Jeonghun Noh

CONTACT INFORMATION

Department of Electrical Engineering
Stanford University
350 Serra Mall Packard 240
Stanford CA 94305
USA

Tel: (650) 723-3476
Fax: (650) 724-3648
E-mail: jhnoh@stanford.edu
WWW: www.stanford.edu/∼jhnoh

OBJECTIVE

To obtain a full-time research position in the area of video streaming/compression and distributed multimedia system

RESEARCH INTERESTS

Video streaming over wired/wireless/cellular networks, peer-to-peer streaming, mobile streaming, video compression/transcoding, multicast protocol, distributed system, stochastic analysis

EDUCATION

Stanford University, Stanford, CA USA

Ph.D. candidate, Electrical Engineering (expected graduation date: June 2010)

- Thesis Topic: Low-latency and Robust Peer-to-Peer Video Streaming
- Advisor: Professor Bernd Girod
- Coursework: Design & analysis of algorithms, Computer architecture & organization, Multimedia networking and communications, Information theory, Image communication, Convex optimization, Game theory

Seoul National University, Seoul, South Korea

M.S., Electrical Engineering and Computer Science, Feb. 1999

- Thesis Topic: Repetitive Sub-channel Multiplexing Scheme for Many-to-Many Multicast in ATM Network
- Advisor: Professor Byeong-gi Lee

B.S., Electrical Engineering and Computer Science, Feb. 1997

- *Summa cum laude* in Engineering
- Thesis Topic: Optical Character Recognition Using Thinning Algorithm
- Advisor: Professor Wonyong Sung

ACADEMIC EXPERIENCE

Stanford University, Stanford, CA USA

Research Assistant **September 2006 to Present**

- Working on distributed video transcoding for mobile users in P2P Networks (x.264, Nokia N96(Symbian S60, Open C++). in collaboration with Deutsche Telekom)
- Collaborating on P2P interactive region-of-interest (RoI) streaming (ns-2 simulator)
- Worked on time-shifted streaming in peer-to-peer (P2P) networks (SPPM, ns-2)
- Developed Stanford Peer-to-Peer Multicast system (SPPM) (C++, Linux/Mac OS)
- Worked on optimizing the performance of P2P overlays (SPPM, ns-2)
- Worked on video- and network-aware P2P live streaming system (SPPM, ns-2)

Seoul National University, Seoul, South Korea

Research Assistant **Fall 1998**

- Developed video applications using adaptive real-time services in ATM Networks

- Verified the proposed system by using network simulator tools (ns-1.4)

Teaching Assistant **Fall 1997, Spring 1998**

- Taught introductory course to science and technology (undergraduate level) and digital filter design (graduate level)

Research Assistant **Spring 1997**

- Developed new higher layer multicast protocol in ATM Networks
- Analyzed Internet multicast protocols

Professional Experience

Dyyno Inc., Palo Alto, CA, USA

Consultant **June to September 2008**

- Supported operations of P2P streaming services using Amazon EC2 cloud computing platform (Bash, EC2API, Packaging software with Linux image)
- Developed system monitoring system (Based on Nagios (open source). Plug-in developed in Python)
- Developed analysis tool for video session logs (Python, MySQL)
- Applied research results to the companys P2P solution (C++) algorithm).

Sharp Laboratories of America, Camas, WA, USA

Researcher **June to September 2007**

- Designed a live streaming and time-shifted streaming P2P system
- Designed a distributed search algorithm for P2P VoD systems
- Developed the proposed system (Java based simulator, PlanetSim) / Analyzed the performance of the proposed algorithm/protocol (Matlab)

Researcher **June to September 2006**

- Designed a low latency initial join protocol for peer-to-peer video streaming systems.

Electronics and Telecommunications Research Institute, Daejon, South Korea

Entrusted Researcher **July to August 1998**

- Analyzed MPLS architectures, such as ARIS, CSR, Ipsilon switch.

Awards and Scholarships

- Best Student Paper Award, 5th International Mobile Multimedia Communications Conference, London, UK, 2009
- Best Presentation Award in P2P Networking and Content Distribution Track, IEEE Consumer Communications & Networking Conference, Las Vegas, USA, 2008
- Fellowship, The Korea Foundation for Advanced Studies, 2002 – 2007
- Fellowship, Oesu Korea-Japan Interchange Foundation, 1994
- Undergraduate Scholarship, Seoul National University, 1993 – 1997
- Silver Prize in mathematics, 3rd National Science and Mathematics Contests, 1991

Conference Publications

- **J. Noh**, A. Mavlankar, P. Baccichet, and B. Girod, "Time-Shifted Streaming in a Peer-to-Peer Video Multicast System," Proc. of IEEE Global Communications Conference (GLOBECOM 2009), Honolulu, Hawaii, USA, Nov./Dec. 2009 (Accepted)
- **J. Noh**, M. Makar, and B. Girod, "Streaming To Mobile Users In A Peer-to-Peer Network," 5th International Mobile Multimedia Communications Conference (MobiMedia 2009), London, England, Sep. 2009.
- A. Mavlankar, **J. Noh**, and B. Girod, "Optimal Server Bandwidth Allocation among Multiple P2P Multicast Live Video Streaming Sessions,," Proc. of 17th IEEE International Packet Video Workshop (PV), Seattle, Washington, USA, May 2009.
- **J. Noh**, P. Baccichet, and B. Girod, "Experiences with a Large-Scale Development of Stanford Peer-to-Peer Multicast," Proc. of 17th IEEE International Packet Video Workshop (PV), Seattle, Washington, USA, May 2009.
- **J. Noh**, P. Baccichet, F. Hartung, A. Mavlankar, and B. Girod, "Stanford Peer-to-Peer Multicast (SPPM) – Overview and Recent Extensions," Proc. of International Picture Coding Symposium (PCS), Chicago, Illinois, USA, May. 2009, invited paper.
- **J. Noh**, S. Deshpande, "Pseudo-DHT: Distributed Search Algorithm For P2P Video Streaming," IEEE International Symposium on Multimedia (ISM 2008), Berkeley, USA, December 2008, Accepted.
- **J. Noh**, P. Baccichet, A. Mavlankar, and B. Girod, "Un-Leeching P2P Streaming By Active Overlay Management," IEEE Global Communications Conference (GLOBECOM 2008), New Orleans, USA, December 2008, Accepted.
- A. Mavlankar, **J. Noh**, P. Baccichet, and B. Girod, "Optimal Server Bandwidth Allocation for Streaming Multiple Streams via P2P Multicast," International Workshop on Multimedia Signal Processing (MMSP 2008), Cairns, Australia, October 2008.
- A. Mavlankar, **J. Noh**, P. Baccichet, and B. Girod, "Peer-to-Peer Multicast Live Video Streaming With Interactive Virtual Pan/Tilt/Zoom Functionality," International Conference on Image Processing (ICIP 2008), San Diego, USA, October 2008.
- S. Deshpande, **J. Noh**, "P2TSS: Time-Shifted and Live Streaming of Video in Peer-to-Peer Systems," Proceedings International Conference on Multimedia and Expo (ICME 2008), Hanover, Germany, June 2008.
- **J. Noh**, A. Mavlankar, P.Baccichet, and B. Girod, "Reducing End-to-End Transmission Delay in P2P streaming systems Using Multiple Trees with Moderate Outdegree," Proceedings International Conference on Multimedia and Expo (ICME 2008), Hanover, Germany, June 2008.
- **J. Noh**, S. Deshpande, "A Method for P2P Streaming System Join Latency Reduction Using Preferred Peer List," Proc. IEEE 5th Consumer Communications and Networking Conference (CCNC 2008), Las Vegas, USA, January 2008.
- P. Baccichet, **J. Noh**, E. Setton, B. Girod, "Content-Aware P2P Video Streaming with Low Latency", Proc. IEEE International Conference on Multimedia and Expo (ICME 2007), Beijing, China, July 2007.
- E. Setton, **J. Noh** and B. Girod, "Congestion-Distortion Optimized Peer-to-Peer Video Streaming," International Conference on Image Processing (ICIP 2006), Atlanta, Georgia, October 2006.

- E. Setton, **J. Noh** and B. Girod, "Low Latency Video Streaming Over Peer-To-Peer Networks," Proceedings International Conference on Multimedia and Expo (ICME), Toronto, Canada, July 2006.
- E. Setton, **J. Noh** and B. Girod, "Rate-Distortion Optimized Video Peer-to-Peer Multicast Streaming," Workshop on Advances in Peer-to-Peer Multimedia Streaming at ACM Multimedia, pp 39-48, November 2005, invited paper.
- **J. Noh** and B. Lee, "Repetitive Sub-channel Multiplexing Scheme for Many-to-Many Multicast in ATM Network," in 9th JCCI, Seoul, Korea, April 1999.

National Journal Publications

- Y. Seo and **J. Noh**, "xDSL technology for high-speed access to Broadband Networks," National Defence Information & Communication Journal, Seoul, vol.23, pp.31-53, April 2001.
- Y. Seo and **J. Noh**, "Next Generation MPLS Networks," National Defence Information & Communication Journal, Seoul, vol.20, pp. 18-31, July 2000.

Patents

- **J. Noh**, B. Girod, and P. Baccichet, "Active Management of Overlay Topology for Peer-to-peer Streaming Systems," *US Patent pending.*
- A. Mavlankar, **J. Noh**, P. Baccichet, and B. Girod, "Systems and Methods for Video Streaming and Display," *US Patent pending.*
- **J. Noh**, P. Baccichet, and B. Girod, "Methods and systems for Peer-to-Peer Systems," *US Patent pending.*
- S. Deshpande, and **J. Noh**, "Distributed Cache Algorithms and System for Time-Shifted, and Live, Peer-to-Peer Video Streaming," *US Patent pending.*
- **J. Noh**, and S. Deshpande, "Distributed search methods for time-shifted and live peer-to-peer video streaming," *US Patent pending.*
- S. Deshpande, and **J. Noh**, "Overlay Join Latency Reduction Using Preferred Peer List," *US Patent pending.*

Professional Presentations

- **J. Noh**, *Design of a Reliable Peer-to-Peer Video Streaming Network.* Invited talk presented at Digital Media Lab, Sungkyunkwan University, Suwon, Korea, October 6, 2008.
- **J. Noh**, *Design of a Reliable Peer-to-Peer Video Streaming Network.* Invited talk presented at Peering Portal, Seoul, Korea, October 6, 2008.
- **J. Noh**, *Time-Shifted and Live Streaming of Video over Peer-to-Peer Networks.* Talk presented at Max Planck Center for Visual Computing and Communications Meeting, Saarbrueken, Germany, November 5, 2007.
- **J. Noh**, *Low-Latency Video Streaming Over P2P Networks.* Talk presented at Communications and Collaboration Systems Group, Microsoft Research, Redmond, WA, USA, June 26, 2006.
- **J. Noh**, *Peer-to-Peer System for Low Latency Video Multicast.* Talk presented at Sharp Laboratories of America, Camas, WA, USA, May 4, 2006.
- Numerous presentations at the academic conferences including: GlobeCom, PCS, ICME, CCNC, ISM, PV, MobiMedia.

Technical Skills

Extensive software experiences in networking and video encoding/compression

Programming: C/C++, Python, Java(basic), Perl, Tcl/Tk, MySQL, Bash, network socket programming (TCP/IP, UDP/IP), HTML, VHDL, Matlab, Symbian S60

Applications/Platforms: Microsoft Office, Adobe Photoshop, AiSee, CVS, Amazon EC2 (cloud computing), PlanetLab, EmuLab, MediaWiki, LaTeX

Open Sources: ffmpeg, GPAC, x264, ns-2(network simulator), Nagios(remote system monitor), WireShark(network traffic analyzer, e.g. tcpdump)

Languages : English (fluent), Korean (mothertongue), Japanese/German (basic knowledge)

Services

Military service

Sergeant, Republic of Korea Army **July 1999 to September 2001**

- Developed/maintained system for detecting underground tunnels inside DMZ

Community service

Volunteer, FIFA 2002 World Cup Korea/Japan **May 2002 to June 2002**

- Supported preparation of material in English for international media

References

Available upon request