

**Bradley R. Smith, PhD.**  
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**Work Experience:**

- Sep, 2006 to Present     *Adjunct Assistant Professor*, Computer Engineering, UC Santa Cruz, Santa Cruz, CA  
Contribute to the academic mission of the Computer Engineering Department through teaching, curriculum and program development, student advising, and research. Past accomplishments include developed curriculum for a new networks lab created by a donation from Cisco Systems, taught CE 150 (Introduction to Networks) and CE 151 (Network Administration), served on several Masters and PhD thesis committees. Most recently I have negotiated funding from Cisco Systems to create a Network Management and Operations lab that will provide on-campus internship opportunities for students, and a forum for collaborative research between Cisco and School of Engineering researchers.
- Sep, 2006 to Present     *Director Research and Faculty Partnerships*, Information Technology Services, UC Santa Cruz, Santa Cruz, CA  
Responsible for developing strategic technologies in support of the campus mission, and for the architecture of new systems and significant enhancements to existing systems for deployment on the campus. Accomplishments to date include identifying the need and developing a case for the installation of dark fiber to the campus, assessing the options for satisfying the campus' need for data center space, and developing a virtual server capability for the campus. Funding has been identified for the dark fiber projects (total cost of \$5.5M), and I am responsible for oversight of the implementation. Approval has been given to identify funding for the data center project (total cost of \$4.9M). I have on-going responsibility for collaboration with faculty, campus leadership, and the rest of the ITS organization in these activities.
- Dec, 2004 to June, 2007     *Director Core Technologies*, Information Technology Services, UC Santa Cruz, Santa Cruz, CA  
Manage all consolidated IT systems, network and telecommunications resources, provide a secure and stable computing environment for the campus, and collaborate with faculty to identify and pursue funding for the expansion of research and instructional infrastructure.
- April, 2004 to Nov, 2004     *Acting Assistant Dean*, School of Engineering, UC Santa Cruz, Santa Cruz, CA  
Serve as principal staff officer for the School of Engineering (SoE), advising the Dean and serving as the Dean's representative providing liaison with other units on a wide variety of administrative issues. Also serve as the primary lead for all SoE resource and academic planning, analysis, and organizational improvement initiatives. Major accomplishments include: completed the construction and occupancy of the Engineering 2 building, coordinated preliminary planning for the delivery of instruction at the Silicon Valley Center, coordinated initial planning for service center and information technology consolidations, and negotiated a \$650,000 donation from Cisco Systems for the creation of an undergraduate network lab.

- 2000 to 2004 *Chief Architect*, Cenus Technologies, Inc., Scotts Valley, CA  
Responsible for the architecture and high-level design of state-of-the-art object routing technology. In addition to the overall architecture, additional accomplishments include design of an innovative object "forwarding table" providing compact representation of object routing information with lookup speeds in excess of one million per second, and the design of an innovative request forwarding mechanism allowing the object routing to interact transparently with most distributed storage protocols. Other responsibilities included participating in negotiations with potential corporate and venture capital investors, and the preparation of patent applications.
- 1996 to 2003 *Research Staff*, Computer Communications Research Group, Jack Baskin School of Engineering, UC Santa Cruz, Santa Cruz, CA  
My research interests are in the analysis, design, and implementation of algorithms, data structures, and protocols for secure computer communication. Specific interests include policy-based routing algorithms and architectures, the design of a trust algebra for securing routing protocols, and the application of these technologies to secure unicast and multicast routing. Reporting to Prof. J.J. Garcia-Luna-Aceves, I work as acting Co-PI on two DARPA funded projects (Secure Active Internetworking, or SAINT, and Fault Tolerant Internetworks). I was co-author on the FTI proposal with Prof. Garcia-Luna. My responsibilities include research on secure multicast routing, scalable object routing, efficient policy-based routing, and a trust algebra for routing protocols. I represent the projects at regular DARPA Principal Investigator (PI) meetings, and contribute material to regular project reports.
- 1994 to 1996 *Computer Security and Network Consultant*  
SECURITY: Firewall evaluation and installation; consulting with foreign PTT for secure provision of Internet services. NETWORK MANAGEMENT: project lead on network expansion as part of purchase of a national ISP.
- Sep, 1985 to 1996 *Network and Unix Systems Manager*  
Manage the development and operation of computing and network services for the School of Engineering at the University of California, Santa Cruz, and the Institute of Fluid Dynamics at the EPFL in Lausanne, Switzerland.
- Jan, 1982 to Sep, 1985 *Software Engineer*,  
Developed software at three different companies, including two startups (Avera Corporation and CTX International) and Hewlett-Packard. Projects included graphics, database, and compiler development. Programming environment was Unix with either C or Pascal.

### Book Chapters

- May 2005 (BC-1) "A New Approach to Policy-Based Routing in the Internet"  
*Performance Evaluation and Planning Methods for the Next Generation Internet* (A. Girard, B. Sanso, and F. Vazques-Abad, Eds.), Kluwer Academic Publishers, 2005.

### Journal Papers

- To Be Published 2009 (J-2) "An End-to-End Approach to Secure Routing in MANETs"  
Stephen Dabideen, Bradley R. Smith, and J.J. Garcia-Luna-Aceves. *Security and Communication Networks*.
- March 1998 (J-1) "Efficient Security Mechanisms for The Border Gateway Routing Protocol"  
Brad Smith and J.J. Garcia-Luna-Aceves. *Computer Communications Journal* (Elsevier), Vol. 21, No. 3, pp. 203-210.

## Conference Papers

- October 2009 (C-9) "An End-to-End Solution for Secure and Survivable Routing in MANET(s)"  
Stephen Dabideen, Bradley R. Smith and J.J. Garcia-Luna-Aceves. 7th International Workshop on the Design of Reliable Communication Networks (DRCN 2009), Washington D.C.
- August 2009 (C-8) "The Case for End-to-End Solutions to Secure Routing in MANETs"  
Stephen Dabideen, Bradley R. Smith and J.J. Garcia-Luna-Aceves. International Workshop on Security, Privacy and Trust of Computer and Cyber-Physical Networks (SecureCPN); 18th International Conference on Computer Communication and Networks (ICCCN '09), San Francisco, CA.
- August 2008 (C-7) "Best Effort Policy-Based Routing"  
Bradley R. Smith and J.J. Garcia-Luna-Aceves. 17th International Conference on Computer Communication and Networks (ICCCN '08), St Thomas, U.S. Virgin Islands.
- October 2004 (C-6) "Efficient Policy-Based Routing Without Virtual Circuits"  
Bradley R. Smith and J.J. Garcia-Luna-Aceves. First International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QSHINE '04), Dallas, Texas.
- October 2004 (C-5) "Policy-Aware Connectionless Routing"  
Bradley R. Smith and J.J. Garcia-Luna-Aceves. First International Workshop on QoS Routing (WQoS '04), Barcelona, Spain.
- October 2003 (C-4) "Enhancing the Internet Routing Architecture"  
J.J. Garcia-Luna-Aceves and Bradley R. Smith. Avances en Ciencias de la Computacion, Vol. 3 (J. Diaz de Leon, G. Gonzalez Santos, and J. Figueroa Nazuno, Eds.), Instituto Politecnico Nacional, ISBN:970-36-0098-0.
- September 1999 (C-3) "Specification and Analysis of a Reliable Broadcasting Protocol in Maude"  
Grit Denker, J.J. Garcia-Luna-Aceves, Jose Meseguer, Peter Csaba Olveczky, Jyoti Raju, Brad Smith, and Carolyn Talcott. Proc. 37th Allerton Conference on Communications, Control, and Computing.
- February 1997 (C-2) "Securing Distance Vector Routing Protocols"  
Brad Smith, Shree Murthy, and J.J. Garcia-Luna-Aceves. Proc. Internet Society Symposium on Network and Distributed System Security, San Diego, CA.
- November 1996 (C-1) "Securing the Border Gateway Routing Protocol"  
Brad Smith and J.J. Garcia-Luna-Aceves. Proc. Global Internet '96 Conference; London, UK.

## Presentations and Articles

- January 1995 Presentation and member of panel in session titled "System Vulnerabilities."  
3rd Annual Workshop on Computer Misuse and Anomaly Detection (Invitation Only)
- September 1988 "Managing BSD Unix Networks"  
Unix/World magazine.

## Service

- Ongoing Negotiated creation of the Network Management and Operations Lab with Cisco Technologies, and oversee its operations. The purpose of this lab is to coordinate collaboration with Cisco in the form of internships for students to work on basic Cisco problems, and research projects for researchers to work on more challenging Cisco problems.

## Teaching

- Spring '09 Network Administration (CMPE 151). Co-taught with Prof. Katia Obraczka.  
Independent Study (CMPS 297): Anselm Kia.  
Independent Study (ISM 198): Tom Freeman, Thor Jensen, John Shu.

Winter '09 Independent Study (CMPS 299): Zeb Nevins.  
 Independent Study (ISM 198): Tom Freeman, Thor Jensen, Kailey Oppenheim, John Shu.  
 Fall '08 Independent Study (CMPS 297): Zeb Nevins.  
 Independent Study (ISM 198): Thor Jensen, John Shu.  
 Spring '08 Network Administration (CMPE 151)  
 Fall '07 Robert Suk Independent Study: "Customizable Routing with XORP and Click."  
 Winter '07 Introduction to Networks (CMPE 150)  
 Fall '06 Network Administration (CMPE 151)  
 Winter '06 Network Administration (CMPE 151). Co-taught with Prof. Katia Obraczka.

### **Thesis**

Rolando Menchaca-Mendez, PhD, August 2009, "Routing and Scheduling In Mobile Ad Hoc Networks Using Meshes"

### **Committees**

Matt Bromage, MS, August 2009, "Trajectory Assisted Routing for Highly Partitioned Networks (TAROT)"

Xinghua (Michael) Hu, MS, September 2008, "Interest-Based Multicast Routing Protocol"

Dhananjay Sampath, PhD (Advancement), June 2008, "Enhanced Routing Structures for Controlled Dissemination in Routing Protocols for MANETs"

Yali Wang, PhD (Advancement), March 2008, "Channel Adaptive Routing in Mobile Ad Hoc Networks"

Anthony Hutter, MS, December 2007, "SNMP Integration with Wireless Sensor Networks"

Xin Wang, PhD (Advancement), September 2007, "Cross layer design in wireless ad-hoc networks"

Rolando Menchaca-Mendez, PhD (Advancement), March 2007, "Supporting Real Time Traffic Flows Over Ad-Hoc Networks"

Sudharsan Rangarajan, MS, March 2007, "On-Demand Loop-Free Multipath Routing in Ad Hoc Networks Using Source Sequence Numbers"

Zhenjiang Li, PhD, December 2006, "Constrained Path Computation for Provisioning of QoS in Computer Networks"

Debasree Banerjee, MS, March 2005, "Supporting Real Time Traffic Flows Over Ad-Hoc Wireless Networks"

Jonathan Webb, MS, December 2004, "Analysis of Packet Flows in Simulated Ad Hoc Networks Using Standard Network Tools"

Chandramouli Balasubramanian, MS, June 2004, "Shortest Multipath Routing Using Labeled Distances for Mobile Ad Hoc Networks"

Sireesh Potireddy, MS, April 2004, "Floor Control for IP Video Collaboration"

Hari Rangarajan, MS, December 2003, "Reliable Information Dissemination in Event-Driven Sensor Networks"

### **Professional Activities**

Reviewer for Elsevier Computer Networks (2009)  
 5th ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT, 2009)  
 IEEE Transactions on Parallel and Distributed Systems (2008)  
 IEEE Internet Computing (2007)  
 IEEE INFOCOM 2004  
 IEEE International Conference on Communications (ICC '04)  
 MILCOM 2004  
 ACM Transactions on Information and System Security (2003)  
 Elsevier Computer Communications Journal (2002)

## **Patents**

- US 7,577,754 J.J. Garcia-Luna-Aceves and B. Smith, "System and Method for Controlling Access to Content Carried in A Caching Architecture," (August 18, 2009)
- US 7,565,450 J.J. Garcia-Luna-Aceves and B. Smith, "System and Method for Using a Mapping between Client Addresses and Addresses of Caches To Support Content Delivery," (July 21, 2009)
- US 7,552,233 J. Raju, J.J. Garcia-Luna-Aceves and B. Smith, "System and method for information object routing in computer networks," (June 23, 2009)
- US 7,343,422 J.J. Garcia-Luna-Aceves and B. Smith, "System and Method for Using Uniform Resource Locators to Map Application Layer Content Names to Network Layer Anycast Addresses." (March, 2008)

## **Education**

- September 2003 University of California, Santa Cruz  
PhD, Computer Science. "Efficient Policy-Based Routing in the Internet."  
Prof. J.J. Garcia-Luna-Aceves, advisor.
- June 1997 University of California, Santa Cruz  
MS, Computer Science. "Securing Distance Vector Routing Protocols."  
Prof. J.J. Garcia-Luna-Aceves, advisor.
- December 1981 University of California, Santa Cruz  
B.A. with Honors, Computer and Information Science

**Instrument rated private pilot.**