

Robert Beverly

Naval Postgraduate School
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EDUCATION

- Massachusetts Institute of Technology** Cambridge, MA
Ph.D in Electrical Engineering and Computer Science, June 2008.
Dissertation: *Statistical Learning in Network Architecture*
Minor in Computational Biology.
- Massachusetts Institute of Technology** Cambridge, MA
MS in Electrical Engineering and Computer Science, September 2004.
- Georgia Institute of Technology** Atlanta, GA
BS in Computer Engineering, December 1996. *Magna Cum Laude*.

RESEARCH INTERESTS

Broad interest in networks, systems engineering, Internet measurement and complex systems. Recent focus on the practical application of machine learning and data mining to real-world Internet problems including routing, provisioning, service selection and security.

PROFESSIONAL EXPERIENCE

- Naval Postgraduate School** Sep. 2009 – Present
Assistant Professor
Monterey, CA
Assistant Professor in Computer Science. Conduct fundamental and applied research with a concentration on network architecture, security, and the science of complex systems. Teach and advise graduate students.
- BBN Technologies** Jul. 2008 – Sep. 2009
Network Scientist
Cambridge, MA
Contributed to the development of a next-generation disruption and delay tolerant network (DTN) platform, including intelligent content routing in challenged contexts. Developed and standardized a DTN-specific service discovery mechanism. Implemented a time-dilation method for emulating large networks in a virtual machine environment including modeling of the wireless channel.
- Massachusetts Institute of Technology** Sep. 2002 – Jun. 2008
Research Assistant
Cambridge, MA
Conduct research on core design principles and network technology in the Advanced Network Architecture group. Developed and lead large-scale Internet neutrality, IP spoofer and electronic mail measurement initiatives that were published, used by regulatory bodies and covered by media. Dissertation research provides architectural guidelines for the practical application of statistical learning to network problems such as service selection, routing and security.
- MCI, Advanced Internet Technology** Jul. 1998 – Jul. 2002
Senior Engineer
Ashburn, VA
Responsible for the measurement infrastructure of several large, international, mission-critical networks including UUNET IP and MCI Frame Relay. Used flow data from custom-developed high-speed passive optical monitors to analyze traffic for peering decisions and traffic engineering. Engineered and supported the NSF sponsored vBNS R&E backbone. Led evaluation, testing and deployment of next generation gigabit routers in MCI's network. Developed a multicast performance test suite and played a key role in MCI's content distribution and video strategy.

REFEREED PUBLICATIONS

- R. Beverly, A. Berger, and G. Xie. Primitives for active internet topology mapping: Toward high-frequency characterization. In *Proceedings of the Ninth ACM SIGCOMM/USENIX Internet Measurement Conference (IMC)*, Nov. 2010
- R. Jansen and R. Beverly. Toward anonymity in delay tolerant networks: Threshold pivot scheme. In *Proceedings of the Military Communications MILCOM Conference*, 2010
- R. Beverly, A. Berger, Y. Hyun, and k. claffy. Understanding the efficacy of deployed internet source address validation filtering. In *IMC '09: Proceedings of the 9th ACM SIGCOMM Internet measurement conference*, pages 356–369, 2009
- R. Beverly. A human factors approach to spam filtering. In *Proceedings of the Sixth Conference on Email and Anti-Spam (CEAS)*, July 2009
- R. Beverly and K. Sollins. An internet protocol address clustering algorithm. In *Proceedings of the 3rd Tackling Computer Systems Problems with Machine Learning Techniques Workshop*, Dec. 2008
- R. Beverly and K. Sollins. Exploiting transport-level characteristics of spam. In *Proceedings of the Fifth Conference on Email and Anti-Spam (CEAS)*, Aug. 2008
- R. Beverly, S. Bauer, and A. Berger. The Internet's Not a Big Truck: Toward quantifying network neutrality. In *Proceedings of the 8th Passive and Active Measurement (PAM) Workshop*, pages 135–144, Apr. 2007
- R. Beverly and M. Afegan. Machine learning for efficient neighbor selection in unstructured p2p networks. In *SYSML'07: Proceedings of the 2nd USENIX workshop on Tackling computer systems problems with machine learning techniques*, pages 1–6, Berkeley, CA, USA, 2007. USENIX Association
- R. Beverly, K. Sollins, and A. Berger. Svm learning of ip address structure for latency prediction. In *MineNet '06: Proceedings of the 2006 SIGCOMM workshop on Mining network data*, pages 299–304, New York, NY, USA, 2006. ACM
- S. Bauer, P. Faratin, and R. Beverly. Assessing the assumptions underlying mechanism design for the internet. In *Economics of Networked Systems*, June 2006
- R. Beverly and S. Bauer. The Spoofer Project: Inferring the extent of source address filtering on the Internet. In *Proceedings of USENIX Steps to Reducing Unwanted Traffic on the Internet (SRUTI) Workshop*, pages 53–59, July 2005
- M. Afegan and R. Beverly. The state of the email address. *ACM SIGCOMM Computer Communications Review, Measuring the Internet's Vital Statistics*, 35(1):29–36, Jan. 2005
- R. Beverly. A Robust Classifier for Passive TCP/IP Fingerprinting. In *Proceedings of the 5th Passive and Active Measurement (PAM) Workshop*, pages 158–167, Apr. 2004
- R. Beverly. RTG: A Scalable SNMP Statistics Architecture for Service Providers. In *Proceedings of the 6th Systems Administration Conference (LISA 2002)*, pages 167–174, Nov. 2002

OTHER PUBLICATIONS

- k. c. claffy, M. Fomenkov, E. Katz-Bassett, R. Beverly, B. A. Cox, and M. Luckie. The workshop on active internet measurements (aims) report. *SIGCOMM Comput. Commun. Rev.*, 39(5):32–36, 2009

R. Beverly. Robust clustering techniques in bioinformatics (18.417), Dec. 2004. <http://ocw.mit.edu>

R. Beverly. MS-SQL slammer/sapphire traffic analysis, Jan. 2003. <http://ana.csail.mit.edu/slammer/>

PATENTS

“Remote Detection of Compromised and Malicious Network Hosts Through Traffic Stream Analysis,” US Patent (pending).

“Method for generating packet loss report by a data coordinator in a multicast data transmission,” US Patent 6,732,182. May 2000.

INVITED TALKS

“Directed Probing for Efficient and Accurate Active Measurements,” CAIDA AIMS-2 Workshop, San Diego, CA, Feb 2010.

“Transport Characteristics of Spam,” End-to-End Meeting, Feb 2008.

“Machine Learning and Networks,” Panel Discussion, USENIX SysML, Apr 2007.

“The Spoofer Project,” NANOG 34, Seattle, WA, May 2005.

“RTG: A Scalable SNMP Architecture for Service Providers,” NANOG 27, Phoenix, AZ, Feb 2003.

“IP Streaming for Broadcast Engineers,” IEEE NAB, Las Vegas, NV, Apr 2002.

“vBNS Update,” UKERNA Networkshop 29, Exeter, England, Mar 2001.

“Multicast Performance Measurement on a High-Performance IP Backbone,” NANOG, Washington, DC, Oct 2000.

SERVICE

Technical Program Committee: IMC 2010, CEAS 2009.

Reviewer: SECON 2009, ACM TISSEC 2008, IEEE ToN 2008, USENIX SysML 2007, ACM CCR, IEEE TDSC 2006, IEEE TPDS 2006, IEEE Sarnoff 2007, MIT CSW 2005-2006.

Program review: NSF GENI 2008, NSF NLANR 2004.

Invited participant: CAIDA AIMS 2009, AIMS 2010, Google M-lab Workshop 2008, CAIDA DatCat 2007, CAIDA CONMI Workshop 2005

MIT Center for Bits and Atoms Internet 0 Project. Editor for IETF Internet Drafts gershenfeld-thtp-01 and gershenfeld-i0-00, 2006.

MIT Africa Internet Technology Initiative (AITI)