

# Prem Gopalan

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<b>Contact Information</b>	Princeton University Department of Computer Science 35 Olden Street Princeton, NJ 08540-5233	<i>Phone:</i> (781) 405-2347 <i>E-mail:</i> pgopalan@cs.princeton.edu <i>Web:</i> www.cs.princeton.edu/~pgopalan
<b>Education</b>	PRINCETON UNIVERSITY, Princeton, NJ <i>Ph.D. candidate in Computer Science</i> Advisors: Prof. Michael Freedman and Prof. David Blei	Sep 2009 - Present Princeton, NJ
	PURDUE UNIVERSITY <i>M.S. in Computer Science</i> Dissertation: CROSS/Linux: Value-added services router Advisor: Prof. David K.Y. Yau	May 2002 West Lafayette, IN
	BIRLA INSTITUTE OF TECH. AND SCIENCE <i>B.E. (Honors) in Computer Science</i>	May 1999 Pilani, India
<b>Professional Experience</b>	MAZU NETWORKS ( <i>Acquired by Riverbed Technology</i> ) Software Engineer Company started after runner-up at the MIT 50K Entrepreneurship Prize. Worked on products aimed at detecting denial-of-service attacks and network worms and, profiling enterprise networks. Led small teams on R&D of networking projects and implemented multi-threaded systems using C++, Perl on Linux. Projects include: <ul style="list-style-type: none"><li>• Real-time algorithms for detecting operational problems on a network using time series forecasting</li><li>• Real-time worm detection and signature generation</li><li>• New arena allocation algorithm in Glibc malloc to avoid blowup</li><li>• Fast IP address lookup in Linux kernel using k-ary trees</li></ul>	Jul 2001 - Jul 2009 Cambridge, MA
<b>Technical Skills</b>	PROGRAMMING: C++, Perl, R, SQL, Java, Caml, Python, LaTeX, Coq SYSTEMS: Postgres, Linux Kernel, Click Router, Glibc malloc	
<b>Teaching Experience</b>	PRINCETON UNIVERSITY CS 318, Operating Systems and CS 461, Computer Networks PURDUE UNIVERSITY ECE 368, Data Structures and Algorithms and ECE 362, Microprocessor System Design	Sep 2010 - Present Aug 1999 - May 2000
<b>Recent Publications</b>	Prem Gopalan, David Mimno, Sean Gerrish, Michael Freedman, David Blei. <i>Online Learning for Overlapping Community Detection. Extended abstract and short talk. Proc. 6th Annual Machine Learning Symposium, The New York Academy of Sciences (NYAS ML'11)</i> , October 2011.	
	Erik Nordstrom, David Shue, Prem Gopalan, Rob Kiefer, Matvey Arye, Steven Ko, Jennifer Rexford, and Michael J. Freedman. <i>Serval: An End-Host Stack for Service-Centric Networking. To appear in Proc. 9th Symposium on Networked Systems Design and Implementation (NSDI '12)</i> , April 2012.	

**Workshop  
Publications**

Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis and Massimiliano Poletto. *Signature Metrics for Accurate and Automated Worm Detection*. In *ACM Workshop on Recurring Malcode (WORM)*, 2006, pp. 65 - 72.

L. Behera and Prem Gopalan. *A Neural Controller based Binocular System for Object Tracking*. In *Proceedings of the Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP98)*, 1998, pp 305-312.

**Journal  
Publications**

Seung Chul Han, Puneet Zaroo, David K.Y. Yau, Yu Dong, Prem Gopalan, John C.S. Lui. *Quality of Service Provisioning for Composable Routing Elements*. *Computer Networks*, Volume 50, Issue 13, 2006, pp. 2255 - 2270.

L. Behera and Prem Gopalan. *A Neural Controller based Binocular Vision System for Object Tracking*. *IETE Journal of Research*, Volume 45, Issue 1, 1999, pp. 63 - 72.

L. Behera and Prem Gopalan. *Implementation of Hand-Eye Coordinated Tracking Mechanism Using Cognachrome Vision System, Paritantra: A Journal of System Science and Engineering*, Volume 4, Issue 1, 1999, pp. 37-42.

**Technical  
Reports**

Prem Gopalan, Seung Chul Han, David K. Y. Yau, Xuxian Jiang, Puneet Zaroo, and John C. S. Lui. *Application Performance on the CROSS/Linux Software-Programmable Router*. CS TR-01-019, Purdue University, West Lafayette, IN, November 2001.

Michael J. Freedman, Matvey Arye, Prem Gopalan, Steven Y. Ko, Erik Nordström, Jennifer Rexford, David Shue. *Service-Centric Networking with SCAFFOLD*. TR-885-10, Princeton University, Princeton, NJ, Sep 2010.

**Patents and  
Patents pending**

US Patent No.7363656 (2003): *Event detection and anomaly correlation heuristics*. Daniel Weber, Prem Gopalan and Massimiliano Poletto; Mazu Networks.

US Patent No.8006306 (2011): *Exploit-based worm propagation mitigation*. Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis; Mazu Networks.

Application Serial No.12-266,105 (2008): *Detecting outliers in network traffic time series*. Prem Gopalan, Bryan Elverson; Mazu Networks.

Application Serial No.12-266,081 (2008): *Impact scoring and reducing false positives*. Prem Gopalan, Bryan Elverson, Christopher White, Andrew Ratin; Mazu Networks.

Application Serial No.12-387,087 (2008): *User Interface for Network Events and Tuning*. Shared patent with David Doyle et al., Mazu Networks.

Application Serial No.11-387,087 (2006): *Email-based worm propagation properties*. Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis; Mazu Networks.

Application Serial No.60-423,557 (2002): *General profile-based event detection framework*. Shared patent with Massimiliano Poletto et al., Mazu Networks.

**Talks**

*Online Learning for Mixed-membership Network Models.* New York Academy of Sciences Machine Learning Symposium, Oct 21, 2011.

*Time Series Analysis for Detecting Operational Problems on a Network.* Riverbed Technology, April 2, 2009.

*Signature Metrics for Accurate and Automated Worm Detection.* Brown University, CS Dept. The 36th IPP Symposium, May 1, 2006.

**Honors**

John Hopkins ECE Dept. Graduate Fellowship, 1999.

Outstanding performance reviews at Mazu Networks, 2005 - 2009.

Invitation for Upsilon Pi Epsilon, Computer Sciences Honor Society, Fall 2001.