

# Sue Moon

Associate Professor

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INTERESTS      Measurement and infrastructure building for emerging media (VoIP/IPTV/VoD/UGC and 3G/3.5G/WiBro); social networking services; future Internet design

EDUCATION      Ph.D., 2000, Computer Science, University of Massachusetts Amherst  
                         Thesis: "Measurement and Analysis of End-to-End Delay and Loss in the Internet,"  
                         supervised by Jim Kurose and Don Towsley  
                         M.S., 1990, Computer Engineering, Seoul National University  
                         B.S., 1988, Computer Engineering, Seoul National University

## WORK

EXPERIENCE      

- Associate Professor; September 2006 - present at Computer Science Department, KAIST
- Visiting Scholar; September 2007 - August 2008 at University of California San Diego
- Visiting Scholar; March 2008 at Telefonica Research Lab in Barcelona, Spain
- Assistant Professor; August 2003 - August 2006 at Computer Science Department, KAIST
- Principal MTS; October 1999 - July 2003 at Sprint ATL
- Intern; Summer 1998 at AT&T Labs - Research
- Intern; Summer 1996 at GTE Labs. Inc.
- Staff Engineer; March 1990 - December 1991 at IMIGE Systems Inc., Korea.

## CONFERENCE

PAPERS            

1. "Watching television over an IP network," M. Cha, P. Rodriguez, J. Crowcroft, S. Moon, X. Amatrian, *ACM SIGCOMM Internet Measurement Conference (IMC) 2008*, Oct. 2008.
2. "Comparison of online social relations in terms of volume vs. interaction: a case study of Cyworld," H. Chun, H. Kwak, Y.-H. Eom, S. Moon, H. Jeong, *ACM SIGCOMM Internet Measurement Conference (IMC) 2008*, Oct. 2008.
3. "Evaluation of VoIP quality over WiBro," M. Han, Y. Lee, S. Moon, K. Jang, D. Lee, *Passive and Active Measurement Conference (PAM)*, April 2008.
4. "On next-generation telco-managed P2P TV architecture," M. Cha, P. Rodriguez, J. Crowcroft, S. Moon, *the 7th International Workshop on Peer-to-Peer Systems (IPTPS)*, Feb. 2008
5. "I tube, you tube, everybody tubes: analyzing the world's largest user generated content video system," M. Cha, H. Kwak, P. Rodriguez, Y.-Y. Ahn, S. Moon, *ACM SIGCOMM Internet Measurement Conference (IMC) 2007*, Oct. 2007. (**Best Paper Award**)
6. "Analysis of topological characteristics of huge online social networking services," Y.-Y. Ahn, S. Han, H. Kwak, S. Moon, H. Jeong, *16th World-Wide Web (WWW) Conference*, May 2007.

7. "Forensic analysis of autonomous system reachability," DK Lee, S. Moon, T. Choi, T. Jeong, *ACM SIGCOMM MineNet Workshop*, Sep. 2006.
8. "Collaborative blog spam filtering using adaptive percolation search," S. Han, Y.-Y. Ahn, S. Moon, H. Jeong, *3rd Workshop on Weblogging Ecosystem (held in conjunction with WWW 2006)*, May 2006.
9. "Case study: resilient backbone design for IPTV services," M. Cha, G. Choudhury, J. Yates, A. Shaikh, S. Moon, *Workshop on IPTV services over WWW (held in conjunction with WWW 2006)*, May 2006.
10. "Path protection routing with SRLG constraints to support IPTV in WDM mesh networks," M. Cha, W. Chaovallitwongse, J. Yates, S. Moon, *9th IEEE Global Internet Symposium*, Mar. 2006.
11. "Placing relay nodes for intra-domain path diversity," M. Cha, S. Moon, C.-D. Park, A. Shaikh, *IEEE INFOCOM*, Mar. 2006.
12. "Practical delay monitoring for ISPs," B.-Y. Choi, S. Moon, R. Cruz, Z.-L. Zhang, C. Diot, *1st Co-NEXT*, Oct. 2005.
13. "Analysis of point-to-point delay in an operational network," B.-Y. Choi, S. Moon, Z.-L. Zhang, C. Diot, *IEEE INFOCOM*, Mar. 2004.
14. "On the correlation between route dynamics and routing loops," A. Sridharan, S. Moon, C. Diot, *ACM SIGCOMM Internet Measurement Conference*, Oct. 2003.
15. "Small-Time Scaling Behaviors of Internet Backbone Traffic: An Empirical Study," Z.-L. Zhang, V. Ribeiro, S. Moon, C. Diot, *IEEE INFOCOM*, Apr. 2003.
16. "Detection and Analysis of Routing Loops in Packet Traces," U. Hengartner, S. Moon, R. Mortier, C. Diot, *ACM SIGCOMM Internet Measurement Workshop*, Nov. 2002.
17. "Prefix-Preserving IP Address Anonymization: Measurement-Based Security Evaluation and a New Cryptography-based Scheme," J. Xu, J. Fan, M. Ammar, S. Moon, *IEEE International Conference on Network Protocols (ICNP)*, Nov. 2002.
18. "Analysis of Measured Single-Hop Delay from an Operational Backbone Network," K. Papagiannaki, S. Moon, C. Fraleigh, P. Thiran, F. Tobagi, C. Diot, *IEEE INFOCOM*, Jun. 2002.
19. "On the Design and Performance of Prefix-Preserving IP Traffic Trace Anonymization," J. Xu, J. Fan, M. Ammar, S. Moon, *ACM SIGCOMM Internet Measurement Workshop*, Nov. 2001.
20. "Metadata Management of Terabyte Datasets from an IP Backbone Network: Experience and Challenges," S. Moon and T. Roscoe, *ACM SIGMOD Network-Related Data Management Workshop*, Apr. 2001.
21. "Design and Deployment of a Passive Monitoring Infrastructure," C. Fraleigh, C. Diot, B. Lyles, S. Moon, P. Owezarski, K. Papagiannaki, F. Tobagi, *Passive and Active Measurements Workshop (PAM)*, Apr. 2001.
22. "Inferring Link-Level Performance from End-to-End Multicast Measurements," R. Cáceres, N. Duffield, S. Moon, D. Towsley, *IEEE GLOBECOM Global Internet Symposium*, Dec. 1999.
23. "Estimation and Removal of Clock Skew from Network Delay Measurements," S. Moon, P. Skelly, D. Towsley, *IEEE INFOCOM*, Mar. 1999.
24. "Measurement and Modelling of the Temporal Dependence in Packet Loss," M. Yajnik, S. Moon, J. Kurose, D. Towlsey, *IEEE INFOCOM*, Mar. 1999.

JOURNAL  
PUBLICATIONS

1. "Analysis of point-to-point packet delay in an operational network," B.-Y. Choi, S. Moon, Z.-L. Zhang, K. Papagiannaki, C. Diot, *Computer Networks*, Vol. 51, Issue 13, Sep. 2007.

2. "Quantile sampling for practical delay monitoring in Internet backbone networks," B.-Y. Choi, S. Moon, R. Cruz, Z.-L. Zhang, C. Diot, *Computer Networks*, Vol. 51, Issue 10, Jun. 2007.
3. "Small-Time Scaling Behavior of Internet Backbone Traffic: An Empirical Study," V. Ribeiro, Z.-L. Zhang, S. Moon, C. Diot, *Computer Networks*, Vol. 48, Issue 3, Jun. 2005.
4. "Prefix-Preserving IP Address Anonymization: Measurement-based Security Evaluation and a New Cryptography-based Scheme," J. Fan, J. Xu, M. Ammar, S. Moon, *Computer Networks*, Vol. 46, Issue 2, Oct. 2004.
5. "Analysis of Measured Single-Hop Delay from an Operational Backbone Network," K. Papagiannaki, S. Moon, C. Fraleigh, P. Thiran, C. Diot, *IEEE Journal on Selected Areas in Communications*, Vol. 21, No. 6, Aug. 2003.
6. "Packet-Level Traffic Measurements from the Sprint IP Backbone," C. Fraleigh, S. Moon, C. Cotton, M. Khan, D. Moll, R. Rockell, T. Seely, C. Diot, *IEEE Network*, Nov/Dec, 2003.
7. "The Use of End-to-End Multicast Measurements for Characterizing Internal Network Behavior," A. Adams, T. Bu, T. Friedman, J. Horowitz, D. Towsley, R. Cáceres, N. Duffield, F. Lo Presti, S. Moon, V. Paxson, *IEEE Communications*, May 2000, Vol. 38, No. 5.
8. "Packet Audio Playout Delay Adjustment: Performance Bounds and Algorithms," S. Moon, J. Kurose, and D. Towsley, *ACM/Springer Multimedia Systems*, Vol. 6, pp. 17-28, Jan. 1998.
9. "Synchronized Two-way Voice Simulation Tool for Internet Phone Analysis and Evaluation," A. Conway, S. Moon, P. Skelly, *Computer Performance Evaluation Modeling Techniques and Tools, Lecture Notes in Computer Science*, Vol. 1245, pp. 108-122, Springer-Verlag, 1997.
10. "Practical point-to-point delay measurement," B.-Y. Choi, S. Moon, Z.-L. Zhang, K. Papagiannaki, C. Diot, *submitted to Computer Networks*.

#### OTHER PUBLICATIONS

1. Z.-L. Zhang, V. Ribeiro, S. Moon, C. Diot, "Impact of Aggregation on Scaling Behavior of Internet Backbone Traffic," *Invited paper to Proceedings of SPIE/ITCOM 2002*, Boston, Massachusetts, August 2002.
2. S. Moon, J. Kurose, D. Towsley. "Correlation of Packet Delay and Loss in the Internet". Technical Report 98-11, Department of Computer Science, University of Massachusetts, Amherst, MA 01003.
3. M. Rahman, S. Moon. "NSedit: A Name Service Independent Editor Design Document". Project Pilgrim, University of Massachusetts, Amherst, MA 01003, April, 1995 (distributed with official releases of DCE for OSF/1 and OpenVMS).

#### PATENTS

S. Moon, P. Skelly, D. Towsley, "Clock Skew Estimation and Removal," *University of Massachusetts at Amherst and GTE Labs, US 6,661,810 B1, U.S.A., 2003*.

#### TUTORIALS

- KRNET 2002, "Monitoring and Measuring Network Performance in Both Data and Control Domains," Seoul, Korea, July 2002.
- ACM SIGMETRICS 2002, "Network Monitoring and Measurements: Techniques and Experience" (jointly with S. Bhattacharyya), Marina Del Rey, California, June 2002.
- KRNET 2001, "Internet Traffic Measurement," Seoul, Korea, June 2001.

#### SELECTED LIST OF INVITED TALKS

- University of California at Los Angeles, "People search, watch, and keep in touch," Database Group Seminar, Nov. 2007.

- Telefonica Research Lab, "Analysis of Topological Characteristics of Huge Online Social Networking Services," Barcelona, Mar. 2007.
- IEEE SAINT Workshop, "Automatic Signature and Behavior Capture for Accurate Traffic Classification," Hiroshima, Japan, Jan. 2007.
- Overlay Network Workshop, "Querying the Internet: Feasibility of Collaborative Looking Glass," Univ. of Tokyo, Japan, Dec. 2006.
- National University of Singapore, "Infrastructure Design for IPTV Services," Singapore, Nov. 2006.
- Microsoft Research Asia, "Control Plane Issues in the Internet: Personal Perspective," Beijing, Apr. 2005.
- Workshop on Measurement, Modeling, and Analysis of Networks (Seoul National University), "Diverse Network Services and Remaining Challenges," Jan. 2005.
- Sungkyunkwan U., "Network Performance: Measurement, Monitoring, Modelling, and Analysis," Suwon, Korea, Nov. 2004.
- Association of Pacific Rim Universities (APRU), "PlanetLab in a Classroom: World-Wide Playground for Students," Beijing, Oct. 2004.
- U. of Minnesota, "Detection of Routing Loops and Analysis of Its Causes," Minneapolis, Oct. 2003.
- U. of California at Santa Barbara, "Detection and Analysis of Routing Loops in Packet Traces," Oct. 2002.
- U. of Wisconsin, "Routing Loops as Manifest in Packet Traces," Madison, May 2002.
- CAIDA ISMA Workshop, "Detection of Routing Loops in Packet Traces and Analysis of Their Impact," San Diego, Dec. 2001.
- 16th Annual IEEE Computer Communications Workshop (CCW), "Analysis of Measured Single-Hop Delay from an Operational Backbone Network," Virginia, Oct. 2001.
- Carnegie Mellon University, "Internet Traffic Analysis: Monitoring the Sprint IP Backbone," Pittsburgh, Apr. 2001.
- Georgia Institute of Technology, "Internet Traffic Analysis: Monitoring the Sprint IP Backbone," Atlanta, Feb. 2001.
- Westfield State College, "Audio over the Internet," Massachusetts, Mar. 1998.

**PROFESSIONAL SERVICE** Currently serving as chair for PAM 2009 and CFI 2009; in program committees for WWW 2007-2009; in executive committee for ACM SIGCOMM 2008-2010.

Past service includes: USENIX NSDI 2008, INFOCOM 2003-2006, NOSSDAV 2002-2004, SIGCOMM IMC 2005, ACM SIGMETRICS 2005, CoNEXT 2005, ACM Multimedia 2005.

Served as chair for ACM SIGCOMM MobiArch 2007, ACM Multimedia 2004, 1st PlanetLab Asia Workshop, and KAIST Networking Seminar Series 2004-2007.

**TEACHING** Taught graduate courses on Network Architecture and Advanced Networking.

Taught undergraduate courses on Introduction to Programming, Data Structures, Introduction to Computer Networking, and Freshman Seminar.

**HONORS** Korean Government Overseas Scholarship, from the fall of 1992 to the spring of 1995. Awarded to seven people nationwide in computer science.

**PROFESSIONAL SOCIETIES** IEEE, ACM, USENIX, KICS, KNOM