Song Noh

No 357, 465 Northwestern Avenue, West Lafayette, IN 47907 (Email: songnoh82@gmail.com, Phone: 765-404-3580)

EXPERIENCE

Purdue University — Indiana, USA
Research Assistant — Jan. 2012 - Present

- Multi-resolution codebook and beamforming sequence design in millimeter wave systems
- Pilot beam pattern and hybrid beamforming design in massive MIMO systems
- Precoder design for blind separation and estimation in MIMO-OFDM systems
- Development of a link level simulator based on Digital Video Broadcasting (DVB-T2)
  - Implementation of symbol spreading and frequency/cell/time interleavers with LDPC code

Wireless Information Systems Research Lab — Daejeon, South Korea
Researcher — Mar. 2010 - Jun. 2011

- Researched user scheduling algorithms for interference alignment via majorization theory

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, South Korea
Research Assistant — Feb. 2008 - Feb. 2010

- Linear precoder design for blind channel estimation in MIMO-OFDM systems
- Development of a link level simulator for high mobility environments based on IEEE 802.16e/m
  - Implementation of tone clustering, slot mapping, and bit interleaver with convolutional code

Communication Network Security Lab — Seoul, South Korea
Research Intern — Oct. 2006 - Feb. 2007

- Development of voice spam control algorithm for Voice over IP systems (VoIP).

Republic of Korea Army — Paju, South Korea
Sergeant: Mandatory military service in South Korea — Dec. 2002 - Jan. 2005

EDUCATION

Purdue University — Indiana, USA
Ph.D. Candidate in Electrical and Computer Engineering — Aug. 2011 – Present
Advisors: Professors Michael Zoltowski and David Love

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, South Korea
Master of Science in Electrical Engineering — Feb. 2010
Advisor: Professor Youngchul Sung

Soongsil University — Seoul, South Korea
Bachelor of Engineering in Electrical Engineering — Feb. 2008

PUBLICATIONS

Journal Articles

Song Noh, Michael Zoltowski, and David Love, "Multi-resolution codebook and adaptive beamforming sequence design for millimeter wave beam alignment," submitted to *IEEE Trans. Wireless Commun.,* 2015 (Available at http://docs.lib.purdue.edu/ecetr/468/).

Il Y. Chun, **Song Noh**, David Love, Thomas M. Talavage, Stephen Beckley, and Sherman J. Kisner, "MSE-based excitation pattern design for MIMO SENSE MRI image reconstruction," submitted to *IEEE Trans. Comput. Imag.,* 2015.

Song Noh, Michael Zoltowski, and David Love, "Training sequence design for feedback assisted hybrid beamforming in massive MIMO systems," *IEEE Trans. Commun.,* to be published. (Available at http://arxiv.org/abs/1407.1786).

Song Noh, Michael Zoltowski, Youngchul Sung, and David Love, "Pilot beam pattern design for channel estimation in massive MIMO systems," *IEEE J. Sel. Topics Signal Process.,* vol. 8, no. 5, pp. 787 – 801, Oct. 2014.

Song Noh, Youngchul Sung, and Michael Zoltowski, "A new precoder design for blind channel estimation in MIMO-OFDM systems," *IEEE Trans. Wireless Commun.,* vol. 13, no. 12, pp. 7011 – 7024, Dec. 2014.

Conference Papers

Song Noh, Michael Zoltowski, and David Love, "Multi-resolution codebook based beamforming sequence design in millimeter-wave systems," in *Proc. IEEE Globecom,* to be published, San Diego, CA, Dec. 2015.

Song Noh, Michael Zoltowski, and David Love, "Downlink training codebook design and hybrid precoding in FDD massive MIMO systems," in *Proc. IEEE Globecom,* Austin, TX, Dec. 2014. (**Best Paper Award**)

Song Noh, Michael Zoltowski, Youngchul Sung, and David Love, "Training signal design for channel estimation in massive MIMO systems," in *Proc. IEEE ICASSP,* Florence, Italy, May 2014.

Song Noh and Michael Zoltowski, "A new precoder design for precoding-based blind channel estimation for MIMO-OFDM systems," in *Proc. IEEE Globecom,* Atlanta, GA, Dec. 2013.

Song Noh and Michael Zoltowski, "Blind separation for precoding-based blind channel estimation for MIMO-OFDM systems," in *Proc. Asilomar,* Pacific Grove, CA, Nov. 2013.

Song Noh, Michael Zoltowski, Youngchul Sung, and David Love, "Optimal pilot beam pattern design for massive MIMO systems," in *Proc. Asilomar,* Pacific Grove, CA, Nov. 2013.

EXTERNAL ACTIVITIES

Reviewer of Journal and Conference Papers
- IEEE Transactions on Communications
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Vehicular Technology
- IEEE Communications Letters
- IEEE Wireless Communications Letters
- IEEE Signal Processing Communications Letters
- IEEE ICC 2015/ IEEE WCNC 2015/ IEEE Globecom 2015

Invited Talks

Channel estimation initiatives through training signal design in large-scale MIMO, at Soongsil University, Sep. 2014, and at KAIST, Aug. 2014.

Teaching Assistant

Digital Signal Processing I (ECE 538), Purdue University	Fall 2014
Advanced Communication System (EE 522), KAIST	Fall 2009
Communication System (EE 421), KAIST	Spring 2009

AWARDS AND HONORS

- IEEE Transactions on Communications Exemplary Reviewer	Apr. 2015
- Silver Prize in the 21st HumanTech Paper Contest sponsored by Samsung	Feb. 2015
- IEEE Global Communications Conference (Globecom) Best Paper Award	Dec. 2014
- Soongsil University Talented Scholar Fellowship	Sep. 2012 - May 2013
- GPA Scholarship, Soongsil University	2005 - 2007

COMPUTER SKILLS

MATLAB, Simulink, C, and C++