

Curriculum Vita for Saurabh Bagchi

July/2017

Education:

<i>Degree</i>	<i>Date</i>	<i>School</i>
BTech	July 1996	Indian Institute of Technology, Kharagpur
MS	May 1998	University of Illinois at Urbana-Champaign
PhD	January 2001	University of Illinois at Urbana-Champaign

Appointments:

August 2013 – Current	Professor, School of Electrical and Computer Engineering (ECE), Purdue University
May 2004 – Current	Assistant/Associate/Full Professor, Department of Computer Science, Purdue University (Courtesy Appointment)
May 2008 – July 2013	Associate Professor, School of Electrical and Computer Engineering (ECE), Purdue University
August 2002 – April 2008	Assistant Professor, School of Electrical and Computer Engineering (ECE), Purdue University
September 2011 – Current	Visiting Scientist, IBM Research, Austin
2002	Research Staff Member, IBM T. J. Watson Research Center

Professional and Honorary Society Memberships:

Institute of Electrical and Electronics Engineering (IEEE)
 Member 1996-2006, Senior member 2007-present
 Board of Governors, Computer Society 2017-19
 Association of Computing Machinery (ACM)
 Member 2003-2009, Senior member 2009-present, Distinguished Scientist 2013-present
 Sigma Xi, The Scientific Research Society
 Member 2009-present (Elected to full membership)

Honors and Awards:

- [1] Founding Director, Purdue College of Engineering Center for Resilient Infrastructures, Systems and Processes (CRISP), 2016: A multi-disciplinary center involving 6 faculty in leadership roles developing design and implementation principles for resilient systems, in the domains of cyber, physical, and civil infrastructures.
- [2] AT&T Labs Research VURI Award, 2016
- [3] IEEE Computer Society Board of Governors, 2017-19
- [4] Google Faculty Research Award, 2015, for project titled “Man with machine in the battle against fake consumer reviews”.
- [5] Program Chair for the 25th IEEE International Symposium on Software Reliability Engineering (ISSRE), 2014 (this is the premier conference on software systems reliability)

and the 41st IEEE/IFIP Conference on Dependable Systems and Networks (DSN), 2011 (this is the premier conference on dependability).

- [6] Elevated to ACM Distinguished Scientist, 2013. Citation: “for laying the software basis for designing distributed systems that can tolerate faults under a variety of operating conditions”.
- [7] Best paper at ACM BCB (2015), ACM Sensys (2011), International Conference on Security and Privacy in Communication Networks (SecureComm; 2008), IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (SUTC; 2006); Runner-up for best paper award at IEEE/ACM Supercomputing Conference (2009, 2012), IEEE High Performance Distributed Computing (HPDC; 2006), IEEE International Microwave Symposium (IMS; 2005), and IEEE International Conference on Dependable Systems and Networks (DSN; 2005)
- [8] Re-appointed Visiting Scientist to IBM Research (originally started in 2012).
- [9] Selected as a faculty fellow of the IMPACT program at Purdue (for 2013-14), sole ECE fellow. IMPACT is a program at Purdue which seeks to change the learning culture on the West Lafayette campus to become more student-centered. Faculty fellows are competitively selected to lead this transformation.
- [10] Appointed ACM Distinguished Speaker, 2012.
- [11] Organizing Committee of the premier dependability conference, IEEE International Symposium on Dependable Systems and Networks (DSN), 2006, 2010, 2011, 2014.
- [12] Appointed Visiting Scientist to IBM Research, Austin (2012 – current)
- [13] Purdue Seed for Success Award, 2011 – two, for the NEEScomm and the MDA grants (given to Purdue PIs who bring in more than \$1M in a single grant).
- [14] Editor of Elsevier Computers and Security (CoSE) (2013-current). Associate Editor of IEEE Transactions on Mobile Computing (TMC) 2008-13 (3 year term, extended by 2 more years).
- [15] Appointed as the Assistant Director of CERIAS, the inter-disciplinary computer security center on the Purdue campus, January 2011. (One of four Assistant Directors)
- [16] Purdue co-PI on the NEES Operations grant 2009-2014 (CMMI-0927178), the largest grant ever awarded to Purdue at \$105M.
- [17] Awarded the Eta Kappa Nu Purdue Student Chapter “Outstanding Professor Award” Spring 2010. This is awarded to one or two faculty members in one academic year.
- [18] Awarded “Teaching for Tomorrow” Award from Purdue University in May 2009, one of ten university-wide awards given for excellence and promise in undergraduate teaching
- [19] Senior member of IEEE (since 2007) and ACM (since 2009)
- [20] Selected as Member of Sigma Xi, the Scientific Research Society
- [21] Nominated by the School of Electrical and Computer Engineering for the Purdue University A. A. Potter Award for Teaching Excellence, 2008 (a single faculty is nominated by ECE based on performance in undergraduate teaching)
- [22] Associate Editor for IEEE Transactions on Mobile Computing (appointed February 2008)

Professional Experience:

August 2013 – present	Professor, School of Electrical and Computer Engineering, Purdue University
August 2008 – August 2013	Associate Professor, School of Electrical and Computer Engineering, Purdue University
August 2011 – present	Visiting Research Scientist, IBM Research Austin
April 2004 – present	Assistant/Associate Professor/Professor, Department of Computer Sciences, Purdue University (Courtesy Appointment)
August 2002 – August 2008	Assistant Professor, School of Electrical and Computer Engineering, Purdue University
January 2001 – July 2002	Research Staff Member, IBM T. J. Watson Research Center

Research Grants and Contracts Received:

(Total grant amounts are listed. If not specified otherwise, the amount is shared equally among the investigators. If no other investigator is mentioned, this implies that the entire amount listed is my share.)

External

- [1] PI, Adobe Research, “Streaming Data Analytics as a Service with Optimal, Fault-Tolerant Cloud Resource Scheduling,” Unrestricted gift, \$60,000.
- [2] PI (with Co-PI: Shreyas Sundaram), Sandia National Lab, “Algorithms for Secure and Distributed Mobile Intelligence, Surveillance, and Reconnaissance Platforms,” October 2017-October 2019, \$200,000. (Individual share: ½)
- [3] Co-PI (with PI: Shreyas Sundaram, Co-PI: Timothy Cason), National Science Foundation, Secure & Trustworthy Cyberspace (SaTC) Program, “The Impacts of Human Decision-Making on Security and Robustness of Interdependent Systems,” Proposal No. CNS-1718637, July 2017-July 2020, \$500,000. (Individual share: ½).
- [4] PI, Lawrence Livermore National Lab, “Efficient Launching of GPU Kernels in the RAJA Programming Model,” March 2017-March 2018, \$75,000.
- [5] PI, Northrop-Grumman Corporation, “Prediction of Attack Consequences and Automatic Network Reconfiguration as Response,” November 2016-December 2017, \$150,000.
- [6] Co-PI (with PI: Ananth Grama (Purdue – Computer Science), Folker Meyer (Argonne National Lab), Co-PI: Somali Chaterji (Purdue CS)), National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID), Research Project (R01), “Continued Development and Maintenance of the MG-RAST Metagenomics Pipeline,” Project No. 1R01AI123037-01, March 2016-February 2021, \$3.8M. (Individual share: About 20%)

- [7] Co-PI (with PI: Abhijit Deshmukh and co-PI: Seokcheon Lee (Purdue – Industrial Engineering)), General Electric, “PRIAM: Smart Real Time Optimized Factories,” June 2015-June 2020, \$1.2M. (Individual share: Approximately 33%) Part of the Purdue-GE 5 year \$10M center, called PRIAM.
- [8] PI, National Science Foundation, Computer Systems Research (CSR) Program, “Diagnosing Performance and Correctness Errors in Parallel Applications at Large Scales,” Proposal No. CNS-1527262, October 2015-September 2018, \$485,514.
- [9] Co-PI (with PI: Gene Spafford (Purdue – Computer Science)), National Science Foundation, Secure & Trustworthy Cyberspace (SaTC) Program, “EAGER: Exploring the Use of Deception to Enhance Cyber Security,” Proposal No. CNS-1548114, August 2015-July 2018, \$182,299. (Individual share: ½)
- [10] PI (with Co-PIs: Xiaohui Song (Purdue), Ravishankar Iyer, Zbigniew Kalbarczyk (University of Illinois at Urbana-Champaign)), National Science Foundation, Division of Computer and Network Systems (CNS), Computing Research Infrastructure (CRI) Program, “Collaborative Research: Computer System Failure Data Repository to Enable Data-Driven Dependability Research,” Proposal No. CNS-1513197, July 2015-July 2018, \$763,331 (Purdue portion). (Individual share: About 75%)
- [11] Co-PI (with PI: Daniel DeLaurentis (Purdue – School of Aeronautics and Astronautics)), Missile Defense Agency, “System of Systems Modeling and Analysis Innovations for Enhanced BMDS Architectures,” June 2015-May 2018, \$1.5M. (Individual share: about 35%)
- [12] PI, Lawrence Livermore National Lab, “Debugging and Failure Root-Cause Analysis Techniques for Heterogeneous Computing,” January 2015-January 2016, \$64,075.
- [13] PI, Northrop-Grumman Corporation, “User-Behavior Modeling and Detection for Novel Attacks against Distributed Infrastructure,” September 2014-September 2015, \$150,000.
- [14] PI, Department of Energy, “Quantifying the Performance Properties of Computing Systems,” September 2014-May 2015, \$50,000.
- [15] PI (with Co-PIs: Yuan Qi (Purdue), Mostafa Ammar (Georgia Tech)), National Science Foundation, Division of Computer and Network Systems (CNS), Research in Networking Technology and Systems (NeTS) Program, “Tango: Performance and Fault Management in Cellular Networks through Device-Network Cooperation,” Proposal No. CNS-1409506, July 2014-July 2018, \$1M.
- [16] PI (with Co-PI: Xiaohui Song (Purdue)), National Science Foundation, Division of Computer and Network Systems (CNS), Computing Research Infrastructure (CRI) Program, “Computer System Failure Data Repository to Enable Data-Driven Dependability Research,” Proposal No. CNS-1405906, June 2014-June 2015, \$100,000.

- [17] Co-PI (with Milind Kulkarni (PI), Michael Gribskov), National Science Foundation, Division of Computer and Communication Foundations (CCF) - Exploiting Parallelism and Scalability (XPS), "On the Hunt for Correctness and Performance Bugs in Large-scale Programs," Proposal No. CCF-1337158, September 2013-September 2015, \$260,331.
- [18] Co-PI, Missile Defense Agency (with PI: Dan DeLaurentis, Aero), "Agent-Based Enhanced C2BMC Architecture," September 2010-December 2014, \$4.8M. (Individual share: 35%)
- [19] PI, Northrop-Grumman Corporation, "RADMAP: Runtime Analysis of Emerging Attack and System Health Data for Mission Planning and Execution," September 2013-September 2014, \$150,000.
- [20] PI, Northrop-Grumman Corporation, "Configuration of Intrusion Detection Sensors for Advanced Persistent Threats in Distributed Systems," September 2012-September 2013, \$100,000.
- [21] PI, Department of Energy, Lawrence Livermore National Lab, "Root Cause Analysis of Faults in Parallel Systems," September 2012-May 2013, \$40,000.
- [22] PI, IBM Research Austin, "Reliability at the Intersection of Mobility and Cloud Computing," February 2012-February 2013, \$65,585 (as an unrestricted gift).
- [23] PI, Northrop-Grumman Corporation, "Secure Configuration of Intrusion Detection Sensors for Enterprise Systems," September 2011-2012, \$100,000.
- [24] PI, Northrop-Grumman Corporation, "Secure Configuration of Intrusion Detection Sensors for Enterprise Systems," September 2010-2011, \$100,000.
- [25] Co-PI (with Xiaojun Lin (PI)), National Science Foundation, Networking Technology and Systems (NeTS) - Network Ecosystems (NECO), "Provably Assurable Ad Hoc Networks under Arbitrary Malicious Behaviors," Proposal No. CNS-0831999, September 2008-September 2012, \$16,000 (individual share, supplemental award).
- [26] PI, National Science Foundation, Computer Systems Research (CSR) Program, "Monitoring for Error Detection in Today's High Throughput Applications," Proposal No. CNS-0916337, June 2011-June 2012, \$16,000 (individual share, supplemental award).
- [27] PI, National Science Foundation, Computer Systems Research (CSR) Program, "Travel grant for IEEE Symposium on Reliable Distributed Systems (SRDS)," Proposal No. CNS-1047647, July 2010-June 2011, \$10,000 (individual share).
- [28] Co-PI (within Purdue, not at NSF), National Science Foundation, "NEES Operations: FY 2010-FY2014," Proposal No. 0927178-CMMI, October 2009-October 2014, \$105M (individual share: 2 students, 1 summer month per year).

- [29] Co-PI (with Vijay Raghunathan (PI)), National Science Foundation, Integrative, Hybrid and Complex Systems, Division of Electrical, Communications and Cyber Systems (ECCS), Engineering Directorate, "Distributed Error Detection and Diagnosis in Wireless Embedded Systems with Customized Hardware Support," Proposal No. ECCS-0925851, September 2009-August 2012, \$317,233.
- [30] PI, National Science Foundation, Computer Systems Research (CSR) Program, "Monitoring for Error Detection in Today's High Throughput Applications," Proposal No. CNS-0916337, July 2009-June 2012, \$259,000 (individual share).
- [31] Co-PI (with Jim Krogmeier (PI) and Jan Allebach), National Science Foundation, Course, Curriculum and Laboratory Improvement (CCLI) Program: Phase 1, "Collaborative Research: The VIP Program - Integrating Undergraduate Design Projects and Graduate Research," Proposal No. DUE-0837280, February 2009-February 2011, \$82,732.
- [32] Co-PI (with Xiaojun Lin (PI)), National Science Foundation, Networking Technology and Systems (NeTS) - Network Ecosystems (NECO), "Provably Assurable Ad Hoc Networks under Arbitrary Malicious Behaviors," Proposal No. CNS-0831999, September 2008-September 2012, \$200,000.
- [33] Co-PI (with Gene Spafford (PI)), Lockheed Martin, "Secure Configuration Management and Resilience to Zero-Day Vulnerabilities," Awarded July 2008-July 2010, \$166,000 (individual share).
- [34] PI, National Science Foundation, Networking Technology and Systems (NeTS) – Networking of Sensor Systems (NOSS), "Robust sensor network architecture through neighborhood monitoring and isolation," REU Supplement for Proposal No. CNS-0626830, Awarded May 2008, \$12,000.
- [35] Co-PI (with Zhiyuan Li (PI) and Yung-Hsiang Lu), National Science Foundation, Computing Research Infrastructure (CRI) Program, "A Testbed for Compiler-supported Scalable Error Monitoring and Diagnosis for Reliable and Secure Sensor Networks," Proposal No. CNS- 0751101, March 2008-March 2010, \$48,930.
- [36] Co-PI (with Elisa Bertino (PI), Lorenzo Martino, Khalid Moidu), National Science Foundation, Information and Intelligent Systems (IIS) Division, Information Privacy and Security Area, "Security Services for Healthcare Applications," Proposal No. CNS-0712846, August 2007-August 2010, \$450,000.
- [37] Co-PI (with Zhiyuan Li (PI) and Yung-Hsiang Lu), National Science Foundation, Cyber Trust Program, "Compiler-Enabled Adaptive Security Monitoring on Networked Embedded Systems," Proposal No. CNS- 0716271, July 2007-July 2010, \$400,000.
- [38] Principal Investigator, Motorola Labs, "Placement of mesh nodes to maximize connectivity and coverage in a mobile rescue and relief operation setting," June 2007-June 2008, \$4,500 (includes \$3,500 equipment donation).

- [39] Principal Investigator (with William Chappell at Purdue, sub-contract through Emmet LLC), The Indiana 21st Century Research and Technology Fund, Round 7, "Metro-Wide Control of Combined Sewer Overflow Events Using Embedded Network Technology," June 2007-June 2009, \$145,994 (individual share).
- [40] Principal Investigator, Avaya Inc., "Intrusion Detection for Voice over IP (VoIP) Systems," April 2007-December 2008, \$60,000.
- [41] Principal Investigator, Lilly Endowment Inc., "Purdue Research Park Pre-eminence Award," Start date: December 2006, \$30,000.
- [42] PI (with Ness B. Shroff (Co-PI)), National Science Foundation, Networking Technology and Systems (NeTS) – Networking of Sensor Systems (NOSS), "Robust sensor network architecture through neighborhood monitoring and isolation," Proposal No. CNS- 0626830, September 2006-September 2009, \$350,000.
- [43] Co-PI (with Zhiyuan Li (PI) and Yung-Hsiang Lu), National Science Foundation, Computer Systems Research (CSR) – Embedded Hybrid Systems (EHS), "Resource-efficient Monitoring, Diagnosis, and Programming Support for Reliable Networked Embedded Systems," Proposal No. CNS-0509394, July 2005-July 2009, \$480,000.
- [44] Principal Investigator (with William Chappell at Purdue, sub-contract through University of Notre Dame), The Indiana 21st Century Research and Technology Fund, Round 6, "Detection and Control of Combined Sewer Overflow Events Using Embedded Sensor Network Technology," Project No. 512040817, January 2005-January 2007, \$153,902 (individual share).
- [45] Principal Investigator (with William Chappell and Catherine Rosenberg as co-PIs), NSF Engineering Directorate, Electrical and Communication Systems, " Smart RF Antennas for Reliable and Real-Time Sensor Networks," Proposal No. ECS-0330016, September 2003-August 2007, \$500,000.

Internal

- [1] Purdue's Office of Technology Commercialization, TRASK Funding program, "Achieving Predictable Performance on the Public Cloud," January-June, 2014, \$30,815.
- [2] Center for Instructional Excellence, "IMPACT Faculty Fellows program," January-December 2013, \$10,000.
- [3] Office of Vice President for Research, Cost-share for NEES grant, "NEES Operations," June-December 2011, \$8,000.
- [4] Office of Vice President for Research, Cost-share for NEES grant, "NEES Operations," January-December 2010, \$16,750.

- [5] Principal Investigator (with Mark Johnson, ECE), Purdue ITAP Teaching and Learning Technologies (TLT) grant, "Value Journeys Not Just Destinations In Learning," May 2009-May 2010, \$12,610.
- [6] Principal Investigator (with Wen Jiang, Biological Sciences, Purdue as co-PI), Purdue Research Foundation Special Initiative Research Grant (SIRG), "Efficient Execution in the Presence of Contention in Shared Computing Environments," June 2008-August 2009, \$16,375.
- [7] Principal Investigator, Purdue Research Foundation, International Travel Grant, "International Conference on Distributed Computing Systems (ICDCS), Beijing, China, June 17-20, 2008," \$1,000.
- [8] Principal Investigator, Purdue Research Foundation, International Travel Grant, "International Conference on Dependable Systems and Networks, Edinburgh, Scotland, June 25-28, 2007," \$1,000.
- [9] Principal Investigator (with Hugh Hillhouse, Chemical Engineering, Purdue as co-PI), Purdue Research Foundation Special Initiative Research Grant (SIRG), "Failure Prediction in Distributed Cycle Sharing Systems," August 2006-August 2007, \$15,292.
- [10] Principal Investigator, Purdue Research Foundation Research Grant, "Tolerating Malicious and Natural Failures in Distributed Applications," July 2005-June 2006, \$13,776.
- [11] Principal Investigator, Purdue Research Foundation, International Travel Grant, "International Conference on Dependable Systems and Networks, Yokohama, Japan, June 28-July 1, 2005," Account No. 750 1071-0002, \$1,000.
- [12] Principal Investigator, Purdue Research Foundation Summer Faculty Grant, "Disruption Detection in a Networked Environment through an External Monitor," June-August 2003, \$7,000.

Professional Society Activities:

Organization: IEEE Computer Society
Activity: Student Member, 1996 - 2001
Member, 2001 – February 2007
Senior Member, February 2007 – Current
Board of Governors, 2017 - 2019

- PC Chair of 25th IEEE International Symposium on Software Reliability Engineering (ISSRE), 2014.
- PC Chair of IEEE International Symposium on Dependable Systems and Networks (DSN), 2011.
- Member of organizing committee of IEEE International Symposium on Dependable Systems and Networks (DSN), 2006, 2010, 2013, 2014, 2017.

- Program Committee member for IEEE International Conference on Dependable Systems and Networks (DSN), 2003-current, IEEE Symposium on Reliable Distributed Systems (SRDS), 2004-current.
- Member of the Organizing Committee for SRDS, 2010 as Travel Grants Chair.
- Program Committee member for 7th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2011.
- Organizer of panel titled “Ten Dependability Challenges for the Next Decade” for DSN 2011.
- Steering Committee member and Co-organizer of “Workshop on Recent Advances in Intrusion Tolerant Systems (WRAITS)” held with DSN 2010, 2009. With Miguel Correia (U. of Lisbon) and Partha Pal (BBN/Raytheon).
- Co-organizer of Workshop titled “Dependability Issues in Wireless Ad Hoc Networks and Sensor Networks (DIWANS)”, at ACM International Conference on Mobile Computing and Networking (Mobicom), 2006 and IEEE International Conference on Dependable Systems and Networks (DSN), 2004. With Douglas Blough (Georgia Tech), Paolo Santi (IIT - CNR, Italy), Nitin Vaidya (Univ. of Illinois at Urbana-Champaign) in 2004 and Parmesh Ramanathan (University of Wisconsin), Shivakant Mishra (University of Colorado), Douglas Blough, and Paolo Santi in 2006.
- Organizer of panel titled “Open Source Software - A Recipe for Vulnerable Software, or The Only Way to Keep the Bugs and the Bad Guys Out?,” at IEEE International Symposium on Software Reliability Engineering (ISSRE), 2003.

Organization: ACM
 Activity: Member, 2003 – 2009
 Senior Member, 2009 – Current
 Distinguished Scientist, 2013
 Distinguished Speaker, 2012

PhD Thesis Supervision Completed:

<i>Name</i>	<i>Date</i>	<i>Thesis Title</i>
Nawanol Theera-Ampornpunt	July 2017	“Improving Failure Management through Cooperation between Mobile Devices and Cellular Network”
Kanak Mahadik (co-supervised with Milind Kulkarni)	July 2017	“Techniques for Scaling Computational Genomic Applications”

Subrata Mitra	November 2016	“What Broke Where For Distributed and Parallel Applications — A Whodunit Story”
Paul Wood	June 2016	"Improving the Resilience of Energy-Based Cyber-Physical Systems under Strategic Adversaries"
Matthew Tan Creti	April 2015	"Software and Hardware Approaches for Record and Replay of Wireless Sensor Networks"
Amiya Maji	February 2015	"Dependability where the Mobile World Meets the Enterprise World"
Bowen Zhou (co-supervised with Milind Kulkarni)	July 2014	"Characterization and Error Detection in Distributed Web Applications"
Fahad Ali Arshad	April 2014	"Failure Characterization and Error Detection in Distributed Web Applications"
Tanzima Zerine Islam (co-supervised with Rudi Eigenmann)	June 2013	"Reliable and Scalable Checkpointing Systems for Distributed Computing Environments"
Gaspar Modelo Howard	February 2013	"Secure Configuration of Intrusion Detection Sensors for Changing Enterprise Systems"
Ignacio Laguna	December 2012	"Probabilistic Fault Detection and Diagnosis in Large-Scale Distributed Applications"
Donghoon Shin	July 2012	"Algorithms for Distributed Monitoring in Multi-Channel Ad Hoc Wireless Networks"
Jin Kyu Koo (co-supervised with Xiaojun Lin)	July 2012	"Secure Control Protocols for Resource-Constrained Embedded Systems"
Rajesh Krishna Panta	June 2010	"Remote Reprogramming of Wireless Sensor Networks"
Sarah Sellke (co-supervised with Ness B. Shroff)	January 2010	"Analytical Techniques for Computer Security"
Yu-Sung Wu	May 2009	"Achieving High Survivability in Distributed Systems through Automated

Response"

Gunjan Khanna	June 2007	"Non Intrusive Detection and Diagnosis Of Failures in High Throughput Distributed Applications"
Issa Khalil (co-supervised with Ness B. Shroff)	December 2006	"Mitigation of Control and Data Traffic Attacks in Wireless Ad-Hoc and Sensor Network"

Master's Thesis Supervision Completed:

<i>Name</i>	<i>Date</i>	<i>Thesis Title</i>
Tara Thomas	July 2017	Streaming data analytics for bottleneck identification in an industrial shop floor
Ayush Patwari (co-supervised with Dan Goldwasser)	July 2017	Identifying undesirable behavior in social media: Towards automated fact-checking and YouTube meta-data spam detection
Suhas Javagal	April 2016	User centric workload analytics: Towards better cluster management
Ravi Gupta (co-supervised with Felix Lin)	April 2016	Programmability for high performance from heterogeneous architectures
Benjamin Kobin	May 2014	Debugging systems problems in data centers (co-supervised with Michael Kistler, IBM Research) (Independent study project)
Madalina Baker	July 2011	"CarChat: A Vehicular Wireless Ad-Hoc Network Data Dissemination Protocol"
Matthew Tan Creti	November 2008	"Neighborhood Overhearing for Detection of Security Attacks in Wireless Sensor Networks"
Ignacio Laguna	June 2008	"Online Error Detection for High Data Rate Distributed Applications"
Carlos Perez	December 2007	"Reputation-based Resilient Data Aggregation in Sensor Networks"
Bryan Rabeler	August 2006	"Fine-Grained Control of Reliability in Shared-Memory Parallel Programs"
Vinita Apte	May 2006	"Distributed Intrusion Detection for Voice-over-IP Environments"

Mike Cheng	May 2006	"State Space Reduction for Efficient Detection and Diagnosis in Distributed Systems"
Ravish Khosla (co-supervised with Edward J. Coyle, ECE)	May 2006	"Reliable Data Dissemination in Energy Constrained Sensor Networks"
Mark Krasniewski	August 2005	"Reliable Middleware for Sensor Networks"
Padma Varadharajan	May 2005	"Automated Monitor Based Detection and Diagnosis in Distributed Systems"
Nipoon Malhotra	June 2004	"Robust Location Determination in Wireless Ad-Hoc Networks"
Yu-Sung Wu	May 2004	"Securing E-commerce System via Collaborative Intrusion Detection and Adaptive Intrusion Tolerance"
Gunjan Khanna	December 2003	"Self Checking Network Protocols: a Monitor-based Approach"

Master's and PhD Thesis Students Currently Being Supervised:

Abraham Clements (co-supervised with Mathias Payer)	PhD	System security for bare-metal embedded systems
Christopher Gutierrez (co-supervised with Gene Spafford)	PhD	Security in distributed applications
Ashraf Mahgoub (co-supervised with Ananth Grama)	PhD	Efficient computational pipelines for genomics workloads
Charitha Saumya (co-supervised with Milind Kulkarni)	PhD	Debugging distributed applications at large scales
Ranvijay Singh	PhD	Performance debugging for accelerator programs
Christopher Wright (co-supervised with Milind Kulkarni)	PhD	Domain Specific Language for genomics applications
Ran Xu (co-supervised with Sasa Misailovic, UIUC)	PhD	Performance debugging for approximate programs
Heng Zhang	PhD	Crowdsensing in mobile platforms

Subramaniam Kannan MS Intrusion response in SDN-based environments

Research Scientists Currently Supervised:

Dr. Linas Mockus, 2014 – present

Dr. Jinkyu Koo, 2016 – present

Dr. Paul Wood, 2016 – present

Courses Developed:

ECE 695 Fault Tolerant Computer Systems (Offered Spring 2009, Spring 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016)

ECE 572 Fault Tolerant Computer Systems (Offered Spring 2003, 2004, 2005, 2007)
(subsumed by ECE 695)

EPICS-ISR Started sensor networks project for Imagination Station, Lafayette (Continuously offered every semester from Spring 2004)

Book Chapters and Magazine Articles:

- [B1] I. Laguna, D. H. Ahn, B. R. de Supinski, T. Gamblin, G. L. Lee, M. Schulz (LLNL), S. Bagchi, M. Kulkarni, B. Zhou (Purdue), Z. Chen, F. Qin (Ohio State), “Debugging High-Performance Computing Applications at Massive Scales,” In Communications of the ACM (CACM) Magazine, vol. 58, no. 9, pp. 72-81, September 2015.
- [B2] Dong-Hoon Shin, Danny Moses (Intel), Muthaiah Venkatachalam (Intel), and Saurabh Bagchi, “Distributed Mobility Management for Efficient Video Delivery over All-IP Mobile Networks: Competing Approaches,” In IEEE Networks Magazine, special issue on "Video over Mobile Networks", pp. 28-33, vol. 27, issue 2, March-April 2013.
- [B3] William Oakes and Saurabh Bagchi, “EPICS Software Development Projects,” In “Service Learning in the Computer and Information Sciences: Practical Applications in Engineering Education”, pp. 159-172, Wiley-IEEE Press, 2012.
- [B4] Yu-Sung Wu, Gaspar M. Howard, Matthew W. Glause, Bingrui Foo, Saurabh Bagchi, and Eugene H. Spafford , “Intrusion Response Systems: A Survey,” In “Information Assurance: Dependability and Security in Networked Systems”, editors David Tipper, Prashant Krishnamurthy, Yi Qian, and James Joshi; pp. 377-416, published by Morgan Kaufmann, 2008.
- [B5] Yuldi Tirta, Bennett Lau, Nipoon Malhotra, Saurabh Bagchi, Zhiyuan Li, and Yung-Hsiang Lu, “Controlled Mobility for Efficient Data Gathering in Sensor Networks with Passively Mobile Nodes,” In “Sensor Network Operations” (Phoha, LaPorta and Griffin eds.), Chapter 3.2, pp. 92-113, IEEE Press, 2006. (Acceptance rate: 30/90 ~ 33.3%)

Serial Journal Articles:

- [J1] Somali Chaterji, Jinkyu Koo, Ninghui Li, Folker Meyer, Ananth Grama, and Saurabh Bagchi, "Federation in Genomics Pipelines: Techniques and Challenges," Accepted to appear in Oxford Briefings in Bioinformatics, pp. 1-11, accepted July 2017.
- [J2] Folker Meyer (Argonne Natonal Lab), Saurabh Bagchi, Somali Chaterji, Wolfgang Gerlach (Argonne Natonal Lab), Ananth Grama, Travis Harrison (Argonne Natonal Lab), Tobias Paczian (Argonne Natonal Lab), Will Trimble (Argonne Natonal Lab), Andreas Wilke (Argonne Natonal Lab), "MG-RAST Version 4 — Lessons learned from a decade of low-budget ultra-high throughput metagenome analysis," Accepted to appear in Oxford Briefings in Bioinformatics, pp. 1-12, accepted July 2017.
- [J3] Andreas Wilke, Jared Bischof, Wolfgang Gerlach, Elizabeth Glass, Travis Harrison, Kevin P. Keegan, Tobias Paczian, William L. Trimble, Saurabh Bagchi, Ananth Grama, Somali Chaterji, and Folker Meyer, "The MG-RAST metagenomics database and portal in 2015," *Nucleic Acids Research*, volume 44 (Database Issue), pp. 590-594, December 2015.
- [J4] Asish Ghoshal, Raghavendran Shankar, Saurabh Bagchi, Ananth Grama, and Somali Chaterji, "MicroRNA Target Prediction using Thermodynamic and Sequence Curves," *BMC Genomics*, volume 16, number 1, pp. 1-21, November 2015, doi: 10.1186/s12864-015-1933-2.
- [J5] Dong-Hoon Shin, Saurabh Bagchi, and Chih-Chun Wang, "Toward Optimal Distributed Monitoring of Multi-Channel Wireless Networks," *IEEE Transactions on Mobile Computing (TMC)*, vol. 15, no. 7, pp. 1826-1838, July 2016.
- [J6] Tanzima Zerine Islam, Saurabh Bagchi, and Rudolf Eigenmann, "Reliable and Efficient Distributed Checkpointing System for Grid Environments," *Journal of Grid Computing (JoGC)*, volume 12, issue 4, pp. 593-613, December 2014.
- [J7] Ignacio Laguna, Dong H. Ahn, Bronis R. de Supinski, Saurabh Bagchi, and Todd Gamblin, "Diagnosis of Performance Faults in Large Scale Parallel Applications via Probabilistic Progress-Dependence Inference," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 26, no. 5, pp. 1280-1289, May 2015.
- [J8] Marc Snir, Robert W. Wisniewski, Jacob A. Abraham, Sarita V. Adve, Saurabh Bagchi, Pavan Balaji, Jim Belak, Pradip Bose, Franck Cappello, Bill Carlson, Andrew A. Chien, Paul Coteus, Nathan DeBardleben, Pedro C. Diniz, Christian Engelmann, Mattan Erez, Saverio Fazzari, Al Geist, Rinku Gupta, Fred Johnson, Sriram Krishnamoorthy, Sven Leyffer, Dean Liberty, Subhasish Mitra, Todd Munson, Rob Schreiber, Jon Stearley, and Eric Van Hensbergen, "Addressing failures in exascale computing," *International Journal of High Performance Computing Applications*, Volume 28, Number 2, pp. 129-173, May 2014.

- [J9] Tanzima Zerine Islam, Kathryn Mohror, Saurabh Bagchi, Adam Moody, Bronis R. de Supinski, and Rudolf Eigenmann, "McEngine: A scalable checkpointing system using data-aware aggregation and compression," *Scientific Programming*, vol. 21, issues 3-4, pp. 149-163, July 2013.
- [J10] Jinkyu Koo, Dong-Hoon Shin, Xiaojun Lin, and Saurabh Bagchi, "A Delay-Bounded Event-Monitoring and Adversary-Identification Protocol in Resource-Constrained Sensor Networks," *Elsevier Ad Hoc Networks*, pp. 1820-1835, vol. 11, issue 6, August 2013.
- [J11] Dong-Hoon Shin and Saurabh Bagchi, "An Optimization Framework for Monitoring Multi-Channel Multi-Radio Wireless Mesh Networks," *Elsevier Ad Hoc Networks*, pp. 926-943, Volume 11, Issue 3, May 2013.
- [J12] Rajesh Krishna Panta and Saurabh Bagchi, "Mitigating the Effects of Software Component Shifts for Incremental Reprogramming of Wireless Sensor Networks," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, pp. 1882-1894, vol. 23, issue 10, October 2012.
- [J13] Thomas J. Hacker, Rudi Eigenmann, Saurabh Bagchi, Ayhan Irfanoglu, Santiago Pujol, Ann Catlin, Ellen Rathje, "The NEEShub Cyberinfrastructure for Earthquake Engineering," *IEEE Computing in Science and Engineering*, vol. 13, issue 4, pp. 67-78, July-August 2011.
- [J14] Issa Khalil and Saurabh Bagchi, "Stealthy Attacks in Wireless Ad Hoc Networks: Detection and Countermeasure," *IEEE Transactions on Mobile Computing (TMC)*, vol. 10, issue 8, pp. 1096-1112, August 2011.
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- [J16] Rajesh Krishna Panta, Saurabh Bagchi, and Samuel P. Midkiff, "Efficient Incremental Code Update for Sensor Networks," *ACM Transactions on Sensor Networks (TOSN)*, vol. 7, issue 4, pp. 1-32, February 2011.
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- [J21] Mark D. Krasniewski, Rajesh K. Panta, Saurabh Bagchi, Chin-Lung Yang, and William J. Chappell, "Energy-efficient, On-demand Reprogramming of Large-scale Sensor Networks," ACM Transactions on Sensor Networks (TOSN), Volume 4, Issue 1, pp. 1-38, January 2008.
- [J22] Issa Khalil, Saurabh Bagchi, and Ness B. Shroff, "MOBIWORP: Mitigation of the Wormhole Attack in Mobile Multihop Wireless Networks," Elsevier Ad hoc Networks Journal, Volume 6, Issue 3, pp. 344-362, May 2008.
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- [J25] Issa Khalil, Saurabh Bagchi, and Ness B. Shroff, "LITEWORP: Detection and Isolation of the Wormhole Attack in Static Multihop Wireless Networks," Elsevier Computer Networks Journal, volume 51, issue 13, pp. 3750-3772, September 2007.
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- [J28] Yu-Sung Wu, Bingrui Foo, Yu-Chun Mao, Saurabh Bagchi, and Eugene H. Spafford, "Automated Adaptive Intrusion Containment in Systems of Interacting Services," Elsevier Computer Networks Journal, Special Issue on "From intrusion detection to self-protection", Volume 51, Issue 5, pp. 1334-1360, April 2007.
- [J29] Chin-Lung Yang, Saurabh Bagchi, and William J. Chappell, "Topology Insensitive Location Determination Using Independent Estimates Through Semi-Directional Antennas," IEEE Transactions on Antennas and Propagation (TAP), Volume: 54 , Issue: 11 , Part 2, pp. 3458 – 3472, Nov. 2006.

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- [J32] Zbigniew Kalbarczyk, Ravishankar K. Iyer, Saurabh Bagchi, and Keith Whisnant, "Chameleon: A Software Infrastructure for Adaptive Fault Tolerance," In IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 10, No. 6, pp. 560-579, June 1999.

Rigorously Reviewed Conference Papers:

- [C1] Ashraf Mahgoub, Paul Wood, Sachandhan Ganesh, Subrata Mitra (Adobe Research), Wolfgang Gerlach (Argonne National Laboratory), Travis Harrison (Argonne National Laboratory), Folker Meyer (Argonne National Laboratory), Ananth Grama, Saurabh Bagchi, and Somali Chaterji, "RAFIKI: A Middleware for Parameter Tuning of NoSQL Datastores for Dynamic Metagenomics Workloads," Accepted to appear at the ACM/IFIP/USENIX Middleware Conference, pp. 1-13, Dec 11-15, 2017, Las Vegas, Nevada. (Acceptance rate: $20/85 = 23.5\%$)
- [C2] Heng Zhang, Nawanol Theera-Ampornpunt, He Wang, Saurabh Bagchi, and Rajesh K. Panta (AT&T Labs), "SENSE-AID: A framework for enabling network as a service for participatory sensing," Accepted to appear at the ACM/IFIP/USENIX Middleware Conference, pp. 1-13, Dec 11-15, 2017, Las Vegas, Nevada. (Acceptance rate: $20/85 = 23.5\%$)
- [C3] Subramaniyam Kannan, Paul Wood, Larry Deatrick (Northrop Grumman), Patricia Beane (Northrop Grumman), Somali Chaterji, and Saurabh Bagchi, "Topology-based Host-Level Attribution for Multi-Stage Attacks in Enterprise Systems using Software Defined Networks," Accepted to appear at the 13th International Conference on Security and Privacy in Communication Networks (Securecomm), pp. 1-22, October 22-24, 2017, Niagara Falls, Canada. (Acceptance rate: $31/105 = 29.5\%$)
- [C4] Kanak Mahadik, Christopher Wright, Milind Kulkarni, Saurabh Bagchi, and Somali Chaterji, "Scalable Genomic Assembly through Parallel de Bruijn Graph Construction for Multiple K-mers," Accepted to appear at the 8th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB) (short paper), pp. 1-7, Aug 20-23, 2017, Boston, MA.
- [C5] Abraham A Clements, Naif Saleh Almakhdhub, Khaled Saab, Prashast Srivastava, Jinkyu Koo, Saurabh Bagchi, and Mathias Payer, "Protecting Bare-metal Embedded Systems with Privilege Overlays," In Proceedings of the IEEE International

- Symposium on Security and Privacy (Oakland), pp. 289-303, May 22-26, 2017, San Jose, California. (Acceptance rate: $60/450 = 13.3\%$)
- [C6] Jinkyu Koo, Xiaojun Lin, and Saurabh Bagchi, "RL-BLH: Learning-Based Battery Control for Cost Savings and Privacy Preservation for Smart Meters," In Proceedings of the 47th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 519-530, June 26-29, 2017, Denver, Colorado. (Acceptance rate: $49/220 = 22.3\%$ (regular papers))
- [C7] Subrata Mitra, Manish Gupta, Sasa Misailovic (U of Illinois at Urbana-Champaign), Saurabh Bagchi, "Phase-Aware Optimization in Approximate Computing," In Proceedings of the 2017 IEEE/ACM International Symposium on Code Generation and Optimization (CGO), pp. 185-196, Feb 4-8, 2017, Austin, TX. (Acceptance rate: $26/114 = 22.8\%$)
- [C8] Ashish R. Hota, Abraham A. Clements, Shreyas Sundaram, and Saurabh Bagchi, "Optimal and Game-Theoretic Deployment of Security Investments in Interdependent Assets," At the 7th Conference on Decision and Game Theory for Security (GameSec), pp. 101-113, Nov 2-4, 2016, New York City, New York.
- [C9] Nawanol Theera-Ampornpunt, Tarun Mangla, Saurabh Bagchi, Rajesh Panta, Kaustubh Joshi, Mostafa Ammar, and Ellen Zegura, "Toward a More Reliable Mobile Streaming through Cooperation between Cellular Network and Mobile Devices," In Proceedings of the IEEE 35th Symposium on Reliable Distributed Systems (SRDS), pp. 297-306, September 26-29, 2016, Budapest, Hungary. (Acceptance rate: $27/83 = 32.5\%$)
- [C10] Tara Thomas, Anmol Bhattad, Subrata Mitra, and Saurabh Bagchi, "Probabilistic data assertions to detect silent data corruptions in parallel programs," In Proceedings of the IEEE 35th Symposium on Reliable Distributed Systems (SRDS), pp. 41-50, September 26-29, 2016, Budapest, Hungary. (Acceptance rate: $27/83 = 32.5\%$)
- [C11] Mahadik, Kanak, Christopher Wright, Jinyi Zhang, Milind Kulkarni, Saurabh Bagchi, and Somali Chaterji. "SARVAVID: A Domain Specific Language for Developing Scalable Computational Genomics Applications." In Proceedings of the 2016 International Conference on Supercomputing (ICS), pp. 1-12, June 1-3, 2016, Istanbul, Turkey. (Acceptance rate: $43/178 = 24.2\%$)
- [C12] Subrata Mitra, Rajesh Krishna Panta (AT&T Labs), Moo-Ryong Ra (AT&T Labs), Saurabh Bagchi, "Partial-parallel-repair (PPR): a distributed technique for repairing erasure coded storage," At the European Conference on Computer Systems (EuroSys), pp. 1-16, April 18-21, 2016, London, UK. (Acceptance rate: $38/180 = 21.1\%$)
- [C13] Paul Wood, Saurabh Bagchi, and Alefiya Hussain, "Defending Against Strategic Adversaries in Dynamic Pricing Markets for Smart Grids," At the 8th International Conference on Communication Systems and Networks (COMSNETS), pp. 1-8, January 5-9, 2016, Bangalore, India. (Acceptance rate: $39/143 = 27.3\%$)

- [C14] Nawanol Theera-Ampornpunt, Seong Gon Kim, Asish Ghoshal, Saurabh Bagchi, Ananth Grama and Somali Chaterji, “Fast training on large genomics data using distributed Support Vector Machines,” At the 8th International Conference on Communication Systems and Networks (COMSNETS), pp. 1-8, January 5-9, 2016, Bangalore, India. (Acceptance rate: 39/143 = 27.3%)
- [C15] Subrata Mitra, Greg Bronevetsky, Suhas Javagal and Saurabh Bagchi, “Dealing with the Unknown: Resilience to Prediction Errors,” At the 24th International Conference on Parallel Architectures and Compilation Techniques (PACT), pp. 331-342, October 18-21, 2015, San Francisco, CA. (Acceptance rate: 38/179 = 21.2%)
- [C16] Asish Ghoshal, Ananth Grama, Saurabh Bagchi and Somali Chaterji, “An Ensemble SVM Model for the Accurate Prediction of Non-Canonical MicroRNA Targets,” At the 6th ACM Conference on Bioinformatics, Computational Biology and Health Informatics (BCB), pp. 403-412, September 9-12, 2015, Atlanta, GA. (Acceptance rate: 48/141 = 34%) (Winner of the best paper award)
- [C17] Paul Wood, Christopher N. Gutierrez, and Saurabh Bagchi, “Denial of Service Elusion (DoSE): Keeping Clients Connected for Less,” At the 34th International Symposium on Reliable Distributed Systems (SRDS), pp. 94-103, September 28 – October 1, 2015, Montreal, Canada. (Acceptance rate: 24/81 (regular papers) = 29.6%)
- [C18] Amiya K. Maji, Subrata Mitra, and Saurabh Bagchi, “ICE: An Integrated Configuration Engine for Interference Mitigation in Cloud Services,” At the 12th IEEE International Conference on Autonomic Computing (ICAC), pp. 91-100, July 7-10, 2015, Grenoble, France. (Acceptance rate: 14/69 (full papers) = 20.3%)
- [C19] Matthew Tancreti, Vinaitheerthan Sundaram, Saurabh Bagchi, and Patrick Eugster, “TARDIS: Software-Only System-Level Record and Replay in Wireless Sensor Networks,” At the 14th ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN), pp. 286-297, April 13-17, 2015, Seattle, WA. (Acceptance rate: 27/111 = 24.3%)
- [C20] Amiya Maji, Subrata Mitra, Bowen Zhou, Saurabh Bagchi, and Akshat Verma (IBM Research), “Mitigating Interference in Cloud Services by Middleware Reconfiguration,” At the 15th Annual ACM/IFIP/USENIX Middleware conference, pp. 277-288, December 8-12, 2014, Bordeaux, France. (Acceptance rate: 27/144 = 18.8%)
- [C21] Kanak Mahadik, Somali Chaterji, Bowen Zhou, Milind Kulkarni, and Saurabh Bagchi, “Orion: Scaling Genomic Sequence Matching with Fine-Grained Parallelization,” At the International Conference for High Performance Computing, Networking, Storage, and Analysis (Supercomputing), pp. 449-460, Nov 16-21, 2014, New Orleans, LA. (Acceptance rate: 82/394 = 20.8%)

- [C22] Tawfeeq Shawly, Jun Liu, Nathan Burow, Saurabh Bagchi, Robin Berthier (University of Illinois at Urbana-Champaign), and Rakesh B. Bobba (University of Illinois at Urbana-Champaign), “A Risk Assessment Tool for Advanced Metering Infrastructures,” At the 5th IEEE International Conference on Smart Grid Communications (SmartGridComm), pp. 989-994, November 3-6, 2014. (Acceptance rate: $168/398 = 42.2\%$; in the Security and Privacy track, 41%)
- [C23] Fahad A. Arshad, Amiya K. Maji, Sidharth Mudgal, Saurabh Bagchi, “Is Your Web Server Suffering from Undue Stress due to Duplicate Requests?” Short Paper, At the 11th International Conference on Autonomic Computing (ICAC), pp. 105-111, June 18-20, 2014, Philadelphia, PA. (Acceptance rate: 12 (full papers) + 10 (short papers)/ $53 = 41.5\%$)
- [C24] Gaspar Modelo-Howard (Boeing), Christopher Gutierrez, Fahad Ali Arshad, Saurabh Bagchi, and Yuan Qi, “pSigene: Webcrawling to Generalize SQL Injection Signatures,” At the 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 45-56, June 23-26, 2014, Atlanta, GA. (Acceptance rate: $56/185 = 30.3\%$)
- [C25] Subrata Mitra, Ignacio Laguna, Dong H. Ahn (LLNL), Saurabh Bagchi, Martin Schulz (LLNL), and Todd Gamblin (LLNL), “Accurate Application Progress Analysis for Large-Scale Parallel Debugging,” At the ACM International Symposium on Programming Language Design and Implementation (PLDI), pp. 193-203, Edinburgh, UK, June 9-11, 2014. (Acceptance rate: $52/287 = 18.1\%$)
- [C26] Fahad Arshad, Rebecca Krause and Saurabh Bagchi, “Characterizing Configuration Problems in Java EE Application Servers: An Empirical Study with GlassFish and JBoss,” At the 24th IEEE International Symposium on Software Reliability Engineering (ISSRE), pp. 198-207, Pasadena, CA, November 4-7, 2013. (Acceptance rate: $46/131 = 35.1\%$)
- [C27] Ignacio Laguna, Subrata Mitra, Fahad A. Arshad, Nawanol Theera-Ampornpunt, Zongyang Zhu, Saurabh Bagchi, Samuel P. Midkiff, Mike Kistler (IBM Research), and Ahmed Gheith (IBM Research), “Automatic Problem Localization in Distributed Applications via Multi-dimensional Metric Profiling,” At the 32nd International Symposium on Reliable Distributed Systems (SRDS), pp. 121-132, Braga, Portugal, September 30-October 3, 2013. (Acceptance rate: $22/67 = 32.8\%$)
- [C28] Dong-Hoon Shin, Jinkyu Koo, Lei Yang (Arizona State U.), Xiaojun Lin, Saurabh Bagchi, and Junshan Zhang (Arizona State U.), “Low-Complexity Secure Protocols to Defend Cyber-Physical Systems Against Network Isolation Attacks,” At the 1st IEEE Conference on Communications and Network Security (CNS), pp. 1-9, Washington DC, October 14-16, 2013. (Acceptance rate: $40/141 = 28.4\%$)

- [C29] Dong-Hoon Shin, Saurabh Bagchi, and Chih-Chun Wang, "Toward Optimal Sniffer-Channel Assignment for Reliable Monitoring in Multi-Channel Wireless Networks," At the 10th IEEE International Conference on Sensing, Communication, and Networking (SECON), pp. 1-9, New Orleans, LA, June 24-27, 2013. (Acceptance rate: $51/173 = 29.5\%$)
- [C30] Bowen Zhou, Jonathan Too, Milind Kulkarni, and Saurabh Bagchi, "WuKong: Automatically Detecting and Localizing Bugs that Manifest at Large System Scales," At the 22nd International ACM Symposium on High Performance Parallel and Distributed Computing (HPDC), pp. 131-142, New York City, New York, June 17-21, 2013. (Acceptance rate: $20/131 = 15.3\%$)
- [C31] Tanzima Zerine Islam, Kathryn Mohror, Saurabh Bagchi, Adam Moody, Bronis R. de Supinski, and Rudolf Eigenmann, "mcrEngine: A Scalable Checkpointing System using Data-Aware Aggregation and Compression," At the IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (Supercomputing), pp. 1-10, Salt Lake City, Utah, November 10-16, 2012. (Acceptance rate: $100/472 = 21.2\%$) (One of 8 papers that was a finalist for the best student paper)
- [C32] Ignacio Laguna, Dong H. Anh, Bronis R. de Supinski, Saurabh Bagchi, and Todd Gamblin, "Probabilistic Diagnosis of Performance Faults in Large Scale Parallel Applications," At the 21st International Conference on Parallel Architectures and Compilation Techniques (PACT), pp. 213-222, September 19-23, 2012, Minneapolis, MN. (Acceptance rate: $39/207 = 18.8\%$)
- [C33] Jinkyu Koo, Xiaojun Lin, and Saurabh Bagchi, "PRIVATUS: Wallet-Friendly Privacy Protection for Smart Meters," At the 17th European Symposium on Research in Computer Security (ESORICS), pp. 343-360, September 10-4, 2012, Pisa, Italy. (Acceptance rate: $50/248 = 20.2\%$)
- [C34] A. B. M. Alim Al Islam, S. M. Iftekharul Alam, Vijay Raghunathan, and Saurabh Bagchi, "Multi-Armed Bandit Congestion Control in Multi-Hop Infrastructure Wireless Mesh Networks," At the 20th IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS), pp. 31-40, August 7-9, 2012, Arlington, VA. (Acceptance rate: $49/136 = 36\%$, our paper was one of 7 accepted papers selected for 10 page publication limit, the others have an 8 page limit)
- [C35] Greg Bronevetsky, Ignacio Laguna, Saurabh Bagchi, and Bronis R. de Supinski, "Automatic Fault Characterization via Abnormality-Enhanced Classification," At the 42nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 1-12, June 25-28, 2012, Boston, MA. (Acceptance rate: $51/236 = 21.6\%$)

- [C36] Timothy Tsai, Nawanol Theera-Ampornpant, and Saurabh Bagchi, “A Study of Soft Error Consequences in Hard Disk Drives,” At the 42nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 1-8, June 25-28, 2012, Boston, MA. (Acceptance rate: $51/236 = 21.6\%$)
- [C37] Amiya K. Maji, Fahad A. Arshad, Saurabh Bagchi, and Jan S. Rellermeier, “An Empirical Study of the Robustness of Inter-component Communication in Android,” At the 42nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 1-12, June 25-28, 2012, Boston, MA. (Acceptance rate: $51/236 = 21.6\%$)
- [C38] Dong-Hoon Shin, Saurabh Bagchi, and Chih-Chun Wang, “Distributed Online Channel Assignment Toward Optimal Monitoring in Multi-Channel Wireless Networks,” At the 31st Annual IEEE International Conference on Computer Communications (INFOCOM), Mini-Symposium, pp. 2626-2630, Orlando, Florida, March 25-30, 2012. (Acceptance rate: 18% of 1554 submissions for Main Program, additional 7.5% to Mini Symposium)
- [C39] Matthew Tan Creti, Mohammad Sajjad Hossain, Saurabh Bagchi, and Vijay Raghunathan, “AVEKSHA: A Hardware-Software Approach for Non-intrusive Tracing and Profiling of Wireless Embedded Systems,” At the 9th ACM Conference on Embedded Networked Sensor Systems (SenSys), pp. 288-301, Seattle, Washington, November 1-4, 2011. (Winner of best paper award) (Acceptance rate: $24/123 = 19.5\%$)
- [C40] Gaspar Modelo-Howard, Jevin Sweval, and Saurabh Bagchi, “Secure Configuration of Intrusion Detection Sensors for Changing Enterprise Systems,” At the 7th ICST International Conference on Security and Privacy for Communication Networks (Securecomm), pp. 1-20, London, United Kingdom, September 7-9, 2011. (Acceptance rate: $23/95 = 24.2\%$)
- [C41] Amiya Maji and Saurabh Bagchi, “v-CAPS: A Confidentiality and Anonymity Preserving Routing Protocol for Content-Based Publish-Subscribe Networks,” At the 7th ICST International Conference on Security and Privacy for Communication Networks (Securecomm), pp. 1-20, London, United Kingdom, September 7-9, 2011. (Acceptance rate: $23/95 = 24.2\%$)
- [C42] Fahad Arshad and Saurabh Bagchi, “Dangers and Joys of Stock Trading on the Web: Failure Characterization of a Three-Tier Web Service,” At the 30th IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 157-166, Madrid, Spain, October 4-7, 2011. (Acceptance rate: $30/88 = 34.1\%$)
- [C43] Ignacio Laguna, Todd Gamblin, Bronis R. de Supinski, Saurabh Bagchi, Greg Bronevetsky, Dong H. Anh, Martin Schulz, and Barry Rountree, “Large Scale Debugging of Parallel Tasks with AutomaDeD,” At the IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (Supercomputing), pp. 1-12, Seattle, Washington, November 12-18, 2011. (Acceptance rate: $74/352 = 21\%$)

- [C44] Bowen Zhou, Milind Kulkarni, and Saurabh Bagchi, "Vrisha: Using Scaling Properties of Parallel Programs for Bug Detection and Localization," At the 20th ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC), pp. 85-96, San Jose, California, June 8-11, 2011. (Acceptance rate: $22/170 = 12.9\%$)
- [C45] Man Wang, Zhiyuan Li, Feng Li, Xiaobing Feng, Saurabh Bagchi, and Yung-Hsiang Lu, "Dependence-based Multi-level Tracing and Replay for Wireless Sensor Networks Debugging," At the ACM SIGPLAN/SIGBED Conference on Languages, Compilers, Tools and Theory for Embedded Systems (LCTES), pp. 91-100, April 12-14, 2011. (Acceptance rate: $17/48 = 35.4\%$)
- [C46] Amiya Kumar Maji, Kangli Hao, Salmin Sultana, and Saurabh Bagchi, "Characterizing Failures in Mobile OSes: A Case Study with Android and Symbian," At the 21st Annual International Symposium on Software Reliability Engineering (ISSRE), pp. 249-258, Nov 1-4, 2010, San Jose, California. (Acceptance rate: $40/130 = 30.8\%$)
- [C47] Rajesh Krishna Panta, Madalina Vintila, and Saurabh Bagchi, "Fixed Cost Maintenance for Information Dissemination in Wireless Sensor Networks," At the 29th IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 54-63, October 31-November 3, 2010, New Delhi, India. (Acceptance rate: $21/93 = 22.6\%$)
- [C48] Carlos Perez-Toro, Rajesh Krishna Panta, and Saurabh Bagchi, "RDAS: Reputation-Based Resilient Data Aggregation in Sensor Network," At the 7th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), pp. 1-9, June 21-25, 2010, Boston, MA. (Acceptance rate: $63/274 = 23.0\%$)
- [C49] Greg Bronevetsky, Ignacio Laguna, Saurabh Bagchi, Bronis R. de Supinski, Dong H. Ahn, and Martin Schulz, "AutomaDeD: Automata-Based Debugging for Dissimilar Parallel Tasks," At the 40th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 231-240, June 28-July 1, 2010, Chicago, IL. (Acceptance rate (DCCS track): $40/174 = 23\%$)
- [C50] Jinkyu Koo, Rajesh Krishna Panta, Saurabh Bagchi, and Luis Montestruque, "A Tale of Two Synchronizing Clocks," At the 7th ACM Conference on Embedded Networked Sensor Systems (SenSys), pp. 239-252, November 4-6, 2009, Berkeley, California. (Acceptance rate: $21/119 = 17.6\%$)
- [C51] Ignacio Laguna, Fahad A. Arshad, David M. Grothe, and Saurabh Bagchi, "How To Keep Your Head Above Water While Detecting Errors," At the ACM/IFIP/USENIX 10th International Middleware Conference, pp. 1-20, November 30-December 4, 2009, Urbana-Champaign, Illinois. (Acceptance rate: $21/110 = 19.1\%$)

- [C52] Tanzima Zerin Islam, Saurabh Bagchi, and Rudolf Eigenmann, "FALCON - A System for Reliable Checkpoint Recovery in Shared Grid Environments," At the 22nd Annual ACM/IEEE Supercomputing Conference, pp. 1-12, November 14-20, 2009, Portland, Oregon. (Acceptance rate: $59/261 = 22.6\%$) (Nominated as one of 4 best student papers)
- [C53] Matthew Tan Creti, Matthew Beaman, Saurabh Bagchi, Zhiyuan Li, and Yung-Hsiang Lu, "Multigrade Security Monitoring for Ad-Hoc Wireless Networks," At the 6th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), pp. 342-352, October 12-15, 2009, Macau SAR, China. (Acceptance rate: $62/245 = 25.3\%$)
- [C54] Rajesh Krishna Panta, Saurabh Bagchi, and Samuel P. Midkiff, "Zephyr: Efficient Incremental Reprogramming of Sensor Nodes using Function Call Indirections and Difference Computation," At the USENIX Annual Technical Conference (USENIX '09), June 14-19, 2009, pp. 411-424, San Diego, CA. (Acceptance rate: $32/191 = 16.8\%$)
- [C55] Yu-Sung Wu, Saurabh Bagchi, Navjot Singh and Ratsameetip Wita, "Spam Detection in Voice-Over-IP Calls through Semi-Supervised Clustering," At the 39th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), Lisbon, Portugal, pp. 307-316, June 29-July 2, 2009. (Acceptance rate: $63/260 = 24.2\%$)
- [C56] Dong-Hoon Shin and Saurabh Bagchi, "Optimal Monitoring In Multi-Channel Multi-Radio Wireless Mesh Networks," At the 10th ACM International Symposium on Mobile Ad Hoc Networking and Computing (Mobihoc), May 18-21, 2009, pp. 229-238, New Orleans, Louisiana. (Acceptance rate: $31/175 = 17.7\%$)
- [C57] Sarah Sellke, Chih-Chun Wang, Saurabh Bagchi, Ness Shroff, "Covert TCP/IP Timing Channels: Theory to Implementation," At the 28th Annual IEEE Conference on Computer Communications (INFOCOM), April 19-25 2009, pp. 2204-2212, Rio de Janeiro, Brazil. (Acceptance rate: $282/1435 = 19.7\%$).
- [C58] Rajesh Krishna Panta and Saurabh Bagchi, "Hermes: Fast and Energy Efficient Incremental Code Updates for Wireless Sensor Networks," At the 28th Annual IEEE Conference on Computer Communications (INFOCOM), April 19-25 2009, pp. 639-647, Rio de Janeiro, Brazil. (Acceptance rate: $282/1435 = 19.7\%$)
- [C59] Yu-Sung Wu, Gaspar Modelo-Howard, Bingrui Foo, Saurabh Bagchi, Eugene Spafford, "Search for Efficiency in Automated Intrusion Response for Distributed Applications," At the 27th International Symposium on Reliable Distributed Systems (SRDS), Naples, Italy, pp. 53-62, October 6-8, 2008. (Acceptance rate: $28/112 = 25\%$)

- [C60] Vinai Sundaram, Saurabh Bagchi, Yung-Hsiang Lu, and Zhiyuan Li, "SeNDORComm: An Energy-Efficient Priority-Driven Communication Layer for Reliable Wireless Sensor Networks," At the 27th International Symposium on Reliable Distributed Systems (SRDS), Naples, Italy, pp. 23-32, October 6-8, 2008. (Acceptance rate: $28/112 = 25\%$)
- [C61] Gaspar Modelo-Howard, Saurabh Bagchi, and Guy Lebanon, "Determining Placement of Intrusion Detectors for a Distributed Application through Bayesian Network Modeling," At the 11th International Symposium on Recent Advances in Intrusion Detection (RAID), Boston, MA, pp. 271-290, September 15-17, 2008. (Acceptance rate: $20/80 = 25\%$)
- [C62] Issa Khalil and Saurabh Bagchi, "MISPAR: Mitigating Stealthy Packet Dropping in Locally-Monitored Multi-hop Wireless Ad Hoc Networks," At the 4th International Conference on Security and Privacy in Communication Networks (SecureComm), Istanbul, Turkey, 10 pages, September 22-25, 2008. (Acceptance rate: $26/124 = 21\%$)
- [C63] Saurabh Bagchi, Mark C. Johnson, and Somali Chaterji, "Effects of Types of Active Learning Activity on Two Junior-Level Computer Engineering Courses," Accepted to appear as a full paper, 6 pages, 38th Annual Frontiers in Education (FIE) Conference, Saratoga Springs, New York, October 25-28, 2008.
- [C64] Saurabh Bagchi, Carla B. Zoltowski, and William C. Oakes, "Impact of Research Technologies on Service Learning," Work In Progress, 2 pages, 38th Annual Frontiers in Education (FIE) Conference, Saratoga Springs, New York, October 25-28, 2008.
- [C65] Rajesh K. Panta, Issa Khalil, Saurabh Bagchi, and Luis Montestruque, "Single versus Multi-hop Wireless Reprogramming in Sensor Networks," In Proceedings of the 4th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (Tridentcom), 7 pages, March 18-20, 2008.
- [C66] Shammi Didla, Aaron Ault, and Saurabh Bagchi, "Optimizing AES for Embedded Devices and Wireless Sensor Networks," In Proceedings of the 4th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (Tridentcom), pp. 1-10, March 18-20, 2008.
- [C67] Vinaitheerthan Sundaram, Sandip HomChaudhuri, Sachin Garg, Chandra Kintala, and Saurabh Bagchi, "Improving Dependability using Shared Supplementary Memory and Opportunistic Micro Rejuvenation in Multi-tasking Embedded Systems," At the 13th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC'07), pp. 240-247, December 17-19, 2007, Melbourne, Australia. (Acceptance rate: $40/110 = 36.4\%$)

- [C68] Gunjan Khanna, Ignacio Laguna, Fahad A. Arshad, and Saurabh Bagchi, "Distributed Diagnosis of Failures in a Three Tier E-Commerce System," At the 26th IEEE International Symposium on Reliable Distributed Systems (SRDS), pp. 185-198, October 10-12, 2007, Beijing, China. (Acceptance rate: 29/193=15%)
- [C69] Gunjan Khanna, Ignacio Laguna, Fahad A. Arshad, and Saurabh Bagchi, "Stateful Detection in High Throughput Distributed Systems," At the 26th IEEE International Symposium on Reliable Distributed Systems (SRDS), pp. 275-287, October 10-12, 2007, Beijing, China. (Acceptance rate: 29/193=15%)
- [C70] Xiaojuan Ren, Rudolf Eigenmann, and Saurabh Bagchi, "Failure-Aware Checkpointing in Fine-Grained Cycle Sharing Systems," In Proc. of the 16th IEEE International Symposium on High-Performance Distributed Computing (HPDC), pp. 33-42, Monterey Bay, California, June 27-29, 2007. (Acceptance rate: 20%)
- [C71] Sarah H. Sellke, Chih-Chun Wang, Ness Shroff, and Saurabh Bagchi, "Capacity Bounds on Timing Channels with Bounded Service Times," At the IEEE International Symposium on Information Theory (ISIT), pp. 981-985, Nice, France, June 24-29, 2007.
- [C72] Issa Khalil, Saurabh Bagchi, and Ness Shroff, "SLAM: Sleep-Wake Aware Local Monitoring in Sensor Networks," At the 37th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 565-574, June 25-28, 2007, Edinburgh, Scotland. (Acceptance rate: 24/94 = 25.5%)
- [C73] Rajesh Krishna Panta, Issa Khalil, and Saurabh Bagchi, "Stream: Low Overhead Wireless Reprogramming for Sensor Networks," At the 26th Annual IEEE Conference on Computer Communications (INFOCOM), pp. 928-936, May 6-12 2007, Anchorage, Alaska, USA. (Acceptance rate: 252/~1400 = 18%)
- [C74] Ravish Khosla, Xuan Zhong, Gunjan Khanna, Saurabh Bagchi, and Edward J. Coyle, "Performance Comparison of SPIN based Push-Pull Protocols," At the IEEE Wireless Communications and Networking Conference (WCNC), pp. 3990-3995, Hong Kong, Mar 11-15, 2007. (Acceptance rate: 48%)
- [C75] Xuan Zhong, Ravish Khosla, Gunjan Khanna, Saurabh Bagchi and Edward J. Coyle, "Data-Centric Routing in Sensor Networks: Single-hop Broadcast or Multi-hop Unicast?," At the IEEE 65th Vehicular Technology Conference (VTC2007-Spring), pp. 150-154, 22 - 25 April 2007, Dublin, Ireland. (Acceptance rate: 685/1443 = 47.4%)
- [C76] Issa Khalil, Saurabh Bagchi, and Ness Shroff, "MOBIWORP: Mitigation of the Wormhole Attack in Mobile Multihop Wireless Networks," At the IEEE International Conference on Security and Privacy in Communication Networks (Securecomm), Baltimore, MD, pp.1-12, Aug 28-Sep 1, 2006. (Acceptance rate: 32/126~25.4%)

- [C77] Xiaojuan Ren, Seyong Lee, Rudolf Eigenmann, and Saurabh Bagchi, "Resource Failure Prediction in Fine-Grained Cycle Sharing Systems," In The 15th IEEE International Symposium on High Performance Distributed Computing (HPDC), pp. 93-104, June 19-23, 2006, Paris, France. (Acceptance rate: 24/157~15.3%) (Runner-up for best paper award)
- [C78] Douglas Herbert, Yung-Hsiang Lu, Saurabh Bagchi, and Zhiyuan Li, "Detection and Repair of Software Errors in Hierarchical Sensor Networks," IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (SUTC), pp. 403-410, June 5-7, 2006, Taiwan. (Acceptance rate: 50/210~23.8%) (One of 4 top papers selected for publication in ACM TAAS)
- [C79] Nipoon Malhotra, Shrish Ranjan, and Saurabh Bagchi, "LRRM: A Randomized Reliable Multicast Protocol for Optimizing Recovery Latency and Buffer Utilization," In the 24th IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 215-225, October 26-28, 2005, Orlando, Florida. (Acceptance rate: 20/67~29.9%).
- [C80] Issa Khalil, Saurabh Bagchi, Cristina Nita-Rotaru, "DICAS: Detection, Diagnosis and Isolation of Control Attacks in Sensor Networks," In the IEEE Conference on Security and Privacy for Emerging Areas in Communication Networks (SecureComm), pp. 89-100, Athens, Greece, September 5-9, 2005 (Acceptance rate: 32/163~19.6%).
- [C81] Bingrui Foo, Yu-Sung Wu, Yu-Chun Mao, Saurabh Bagchi, and Eugene Spafford, "ADEPTS: Adaptive Intrusion Response using Attack Graphs in an E-Commerce Environment," In the International Conference on Dependable Systems and Networks (DSN), pp. 508-517, Yokohama, Japan, June 28 - July 1, 2005. (Acceptance rate: DCCS track 54/204 ~ 26.8%)
- [C82] Sarah Sellke, Ness B. Shroff, and Saurabh Bagchi, "Modeling and Automated Containment of Worms," In the International Conference on Dependable Systems and Networks (DSN), pp. 528-537, Yokohama, Japan, June 28 - July 1, 2005. (Acceptance rate: DCCS track 54/204 ~ 26.8%)
- [C83] Mark Krasniewski, Padma Varadharajan, Bryan Rabeler, Saurabh Bagchi, and Y. Charlie Hu, "TIBFIT: Trust Index Based Fault Tolerance for Arbitrary Data Faults in Sensor Networks," In the International Conference on Dependable Systems and Networks (DSN), pp. 672-681, Yokohama, Japan, June 28 - July 1, 2005. (Acceptance rate: PDS track 24/115 ~ 20.9%) [Nominated for the best paper in the PDS track, one of 7 nominated papers]
- [C84] Issa Khalil, Saurabh Bagchi, and Ness B. Shroff, "LITEWOP: A Lightweight Countermeasure for the Wormhole Attack in Multihop Wireless Networks," International Conference on Dependable Systems and Networks (DSN), pp. 612-621, Yokohama, Japan, June 28 - July 1, 2005. (Acceptance rate: PDS track 24/115 ~ 20.9%)

- [C85] N. Malhotra, M. Krasniewski, C. Yang, S. Bagchi, and W. Chappell, "Location Estimation in Ad-Hoc Networks with Directional Antennas," In Proceedings of the 25th IEEE International Conference on Distributed Computing Systems (ICDCS), pp. 633-642, June 6-9, 2005, Columbus, Ohio. (Acceptance rate: 14.3% of 540 submitted papers)
- [C86] Gunjan Khanna, Padma Varadharajan, and Saurabh Bagchi, "Self Checking Network Protocols: A Monitor Based Approach," In Proceedings of the 23rd IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 18-30, October 18-20, 2004, Florianopolis, Brazil. (Acceptance rate: 27/117 ~ 23.1%)
- [C87] Yuldi Tirta, Zhiyuan Li, Yung-Hsiang Lu, and Saurabh Bagchi, "Efficient Collection of Sensor Data in Remote Fields Using Mobile Collectors," In Proceedings of the 13th IEEE International Conference on Computer Communications and Networks (ICCCN), pp. 515-520, October 11-13, 2004. (Acceptance rate: 81/200 ~ 40.5%)
- [C88] Saurabh Bagchi, Yu-Sung Wu (Purdue U., USA), Sachin Garg, Navjot Singh, and Tim Tsai (Avaya Labs, USA) "SCIDIVE: A Stateful and Cross Protocol Intrusion Detection Architecture for Voice-over-IP Environments," In Proceedings of the IEEE Dependable Systems and Networks Conference (DSN), pp. 401-410, June 28-July 1, 2004, Florence, Italy. (Acceptance rate: DCCS track 58/276 ~ 21.0%)
- [C89] Gunjan Khanna, Saurabh Bagchi, and Yu-Sung Wu, "Fault Tolerant Energy Aware Data Dissemination Protocol in Sensor Network," In Proceedings of the IEEE Dependable Systems and Networks Conference (DSN), pp. 739-748, June 28-July 1, 2004, Florence, Italy. (Acceptance rate: PDS track 25/101 ~ 24.8%)
- [C90] Serdar Cabuk, Nipoon Malhotra, Longbi Lin, Saurabh Bagchi, and Ness Shroff, "Analysis and Evaluation of Topological and Application Characteristics of Unreliable Mobile Wireless Ad-hoc Network," In Proceedings of the 10th IEEE Pacific Rim Dependable Computing Conference (PRDC), pp. 248-257, March 2004. (Acceptance rate: 34/102 ~ 33.3%)
- [C91] Gunjan Khanna, John Rogers, and Saurabh Bagchi, "Failure Handling in a Reliable Multicast Protocol for Improving Buffer Utilization and Accommodating Heterogeneous Receivers," At the 10th IEEE Pacific Rim Dependable Computing Conference (PRDC), pp. 15-24, March 2004. (Acceptance rate: 34/102 ~ 33.3%)
- [C92] Yu-Sung Wu, Bingrui Foo, Yongguo Mei, and Saurabh Bagchi, "Collaborative Intrusion Detection System (CIDS): A Framework for Accurate and Efficient IDS," In Proceedings of the 19th Annual Computer Security Applications Conference (ACSAC), pp. 234-244, December 2003. (Acceptance rate: 36/110 ~ 32.7%)
- [C93] S. Bagchi, M. Kaplan, and R. Das, "Design and Evaluation of a Logger-based Recovery Subsystem for Publish-Subscribe Middleware," In Proceedings of the International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS), 10 pages, July 2002.

- [C94] S. Bagchi, G. Kar, and J. Hellerstein, "Dependency Analysis in Distributed Systems using Fault Injection: Application to Problem Determination in an E-Commerce System," In Proceedings of the 12th International Workshop on Distributed Systems: Operations & Management (DSOM), 14 pages, October 2001.
- [C95] S. Bholra, R. Strom, S. Bagchi, Y. Zhao, and J. Auerbach, "Exactly-once Delivery in a Content-based Publish-Subscribe System," In Proceedings of the International Conference on Dependable Systems and Networks (DSN), pp. 7-16, June 2002.
- [C96] S. Bagchi, Y. Liu, Z. Kalbarczyk, R. K. Iyer, Y. Levendel, and L. Votta, "A Framework for Database Audit and Control Flow Checking for a Wireless Telephone Network Controller," In Proceedings of the International Conference on Dependable Systems and Networks (DSN), pp. 225-234, July 2001.
- [C97] N. Speirs, D. Stott, Z. Kalbarczyk, S. Bagchi, J. Xu, and R. K. Iyer, "Comparing Fail-Silence Provided by Process Duplication versus Internal Error Detection for DHCP Server," In Proceedings of the 15th International Parallel and Distributed Processing Symposium (IPDPS), pp. 8-15, April 2001.
- [C98] S. Bagchi, K. Whisnant, Z. Kalbarczyk, and R. K. Iyer, "The Chameleon Infrastructure for Adaptive, Software Implemented Fault Tolerance," In Proceedings of the 17th IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 261-267, October 1998.

Short Conference Papers or Lightly Reviewed Workshop Papers:

- [L1] Ayush Patwari, Ignacio Laguna (LLNL), Martin Schulz (LLNL), and Saurabh Bagchi, "Understanding the Spatial Characteristics of DRAM Errors in HPC Clusters," At the 7th Fault Tolerance for HPC at eXtreme Scales (FTXS) Workshop (co-located with HPDC), pp. 1-6, Jun 26, 2017, Washington DC.
- [L2] Subrata Mitra, Suhas Raveesh Javagal, Amiya K. Maji (ITaP), Todd Gamblin (LLNL), Adam Moody (LLNL), Stephen Harrell (ITaP), and Saurabh Bagchi, "A Study of Failures in Community Clusters: The Case of Conte," At the 7th IEEE International Workshop on Program Debugging, co-located with ISSRE, pp. 1-8, Oct 23-27, 2016, Ottawa, Canada.
- [L3] Saiyma Sarmin, Saurabh Bagchi, Alim Al Islam, "Chameleon: defending secret information from eavesdropping over physical environment," At the International Conference on Networking Systems and Security (NSysS), pp. 1-5, Dhaka, Bangladesh, January 7-9, 2016.
- [L4] Subrata Mitra, Suhas Javagal (Purdue University, USA); Todd Gamblin, Adam Moody (Lawrence Livermore National Laboratory, USA); Stephen Harrell, Saurabh Bagchi (Purdue University, USA), "Cluster Workload Analytics Revisited," In the Fast Abstracts session of the 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 1-2, June 28-July 1, 2016, Toulouse, France.

- [L5] Saurabh Bagchi, Fahad Ali Arshad, and Gaspar Modelo Howard, "Cybersecurity Operations in a Multi-Institutional Academic Setting: The NEES Story," At the NSF Cybersecurity Summit for Large Facilities and Cyberinfrastructure, pp. 1-6, August 26-28, 2014, Arlington, VA.
- [L6] Nawanol Theera-Ampornpant, Saurabh Bagchi, Kaustubh Joshi (AT&T Labs), Rajesh Krishna Panta (AT&T Labs), "Using Big Data for More Dependability: A Cellular Network Tale," At the 9th Workshop on Hot Topics in Dependable Systems (HotDep), held in conjunction with the 24th ACM Symposium on Operating Systems Principles (SOSP), pp. 1-6, November 3, 2013, Nemacon Woodlands Resort, PA. (Acceptance rate: 11/21 = 52.3%)
- [L7] Saurabh Bagchi, Fahad Arshad, Jan Rellermeyer (IBM), Thomas Osiecki (IBM), Michael Kistler (IBM), and Ahmed Gheith (IBM), "Lilliput meets Brodingnagian: Data Center Systems Management through Mobile Devices," At the 3rd International Workshop on Dependability of Clouds, Data Centers and Virtual Machine Technology (DCDV 2013), held with the 43rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp. 1-6, June 24, 2013, Budapest, Hungary.
- [L8] Fahad A. Arshad, Gaspar Modelo-Howard, and Saurabh Bagchi, "To Cloud or Not to Cloud: A Study of Trade-offs between In-house and Outsourced Virtual Private Network," At the 7th workshop on Secure Network Protocols (NPsec), held in conjunction with the 20th IEEE International Conference on Network Protocols (ICNP), pp. 1-6, October 30, 2012, Austin, TX.
- [L9] Bowen Zhou, Milind Kulkarni, and Saurabh Bagchi, "ABHRANTA: locating bugs that manifest at large system scales," At the 8th Workshop on Hot Topics in System Dependability (HotDep), held in conjunction with the 10th USENIX Symposium on Operating Systems Design and Implementation (OSDI), pp. 1-6, October 7, 2012, Hollywood, CA.
- [L10] Jan S. Rellermeyer and Saurabh Bagchi, "Dependability as a Cloud Service - A Modular Approach," In Proceedings of the 2nd International Workshop on Dependability of Clouds, Data Centers, and Virtual Machine Technology (DCDV), pp. 1-5, June 25-28, 2012, Boston, MA.
- [L11] Parmjeet Singh, Noopur Singh, Jung Yang, and Saurabh Bagchi, "Eternal Youth for the Data Center through Software Rejuvenation: Promise or Paradox?," Accepted to appear as a Fast Abstract paper at the 41st IEEE/IFIP International Symposium on Dependable Systems and Networks (DSN), 2 pages, June 27-30, 2011.
- [L12] A. B. M. Alim Al Islam, S. M. Iftekharul Alam, Vijay Raghunathan, and Saurabh Bagchi, "MABCC: Multi-Armed Bandit Congestion Control in Multi-hop Infrastructure Wireless Mesh Networks," Accepted to appear as a Fast Abstract paper at the 41st IEEE/IFIP International Symposium on Dependable Systems and Networks (DSN), 2 pages, June 27-30, 2011.

- [L13] Nawanol Theera-Ampornpunt, Bowen Zhou, and Saurabh Bagchi, "Predicting Time to Failure for Large Scale Distributed Systems," Accepted to appear as a Fast Abstract paper at the 41st IEEE/IFIP International Symposium on Dependable Systems and Networks (DSN), 2 pages, June 27-30, 2011.
- [L14] Srikanth Hariharan, Ness B. Shroff, and Saurabh Bagchi, "Secure Neighbor Discovery through Overhearing in Static Multihop Wireless Networks," IEEE Workshop on Wireless Mesh Networks (WIMESH 2010), pp.1-6, 21 June 2010.
- [L15] Greg Bronevetsky, Ignacio Laguna, Saurabh Bagchi, Bronis R. de Supinski, Martin Schulz, and Dong H. Ahn, "Statistical Fault Detection for Parallel Applications with AutomaDeD," At the IEEE Workshop on Silicon Errors in Logic - System Effects (SELSE), pp. 1-6, 2010.
- [L16] Jinkyu Koo, Myungjin Lee, and Saurabh Bagchi, "Fault Tolerant and Energy-Efficient Real-Time Scheduling of Packet Transmission for Wireless Network Interface Cards," As a Fast Abstract (2 pages) at the 39th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN-2009).
- [L17] Amiya Kumar Maji, Kangli Hao, Salmin Sultana, and Saurabh Bagchi, "Characterization of Failures in Android Operating System," As a Fast Abstract (2 pages) at the 39th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN-2009).
- [L18] Mohammad Sajjad Hossain, Tanzima Zerine Islam, Saurabh Bagchi, and Vijay Raghunathan, "Fast and Collaborative Interference Avoidance for Wireless Medical Devices," As a Fast Abstract (2 pages) at the 39th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN-2009).
- [L19] Vinaitheerthan Sundaram, Matthew Tan Creti, Rajesh K. Panta, and Saurabh Bagchi, "Component-Dependency based Micro-Rejuvenation Scheduling," As a Fast Abstract (2 pages) at the 38th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN-2008).
- [L20] Sarah Sellke, Ness B. Shroff, Saurabh Bagchi, and Chih-Chun Wang, "Timing Channel Capacity for Uniform and Gaussian Servers," At the 44th Annual Allerton Conference On Communication, Control, and Computing, 2 pages, Sep 27-29, 2006, Allerton, IL.
- [L21] Gunjan Khanna, Saurabh Bagchi, Kirk Beaty, Andrew Kochut, and Gautam Kar, "Providing Automated Detection of Problems in Virtualized Servers using Monitor framework," In the Workshop on Applied Software Reliability (WASR), held with the IEEE International Conference on Dependable Systems and Networks (DSN), 6 pages, June 25-28, 2006.

- [L22] Vinita Apte, Yu-Sung Wu, Saurabh Bagchi, Sachin Garg, and Navjot Singh, "SpaceDive: A Distributed Intrusion Detection System for Voice-over-IP Environments," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, 2 pages, June 25-28, 2006, Philadelphia, USA.
- [L23] Gunjan Khanna, Yu Cheng and Saurabh Bagchi, "Modeling Probabilistic Diagnosis Parameters," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, 2 pages, June 25-28, 2006, Philadelphia, USA.
- [L24] Ruben Torres, Vinita Apte, and Saurabh Bagchi, "Epidemic Multicast with Optimal Node Selection in Ad-Hoc Networks," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, 2 pages, June 28-July 1, 2005, Yokohama, Japan.
- [L25] Ravish Khosla, Yu Cheng, and Saurabh Bagchi, "Reliable Data Dissemination using Trust in Multi-hop Sensor Networks," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, 2 pages, June 28-July 1, 2005, Yokohama, Japan.
- [L26] Xiaojuan Ren, Seyong Lee, Saurabh Bagchi, and Rudolf Eigenmann, "Resource Fault Prediction for Fine-Grained Cycle Sharing," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, 2 pages, June 28-July 1, 2005, Yokohama, Japan.
- [L27] Chin-Lung Yang, Saurabh Bagchi, and William Chappell, "Location Tracking with Directional Antennas in Wireless Sensor Networks," Appeared in the IEEE MTT-S International Microwave Symposium 2005 (IMS2005), 4 pages, June 11-17, 2005, Long Beach, California. (Nominated for the best student paper in the MTT-S conference, one of 20 nominated student papers)
- [L28] B. Rabeler, Z. Chishti, S. Bagchi, "An API for Varying Criticality Requirements in Parallel Programs," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 28-July 1, 2004, Florence, Italy.
- [L29] M. Krasniewski, P. Varadharajan, S. Bagchi, "A Trust Index Based Protocol to Tolerate Byzantine Failures in Sensor Networks," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 28-July 1, 2004, Florence, Italy.
- [L30] N. Pettis, S. Bagchi, "Energy Efficiency and Fault Tolerance in Wireless Network Cards Through Buffering," Appeared at the IEEE International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 28-July 1, 2004, Florence, Italy.

- [L31] Saurabh Bagchi and Henrique Madeira, "Open Source Software-A Recipe for Vulnerable Software, or the Only Way to Keep the Bugs and the Bad Guys Out?," In Proceedings of the 14th IEEE International Symposium on Software Reliability Engineering (ISSRE), Denver, Colorado, pp. 347-349, November 2003.
- [L32] Nipoon Malhotra, Shrish Ranjan, and Saurabh Bagchi, "Light-Weight Randomized Reliable Multicasting Protocol," Appeared at the International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 2003.
- [L33] Gunjan Khanna, Yu-Sung Wu, and Saurabh Bagchi, "Data Dissemination Protocol in Sensor Networks to Tolerate Node and Link Failures," In Proceedings of the International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 2003.
- [L34] Jen-Yeu Chen, Yen-Shiang Shue, Hakeem Ogunleye, and Saurabh Bagchi, "A comparative study on data fault tolerant requirements for data propagation in sensor networks," In Proceedings of the International Conference on Dependable Systems and Networks (DSN) as a Fast Abstracts paper, June 2003.
- [L35] S. Bagchi, Z. Kalbarczyk, R. Iyer, and K. Whisnant, "Software-based Signaturing in Distributed Systems," In Fast Abstract of the 29th IEEE Fault Tolerant Computer Symposium (FTCS-29), June 1999.
- [L36] R.K. Iyer, Z. Kalbarczyk, K. Whisnant, and S. Bagchi, "A Flexible Software Architecture for High Availability Computing," In Proceedings of the 3rd IEEE International High-Assurance Systems Engineering Symposium (HASE), pp. 42-49, November 1998.
- [L37] S. Bagchi, K. Whisnant, Z. Kalbarczyk, and R. K. Iyer, "Chameleon - A Software Infrastructure for Adaptive Fault Tolerance," In IEEE International Computer Performance and Dependability Symposium (IPDS), pp. 275-276, September 1998.
- [L38] R.K. Iyer, Z. Kalbarczyk, and S. Bagchi, "Chameleon: Adaptive Fault Tolerance Using Reliable, Mobile Agents," As Short Paper in Proceedings of the 16th IEEE Symposium on Reliable Distributed Systems (SRDS), pp. 61-62, October 1997.

Invited Lectures:

- [I1] "Dependable versus Fake News," At meeting of IFIP Working Group 10.4 on Dependable Computing and Fault Tolerance, Longmont, Colorado, June 22-25, 2017.
- [I2] "Dependability for Computer Systems meets Data Analytics," At Rutgers University, Department of Electrical and Computer Engineering, April 7, 2016.
- [I3] "FRESCO: An Open Failure Data Repository for Dependability Research and Practice," At the ACM/IEEE Supercomputing Conference, Bird-of-Feather Session, November 18, 2015.

- [14] “User-centric Workload Analysis of University-wide Computing Cluster,” At the University of Illinois, Department of Electrical and Computer Engineering, October 6, 2015.
- [15] “Dependability in a Connected World: Research in Action in the Operational Trenches,” Keynote talk at the 34th International Symposium on Reliable Distributed Systems (SRDS), Montreal, Canada, September 28, 2015
- [16] “Dependability in a Connected World: From the Very Large to the Very Small,” At Georgia Tech College of Computing, September 9, 2015.
- [17] “Cyber-Physical Security for the Energy Grid: From the Micro to the Macro,” At Duke Energy, Lafayette, IN, March 11, 2015.
- [18] “Dependability in a Connected World: From the Very Large to the Very Small,” At the Indian Institute of Technology, Kharagpur, January 8, 2015.
- [19] “Countering Evolving Threats in Distributed Applications: Scientific Principles,” At Sandia National Labs in Albuquerque, NM, July 30, 2014.
- [I10] “Performance Debugging for Highly Parallel Accelerator Architectures,” At EPFL, Lausanne, Switzerland, February 22, 2013.
- [I11] “Discrete Mathematics Teaching in Computer Engineering Curriculum,” At the NSF Workshop on “Learning Discrete Mathematics and Computer Science via Primary Historical Sources”, Las Cruces, NM, April 16-17, 2012.
- [I12] “Three Significant Trends in Mobile Security: Threats and Solutions,” At the 13th Annual CERIAS Information Security Research Symposium, Panel on “Mobile Security”, West Lafayette, IN, April 3, 2012.
- [I13] “Fault Tolerance for Exascale Systems through Automated Error Detection, Localization, and Efficient Checkpointing,” At IBM Austin Research Lab, May 25, 2011.
- [I14] “Secure Configuration of Intrusion Detections Sensors for Enterprise Systems,” At the Northrop Grumman Cybersecurity Research Consortium (NGCRC) 3rd Semi-Annual Symposium, April 14, 2011.
- [I15] “Stateful Detection in High Throughput Distributed Systems,” At IBM Research, Delhi, India, November 3, 2010.
- [I16] “Responses to Cyber Attacks in Distributed Systems,” At Air Force Research Lab, Rome, NY, August 17, 2010.
- [I17] “PhD: The First Chapter in an Exciting (mostly) Journey,” At the 7th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), June 24, 2010, Boston, MA.

- [I18] "Responses to Cyber Attacks in Distributed Systems," At the AFRL □ Dartmouth Workshop on Cyber Network Operations Planning and Assessment, April 21-22, 2010, Dartmouth College, Hanover, NH. Also at the Air Force Research Lab, Rome, NY, August 17, 2010.
- [I19] "Toward Dependable and Controllable Wireless Networks," University of Illinois at Urbana-Champaign Wireless Summer School. This was for a panel titled "Future Research Directions in Wireless Networks", August 5, 2009.
- [I20] "Non Intrusive Detection of Errors in High Throughput Distributed Applications," At the Lawrence Livermore National Lab to the Center for Applied Scientific Computing (CASC), July 13, 2009.
- [I21] "Secure Embedded Wireless Networks," Venture capitalists as part of the Road Show organized by Purdue's Office of Technology Commercialization, at Fort Wayne, IN, September 10, 2008.
- [I22] "Non Intrusive Detection & Diagnosis of Failures in High Throughput Parallel Applications," Lawrence Livermore National Lab, August 11, 2008.
- [I23] "Dependable Middleware for Wireless Sensor and Mesh Networks," Crane, June 30, 2008.
- [I24] "Research in Service Learning: A Tricky Path but with Potential Windfall," EPICS Annual Symposium, May 22, 2008.
- [I25] "A Very Personal List of Caveats and Wishes for System Research," Presentation as member of "Systems" panel, at the 4th University of Illinois Information Trust Institute (ITI) Workshop on Dependability and Security: Opportunities and Challenges in Building an Overarching Community, November 30, 2007.
- [I26] "Failure prediction and failure-aware scheduling in grid-like systems," University of Texas at Austin, March 2, 2007.
- [I27] "Core Technologies," Information Trust Institute, University of Illinois Workshop on Dependability and Security, December 5, 2006.
- [I28] "Achieving High Survivability in Distributed Systems through Automated Intrusion Response," At the bi-annual meeting of the IFIP WG 10.4 on Dependable Computing and Fault Tolerance, Annapolis, Maryland, July 2, 2006.
- [I29] "Robust Communication in Ad hoc Networks Resistant to Node Compromise and Failure," Rockwell Collins Advanced Technology Center, Cedar Rapids, Iowa, May 19, 2006.
- [I30] "Dependable Middleware for Wireless Sensor Networks," Tellabs Foundation, Naperville, Illinois, February 23, 2006.

- [I31] "Secure Key Management in Sensor Networks," Department of ECE, Georgia Tech, October 2004.
- [I32] "Disruption Tolerance: Why, What & How," At the bi-annual meeting of the IFIP WG 10.4 on Dependable Computing and Fault Tolerance, Siena, Italy, July 2004.
- [I33] "Intrusion Tolerance in Distributed Systems," Coordinated Science Lab, University of Illinois at Urbana-Champaign, April 2004.

Issued Patents:

- [P1] Patent No: 8,811,188, Protocol for secure and energy-efficient reprogramming of wireless multi-hop sensor networks, issued: August 19, 2014, filed: January 30, 2012.
- [P2] Patent No: 8,767,957, Communication encryption method and device, issued: July 1, 2014, filed: December 3, 2008.
- [P3] Patent No: 8,107,397, Protocol for secure and energy-efficient reprogramming of wireless multi-hop sensor networks, issued: January 31, 2012, filed: June 5, 2007.
- [P4] Patent No: 8,032,615, Dynamic online multi-parameter optimization system and method for autonomic computing systems, issued: October 4, 2011, filed: May 23, 2008.
- [P5] Patent No: 7,814,547, Stateful and cross-protocol intrusion detection for voice over IP, issued: October 12, 2010, filed: August 28, 2008.
- [P6] Patent No: 7,451,486, Stateful and cross-protocol intrusion detection for voice over IP, issued: November 11, 2008, filed: September 30, 2004.

Other Activities:

- [1] Advanced Communicator Silver (ACS), Toastmasters Club No. 1127, West Lafayette, Indiana, member December 2003-present.
- [2] Faculty Advisor, "Asha for Education", Registered Student Organization, Purdue University, 2003-present.