

ALPER T. MIZRAK

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Education

- 2007 **Doctor of Philosophy(Ph.D.)** in Computer Science
University of California, San Diego (UCSD)
- 2002 **Master of Science(M.S.)** in Computer Science
University of California, San Diego (UCSD)
- 2000 **Bachelors of Science(B.Sc.)** in Computer Engineering
Bilkent University, Ankara, Turkey

Work Experience

- Oct 2007 - ... **VMware Inc.** Senior Member of Technical Staff.
Research & Development. Optimize the performance and scalability of VMware products. Find the root cause of bottlenecks and initiate performance improvements. Work with developers to improve performance and also to prototype performance optimizations.
Analyze workload performance and scalability across a variety of hardware and software configurations. Develop sound methodologies for accurate performance comparisons, as well as study workload characteristics to create a balanced suite of performance workloads. Work with developers to resolve performance problems, and implement solutions and performance optimizations. Develop tools for understanding and comparing performance data.
- Summer 2003 **AT&T Research Labs.** Research Intern.
Research Mentors: Zhen Xiao, Oliver Spatscheck, Shubhabrata Sen.
Research on “in-network TCP reassembly”.
Designed a library, ITRAM, and application monitoring toolkits.
- Summer 2001 **Packet Video.** Software/Test Engineer.
Designed a general automated testing tool for decoder.
- Summer 2000 **Bilkent Computer Center,** Ankara, Turkey. Software Engineer.
Designed a project for the automation of purchasing goods for university departments through university budget.

Academic Experience

2000 - 2007	Research Assistant, University of California, San Diego. Advisors: Prof. Stefan Savage and Prof. Keith Marzullo.
2001	Teaching Assistant, University of California, San Diego. Courses: Computer Architecture.

Research Interests

Distributed systems, fault-tolerant systems, operating systems, and computer networks.

Ph.D. Dissertation

Title	Detecting Malicious Routers
Topic	I have been interested in a simply stated, yet increasingly important network security problem: <i>how to detect the existence of compromised routers in a routing system and remove them from the routing fabric.</i>
Achievements	I have studied different aspects of this problem combining science and engineering. I have specified the problem of detecting routers with incorrect packet forwarding behavior on the abstract level, provided a general framework for the protocols addressing this problem, explored the design space of protocols that implement such a detector, developed various such protocols, implemented and evaluated prototype systems, which are inexpensive enough for practical implementation at scale.
Experience	Over the course of my Ph.D. study, I have gained general research expertise as an independent researcher: I have been trained, first, to identify, abstract, specify and formalize a problem; second, to develop protocols implementing various specifications; and then to build up a complete system including distributed computing, kernel programming, network routing protocols, traffic shaping. Furthermore, I am experienced in testing and evaluating the distributed systems using network simulators(ns2) and network emulation testbeds(Emulab, Deterlab).
Advisors	Prof. Stefan Savage and Prof. Keith Marzullo

Awards

2005	The William C. Carter Award. "The award is presented annually since 1997 to recognize an individual who has made a significant contribution to the field of dependable computing through his or her graduate dissertation research. The award is sponsored by the IEEE Technical Committee on Fault-Tolerant Computing and the IFIP WG-10.4 on Dependable Computing and Fault Tolerance."
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Publications

Book

- Book 2008 Alper T. Mizrak, "Secure Networking: Detecting Malicious Routers," Publisher: VDM Verlag Dr. Muller, ISBN: 978-3-639-07283-9, August 2008.

Journal/Conference/Workshop

- TPDS 2009 Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Detecting Malicious Packet Losses," *IEEE Transactions on Parallel and Distributed Systems*, 2009.
- Network 2008 Alper T. Mizrak, Stefan Savage and Keith Marzullo, "Detecting Compromised Routers via Packet Forwarding Behavior," *Special issue of IEEE Network on Internet Scalability: Properties and Evolution*, (Vol. 22, No. 2) pp. 34-39, March/April 2008.
- TDSC 2006 Alper T. Mizrak, Yu-Chung Cheng, Keith Marzullo and Stefan Savage, "Detecting and Isolating Malicious Routers," *IEEE Transactions on Dependable and Secure Computing*, July-September 2006 (Vol. 3, No. 3) pp. 230-244.
- DSN 2005 Alper T. Mizrak, Yu-Chung Cheng, Keith Marzullo and Stefan Savage, "Fatih: Detecting and Isolating Malicious Routers," *The International Conference on Dependable Systems and Networks*, Yokohama, Japan, June 2005.
This paper was recognized with the William C. Carter Award.
- FuDiCo 2004 Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Fault-Tolerant Forwarding in the Face of Malicious Routers," *Workshop on the Future Directions in Distributed Computing*, Bertinoro, Italy, June 2004.
- PODC 2004 Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Brief Announcement: Detecting Malicious Routers," *Symposium on Principles of Distributed Computing*, St. John's, Newfoundland, Canada, July 2004.
- WIAPP 2003 Alper T. Mizrak, Yu-Chung Cheng, Vineet Kumar and Stefan Savage, "Structured Superpeers: Leveraging Heterogeneity to Provide Constant-Time Lookup," *The IEEE Workshop on Internet Applications*, San Jose, CA, June 2003.
- ISI 2001 Alper T. Mizrak, "Discovering Paths Traversed by Visitors in Web Server Access Logs," *The International NAISO Congress Information Science Innovations*, Dubai, U.A.E., March 2001.

Technical Reports

- UCSD 2007-Jun Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Detecting Compromised Routers via Packet Forwarding Behavior," *UCSD Technical Report*, CS2007-0899, June 2007.
- UCSD 2007-Apr Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Detecting Malicious Packet Losses," *UCSD Technical Report*, CS2007-0889, April 2007.
- UCSD 2004 Alper T. Mizrak, Keith Marzullo and Stefan Savage, "Detecting Malicious Routers," *UCSD Technical Report*, CS2004-0789, May 2004.

Professional Activities

Memberships	IEEE, ACM.
External Reviewer	IEEE Transactions on Parallel and Distributed Systems, IEEE Computer, The International Conference on Dependable Systems and Networks (DSN 2006), International Conference on Parallel Processing (ICPP 2005), International Conference on Data Engineering (ICDE 2004).

References

Professor Stefan Savage	Computer Science and Engineering University of California, San Diego savage@cs.ucsd.edu, (858) 822-4895
Professor Keith Marzullo	Computer Science and Engineering University of California, San Diego marzullo@cs.ucsd.edu, (858) 534-1126
Professor Geoffrey Voelker	Computer Science and Engineering University of California, San Diego voelker@cs.ucsd.edu, (858) 822-3323
Rajit Kambo	Research & Development VMware, Inc. rajit@vmware.com, (650) 319-5403