

ATUL PRAKASH

Contact Information

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Education

- Ph.D., Dept. of EECS, University of California, Berkeley, 1989.
- M.S. in Computer Science. University of California, Berkeley, 1984.
- B.Tech. in Electrical Engineering. Indian Institute of Technology, New Delhi, 1982.

Professional Experience

2001-present University of Michigan, Ann Arbor. Professor, Computer Science Division, Department of EECS.

1995-2001 University of Michigan, Ann Arbor. Associate Professor, Computer Science Division, Department of EECS.

5/99-6/99 Visiting Research Scientist, GMD-IPSI, Darmstadt, Germany.

10/95-5/96 IBM T.J. Watson Research Center, Yorktown Heights, Visiting Research Scientist (on sabbatical leave from the University of Michigan).

1989-1995 University of Michigan. Assistant Professor, Computer Science Division, Department of EECS.

Awards and Honors

- ITR Award from the National Science Foundation, 2000.
- Inclusion of the the Upper Atmospheric Research Collaboratory project in the Smithsonian Permanent Collections and selection as one of the finalists in the 1998 Smithsonian/Computerworld award for the best Science project.
- Research Excellence Award, Department of EECS, University of Michigan, 1996-97.

- Irving and Lucille Smith Fellowship, Computer Science, University of California, Berkeley, 1988-89.
- Passed with distinction, Ph.D. thesis qualifying examination presentation, University of California, Berkeley, 1988.
- Honored for participating in the Centennial Issue of IEEE Computer, 1984.
- Regents Fellowship, University of California, 1983-84.
- Rajiv Bambawale Memorial Award for the best B.Tech. Electrical Engineering project, IIT Delhi, 1982.
- Merit Prizes, IIT Delhi, 1977, 78, 79, 80, 81 and 82.
- Merit Prize for 4th rank in the All India Joint Entrance Examination for admission to the five IITs (among approximately 100,000 students), 1977.
- Merit Scholarship, All India Board of Higher Secondary Education, 1977.

Research in the News

Our study on vulnerabilities in online banking systems (July 2008) received a lot of press. It was quoted in Barron's, BusinessWeek, NPR, Associated Press, BBC, and many other publications. Several banks, including Chase and LaSalle Bank, changed their web sites for improved security shortly after publication of the work.

Publications

Book Chapters

- Hyong-Sop Shim, Atul Prakash, and Jang Ho Lee. Distributed and Collaborative Development. *Wiley Encyclopedia of Computer Science and Engineering*, DOI: 10.1002/9780470050118.ecse116, John Wiley & Sons, Dec. 14, 2007.
- L. Opyrchal and A. Prakash, Publish Subscribe Middleware, Chapter in *Scalable Enterprise Systems: An Introduction to Recent Advances*, ed. V. Prabhu, S. Kumara, and M. Kamath, Kluwer Academic Publishers, July 2003.
- Atul Prakash, Group Editors, Chapter in *Trends in Computer-Supported Cooperative Work*, John Wiley & Sons. (Editor: M. Beaudouin-Lafon), 1998.
- C.R. Clauer, D.E. Atkins, T.E. Weymouth, G.M. Olson, R. Niciejewski, T.A. Finholt, A. Prakash, C.E. Rasmussen, T. Killeen, T.J. Rosenberg, D. Detrick, J.D. Kelly, Y. Zambre, C. Heinselmann, P. Stauning, E. Friis-Christtensen, and S.B. Mende, A Prototype Atmospheric Research Collaboratory (UARC), in *Applications of Data Handling and Visualization Technique in Space Atmospheric Sciences*, E. Szuszczewicz (ed), NASA SP-519, pp. 105-112.

- C.V. Ramamoorthy, A. Prakash, V. Garg, T. Yamaura, and A. Bhide, Issues in the Development of Large, Distributed, and Reliable Software, *Advances in Computers*, Vol. 26, 1987, pp. 396-443.
- C. V. Ramamoorthy, A. Prakash, W.-T. Tsai and Y. Usuda, Software Reliability: Its Nature, Models, and Improvement Techniques, in *Theory of Reliability*, ed. A. Serra and R.E. Barlow, Proceedings of the International School of Physics “Enrico Fermi”, North-Holland, 1986, pp. 287-320.

Journal Publications

1. Akula, M., Sandur, A., Kamat, V. R., and Prakash, A. Context-Aware Framework for Highway Bridge Inspections. *Journal of Computing in Civil Engineering*, 29(1), January 2015 (online publication: 19th Jan. 2013).
2. Crowell, A., Ng, B. H., Fernandes, E., and Prakash, A. (2013). The Confinement Problem: 40 Years Later. *Journal of Information Processing Systems*, 9(2), June 2013, pp. 189-204.
3. Tzeng, H. M., Prakash, A., Brehob, M., Anderson, A., Devecsery, D. A., and Yin, C. Y. (2013). How feasible was a bed-height alert system?. *Clinical nursing research*, 22(3), 300-309.
4. Sharad Sharma, Harpreet Singh, Atul Prakash. Multi-agent modeling and simulation of human behavior in aircraft evacuations. *IEEE Transactions on Aerospace and Electronic Systems*, Oct. 2008, Vol. 44, No. 4, pp. 1477-1488.
5. Xin Zhao, Kevin Borders, and Atul Prakash. Using a virtual machine to protect sensitive Grid resources. *Concurrency and Computation: Practice and Experience*. Special issue on Middleware for Grid Computing: A Possible Future. Vol. 19, No. 14, Sept. 2007, pages: 1917-1935.
6. Patrick McDaniel and Atul Prakash, Enforcing provisioning and authorization policy in the Antigone system, *Journal of Computer Security*. 14(6):483-511, 2006.
7. Patrick McDaniel and Atul Prakash, Methods and Limitations of Security Policy Reconciliation. *ACM Transactions on Information and System Security (TISSEC)*, Association for Computing Machinery, 9(3):259-291, August, 2006.
8. Trent Jaeger, Atul Prakash, Jochen Liedtke and Nayeem Islam, Flexible control of downloaded executable content, *ACM Transactions on Information and System Security*, Vol. 2, Issue 2, May 1999, pp. 177-228.
9. S. Subramanian, G.R. Malan, H.S. Shim, J.H. Lee, P. Knoop, T.E. Weymouth, F. Jahanian, A. Prakash, Software architecture for the UARC Web-based collaboratory, *IEEE Internet Computing*, Mar-Apr. 1999, Vol. 3, Issue 2, pp. 46-54.
10. A. Prakash, H.S. Shim, and J.H. Lee, Issues and Trade-offs in CSCW Systems, *IEEE Transactions on Data and Knowledge Engineering*, Jan.-Feb. 1999, Vol. 11, Issue 1, pp. 213-227.

11. G. Olson, D.E. Atkins, R. Clauer, T. Finholt, F. Jahanian, T.L. Killeen, A. Prakash, and T. Weymouth, The Upper Atmospheric Research Collaboratory, *ACM Interactions*, Vol. 3, May-June 1998, pp. 48-55.
12. R. Strom, G. Banavar, K. Miller, A. Prakash, and M. Ward, Concurrency Control and View Notification Algorithms for Collaborative Replicated Objects, *IEEE Transactions on Computers*, Vol. 47, No. 8, April 1998, pp. 458-471.
13. S. Paul and A. Prakash, A Query Algebra for Program Databases, *IEEE Transactions on Software Engineering*, Vol. 22, No. 1, March 1996, Vol. 22, No. 3, pp. 202-217.
14. R. Al-Zoubi and A. Prakash, Program View Generation and Change Analysis Using Attributed Dependency Graphs, *Journal of Software Maintenance — Research and Practice*, Volume 7, No. 4, July-August 1995.
15. A. Prakash and M. Knister, A Framework for Undoing Actions in Collaborative Systems, *ACM Transactions on Computer-Human Interaction*. December 1994.
16. C. R. Clauer, J. D. Kelly, T. J. Rosenberg, C. E. Rasmussen, P. Stauning, E. Friis-Christensen, R. J. Niciejewski, T. L. Killeen, S. B. Mende, Y. Zambre, T. E. Weymouth, A. Prakash, S. E. McDaniel, G. M. Olson, T. A. Finholt, and D. E. Atkins, A New Project to Support Scientific Collaboration Electronically, *EOS Trans. Amer. Geophys. Union*, Vol. 75, June 28, 1994.
17. E. Buss, R. De Mori, M. Gentleman, J. Henshaw, H. Johnson, K. Kontogiannis, E. Merlo, H. Muller, J. Mylopoulos, S. Paul, A. Prakash, M. Stanley, S. Tilley, J. Troster and K. Wong, Investigating Reverse Engineering Technologies: The CAS Program Understanding Project, *IBM Systems Journal*, Vol. 33, No. 3, August 1994, pp. 477-500.
18. S. Paul and A. Prakash, Supporting Queries on Source Code: A Formal Framework, *International Journal of Software Engineering and Knowledge Engineering* (Special Issue on Reverse Engineering), Vol. 4, No. 3, September 1994, pp. 325-348.
19. S. Paul and A. Prakash, Framework for Source Code Search Using Program Patterns, *IEEE Transactions on Software Engineering*, Volume 20, Number 6, June 1994, pp. 463-475.
20. C.R. Clauer, D.E. Atkins, T.E. Weymouth, G.M. Olson, R. Niciejewski, T. Finholt, A. Prakash, C.E. Rasmussen, T.J. Rosenberg, J.D. Kelly, Y. Zambre, P. Stauning, E. Friis-Christensen, and S.B. Mende, A Prototype Upper Atmospheric Research Collaboratory (UARC) (**Abstract**), *EOS, Transactions on American Geophysical Union*, Vol. 74, 1993.
21. M. Knister and A. Prakash, Issues in the Design of a Toolkit for Supporting Multiple Group Editors, *Computing Systems*, Journal of the Usenix Association, Vol. 6, No. 2, Spring 1993, pp. 135-166.
22. C.V. Ramamoorthy, Y. Usuda, A. Prakash, and W.T. Tsai, The Evolution Support Environment System, *IEEE Trans. on Software Engineering*, Vol. 16, No. 11, November 1990, pp. 1225-1234.

23. C.V. Ramamoorthy, V. Garg, and A. Prakash, Support for Reusability in Genesis, *IEEE Transactions in Software Engineering*, Vol 14, No. 8, August 1988, pp. 1145-1154.
24. C.V. Ramamoorthy, V. Garg, and A. Prakash, Programming in the Large, *IEEE Transactions on Software Engineering*, Vol. 12, No. 7, July 1986, pp. 769-783.
25. C. V. Ramamoorthy, A. Prakash, W.-T. Tsai, and Y. Usuda, Software Engineering: Status and Perspectives, *IEEE Computer*, Vol. 17, No. 10, October 1984, pp. 191-209.

Conference and Workshop Publications

1. Earlence Fernandes, Ajit Aluri, Alexander Crowell, and Atul Prakash, Decomposable Trust for Android Applications, *IEEE/IFIP International Conference on Dependable Systems and Networks*, accepted for publication, 2015.
2. Jiaan Zeng, Guangchen Ruan, Alexander Crowell, Atul Prakash, and Beth Plale, Cloud computing data capsules for non-consumptive use of texts, *ScienceCloud'14, Proceedings of the 2014 International Workshop on Scientific Cloud Computing, Vancouver, BC, Canada, June 23-27, 2014*, pp. 9-16, 2014.
3. Mauro Conti, Earlence Fernandes, Justin Paupore, Atul Prakash, Daniel Simionato, OASIS: Operational Access Sandboxes for Information Security, *Proceedings of the 4th ACM Workshop on Security and Privacy in Smartphones & Mobile Devices, SPSM@CCS 2014, Scottsdale, AZ, USA, November 03 - 07, 2014*, pp. 105-110, 2014.
4. Beng Heng Ng and Atul Prakash, Let the Right One In: Discovering and Mitigating Permission Gaps, *Proc. Intl. Conf. on Information Security and Systems*, Kolkata, India, pp. 297-313, 2013.
5. Beng Heng Ng and Atul Prakash, Expose: Discovering Potential Binary Code Re-Use, *Proc. 37th IEEE Conference on Computers, Software, and Applications (COMPSAC)*, Kyoto, Japan, 2013.
6. Beng Heng Ng, Earlence Fernandes, Ajit Aluri, Jijiang James, and Atul Prakash, Beyond Instruction Level Taint Propagation, presented at *6th European Workshop on Systems Security (EuroSec'13)*, Prague, Czech Republic, April 2013.
7. Beng Heng Ng, Alexander Crowell, Atul Prakash: Adaptive semi-private email aliases. *Proc. of 7th ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, Seoul, Korea, 2012.
8. Yilan Zhang, Masahiro Kurata, Jerome P. Lynch, Gwendolyn Van Der Linden, Hassan Sadarat, and Atul Prakash. Distributed cyberinfrastructure tools for automated data processing of structural monitoring data. *Proceedings of SPIE - The International Society for Optical Engineering*, 8347, 2012.
9. Biswajit Panja, Atul Prakash, Priyanka Meharia, Bradley Schneider: Security in sensor network based SCADA system for adaptive traffic signal operation. *International Conference on Collaboration Technologies and Systems (CTS)*, 2012, 195-202.

10. Tzeng, HM, Yin, CY, Anderson, A, and Prakash, A (2012). Nursing staffs awareness of keeping beds in the lowest position to prevent falls and fall injuries in an adult acute surgical inpatient care setting. *MedSurg Nursing*, 21(5), 271274.
11. Akula, M., Sandur, A., Kamat, V.R., and Prakash, A. (2012). "Context-Aware Computing Framework for Improved Bridge Inspections", Proceedings of the 2012 Construction Research Congress, American Society of Civil Engineers, Reston, VA, 698-707.
12. Heqing Huang, Su Zhang, Xinming Ou, Atul Prakash, and Karem Sakallah. 2011. Distilling critical attack graph surface iteratively through minimum-cost SAT solving. In *Proceedings of the 27th Annual Computer Security Applications Conference (ACSAC '11)*. ACM, New York, NY, USA, 31-40.
13. Mark W. Newman, Mark S. Ackerman, Jungwoo Kim, Atul Prakash, Zhenan Hong, Jacob Mandel, and Tao Dong. 2010. Bringing the field into the lab: supporting capture and replay of contextual data for the design of context-aware applications. In *Proceedings of the 23rd annual ACM symposium on User interface software and technology (UIST '10)*. ACM, New York, NY, USA, 105-108.
14. Mark S. Ackerman, Tao Dong, Scott Gifford, Jungwoo Kim, Mark W. Newman, Atul Prakash, Sarah Qidwai, David Garcia, Paulo Villegas, Alejandro Cadenas, Antonio Sanchez-Esguevillas, Javier Aguiar, B. Carro, Sean Mailander, Ronald Schroeter, Marcus Foth, Amiya Bhattacharya, and Partha Dasgupta. 2009. Location-Aware Computing, Virtual Networks. *IEEE Pervasive Computing*, Vol. 8, No. 4 (October 2009), 28-32.
15. Prakash, Atul, Ng, Beng Heng, Lau, Billy, and Kamat, Vineet (2009). "Dependable Opportunistic Communication in a MultiTier Sensor Network Architecture", Proceedings of the 2009 Workshop on Research Directions in Situational Self-managed Proactive Computing in Wireless Ad-Hoc Networks, Air Force Research Laboratory, St. Louis, MO.
16. Swati Gupta, Kristen LeFevre, and Atul Prakash. SPAN: a unified framework and toolkit for querying heterogeneous access policies. In *Proceedings of the 4th USENIX conference on Hot topics in security (HotSec'09)*, 2009, Usenix Association.
17. Kevin Borders, Eric Vander Weele, Billy Lau, and Atul Prakash. 2009. Protecting confidential data on personal computers with storage capsules. In Proceedings of the 18th conference on USENIX security symposium. USENIX Association, Berkeley, CA, USA, 367-382.
18. Kevin Borders and Atul Prakash. 2009. Quantifying Information Leaks in Outbound Web Traffic. In Proceedings of the 2009 30th IEEE Symposium on Security and Privacy (SP '09). IEEE Computer Society, Washington, DC, USA, 129-140.
19. Xin Zhao, Atul Prakash, and Kevin Borders. Prism: Providing flexible and fast filesystem cloning service for virtual servers, *Proc. of the 9th ACM/IFIP/USENIX International Conference on Middleware (Middleware 2008)*, Springer-Verlag, pp. 388-407.
20. Garrett Brown, Travis Howe, Michael Ihbe, Atul Prakash, and Kevin Borders. Social Networks and Context-Aware Spam, *Proc. of the ACM Conference on Computer-supported Cooperative Work*, Nov. 8-12, 2008.

21. Kevin Borders and Atul Prakash, Towards Quantification of Network-based Information Leaks via HTTP. *Proc. 3rd Usenix Workshop on Hot Topics in Security (HOTSEC)*, July 29, 2008, San Jose, CA.
22. Laura Falk, Atul Prakash, Kevin Borders, Analyzing Websites for User-visible Security Design Flaws, *Proc. Symposium on Usable Security and Privacy (SOUPS)*, July 23-25th, 2008.
23. Atul Prakash. Security in Practice: Security-Usability Chasm. *Proc. of Third International Conference on Information Systems Security (ICISS)*, December 2007. Invited paper.
24. Kevin Borders, Atul Prakash, and Mark Zielinski, Spector: Automatically Analyzing Shell Code. *Proc. of the 23rd Annual Computer Security Applications Conference (ACSAC '07)*, Dec. 2007, 501-513.
25. Kevin Borders and Atul Prakash, Securing Network Input via a Trusted Input Proxy. *Proceedings of the 2nd USENIX Workshop on Hot Topics in Security (HOTSEC '07)*, Aug. 2007.
26. Kevin Borders, Xin Zhao, and Atul Prakash, Sting: Detecting Evasive Malware (short paper), *IEEE Oakland Symposium on Security and Privacy*, 2006.
27. L. Opyrchal, A. Prakash, and A. Agrawal, Designing a Publish-Subscribe Substrate for Privacy/Security in Pervasive Environments, *Proc. of the 2006 ACS/IEEE International Conference on Pervasive Services*, June 26-29, 2006, pages 313-316.
28. Kevin Borders, Xin Zhao, and Atul Prakash, Sting: Detecting Evasive Malware (short paper), *IEEE Symposium on Security and Privacy*, 2006.
29. Xin Zhao and Atul Prakash. WSF: An HTTP-level firewall for hardening web servers. *The 17th IASTED International Conference on Parallel and Distributed Computing Systems*, Nov. 2005, Phoenix, AZ.
30. Xin Zhao, Kevin Borders, and Atul Prakash. SVGrid: a secure virtual environment for untrusted grid applications. *Proc. of the 3rd International workshop on Middleware for Grid Computing (MGC'05)*, Grenoble, France, 2005.
31. Kevin Borders, Xin Zhao, and Atul Prakash, CPOL: High-Performance Policy Evaluation. *Proc. of the 12th ACM Conference on Computer and Communications Security (CCS)*, 2005.
32. Kevin Borders and Atul Prakash, Web Tap: Detecting Covert Web Traffic. *Proceedings of the 11th ACM Conference on Computer and Communications Security (CCS)*, Oct. 2004, 110-120.
33. Lukasz Opyrchal, Atul Prakash, and Amit Agrawal, Designing a Publish-Subscribe Substrate for Privacy/Security in Pervasive Environments, presented at the *First Workshop on Pervasive Security (PSPT)*, Boston, MA, August 2004. (refereed, only electronic proceedings).
34. Xin Zhao and Atul Prakash. Source authentication in group communication systems. *Proceedings of the 14th International Workshop on Database and Expert Systems Applications*, Sept 2003. pp. 455 -459

35. James Irrer, Atul Prakash, and Patrick McDaniel. Antigone: policy-based secure group communication system and AMirD: antigone-based secure file mirroring system. *Proceedings of the DARPA Information Survivability Conference and Exposition*, Volume 2, April 22-24 2003, pp. 44-46.
36. P. McDaniel and A. Prakash, Methods and Limitations of Security Policy Reconciliation, *Proceedings of the 2002 IEEE Symposium on Security and Privacy*, Oakland CA, pp. 73-87.
37. L. Opyrchal and A. Prakash, Secure Distribution of Events in Content-Based Publish Subscribe Systems, *Proceedings of the 2001 Usenix Security Symposium*, Washington D.C., August 2001.
38. Radu Litiu, Atul Prakash: DACIA: A Mobile Component Framework for Building Adaptive Distributed Applications. *Operating Systems Review* 35(2): 31-42 (2001)
39. P. McDaniel, A. Prakash, J. Irrer, S. Mittal, and T. Thuang, Flexibly Constructing Secure Groups in Antigone 2.0. In *Proceedings of DARPA Information Survivability Conference and Exposition II*. IEEE, June 2001.
40. Radu Litiu and Atul Prakash, Developing Adaptive Groupware Applications Using a Mobile Component Framework”, *the ACM 2000 Conference on Computer Supported Cooperative Work (CSCW 2000)*, Philadelphia, PA, December 2000, pp.
41. Radu Litiu, and Atul Prakash, ”DACIA: A Mobile Component Framework for Building Adaptive Distributed Applications”, *Principles of Distributed Computing (PODC) 2000 Middleware Symposium*, Portland, OR, July 2000; an earlier version appeared as Technical Report CSE-TR-416-99, Department of EECS, University of Michigan, Dec 1999.
42. P. McDaniel, A. Prakash, P. Honeyman, Antigone: A Flexible Framework for Secure Group Communication, *Proceedings of the 8th Usenix Security Symposium*, August 1999, Washington D.C., pp. 99-104.
43. L. Opyrchal and A. Prakash, Efficient Object Serialization in Java, *Workshop on Electronic Commerce and Web-based Applications/Middleware, 1999, at International IEEE Conference on Distributed Computing Systems (ICDCS)*, May-June 1999, pp. 96-101.
44. R. Litiu and A. Prakash, Stateful Multicast Services, *Proc. of the International IEEE Conference on Distributed Computing Systems (ICDCS)*, May-June 1999, pp. 82-89.
45. H.S. Shim and A. Prakash, Tolerating Client and Communication Failures in Distributed Groupware Systems, *Proc. of the IEEE Symposium on Reliable Distributed Systems (SRDS)*, Purdue, 1998, pp. 221-227.
46. R. Litiu and A. Prakash, Adaptive group communication services for groupware systems, *Proc. of the 2nd International Enterprise Distributed Object Computing Workshop*, 1998, IEEE Press, pp. 218-229.

47. H.S. Shim, R. Hall, A. Prakash, and F. Jahanian, Providing Flexible Services for Managing Shared State in Collaborative Systems, *Proc. of the European Conference on Computer-Supported Cooperative Work (ECSCW)*, September 1997, pp. 237-252.
48. B. Mirel, L.A. Olsen, A. Prakash, and E. Soloway, Improving Quality in Teaching Software Engineering through Emphasis on Communication, *Proc. of the 1997 Annual Conference of American Society for Engineering Education (ASEE)*, Milwaukee, Wisconsin, June 15-18, 1997.
49. R. Strom, G. Banavar, K. Miller, A. Prakash, and M. Ward, Concurrency Control and View Notification Algorithms for Collaborative Replicated Objects, *The 17th Proceedings of the International Conference on Distributed Computing Systems (ICDCS)*, Baltimore, MD, May 27-30, 1997, pp. 194-203.
50. Jang Ho Lee, Atul Prakash Trent Jaeger, and Gwobaw Wu Supporting Multi-User, Multi-Applet Workspaces in CBE, *The Proceedings of the Sixth ACM Conference on Computer-Supported Cooperative Work (CSCW)*, November 1996, pp. 344-353.
51. R. W. Hall, A. G. Mathur, F. Jahanian, A. Prakash, and C. Rasmussen, Corona: A Communication Service for Scalable, Reliable Group Collaboration Systems, *Proc. of the Sixth ACM Conference on Computer Supported Cooperative Work (CSCW)*, Boston, MA, November 1996, pp. 140-149.
52. Trent Jaeger, Aviel D. Rubin, and Atul Prakash. A system architecture for flexible control of downloaded executable content. *Proceedings of the Fifth International Workshop on Object Orientation in Operating Systems*, pages 14-18, Seattle, Wa., October 1996.
53. T. Jaeger, A.D. Rubin, and A. Prakash, Building Systems that Flexibly Control Downloaded Executable Content, *Proc. of the 6th USENIX UNIX Security Symposium*, July 22-25, San Jose, CA, pp. 131-148. (*Best Student Paper Award*).
54. A. G. Mathur and A. Prakash, A Protocol Composition-Based Approach to QoS Control in Collaboration Systems, in *Proc. Third IEEE International Conference on Multimedia Computing and Systems (CMCS)*, Hiroshima, Japan, June 1996, pp. 62-69.
55. N. R. Manohar and A. Prakash, A Flexible Architecture for Integrating Heterogeneous Re-playable Workspaces, *Proc. Third IEEE International Conference on Multimedia Computing and Systems (CMCS)*, Japan, June 1996, pp. 274-278.
56. N. R. Manohar and A. Prakash, Dealing with timing variability in the playback of interactive session recordings *Proceedings of ACM Multimedia Conference 1995*, San Francisco, November 1995, pp. 45-56.
57. T. Jaeger and A. Prakash, Requirements of Role-based Access Control for Collaboration Systems, in *Proc. of the 1st ACM Workshop on Role-based Access Control (RBAC'95)*, Gaithersburg, MD, Nov. 1995.

58. N. R. Manohar and A. Prakash, The Session Capture and Replay Paradigm for Asynchronous Collaboration, *Proceedings of European Conference on Computer-supported Cooperative Work (ECSCW)*, Stockholm, Sweden, September 1995, pp. 149-164.
59. T. Jaeger and A. Prakash, Management and Utilization of Knowledge for the Improvement of Workflow Performance, *Proc. of the 1995 ACM Conference on Organizational Computing Systems (COOCS '95)*, Milpitas, CA, August 1995, pp. 32-43.
60. T. Jaeger and A. Prakash, Implementation of a Discretionary Access Control Model for Script-based Systems, *Proc. of the 8th IEEE Computer Security Foundations Workshop*, County Kerry, Ireland, June 1995, pp. 70-84.
61. T. Jaeger and A. Prakash, Representation and Adaptation of Organization Coordination Knowledge for Autonomous Agent Systems, *Proc. of the 7th International Conference on Software Engineering and Knowledge Engineering*, June 1995, pp. 103-105.
62. T. Jaeger and A. Prakash, Support for File System Security Requirements of Computational E-Mail Systems, *Proc. 2nd ACM Conference on Computer and Communications Security (CCCS)*, Fairfax, VA, ACM Press, November 1994, pp. 1-9.
63. S. Paul and A. Prakash, Object Data Models to Support Source Code Queries: Implementing SCA within REFINE, *1994 Proc. of the IEEE Third Workshop on Program Comprehension*, Washington D.C., November 1994, IEEE Computer Society Press, pp. 145-152.
64. T. Jaeger, A. Prakash, and M. Ishikawa, A Framework for Automatic Improvement of System Specifications to Meet Delivery Performance Goals, *Proc. Sixth IEEE Conference on Tools for AI*, New Orleans, November 1994, pp. 640-646.
65. A. Mathur and A. Prakash, Protocols for Integrated Audio and Shared Windows in Collaborative Systems, *Proc. ACM Multimedia 94*, October 1994, pp. 381-388.
66. A. Prakash and H. S. Shim, DistView: Support for Building Efficient Collaborative Applications using Replicated Active Objects, *Proc. Fifth ACM Conference on Computer-Supported Cooperative Work (CSCW)*, October 1994, pp. 153-164.
67. S. Paul and A. Prakash, Querying Source Code Using an Algebraic Query Language, *Proc. International Conference on Software Maintenance*, IEEE Press, September 1994, pp. 127-136.
68. S. Paul and A. Prakash, Generating Programming Language-based Pattern Matches, *Proc. of the 1993 Conference of the Center for Advanced Studies on Collaborative Research: Software Engineering - Volume 1*, IBM Press, October 1993, pp. 227-243.
69. T. Jaeger and A. Prakash, BizSpec: A Business-Oriented Model for System Specification and Generation, *The 5th International Conference on Software Engineering and Knowledge Engineering (SEKE)*, June 14-18, 1993, pp. 191-199.

70. S. Paul and A. Prakash, Source Code Retrieval Using Program Patterns, *IEEE CASE'92 (Fifth International Workshop on Computer-Aided Software Engineering)*, Montreal, July 1992, pp. 95-105.
71. A. Prakash and M.J. Knister, Undoing Actions in Collaborative Work, *Proc. of The Fourth ACM Conference on Computer-Supported Cooperative Work (CSCW)*, October 1992, Toronto, Canada, pp. 273-280.
72. A. Prakash and R. Subramanian, An Efficient Optimistic Distributed Simulation Scheme based on Conditional Knowledge, *Proc. of The Sixth Parallel and Distributed Simulation Workshop, 1992 SCS Western Multiconference*, Newport Beach, CA, January 1992, pp. 85-94.
73. S. Paul, A. Prakash, E. Buss, and J. Henshaw, Theories and Techniques of Program Understanding, *Proc. of the 1991 Conference of the Center for Advanced Studies on Collaborative Research*, IBM Press, Toronto, Canada, October 1991, pp. 37-54.
74. A. Prakash and R. Subramanian, Filter: An Algorithm for Reducing Cascaded Rollbacks in Optimistic Distributed Simulation, *Proc. of the 24th Annual Simulation Symposium, 1991 Simulation Multiconference*, New Orleans, April 1991, pp. 123-132.
75. M.J. Knister and A. Prakash, DistEdit: A Distributed Toolkit for Supporting Multiple Group Editors, *Proc. of the Third ACM Conference on Computer-Supported Cooperative Work*, Los Angeles, October 1990, pp. 343-355.
76. A. Prakash and C.V. Ramamoorthy, Hierarchical Distributed Simulations, *Proc. of the 8th International Conference on Distributed Computing Systems*, San Jose, IEEE Press, 1988, pp. 341-348.
77. Y.F. Chen, A. Prakash, and C.V. Ramamoorthy, Pulsating Computations, *Proc. of the International Computer Symposium*, Taiwan, December 1986, pp. 1107-1115.
78. Y.F. Chen, A. Prakash, and C.V. Ramamoorthy, The Network Event Manager, *Proc. of the Computer Networks Symposium*, Washington D.C., IEEE Press, November 1986, pp. 169-177.
79. C. V. Ramamoorthy, W.-T. Tsai, Y. Usuda, and A. Prakash, Genesis: An Integrated Environment for Development and Evolution of Software Systems, *Proc. of the 19th International Conference on Computer Software Applications*, Chicago, IEEE Press, November 1985, pp. 472-479.

Patents

- Patent #6,425,016 (and related patent #6,988,270) on System and method for providing collaborative replicated objects for synchronous groupware application.

Selected Service

University

- Co-chair, Data Science Program Committee, 2015-2016.
- Member, CSE Faculty Search Committee, 2014-2015.
- Co-lead, Design of undergraduate Data Science program, University of Michigan, 2012-2014.
- Director, Software Systems Lab, Fall 2012, Winter 2013.
- Chair, Informatics Steering Committee, Fall 2011-2013.
- Chair, CSE Internal Review Committee, Fall 2012, Winter 2013.
- Member, ad hoc committee on the Data Science Program, Winter 2013.
- Member, CSE Search Committee, Winter 2012.
- Undergraduate advisor, CS LS&A program, Fall 2012.
- Member, Committee for Redesigning CS LS&A Program, 2012.
- Member, Informatics Steering Committee, 2010.
- Undergraduate advisor, Informatics Program, 2010.
- Member, CSE Executive Committee, 2009
- Member, Steering Committee, Informatics Program, 2007-2009
- Undergraduate Advisor, Informatics Program, 2008-2009
- Director, Software systems lab, 2004-2007
- College undergraduate advisor, 2004-2005
- Computer engineering advisor, 2003-2004.
- Chair, EECS curriculum committee, 2002-2003.
- Member, College curriculum committee, 2002-2003.
- Member, EECS Executive Committee, 1998-2002.
- Member, CSE curriculum committee, 1998-2002.
- Member, EECS committee to examine reorganization of degree programs in EECS, 1999-2000.

- Director, Industrial Partners program of Computer Science and Engineering (IPoCSE), University of Michigan, March 1999-2001
- Graduate Student Advising, 1990-2009
- Marshall, Engineering Honors Convocation, Winter 2000.
- Member, reappointment committee for Sugih Jamin, 1999.
- Computer Engineering Undergraduate Advisor, 1996-1999.
- Help prepare ABET information for EECS 482 and EECS 380 in 1997 and 1999.
- Member, EECS Departmental Computing Organization Committee, 1998.
- Member, College ad-hoc committee to examine large enrollments in Computer Science Engineering, 1997-98.
- Chair, Reappointment Committee for Nandit Soparkar. 1996.
- Coordinator, Software Qualifying Examination, January 1997.
- Invited by Dan Atkins to help formulate the direction of the new School of Information, 1995.
- Member, CSE Curriculum Committee, 1994-1995. The work on the committee led to stream-lining of the CSE curriculum by eliminating outdated courses and revision of lower division courses.
- Member, CSE Graduate Committee, 1992-1995.
- Coordinator, Software Qualifying Examination, January 1993.
- Volunteer, EECS student lucheon, 1991
- Member, Faculty Search Committee, 1990.
- Founding member of the Software Systems Research Laboratory, Department of EECS, University of Michigan, 1989.
- Marshall, May 1989 commencement.

Professional Service

- Program Co-chair, International Conference on Information Security and Systems, 2014.
- PC member, 1st Workshop on Cloud Security Auditing, 9th IEEE World Congress on Services, 2013.
- PC member, 9th International Conference on Information Systems Security, 2013.

- PC member, CRISIS 2013.
- Best paper awards committee Co-Chair, IEEE Symposium on Reliable Distributed Systems, 2012.
- PC member, IEEE PASSAT, 2012.
- Program committee and steering committee: Intl. Conference on Information Security and Systems, 2011 (ICISS11).
- Best Paper Awards Committee Co-Chair, IEEE Symposium on Reliable Distributed Systems, 2011.
- Associate Editor, IEEE Transactions on Dependable Computing (2009-2012).
- PC member and Advisory committee: Collaborative Technology Systems, 2011.
- PC member: IEEE Intl. Conference on Information Privacy, Security, Risk and Trust (PASSAT), 2011
- PC member, IEEE Symposium on Reliable Distributed Systems, 2011
- PC member: IEEE Intl. Conference on Information Privacy, Security, Risk and Trust (PASSAT), 2010
- Program committee and steering committee: Intl. Conference on Information Security and Systems, 2010 (ICISS10).
- Program Co-chair, IEEE Symp. of Reliable Distributed Systems (SRDS), 2010.
- PC member and Advisory committee: Collaborative Technology Systems, 2010.
- Program Co-chair, Intl. Conf. on Information Security and Systems, 2009.
- Best paper award committee co-chair, IEEE Symp. of Reliable Distributed Systems, 2009.
- PC member, SECURE 2009.
- PC member, PASSAT 2009
- PC member, CRIWG 2009.
- Program committee member, IEEE Oakland Symp. on Security and Privacy, 2008.
- Program committee member, SECURE 2008.
- Advisory committee member and program committee member, 2008 International Symposium on Collaborative Technologies and Systems.
- PC member, ICDCN, 2008.
- PC member, ICISS, 2008.

- PC Member, CRIWG 2008.
- PC member, IEEE Workshop on Specialized Ad Hoc Networks and Systems, 2007.
- PC member, SECRIPT, 2007.
- Committee member, International Symp. on Collaborative Technology and Systems, 2007.
- Reviwer, IEEE Transactions on Distributed Computing
- Reviewer, IEEE Internet Computing
- PC member, Workshop on Software Application Security (WSAS'07).
- PC Member, International Conference on Collaborative Computing, 2006.
- PC member, Next-generation web services Practices (NWeSP'06), 2006.
- Advisory committee, International Symposium on Collaborative Technology and Systems, 2006.
- PC member, CollaborateCom 2006.
- PC member, SecCrypt'06.
- PC member, IEEE eScience Collaborative Remote Laboratories Symposium, 2006.
- Program committee member, WISA 2005, NGWSP 2005, CTS 2005, CNIS 2005.
- Program committee member, WWW'2004 (Security track).
- Program committee member, European CSCW Conference, 1995, 1997, 1999, 2001.
- Program committee member, The Fifth International Symposium on Autonomous Decentralized Systems, March 2001.
- Associate Program Chair, IEEE Tools with AI Conference, 1999.
- Associate Program Chair, ACM Conference on Computer-supported Cooperative Work, 1998.
- Program committee member, IEEE International Conference on Distributed Computing Systems (ICDCS), 1998.
- Program committee member, Multimedia Software Engineering Workshop (held in conjunction with IEEE International Conference on Software Engineering), April 20-21, Kyoto, 1998.
- Program committee member, IEEE Conference on Tools with AI, 1997, 1998.
- Program committee member, the IEEE Singapore International Conference on Networks, April 1997.

- Program committee member, the Fifth and Sixth ACM Conference on Computer-Supported Cooperative Work, 1994, 1996.
- Program committee member, European Conference on Computer-Supported Cooperative Work, 1995, 1997
- Panel member, Multimedia for Collaboration Support, International Conference on Multimedia Computing and Systems (IEEE Multimedia 96).
- mini-track coordinators on Web-based multimedia and collaboration technologies mini-track at the HICCS conference, 1996.
- Panel member, Distributed systems issues in Computer-Supported Cooperative Work, International Conference on Distributed Computing Systems, Vancouver, 1995.
- Program Vice-Chair, Software Engineering Track, 7th IEEE Conference on Tools with AI, Nov. 1995.
- Co-chair, ACM CSCW'94 Workshop on Distributed Systems, Multimedia, and Infrastructure Support in CSCW, October, 1994.
- Minitrack coordinator on Parallel and Distributed Programming Toolkits and Environments, Software Track of the 26th Hawaii International Conference on System Sciences, January 1993.
- Program committee member, 25th Annual Simulation Symposium, April 1992.
- Session Chair, 24th Annual Simulation Symposium, April 1991
- Program Committee Member, First IEEE International Conference on System Integration, New Jersey, April 1990.
- Refereed papers for several journals and conferences including the IEEE Transactions on Software Engineering, IEEE Transactions on Data and Knowledge Engineering, ACM Computing Surveys, Usenix conferences, International Journal on Computer Simulation, International Conference on Parallel Processing, Workshops on Parallel and Distributed Simulation, ACM Conferences on Computer-supported cooperative work, Conferences on User-Interface and Software Technology, etc.

Graduated Ph.D. Students

- Beng Heng Ng (Ph.D., 2013)
- Kevin Borders (Ph.D., 2009).
- Xin Zhao (Ph.D., 2007).
- Lukasz Opyrchal (Ph.D. 2004).

- Patrick McDaniel (Ph.D. 2001).
- Radu Litiu (Ph.D. 2001).
- Amit Mathur (Ph.D. 2001).
- Hyong Sop Shim, 1999.
- Jang Ho Lee, 1999.
- Nelson Manohar, Ph.D. 1998.
- Trent Jaeger, Ph.D. 1997.
- Santanu Paul, Ph.D. 1994.
- Ratib Al-Zoubi, Ph.D. 1992.

Teaching

I have taught the following undergraduate and graduate courses.

- EECS 182: Building Information Environments
- EECS 280: Programming and Introductory Data Structures
- EECS 282: Information Systems Design and Programming
- EECS 482: Operating Systems
- EECS 380: Data Structures and Algorithms
- EECS 481: Software Engineering
- EECS 484: Introduction to Databases
- EECS 498: Special topics course on computer security and trustworthy computing
- EECS 581: Advanced Software Engineering
- EECS 585: Web Technologies
- EECS 588: Computer and Network Security
- EECS 598: Special Topics course on groupware systems
- EECS 598: Special Topics course on multimedia systems
- EECS 598: Special Topics course on Web Technologies

Professional Affiliations

- ACM and IEEE