

Jaeyeon Jung

CONTACT INFORMATION

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RESEARCH INTERESTS

Network data analysis with emphasis on network security, user privacy and application performance: anomaly detection, network forensic analysis, traffic behavior modeling, and application performance assessment

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA, USA

Ph.D. in Computer Science, May 2006

Dissertation : Real-Time Detection of Malicious Network Activity Using Stochastic Models

Advisor: Hari Balakrishnan

Korea Advanced Institute of Science and Technology, Daejeon, Korea

M.S., in Computer Science, February 1998

B.A., in Computer Science, *Summa Cum Laude*, February 1996

ACADEMIC EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA, USA

Graduate Researcher

September 2000–May 2006

Includes Ph.D. research, Ph.D. and Masters level coursework and research projects.

Teaching Assistant for 6.829 Computer Networks

September–December 2003

Responsible for giving recitation classes, holding office hours, and grading papers

PUBLICATIONS

[1] Jaeyeon Jung, Rodolfo Milito, and Vern Paxson. On the Adaptive Real-Time Detection of Fast-Propagating Network Worms In *Proc. of DIMVA*, Switzerland, July 2007.

[2] Roxana Geambasu, Tanya Bragin, Jaeyeon Jung, and Magdalena Balazinska. On-Demand View Materialization and Indexing for Network Forensic Analysis In *Proc. of NetDB*, Boston, April 2007.

[3] Jayanth Kumar Kannan, Jaeyeon Jung, Vern Paxson, and Can Emre Koksal. Semi-Automatic Session Discovery. In *Proc. of the Internet Measurement Conference*, Rio de Janeiro, Brazil, October 2006.

[4] Seungwon Shin, Jaeyeon Jung, and Hari Balarishnan. Malware Prevalence in KaZaA File-Sharing Network. In *Proc. of the Internet Measurement Conference*, Rio de Janeiro, Brazil, October 2006.

[5] Stuart E. Schechter, Jaeyeon Jung, Will Stockwell, and Cynthia McLain. Inoculating SSH Against Address Harvesting. In *Proc. of NDSS*, San Diego, CA, February 2006.

[6] Nick Feamster, Jaeyeon Jung, and Hari Balakrishnan. An Empirical Study of “Bogon” Route Announcements. *ACM Computer Communication Review*, Special Issue on Internet Vital Signs, Volume 35, Number 1, January 2005.

[7] Jaeyeon Jung and Emil Sit. An Empirical Study of Spam Traffic and the Use of DNS Black Lists. In *Proc. of the Internet Measurement Conference*, Taormina, Sicily, Italy, October 2004.

- [8] Stuart E. Schechter, Jaeyeon Jung, and Arthur Berger. Fast Detection of Scanning Worm Infections. In *Proc. of the Seventh International Symposium on Recent Advances in Intrusion Detection (RAID)*, Sophia Antipolis, French Riviera, France, September 2004.
- [9] Jaeyeon Jung, Vern Paxson, Arthur Berger, and Hari Balakrishnan. Fast Portscan Detection Using Sequential Hypothesis Testing. In *Proc. of the IEEE Symposium on Security and Privacy*, Oakland, CA, May 2004.
- [10] Jaeyeon Jung, Arthur Berger, and Hari Balakrishnan. Modeling TTL-based Internet caches. In *Proc. of the IEEE Infocom*, San Francisco, CA, March 2003.
- [11] Jaeyeon Jung, Balachander Krishnamurthy, and Michael Rabinovich. Flash Crowds and Denial of Service Attacks: Characterization and Implications for CDNs and Web Sites. In *Proc. of the WWW conference*, Honolulu, HI, May 2002.
- [12] Jaeyeon Jung, Emil Sit, Hari Balakrishnan, and Robert Morris. DNS Performance and the Effectiveness of Caching. *IEEE/ACM Transactions on Networking*, October 2002 Volume 10, Number 5, and in *Proc. of the ACM SIGCOMM Internet Measurement Workshop*, San Francisco, CA, November 2001.
- [13] Jaeyeon Jung, Dongman Lee and Kilnam Chon. Proactive Web Caching with Cumulative Prefetching for Large Multimedia Data. *Computer Networks* 33 (2000) pp. 645-655, and in *Proc. of the WWW conference*, Amsterdam, Netherlands, May 2000.
- [14] Jaeyeon Jung and Kilnam Chon. RepliCache: Enhancing Web Caching Architecture with the Replication of Large Objects. In *Proc. of the ICOIN*, Jeju island, Korea, January 1999.
- [15] Bradley Huffaker, Jaeyeon Jung, Evi Nemeth, Duane Wessels, and k claffy. Visualization of the Growth and Topology of NLANR Caching Hierarchy, *Computer Networks and ISDN Systems* 30 (1998) pp. 2131-2139.
- [16] Jaeyeon Jung and Kilnam Chon. Nation-wide Caching Project in Korea. Position paper at NLANR Web Caching Workshop, Boulder CO, June 1997.

WORK EXPERIENCE Intel Research, Seattle, WA

Research Scientist

July 2007–present

Mazu Networks, Cambridge, MA

Software Architect

August 2006–June 2007

Implemented my TRW scan detection algorithm and tailored it for use in high performance network environments. The TRW scan detection algorithm has been deployed in Mazu's Profiler product since November 2006. Currently developing a cache structure to improve Profiler's query performance. Also developing a tool to automatically identify patterns in network data for traffic classification.

MIT Computer Science and Artificial Intelligence Lab., Cambridge, MA

Postdoctoral Researcher

June–August 2006

Directed a study of the prevalence of viruses in the KaZaA file-sharing network using a home-grown crawler that monitored tens of thousands of KaZaA supernodes.

Harvard University: Leverett House, Cambridge, MA

Assistant Resident Dean

July 2005–June 2007

Responsible for policies and scheduling of common rooms in resident community of 450 students. Jointly implemented an automated room reservation system that has been well received and highly utilized.

ICSI Center for Internet Research, Berkeley, CA

Summer Researcher

May–August 2003

Analyzed network traces collected from enterprise networks. Developed a portscan detection algorithm (TRW) that applies Bayesian sequential hypothesis testing.

AT&T Research Lab, Florham Park, NJ

Summer Researcher

May–August 2001

Analyzed web workload and developed an algorithm to distinguish flash crowd traffic and distributed denial of service attacks toward a busy web server.

Cooperative Association for Internet Data Analysis (CAIDA), La Jolla, SD

Intern

January–August 1998

Implemented a Java program (Plankton) to interactively display data sets for the NLNR web caching hierarchy.

GRANTS RECEIVED **Electronics and Telecommunications Research Institute (ETRI)**

July 2005–July 2006

Awarded \$70,000, which was applied to my and my advisor's salaries, during my final year of study at MIT. In addition, ETRI sent a full time research staff member to perform research under my direction.

HONOR AND AWARDS

- Awarded I3P Postdoctoral Fellowship, 2006
- Awarded NTT Graduate Student Fellowship, 1999

SERVICE AND OTHER ACTIVITIES

- Program committee member for the International Web Caching and Content Distribution Workshop, 1998, 2000, and 2003
- Poster committee member for the WWW conference, 2003
- Reviewer for IEEE Symposium on Security and Privacy (2006), SIGCOMM (2005), WORM (2005), PAM (2005), NSDI (2004), USENIX (2004), RAID (2004), IPTPS (2004), ASPLOS (2004), HotNets (2003), IEEE Transactions on Dependable and Secure Computing (2006), and Computer Networks (2007)

REFERENCES

Professor Hari Balakrishnan

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Dr. Vern Paxson

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1947 Center Street. Suite 600
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Professor Can Emre Koksai

Assistant Professor, Ohio State University
2015 Neil Ave., 712 Dreese Lab.
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Dr. Max Poletto

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