Song Noh

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EXPERIENCE

Incheon National University Incheon, South Korea
Assistant Professor Sep. 2018

Intel Corporation Oregon, USA
Wireless Standards Research Engineer Dec. 2015 - Jul. 2018

- Investigation of the dynamic blockage effects on performance in mmWave
- Development of PHY and MAC algorithms for self-contained and flexible duplex transmissions
- Performance analysis of wireless backhaul solutions in sub-6GHz and mmWave bands
- Technical contributions to Integrated Access and Backhaul for NR study item

Purdue University Indiana, USA
Research Assistant Jan. 2012 - Dec. 2015

- 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)

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. in Electrical and Computer Engineering Aug. 2011 – Dec. 2015
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

<u>Journal Articles</u>

Song Noh, Michael Zoltowski, and David Love, "Multi-resolution codebook and adaptive beamforming sequence design for millimeter wave beam alignment," *IEEE Trans. Wireless Commun.,* vol. 16, no. 9, pp 5689 – 5701, Sep. 2017.

Il Y. Chun, **Song Noh**, David Love, Thomas M. Talavage, Stephen Beckley, and Sherman J. Kisner, "Mean square error (MSE)-based excitation pattern design for parallel transmit and receive SENSE MRI image reconstruction," *IEEE Trans. Comput. Imag.,* vol. 2, no. 4, pp. 424 – 439, Dec. 2016.

Song Noh, Michael Zoltowski, and David Love, "Training sequence design for feedback assisted hybrid beamforming in massive MIMO systems," *IEEE Trans. Commun.,* vol. 61, no. 1, pp 187 – 200, Jan. 2016.

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, Dawei Ying, Qian (Clara) Li, Hassan Ghozlan, Apostolos (Tolis) Papathanassiou, and Geng Wu, "System evaluation for millimeter-wave radio access network," in *Proc. IEEE ICC,* Kansas City, MO, May 2018.

Song Noh, Michael Zoltowski, and David Love, "Multi-resolution codebook based beamforming sequence design in millimeter-wave systems," in *Proc. IEEE Globecom,* 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

Technical Committee Activities

- Member, Wireless World Research Form, Steering Board — Oct. 2017 - Jul. 2018

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 Globecom / IEEE ICC / IEEE WCNC

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

- Next Generation and Standards (NGS) Division Recognition Award	Q3 2017
- Wireless Communication Research (WCR) Division Recognition Award	Q1 2017
- 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

COMPUTER SKILLS

MATLAB, Simulink, C, and C++