

## R. Sekar

Professor of Computer Science

Stony Brook University, Stony Brook, NY 11794.

E-mail: [sekar@cs.sunysb.edu](mailto:sekar@cs.sunysb.edu)

Voice: (631)-632-5758

Lab: <http://seclab.cs.sunysb.edu>

Home: <http://www.cs.sunysb.edu/~sekar>

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- Employment**
- Professor:** (2006 – )  
Department of Computer Science, Stony Brook University.
- Associate Professor:** (2001 – 2006)  
Department of Computer Science, Stony Brook University.
- Assistant Professor:** (1999 – 2001)  
Department of Computer Science, Stony Brook University.
- Assistant Professor:** (1996 – 1999)  
Department of Computer Science, Iowa State University, Ames, IA.
- Research Scientist:** (1991 – 1996)  
Computer Networking Research, Bellcore, Morristown, NJ.
- Education**
- Ph.D., Computer Science:** (1991)  
State University of New York at Stony Brook.
- Bachelor of Technology, Electrical Engineering:** (1986)  
Indian Institute of Technology, Madras, India.
- Courses Taught**
- Graduate:** Algorithms, System Security, Network Security, Compiler Design, Programming Languages.
- Undergraduate:** Programming Languages, Compiler Design, Software Security, Network Security
- Seminar courses:** Computer security and intrusion detection, Computer-aided techniques for building reliable systems, Program analysis and software engineering.
- Curriculum Development**
- Developed specialization in *Information Assurance* at undergraduate and graduate levels. Stony Brook was designated by the National Security Agency (NSA) as a *Center of Excellence in Information Assurance Education* as a result of these efforts.
  - Developed a laboratory for cybersecurity experiments, incorporating a novel virtual network testbed, with support from NSF.
  - Developed several graduate and undergraduate courses, including:
    - Network Security (CSE 508)
    - Computer System Security (CSE 509)
    - Advanced Computer Security (CSE 608),
    - Network Security (CSE 408),
    - Computer System Security (CSE 409),
    - Software Security (CSE 360),
    - Advanced Programming Languages (ComS 542, Iowa State University),
    - Principles of Network Application Programming (ComS 587, Iowa State University).

**Research  
Supervision**

**Past:**

*Post-doctoral:*

Yow-Jian Lin (Telcordia Technologies)  
Daniel DuVarney (Reactive Systems, Inc.)  
Yves Younan (Cisco)

*Ph.D.:*

1995: C.R. Ramakrishnan (Co-advisor; Professor, Stony Brook University)  
2003: P. Uppuluri (U. of Missouri, Kansas City)  
2003: Ajay Gupta  
2004: V.N. Venkatakrishnan (Professor, U. of Illinois, Chicago)  
2006: Zhenkai Liang (Associate Professor, National University of Singapore)  
2006: Sandeep Bhatkar (Symantec Research)  
2008: Weiqing Sun (Toledo University)  
2008: Lorenzo Cavallaro (Royal Holloway, University of London)  
2009: Wei Xu (VMWare)  
2009: Alok Tongaonkar (Director, Symantec)  
2015: Mingwei Zhang (Intel)  
2015: Niranjana Hasabnis (Intel)  
2016: Riccardo Pelizzi (Google)  
2016: Wai-Kit Sze (Renaissance Technologies)  
2017: Laszlo Szekeres (Google)  
2017: Qiao Rui (LinkedIn).

*M.S.:*

1997: Y. Guang, Y. Cai  
1998: R. Vankamamidi  
1999: P. Bollineni, K. Jain, A. Deshmukh, P. Uppuluri  
2000: T. Shanbhag, M. Bendre  
2001: S. Zhou, X. Li, G. Sehgal  
2002: S. Tsipa, A. Gupta, H. Yang, S. Balu, D. Dhurjhati  
2003: A. Tiwari, J. Frullo, P. Ram, I. Jatoi, S. Lee, S. Murthy, T. Li, T. Kamat  
2004: P. Rana, C. Mohan, D. Padmanabhan, V. Nagaraja, A. Tongaonkar  
2005: A. Chaturvedi, Y. Chauhan, K. Kumar  
2006: G. Poothia, V. Katta, S. Menon, C. Parampalli,  
M. Al-ayyoub, M. Mehkri, M. Manavat, K. Murthy, E. Chen  
2007: P. Saxena, A. Dharanipragadha, J. Natarajan, M. Mahajan, P. Zaveri, M. Nair,  
2008: M. Chiwara, N. Inamdar, T. Karandikar, V. Puranik, M. Rivera  
2009: R. Chintallapudi, A. Dhamija, A. Karmarkar, S. Kudria, S. Vasudevan  
2010: A. Ayyangar, A. Butala, A. Chandwani, P. Deshmukh, N. Hasabnis,  
M. Iyer, A. Limaje, B. Mital, A. Misra, S. Narra,  
A. Ponniah, G. Naigoankar, G. Sangle, P. Sharma  
2011: K. Alphonse, P. Krishnamurthy, M. Mehra, S. Priya  
2012: M. Corley, A. Saberi, J.P. Singh  
2013: Z. Khurasani, N. Suneja

*B.S.:*

Paul Talamo, Marc Gordon, Kenzley Alphonse, Jamal Irving,  
Eric Papenhausen, Michael Corley, Daniel Scanteianu, Ryan Webber

**Current:**

*Ph.D.:*

Md Nahid Hossain, Tung Tran

## Honors and Distinctions

- Runner-up for best paper, ACM SACMAT, 2014.
- Best paper award, USENIX Security Symposium, 2013.
- Chancellor's award for Excellence in Scholarship and Creative Activities, 2011.
- SUNY Research and Scholarship Award, 2006. (4 out of about 1700 faculty at Stony Brook University received this award in 2006.)
- Faculty Service award, Department of Computer Science, 2002-04. (One award made for the above two-year period.)
- Best paper award, Annual Computer Security Applications Conference (ACSAC), 2003.
- Promising Inventor Award, Research Foundation of SUNY, 2003.
- Research Excellence award, Department of Computer Science, 2000-02.(One award made for the above two-year period.)
- DoD Critical Infrastructure Protection and Information Assurance Fellows award, 2001.
- Catacasinos Fellowship for Excellence in Computer Science, Stony Brook, 1990.
- Distinction in the Ph.D. qualifying examination, first among 20 candidates, 1988.
- Siemens Prize for best student in Electrical Engineering (1982-86) at IIT, Madras.
- Best student award in Electrical Engineering, IIT, Madras, 1983-84, 84-85 and 85-86.

## Selected Invitations

- Invited Speaker Series, Department of Computer Science, SUNY, Binghamton, 2017.
- Distinguished Lecture, Cyber Security Research & Education Institute, UT Dallas, 2017.
- Keynote Speaker, 25th IFIP Data and Applications Security and Privacy Conference (DBSec), July 2011.
- Keynote Speaker, International Conf. on Runtime Verification, Nov. 2010.
- Invited participant at DARPA ISAT Workshop on Black Clouds (Security issues in Cloud Computing Environment), 2010.
- Invited Speaker, TRUST Seminar, University of California, Berkeley, November 2008.
- Keynote Speaker, International Conf. on Information System Security, Dec. 2006.
- Invited Speaker, Information Trust Institute Seminar, University of Illinois at Urbana-Champaign, November 2006.
- Invited speaker at AFOSR Workshop on: Homogeneous Enclave Software vs Heterogeneous Enclave Software, 2007.
- Invited participant at the NSF/Treasury workshop on security for the finance industry, March 2005.
- Invited participant at DARPA Workshop on Application Communities, October 2004.
- Invited participant at CRA Grand Challenges in Information Security workshop, 2003.
- Invited participant at DARPA Workshop on Security Policy, 2000).
- Invited participant at DARPA Workshop on Intrusion Detection Evaluation, 2000.
- Invited participant at the first and second DARPA workshops on Management and Survivability of Large-Scale Networks, 1996.

**Professional Service**

- Associate editor, Journal of Computer Security (2014-)
- Associate editor, ACM Transaction on Internet Technology (2009-2015)
- Associate editor, IEEE Transactions on Information Forensics (2009-2014)
- Member, NSF CISE/CNS Committee of Visitors.
- Panel member for for NSF Cyber Trust, Expeditions, Distributed Systems, CAREER, SFS and other programs.
- Reviewer for Research Council of Norway, and MITACS, Canada.
- Program Chair, 4th International Conference on Information Systems Security, 2008. Also a program committee member 2005-11.
- Program Chair, ACM New Security Paradigms Workshop, 2003 and 2004.
- Co-chair, Workshop on abstractions for distributed multimedia, ACM/IEEE Multimedia Conference, Anaheim, California, 1993.

*Selected Program Committees*

- IEEE Security and Privacy Symposium, 2007–09, 2011-13.
- ISOC Network and Distributed Systems Security Conference, 2008–09, 2012.
- USENIX Security Conference, 2005, 2006, 2008–10, 2015.
- ACM Computer and Communications Security Conference, 2002, 2003, 2006, 2009, 2010.
- Annual Computer Security Applications Conference (ACSAC), 2010, 2011.
- ESORICS, 2011.
- Recent Advances in Intrusion Detection, 2008, 2009.
- Detection of Intrusions & Malware, and Vulnerability Assessment, 2007.
- Organized *Stony Brook Workshop on Information Assurance Education*, 2004.
- ACM New Security Paradigms Workshop, 2002.
- Practical Aspects of Declarative Languages, 2000.

**University Service**

- Graduate Admissions Chair (2001–): Organized and managed the admission process, evaluating over 3000 applications in the last year. Developed a web-based system to handle this volume of applications, and to streamline the evaluation process.
- Graduate committee (2003–present).
- Established the Center for Cybersecurity as a department level center (2001) and then as a College of Arts and Sciences Center (2004).
- SUNY Chancellor’s Cybersecurity Task Force (2002–04).
- Online graduate application project. This is a joint project between DoIT, Graduate School and CS department to develop a customized online application and evaluation system to handle graduate admissions for SBU (2003–2005).
- University Senate Computing and Communications Committee (2002–2009).
- Department Faculty recruiting committee (2001–2005, 2010).
- Center of Excellence in Wireless and IT (CEWIT) Steering Committee (2003–present).

## Research Grants

1. Multi-layer Software Transformation for Attack Surface Reduction and Shielding, \$3,496,687, PIs: R. Sekar, Michalis Polychronakis and Long Lu  
*Office of Naval Research*, 2017–22.
2. MARPLE: Mitigating APT damage by Reasoning with Provenance in Large Enterprise networks, \$1,218,411, PIs: R. Sekar, Scott Stoller and Leman Akoglu,  
*Defense Advanced Research Projects Agency (DARPA)*, 2015–19.
3. Software Diversification for Attack Prevention and Forecasting, \$821,836, PIs: Michalis Polychronakis, Long Lu and R. Sekar,  
*Office of Naval Research*, 2015–18.
4. Malware Analytic and Reasoning Capability, PIs: Alok Nigam, Jim Just (Global Infotek, Inc.), R. Sekar, \$650,000 *DISA/NSA*, 2015–16.
5. A platform for enhancing security of binary code, \$500,000, PI: R. Sekar, *National Science Foundation*, 2013–16.
6. Hardware, Languages, and Architectures for Defense Against Hostile Operating Systems, \$900,000, PI: R. Sekar, *Air Force Office of Scientific Research*, 2009-14. (Stony Brook’s share of a \$7.5M *DoD MURI* grant with 8 PIs from Berkeley, Harvard, SBU, UIUC and UVa.)
7. Proactive Techniques for Preserving System Integrity: A Basis for Robust Defense Against Malware, \$1,000,000, PIs: R. Sekar, Scott Stoller and C.R. Ramakrishnan, *National Science Foundation*, 2008-13.
8. An Extensible Software Platform for a Virtual Cyber Security Laboratory, \$191,000, PI: R. Sekar, *National Science Foundation*, 2008-10. (Stony Brook’s share of a \$500,000 grant with 4 PIs across two CUNY campuses, NYU/Polytechnic and SBU.)
9. A Framework for Analyzing and Ensuring Trust in Service-Oriented Architectures, \$2,085,412, PIs: Scott Stoller, R. Sekar and C.R. Ramakrishnan,  
*DoD Multi-Disciplinary University Research Initiative (MURI)* award, *Office of Naval Research*, 2007–13.
10. RAMSES: A Cognitive Immune System, PIs: Jim Just (Global Infotek, Inc.) and R. Sekar, \$1,490,048, *Defense Advanced Research Projects Agency (DARPA)*, 2006–08.
11. Center for Information Protection: A Multi-University Industry/University Collaborative research Center, \$250,000, PI: R. Sekar, co-PIs: Tzi-cker Chiueh, Rob Johnson, Radu Sion, Scott Stoller, and Erez Zadok.  
*National Science Foundation*, 2007–2012.
12. New Techniques for Attack Detection, Prevention and Immunization, \$350,056, PI: R. Sekar, *National Science Foundation*, 2006–10.
13. Cyber Security: Tools and Techniques for Fail-Safe Systems, \$202,188, PIs: R. Sekar, T. Chiueh, S. Stoller, C.R. Ramakrishnan, R. Sion and E. Zadok,  
*NYSTAR*, 2005–06.
14. Scholarship for Service in Information Assurance, \$2,459,061, PI: R. Sekar, Co-PIs: T. Chiueh, S. Stoller, I.V. Ramakrishnan, and E. Zadok,  
*National Science Foundation*, 2004–10.
15. Diversity Algorithms for Worrisome Software and Networks, PI: J. Just, Global Infotek, Co-PIs: K. Levitt, J. Rowe and Z. Su (UC at Davis), Consultant: R. Sekar \$1,316,000, *Defense Advanced Research Projects Agency (DARPA)*, 2004–05.
16. Model-Carrying Code: A new Approach to Mobile-Code Security, \$1,548,926, PI: R. Sekar, Co-PIs: S. Smolka, C.R. Ramakrishnan, and I.V. Ramakrishnan,  
*Office of Naval Research*, 2001–06.

17. Model Checking for Detecting Computer System Vulnerabilities, \$925,000, PIs: C.R. Ramakrishnan, I.V. Ramakrishnan, R. Sekar, S. Smolka, and S. D. Stoller, *National Science Foundation*, Information Technology Research (ITR), 2002-2007.
18. A Plan for Developing an Industry/University Collaborative Research Center on Cyber Security, PI: R. Sekar, Co-PIs: T. Chiueh, R. Johnson, S. Stoller, C.R. Ramakrishnan, R. Sion and E. Zadok, \$10,000, *National Science Foundation*, 2005–06.
19. Capacity Expansion in Information Assurance, \$199,883, PI: R. Sekar, Co-PIs: S. Stoller, I.V. Ramakrishnan, and E. Zadok, *National Science Foundation*, 2003–06.
20. Secure Mobile Code Execution Environment, PI: R. Sekar, Co-PI: I.V. Ramakrishnan, \$352,519, *Computer Associates (includes a \$60K supplement from NYSTAR)*, 2003–06.
21. A New Approach for Securing Systems Using Adaptive Intrusion Response, PI: R. Sekar, \$290,000, *National Science Foundation, Trusted Computing division*, 2002-2007.
22. A New Approach for Effective Detection of Cyber Attacks Based on Anomalous Program Behaviors, PI: U. Ganapathy, *Immunet Security Solutions, Inc.*, Chief scientist/consultant: R. Sekar, \$100,000, *National Science Foundation (SBIR)*, 2003.
23. Cybersecurity Collaborating with Information Technology via CSL \$90,180, *Dolphin Technology Inc.*, 2003. PI: R. Sekar, Co-PIs: T. Chiueh, S. Stoller and E. Zadok
24. A System for Accurate Detection of Known and Novel Attacks in High Speed Networks, PI: U. Ganapathy, *Immunet Security Solutions, Inc.*, Chief scientist/consultant: R. Sekar, \$100,000, *Department of Energy (SBIR)*, 2002-03.
25. Securing Operating Systems Against Intruder Attacks, \$100,000, *National Science Foundation (SBIR)* PI: U. Ganapathy, *Immunet Security Solutions, Inc.*, Chief scientist/consultant: R. Sekar, 2002.
26. A Model-Based Approach for Securing Software Systems, PI: R. Sekar \$200,000, *National Science Foundation*, 2001–05.
27. Specification-Based Techniques in Information Assurance, PI: R. Sekar \$235,000, *Air Force Office of Scientific Research*, US DoD Critical Infrastructure Protection and Information Assurance Fellows program, 2001–02.
28. Protecting Resources Using Programmable Adaptive Rapid Reactors, PI: R. Sekar \$260,000, *Defense Advanced Research Projects Agency (DARPA)*, 2000–02.
29. Survivable Active Networks, PI: R. Sekar \$446,000, *Defense Advanced Research Projects Agency (DARPA)*, 1997–2001.
30. Techniques for Enhancing the Power and Performance of Equational Systems, \$159,183, *National Science Foundation*, 1996-98. PIs: L. Bachmair, I.V. Ramakrishnan, and R. Sekar.

# Publications

## Book Chapters

1. Term Indexing, R. SEKAR, I.V. RAMAKRISHNAN AND A. VORONKOV, *Handbook of Automated Reasoning*, Edited by A. ROBINSON AND A. VORONKOV, Chapter 26, Elsevier Science Publishers B.V., 2001, pages 1855–1964.
2. Safe Execution of Mobile and Untrusted Code: The Model-Carrying Code Project, R. SEKAR ET AL, *Information Security Research*, Wiley Publishers, 2007.
3. Formal Verification of a Microprocessor Using Equational Techniques, R. SEKAR AND M.K. SRIVAS, *Current Trends in Hardware Verification and Automated Theorem Proving (Chapter 4)*, pages 171–217. Springer-Verlag, 1989.

## Refereed Conference Publications

4. *Protecting COTS Binaries from Disclosure-guided Code Reuse Attacks*, Mingwei Zhang, Michalis Polychronakis and R. Sekar, *Annual Computer Security Applications Conference (ACSAC)*, 2017.
5. *SLEUTH: Real-time Attack Scenario Reconstruction from COTS Audit Data*, Md Nahid Hossain, Sadegh Milajerdi, Junao Wang, Birhanu Eshete, Rigel Gjomemo, R. Sekar, Scott D. Stoller and V.N. Venkatakrishnan, *USENIX Security Symposium (USENIX Security)*, 2017.
6. *Function Interface Analysis: A Principled Approach for Function Recognition in COTS Binaries*, Rui Qiao and R. Sekar, *Dependable Systems and Networks (DSN)*, 2017.
7. *Extracting Instruction Semantics Via Symbolic Execution of Code Generators*, Niranjana Hasabnis and R. Sekar, *Foundations of Software Engineering (FSE)*, 2016.
8. *Hardening OpenStack Cloud Platforms against Compute Node Compromises*, Wai-Kit Sze, Abhinav Srivastava, and R. Sekar, *ACM Symposium on Information, Computer and Communications Security. (ASIACCS)*, 2016.
9. *Lifting Assembly to Intermediate Representation: A Novel Approach Leveraging Compilers*, Niranjana Hasabnis and R. Sekar, *ACM Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, 2016.
10. *A Principled Approach for ROP Defense*, Qiao Rui, Mingwei Zhang and R. Sekar, *Annual Computer Security Applications Conference (ACSAC)*, 2015.
11. *Provenance-based Integrity Protection for Windows*, Wai-Kit Sze and R. Sekar, *Annual Computer Security Applications Conference (ACSAC)*, 2015.
12. *JaTE: Transparent and Efficient JavaScript Confinement*, Tung Tran, Riccardo Pelizzi and R. Sekar, *Annual Computer Security Applications Conference (ACSAC)*, 2015.
13. *Code and Control Flow Integrity for COTS binaries: An Effective Defense Against Real-World ROP Attacks*, Mingwei Zhang and R. Sekar, *Annual Computer Security Applications Conference (ACSAC)*, 2015.
14. *Checking Correctness of Code Generator Architecture Specifications*, Niranjana Hasabnis, Qiao Rui and R. Sekar, *ACM/IEEE International Symposium on Code Generation and Optimization (CGO)*, February, 2015.
15. *Code-Pointer Integrity*, Volodymyr Kuznetsov, Laszlo Szekeres, Mathias Payer, George Candea, R. Sekar and Dawn Song, *USENIX Operating System Design and Implementation (OSDI)*, October, 2014.
16. *Comprehensive Integrity Protection for Desktop Linux (Demo)*, Wai-Kit Sze and R. Sekar, *ACM Symposium on Access Control Models and Technologies (SACMAT)*, June, 2014.
17. *Towards More Usable Information Flow Policies for Contemporary Operating Systems*, Wai-Kit Sze, Bhuvan Mital and R. Sekar, *ACM Symposium on Access Control Models and Technologies (SACMAT)*, June, 2014. **Honorable mention for Best paper.**

18. *A Platform for Secure Static Binary Instrumentation*, Mingwei Zhang, Qiao Rui, Niranjana Hasabnis and R. Sekar, *Virtual Execution Environments (VEE)*, March, 2014.
19. A Portable User-Level Approach for System wide Integrity Protection , SZE WAI-KIT AND R. SEKAR, *Annual Computer Security Applications Conference (ACSAC)*, 2013. *Acceptance rate: 19%*.
20. Control-flow integrity for COTS binaries, MINGWEI ZHANG AND R. SEKAR, *USENIX Security Symposium*, 2013. *Acceptance rate: 16%. Best paper award.*
21. Protection, Usability and Improvements in Reflected XSS Filters, RICCARDO PELIZZI AND R. SEKAR, *ACM Symposium on Information, Computer and Communications Security. (ASIACCS)*, 2012. *Acceptance rate: 22%*.
22. Light-weight Bounds Checking, NIRANJANA HASABNIS, ASHISH MISRA AND R. SEKAR, *ACM/IEEE International Symposium on Code Generation and Optimization (CGO)*, 2012.
23. Taint-Enhanced Anomaly Detection, LORENZO CAVALLARO AND R. SEKAR, *International Conference on Information Systems Security (ICISS)*, 2011. *Acceptance rate: 19%*.
24. A Server- and Browser-Transparent CSRF Defense for Web 2.0 Applications RICCARDO PELIZZI AND R. SEKAR, *Annual Computer Security Applications Conference (ACSAC)*, 2011. *Acceptance rate: 18%*.
25. PAriCheck: An Efficient Pointer Arithmetic Checker for C Programs, YVES YOUNAN, PIETER PHILIPPAERTS, LORENZO CAVALLARO, R. SEKAR, FRANK PIESSENS AND WOUTER JOOSEN, *ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, 2010. *Acceptance rate: 15%*.
26. Online Signature Generation for Windows Systems, LIXIN LI, R. SEKAR AND JAMES E. JUST, *Annual Computer Security Applications Conference (ACSAC)*, December 2009. *Acceptance rate: 20%*.
27. An Efficient Black-box Technique for Defeating Web Application Attacks, R. SEKAR, *ISOC Network and Distributed Systems Symposium (NDSS)*, 2009. *Acceptance rate: 11%*.
28. Fast Packet Classification using Condition Factorization, ALOK TONGAONKAR, R. SEKAR AND SREENAATH VASUDEVAN, *International Conference on Applied Cryptography and Network Security*, Paris, France, 2009. *Acceptance rate: 20%*.
29. Practical Proactive Integrity Preservation: A Basis for Malware Defense, WEIQING SUN, R. SEKAR, GAURAV POOTHIA AND TEJAS KARANDIKAR, *IEEE Symposium on Security and Privacy*, 2008. *Acceptance rate: 11%*.
30. A Practical Mimicry Attack Against Powerful System-Call Monitors, CHETAN PARAMPALLI, R. SEKAR AND ROB JOHNSON, *ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, 2008. *Acceptance rate: 22%*.
31. Fast Packet Classification for Snort, ALOK TONGAONKAR, SREENAATH VASUDEVAN, AND R. SEKAR, *22nd USENIX Large Installation System Administration Conference (LISA)*, 2008.
32. Data Space Randomization (DSR), SANDEEP BHATKAR AND R. SEKAR, *Detection of Intrusions, Malware and Vulnerability Analysis (DIMVA)*, 2008.
33. Efficient Fine-Grained Binary Instrumentation with Applications to Taint-Tracking, PRATEEK SAXENA, R. SEKAR AND VARUN PURANIK, *ACM/IEEE International Symposium on Code Generation and Optimization (CGO)*, 2008.
34. On the Limits of Information Flow Techniques for Malware Analysis and Containment, LORENZO CAVALLARO, PRATEEK SAXENA, AND R. SEKAR, *Detection of Intrusions, Malware and Vulnerability Analysis (DIMVA)*, 2008.
35. *Expanding Malware Defense by Securing Software Installations*, WEIQING SUN, R. SEKAR, ZHENKAI LIANG AND V.N. VENKATAKRISHNAN, *Detection of Intrusions, Malware and Vulnerability Analysis (DIMVA)*, 2008.



36. Inferring Higher Level Policies from Firewall Rules, ALOK TONGAONKAR, NIRANJAN INAMDAR, AND R. SEKAR, *21th USENIX Large Installation System Administration Conference (LISA)*, Dallas, TX, 2007.
37. Provably Correct Runtime Enforcement of Non-Interference Properties, V.N. VENKATAKRISHNAN, W. XU, D. DUVARNEY AND R. SEKAR, *8th International Conference on Information and Communications Security (ICICS)*, 2006.
38. Address-Space Randomization for Windows Systems, L. LI, J. JUST AND R. SEKAR, *Annual Computer Security Applications Conference, December 2006*.
39. Taint-Enhanced Policy Enforcement: A Practical Approach to Defeat a Wide Range of Attacks, WEI XU, S. BHATKAR AND R. SEKAR, *USENIX Security Symposium*, 2006. *Acceptance rate: 12%*.
40. Dataflow Anomaly Detection, S. BHATKAR, A. CHATURVEDI AND R. SEKAR, *IEEE Security and Privacy*, 2006. *Acceptance rate: 9.2%*.
41. A Framework for Building Privacy-Conscious Composite Web Services, WEI XU, V.N. VENKATAKRISHNAN, R. SEKAR AND I.V. RAMAKRISHNAN, *4th IEEE International Conference on Web Services (ICWS) (Application Services and Industry Track)*, 2006.
42. Automatic Generation of Buffer Overflow Attack Signatures: An Approach Based on Program Behavior Models, Z. LIANG AND R. SEKAR, *Annual Computer Security Applications Conference*, 2005. *Acceptance rate: 19%*.
43. Automated, Sub-second Attack Signature Generation: A Basis for Building Self-Protecting Servers, Z. LIANG AND R. SEKAR, *ACM Computer and Communication Security*, 2005. *Acceptance rate 15%*.
44. Efficient Techniques for Comprehensive Protection from Memory Error Exploits, S. BHATKAR, R. SEKAR AND D. DUVARNEY, *USENIX Security Symposium*, 2005. *Acceptance rate: 14%*.
45. One-way isolation: An Effective Approach for Realizing Safe Execution Environments, W. SUN, Z. LIANG, R. SEKAR AND V.N. VENKATAKRISHNAN, *ISOC Network and Distributed Systems Symposium (NDSS)*, San Diego, 2005, pages 265–278. *Acceptance rate: 13%*
46. V-NetLab: A Cost-Effective Platform to Support Course Projects in Computer Security, K. KRISHNA, W. SUN AND R. SEKAR, *9th Colloquium for Information Systems Security Education*, Atlanta, Georgia, 2005.
47. Automatic Synthesis of Filters to Discard Buffer Overflow Attacks: A Step Towards Realizing Self-Healing Systems, Z. LIANG, R. SEKAR AND D. DUVARNEY, *USENIX Technical Symposium*, (Short paper), Anaheim, 2005, pages 375–378. *Acceptance rate: 24%*
48. A Secure Composition Framework for Trustworthy Personal Information Assistants, V.N. VENKATAKRISHNAN, WEI XU, I.V. RAMAKRISHNAN AND R. SEKAR, *IEEE International Conference Integration of Knowledge Intensive Multi-Agent Systems (KIMAS)*, 2005.
49. An Efficient and Backwards-Compatible Transformation to Ensure Memory Safety of C Programs, WEI XU, DANIEL C. DUVARNEY, AND R. SEKAR, *ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)*, Newport Beach, CA, 2004, pages 117–126. *Acceptance rate: 15%*
50. Isolated Program Execution: An Application Transparent Approach for Executing Untrusted Programs, Z. LIANG, V.N. VENKATAKRISHNAN AND R. SEKAR *Annual Computer Security Applications Conference*, Las Vegas, NV, 2003, pages 182–191. **Best paper award.**
51. Model-Carrying Code: A Practical Approach for Safe Execution of Untrusted Applications, R. SEKAR, V.N. VENKATAKRISHNAN, SAMIK BASU, SANDEEP BHATKAR AND DAN DUVARNEY, *ACM Symposium on Operating Systems Principles (SOSP)*, Bolton Landing, NY, 2003, pages 15–28. *Acceptance rate 17%*
52. An Approach for Detecting Self-Propagating Email Using Anomaly Detection, A. GUPTA AND R. SEKAR, *Recent Advances in Intrusion Detection*, Pittsburgh, September 2003, pages 55–72. *Acceptance rate: 29%*

53. Address Obfuscation: An Efficient Approach to Combat a Broad Range of Memory Error Exploits, SANDEEP BHATKAR, DANIEL C. DUVARNEY, AND R. SEKAR, *USENIX Security Symposium*, Baltimore, August 2003, pages 105–120. Acceptance rate 16%
54. Specification-Based Anomaly Detection, R. SEKAR ET AL, *ACM Computer and Communication Security*, Washington, November 2002, pages 265–274. Acceptance rate: 13%
55. Secure Software Installation, V.N. VENKATAKRISHNAN, R. SEKAR, T. KAMAT, S. TSIPA AND Z. LIANG *USENIX LISA Conference*, Philadelphia, November 2002, pages 219–226.
56. Experiences with Specification Based Intrusion Detection System, P. UPPULURI AND R. SEKAR, *Recent Advances in Intrusion Detection (RAID)*, Davis, CA, October 2001. Acceptance rate 22%
57. A Fast Automaton-Based Method for Detecting Anomalous Program Behaviors, R. SEKAR, M. BENDRE, P. BOLLINENI, AND D. DHURJATI, *IEEE Symposium on Security and Privacy*, 2001, pages 144–155.
58. Building Survivable Systems: An Integrated Approach Based on Intrusion Detection and Confinement, T. BOWEN, M. SEGAL AND R. SEKAR, *DARPA Information Security Symposium*, 2000.
59. User-Level Infrastructure for System Call Interposition: A Platform for Intrusion Detection and Confinement, K. JAIN AND R. SEKAR, *ISOC Network and Distributed Systems Security Conference*, 2000.
60. A High-Performance Network Intrusion Detection System, R. SEKAR, Y. GUANG, T. SHANBHAG AND S. VERMA, *ACM Symposium on Computer and Communication Security*, 1999.
61. Synthesizing Fast Intrusion Detection/Prevention Systems from High-Level Specifications, R. SEKAR AND P. UPPULURI, *USENIX Security Symposium*, 1999.
62. A Specification-Based Approach for Building Survivable Systems, R. SEKAR, Y. CAI AND M. SEGAL, *National Information Systems Security Conference*, 1998.
63. A Conservative Technique to Improve Deterministic Evaluation of Logic Programs, A. ROYCHOUDHURY, C.R. RAMAKRISHNAN, I.V. RAMAKRISHNAN, AND R. SEKAR, *Intl' Conf. on Computer Languages (ICCL)*, 1998.
64. A Symbolic Constraint Solving Framework for Analysis of Logic Programs, C.R. RAMAKRISHNAN, I.V. RAMAKRISHNAN AND R. SEKAR, *ACM Conference on Partial Evaluation and Semantics based Program Manipulation (PEPM)*, 1995.
65. Automata-driven Efficient Subterm Unification, R. RAMESH, R. SEKAR AND I.V. RAMAKRISHNAN, *Foundations of Software Technology and Theoretical Computer Science (FST&TCS)*, 1994.
66. Modelling Techniques for Evolving Distributed Applications, R. SEKAR, Y-J. LIN AND C.R. RAMAKRISHNAN, *Formal Description Techniques (FORTE)*, 1994.
67. A High-Performance Runtime System for Parallel Evaluation of Lazy languages, with O. KASER, C.R. RAMAKRISHNAN AND R. SEKAR, *Int. Symp. on Parallel Symbolic Computation (PASCO)*, 1994.
68. Extracting Determinacy in Logic Programs, S. DAWSON, C.R. RAMAKRISHNAN, I.V. RAMAKRISHNAN AND R. SEKAR, *International Conference on Logic Programming (ICLP)*, 1993.
69. Adaptive Pattern Matching, R. SEKAR, R. RAMESH AND I.V. RAMAKRISHNAN, *International Colloquium on Automata, Languages and Programming (ICALP)*, 1992.
70. Fast Parallel Implementation of Lazy Languages – The EQUALS Experience, WITH O. KASER *et al*, *ACM Conference on Lisp and Functional Programming (LFP)*, 1992.
71. Programming with Equations – A Framework for Lazy Parallel Evaluation, R. SEKAR AND I.V. RAMAKRISHNAN, *International Conference on Automated Deduction (CADE)*, 1992.
72. On Modelling and Reasoning about Hybrid Systems, R. SEKAR, Y.-J. LIN AND S. NARAIN, *International Symposium on Protocol Specification, Testing and Verification (PSTV)*, 1992.

73. On the Power and Limitation of Strictness Analysis based on Abstract Interpretation, R. SEKAR, P. MISHRA AND I.V. RAMAKRISHNAN, *ACM Principles of Programming Languages (POPL)*, 1991.
74. Equational Logic Programming: Beyond Strong Sequentiality, R. SEKAR AND I.V. RAMAKRISHNAN, *IEEE Symposium on Logics In Computer Science (LICS)*, June 1990. Invited from the conference to a special issue of *Information and Computation*.
75. Small Domains Spell Fast Strictness Analysis, R. SEKAR, S. PAWAGI AND I.V. RAMAKRISHNAN, *ACM Symposium on Principles of Programming Languages (POPL)*, 1990.
76. Transforming Strongly Sequential Systems for Efficient Parallel Execution, R. SEKAR, S. PAWAGI AND I.V. RAMAKRISHNAN, *Int'l Conf. on Rewriting Techniques and Applications (RTA)*, 1989.

### Refereed Journal Publications

77. *Condition Factorization: A Technique for Building Fast and Compact Packet Matching Automata*, Alok Tongaonkar and R. Sekar, *IEEE Transactions on Information Forensics and Security (IEEE TIFS)*, March, 2016.
78. *Eternal War in Memory*, Laszlo Szekeres, Mathias Payer, Tao Wei and R. Sekar, *IEEE Security and Privacy*, May 2014.
79. *Alcatraz: An Isolated Environment for Experimenting with Untrusted Software*, Zhenkai Liang, Weiqing Sun, V.N. Venkatakishnan and R. Sekar, *ACM Transactions on Information Systems Security (TISSEC)*, January 2009.
80. Model-Based Analysis of Configuration Vulnerabilities, C. RAMAKRISHNAN AND R. SEKAR, *Journal of Computer Security*, Vol 10, No, 11-12, 2002, pages 189–209.
81. Efficient Automata-Driven Subterm Unification, R. RAMESH, I.V. RAMAKRISHNAN AND R. SEKAR, *Theoretical Computer Science*, 254 (1-2), 2001, pages 187–223.
82. On the Power and Limitations of Strictness Analysis based on Abstract Interpretation, R. SEKAR, P. MISHRA AND I.V. RAMAKRISHNAN, *Journal of the ACM*, 44(3), 1997, pages 505–525.
83. EQUALS — A Fast Parallel Implementation of a Lazy Language, O. KASER, C.R. RAMAKRISHNAN, I.V. RAMAKRISHNAN AND R. SEKAR, *Journal of Functional Programming*, 7(2), 1997, pages 183–217.
84. Fast Strictness Analysis Based on Demand Propagation, R. SEKAR AND I.V. RAMAKRISHNAN, *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 17(6), 1995, pages 896–937.
85. Adaptive Pattern Matching, R. SEKAR, R. RAMESH AND I.V. RAMAKRISHNAN, *SIAM Journal of Computing*, 24(6), 1995, pages 1207–1234.
86. Programming in Equational Logic: Beyond Strong Sequentiality, R. SEKAR AND I.V. RAMAKRISHNAN, *Information and Computation*, 104(1), 1993, pages 78–109.
87. The Touring Machine System, ARANGO ET AL, *Communications of the ACM*, Special issue on *Multimedia in the Workplace*, 36(1), 1993, pages 68–77.
88. An Equational Approach to the Verification of Microprocessors, M.K. SRIVAS AND R. SEKAR, *Int'l Journal of Computer Aided VLSI Design*, Special issue on “Zero-defect VLSI design,” 2(3), pages 359–390, 1990.

### Refereed Workshop Publications

89. *WebSheets: Web Applications for Non-Programmers*, Riccardo Pelizzi and R. Sekar, *New Security Paradigms Workshop*, 2015.
90. *Automatic Generation of Assembly to IR Translators Using Compilers*, Niranjan Hasabnis and R. Sekar *Architectural and Microarchitectural Support for Binary Translation (AMAS-BT)*, February, 2015.

91. *Practical Techniques for Regeneration and Immunization of COTS Applications*, LIXIN LI, MARK R. CORNWELL, E. HULTMAN, JAMES E. JUST AND R. SEKAR, *3rd Workshop on Recent Advances on Intrusion-Tolerant Systems*, Estoril, Portugal, June 2009.
92. *V-NetLab: An Approach for Realizing Logically Isolated Networks for Security Experiments*, WEIQING SUN, VARUN KATTA, KUMAR KRISHNA, AND R. SEKAR, *USENIX Workshop on Cyber Security Experimentation and Test (CSET)*, 2008.
93. *Anomalous Taint Detection (Extended Abstract)*, LORENZO CAVALLARO AND R. SEKAR, Refereed Extended Abstract/Poster at *Recent Advances in Intrusion Detection (RAID)*, 2008.
94. On Supporting Active User Feedback in P3P, V.N. VENKATAKRISHNAN, WEI XU, AND RISHI KANT SHARDA, *2nd Secure Knowledge Management Workshop (SKM)*, 2006.
95. An Approach for Realizing Privacy-Preserving Web-Based Services, WEI XU, R. SEKAR, I.V. RAMAKRISHNAN, AND V.N. VENKATAKRISHNAN, *14th International World-Wide Web Conference*, Refereed Poster, 2005.
96. Immunizing Servers from Buffer-Overflow Attacks, ZHENKAI LIANG, R. SEKAR, AND DANIEL C. DUVARNEY, *Adaptive and Resilient Computing Security Workshop*, 2004.
97. Empowering Mobile Code with Expressive Security Policies, V.N. VENKATAKRISHNAN AND R. SEKAR, *New Security Paradigms Workshop*, 2002.
98. Model-Carrying Code (MCC): A New Paradigm for Mobile-Code Security, R. SEKAR, C.R. RAMAKRISHNAN, I.V. RAMAKRISHNAN, AND SCOTT A. SMOLKA, *New Security Paradigms Workshop*, 2001.
99. Model-Based Analysis of Configuration Vulnerabilities, C. RAMAKRISHNAN AND R. SEKAR, *ACM Intrusion Detection and Prevention Workshop*, 2000.
100. On Preventing Intrusions by Process Behavior Monitoring, R. SEKAR, T. BOWEN AND M. SEGAL, *USENIX Intrusion Detection Workshop*, 1999.
101. Model-based vulnerability analysis of computer systems, C.R. RAMAKRISHNAN AND R. SEKAR, *2nd Int'l Workshop on Verification, Model Checking and Abstract Interpretation, Pisa, Italy*, 1998.
102. Making a Success out of Early Failures, A. ROYCHOUDHURY, C. R. RAMAKRISHNAN, I. V. RAMAKRISHNAN AND R. SEKAR, *ILPS Workshop on Specialization of Declarative Programs*, 1997.
103. EQUALS: The New Generation, O. KASER, C.R. RAMAKRISHNAN AND R. SEKAR, *International workshop on parallel processing (IWPP)*, 1994.
104. The Touring Machine System: An Open Distributed Platform for Information Networking Applications (Extended Abstract), B. COAN, W. LELAND, V. MAK, R. SEKAR, A. WEINRIB AND S. WUU, *4th Telecommunications Information Networking Architecture Workshop (TINA93)*, 1993.
105. A Temporal Logic for Telecommunications, S. NARAIN, J. CAMERON, Y.-J. LIN AND R. SEKAR, *AAAI workshop on Implementing Temporal Reasoning, San Jose*, 1992.
106. Stony Brook Parallel Programming Project, R. SEKAR, S. PAWAGI AND I.V. RAMAKRISHNAN, *Workshop on Architectural Support for Declarative Languages*, 1989.

### Other Significant Publications

107. MCC End-User Management Framework, R. SEKAR, Technical Report SECLAB06-01, Secure Systems Laboratory, Stony Brook University, 2006.
108. A Middleware Architecture for Management of Data Services, R. SEKAR, *CARIN-MADN-4.3, Bellcore*, 1996.
109. Managing Web Services, R. SEKAR, *CARIN-MADN-3.4, Bellcore*, 1996.
110. An Aggregation System for Monitoring Data Services, R. SEKAR, *CARIN-MADN-4.1, Bellcore*, 1996.