resilient Runtime Verification, *Technical University of Graz*, Austria, October 2015.

◇ Decentralized Asynchronous Crash-Resilient Runtime Verification, *University of Texas at Austin*, USA, October 2015.

◇ Automated Program Repair: Beyond Verification, *University of Saarland*, Germany, October 2014.

◇ Resource-aware Runtime Verification, *Charles University*, Czech Republic, October 2014.

◇ Automated Program Repair: Beyond Verification, *University of Toronto*, September 2013.

◇ Automated Program Repair: Beyond Verification, *University of Toronto*, September 2013.

⋄ Automated Program Repair: Beyond Verification, *Technical University of Vienna*, August 2013.

⋄ Model-based Code Generation and Debugging of Concurrent Programs, *University of Minnesota*, June 2012.

⋄ Time-triggered Runtime Verification, *SRI International*, January 2012.

⋄ Model-based Code Generation and Debugging of Concurrent Programs, *Microsoft Research - Redmond*, January 2012.

⋄ Time-triggered Runtime Verification, *State University of New York - Stony Brook*, May 2011.

⋄ Automated Distributed Implementation of Component-Based Models, *University of Illinois Urbana-Champaign*, November 2010.

⋄ Certification of Software-Driven Medical Devices, Invited panel at *ISoLA 2010*, October 2010.

⋄ Compositional Verification of Real-Time Fault-Tolerant Programs, *INRIA-Grenoble*, April 2010.

⋄ From High-Level Component-Based Models to Distributed Implementations, *University of California-Berkeley*, January 2010.

⋄ From High-Level Component-Based Models to Distributed Implementations, *University of Pennsylvania*, January 2010.

⋄ From High-Level Component-Based Models to Distributed Implementations, *NASA Langley Research Center*, January 2010.

⋄ From High-Level Component-Based Models to Distributed Implementations, *Vanderbilt University*, January 2010.

⋄ From High-Level Component-Based Models to Distributed Implementations, *Michigan State University*, February 2010.

⋄ Automated Distributed Implementation of Component-Based Models, *McGill University*, November 2009.

⋄ Automated Distributed Implementation of Component-Based Models, *University of Waterloo*, November 2009.

⋄ Automated Distributed Implementation of Component-Based Models, *University of Toronto*, November 2009.

⋄ Automated Distributed Implementation of Component-Based Models, *McMaster University*, November 2009.

⋄ Automated Revision of Distributed and Real-Time Programs, *Microsoft Research*, Redmond, WA, USA, March 2008.

⋄ Demands and Challenges in Repairing and Maintaining Deeply Embedded Automotive Systems, *RTSS'07 Special Session on Cyber-Physical System Challenges in the Automotive Domain*, Tucson, USA, December 2007.

⋄ Automated Revision of Programs, *McMaster University*, Hamilton, Canada, August 2007.

⋄ Symbolic Synthesis of Distributed Programs with Large State Space, *The University of York*, UK, July 2007.

⋄ Symbolic Synthesis of Distributed Programs with Large State Space, *University of Waterloo*, Canada, June 2007.

⋄ Automated Revision of Existing Real-Time Programs, *National Institute of Aerospace (NIA)*, Hampton, Virginia, May 2006.

5. Contributions to Training of Highly Qualified Personnel

	# completed	# in progress
Postdocs	0	2
Ph.D.	1	3
Master's	6	3

CURRENT SUPERVISIONS

Student	Degree	Institution	Duration
Fathiyeh Faghih	Postdoc	CAS - McMaster	2015 -
Umair Siddique	Postdoc	CAS - McMaster	2016 -
Anh-Duy Vu	Ph.D.	CAS - McMaster	2015 -
Noel Brett	Ph.D.	CAS - McMaster	2015 -
Ramy Medhat	Ph.D.	CAS - McMaster	2012 -
Shokoufeh Kazemlou	Master's	CAS - McMaster	2015 -
Omer Waseem	M.Eng.	CAS - McMaster	2016 -
Anuragini Sharma	M.Eng.	CAS - McMaster	2016 -

PAST SUPERVISIONS

Student	Degree	Institution	Duration	Last known employment
Fathiyeh Faghih	Ph.D.	CS - U. Waterloo	2011 - 2015	Postdoc at McMaster University
Mikhail Markov	Master's	CAS - McMaster	2014 - 2016	
Akhil Krishnan	Master's	CAS - McMaster	2014 - 2016	
Menna Mostafa	M. Math	CS - U. Waterloo	2013 - 2016	
Shreya Agrawal	M. Math	CS - U. Waterloo	2013 - 2015	Google, Germany
Saba Aflkai	M. Math	CS - U. Waterloo	2013 - 2015	University of Waterloo
Yogi Joshi	M. Math	CS - U. Waterloo	2013 - 2015	

PHD/MASTER'S SUPERVISORY & EXAMINATION COMMITTEE

Student	Program	Year	Institution
Andrew LeClair	Ph.D.	-	McMaster University
Fatemeh H. Fard	Ph.D.	2016	University of Calgary
Tianwei Liu	M.Eng.	2016	McMaster University
Li Ye	M.Eng.	2015	McMaster University
Margaree Peacocke	M.A.Sc.	2015	McMaster University
Behzad Akbari	M.A.Sc.	2014	McMaster University
Wallace Wu	M.Sc.	2013	University of Waterloo
Deepak Kumar	M.Sc.	2013	University of Waterloo
Shay Berkovich	M.Sc.	2013	University of Waterloo
Johnson Thomas	M.Sc.	2013	University of Waterloo

RESEARCH ASSISTANTS

Student	Duration	Current employment
Opeyemi Salau	Summer 2016	McMaster University
Shokoufeh Kazemlou	Fall 2015	McMaster University

	Student	Degree	Duration	Last known employment
	Samaneh Navabpour	Ph.D.	2010 - 2014	CPP, Canada
Unofficial Supervisions	Wallace Wu	M.Sc.	2010 - 2012	Bluecoat Inc.
	Deepak Kumar	M.Sc.	2011 - 2013	
	Shay Berkovich	M.Sc.	2011 - 2013	Bluecoat Inc.
	Johnson Thomas	M.Sc.	2011 - 2013	Cisco Canada

6. Scholarly and Professional Scientific Activities

EDITORIAL
◇ Guest editor of Special Issue on Runtime Verification in Springer Journal on Formal Methods for System Design, 2015

PROGRAM COMMITTEE CHAIR
◇ International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2016

◇ 25th Euromicro International Conference on Parallel, Distributed, and Network-based Processing - Special Session on Formal Approaches to Parallel and Distributed Systems (**4PAD**), 2017

◇ IEEE/IFIP International Conferences on Embedded and Ubiquitous Computing, 2016 (Software for Embedded and Ubiquitous Computing track)

◇ International Workshop on Formal Reasoning in Distributed Algorithms (**FRIDA**), 2015

◇ International Conference on Runtime Verification (**RV**), 2014

◇ International Competition on Software Runtime Verification (**CSRV**), 2014

◇ International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2014 (Safety, Security, and Formal Methods track)

◇ International Workshop on Formal Reasoning in Distributed Algorithms (**FRIDA**), 2014

◇ International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2012 (Formal Methods track)

◇ International Workshop on Logical Aspects of Fault-Tolerance (**LAFT**), 2011

CONFERENCE ORGANIZATION
◇ Financial co-Chair of the 17th International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2015

◇ Publicity chair of the 11th International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2009

◇ Local Arrangements Chair of the 14th International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2012

PROGRAM COMMITTEE MEMBER
◇ ACM International Conference on Principles of Distributed Computing (**PODC**), 2017

◇ IEEE International Parallel and Distributed Processing Symposium (**IPDPS**), 2017

◇ Symposium of Design, Automation and Test in Europe (**DATE**), 2017, 2015

◇ International Conference on Runtime Verification (**RV**), 2016, 2015, 2013

◇ IEEE International Symposium on Reliable Distributed Systems (**SRDS**), 2016

◇ International Conference on Formal Aspects of Component Software (**FACS**), 2016

◇ NASA Formal Methods Symposium (**NFM**), 2016, 2015

◇ International Conference on Integrated Formal Methods (**iFM**), 2016

◇ IEEE International Conference on Distributed Computing Systems (**ICDCS**), 2015

◇ International Symposium on Stabilization, Safety, and Security of Distributed Systems (**SSS**), 2015, 2013, 2011, 2010, 2009

◇ International Design Automation Conference (**DAC**), 2015

◇ International Conference on Formal Techniques Distributed Objects, Components and Systems (**FORTE**), 2015

◇ IEEE Real-time Systems Symposium (**RTSS**), 2014

◇ IEEE Real-time and Embedded Technology and Applications Symposium (**RTAS**), 2014

◇ International Conference on Programming Languages and Coordination Models (**COORDINATION**), 2013, 2012

◇ International Conference on Fundamentals of Software Engineering (**FSEN**), 2015, 2013

◇ Australasian Symposium on Parallel and Distributed Computing (**AusPDC**), 2015, 2014, 2013

◇ International Conference on Software Engineering and Knowledge Engineering (**SEKE**), 2013, 2012, 2011

◇ International Conference on Distributed Computing and Networking (**ICDCN**), 2012

◇ International Symposium on Foundations of Health Information Engineering and Systems (**FHIES**), 2012

◇ IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (**EUC**), 2011

◇ International Conference on Embedded and Multimedia Computing (**EMC**), 2011

◇ IEEE International Conference on Embedded Software and Systems (**ICESS**), 2010

◇ International Workshop on Logical Aspects of Fault-Tolerance (**LAFT**), 2009

Journal & Conference Referee

Served as reviewer for several journals, including

· IEEE Transactions on Parallel and Distributed Systems (TPDS), ACM Transactions on Embedded Computing Systems (TECS), Springer Journal on Distributed Computing (DC), Elsevier Science of Computer Programming (SCP), Elsevier Information Processing Letters (IPL), ACM Transactions on Autonomous and Adaptive Systems (TAAS), Elsevier Journal on Theoretical Computer Science (TCS), Elsevier Journal on Science of Computer Programming (SCP), Springer Journal on Formal Methods in System Design (FMSD), ACM Transactions on Programming Languages and Systems (TOPLAS), Wiley Journal on Software Testing, Verification, and Reliability (STVR)

Served as external reviewer for several conferences, including

· International Conference on Formal Methods (FM), International Conference on Logic for Programming Artificial Intelligence and Reasoning (LPAR), International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), IEEE Symposium on Logic in Computer Science (LICS), ACM Symposium on Principles of Distributed Computing (PODC), IEEE Dependable and Network Systems (DSN), International Conference on Computer-Aided Verification (CAV), IEEE Conference in Network Protocols (ICNP), IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), International Conference on Distributed Computing (DISC), IEEE Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), IEEE Conference on Networking, Sensing, and Control (ICNSC), International Workshop on Assurance in Distributed Systems and Networks (ADSN), International Conference on Networked Sensing Systems (INSS).

Organization Leadership

· First vice president of International Students Association (ISA) at Michigan State University.

7. Teaching Record

<table>
<tr>
<td>UNDERGRAD.
COURSES</td>
<td>⋄ Department of Computing and Software, McMaster University
Course instructed: *Operating Systems* (Sfwr Eng 3SH3).</td>
<td>*Winter 2016*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Computing and Software, McMaster University
Course instructed: *Principles of Programming* (Sfwr Eng / Comp Sci 2S03).</td>
<td>*Fall 2015*</td>
</tr>
<tr>
<td></td>
<td>⋄ School of Computer Science, University of Waterloo
Course instructed: *Logic and Computation* (CS245).</td>
<td>*Fall 2013*</td>
</tr>
<tr>
<td></td>
<td>⋄ School of Computer Science, University of Waterloo
Course instructed: *Logic and Computation* (CS245), **recognized as top instructor**.</td>
<td>*Fall 2012*</td>
</tr>
<tr>
<td></td>
<td>⋄ School of Computer Science, University of Waterloo
Course instructed: *Operating Systems* (CS350).</td>
<td>*Fall 2011*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Computer Science, Michigan State University
Course instructed: *Operating Systems* (CSE410).</td>
<td>*Summer 2008*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Computer Science, Michigan State University
Course instructed: *Computing Concepts and Competencies* (CSE101).</td>
<td>*Fall 2004*</td>
</tr>
</table>

<table>
<tr>
<td>GRADUATE
COURSES</td>
<td>⋄ Department of Computing and Software, McMaster University
Course instructed: *Logic and Discrete Math for Software Engineering* (CAS 701).</td>
<td>*Fall 2016*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Computing and Software, McMaster University
Course instructed: *Logic and Discrete Math for Software Engineering* (CAS 701).</td>
<td>*Fall 2015*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Computing and Software, McMaster University
Course instructed: *Distributed Algorithms* (CAS 769).</td>
<td>*Winter 2015*</td>
</tr>
<tr>
<td></td>
<td>⋄ School of Computer Science, University of Waterloo
Course instructed: *Computer-Aided Verification* (CS745).</td>
<td>*Fall 2013*</td>
</tr>
<tr>
<td></td>
<td>⋄ School of Computer Science, University of Waterloo
Course instructed: *Computer-Aided Verification* (CS745), **recognized as top instructor**.</td>
<td>*Fall 2012*</td>
</tr>
<tr>
<td></td>
<td>⋄ Department of Electrical and Computer Engineering, University of Waterloo
Course instructed: *Computer-Aided Verification* (CS745).</td>
<td>*Winter 2011*</td>
</tr>
</table>

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8. Miscellaneous

WORK
EXPERIENCE

◇ **Tecteon PLC., Software Designer and Developer**   *2001-2002*
London, UK

Project involved: Design and implementation of a 128ms echo canceler test-bed
using real-time UML and Visual C++.

◇ **Electrical and Computer Engineering Research Center, Team Leader** *1998-2001*
Esfahan University of Technology, Iran

Projects involved: (I) Design and implementation of heterogeneous distributed signal
processing algorithms.
(II) Design and implementation of an IPX/SPX router in
Windows 2000 environment.