Taehwan Kim

Berkeley Wireless Research Center, 2108 Allston Way, Berkeley, CA 94720
+1-510-295-3549 | taehwan@berkeley.edu

Research Interests

Electronic-photonic integrated systems for communication/sensing
Electronic-photonic integration technology & design methodology development
Analog/mixed-signal integrated circuit design

Education

University of California, Berkeley *Aug. 2014 to Present*
Ph.D. Student in Electrical Engineering and Computer Science

Seoul National University *Mar. 2007 to Feb. 2014*
B.S. in Electrical and Computer Engineering
B.A. in Economics (Double major)

Research Experience

Graduate Student Researcher *Aug. 2014 to present*
Integrated Systems Group, University of California, Berkeley (Advisor: Vladimir Stojanović)

- Optical phased array based systems in electronic-photonic heterogeneous integration platform
  - Developing single-chip solution for ultra high-resolution laser radar (LIDAR) and free-space optical communication links leveraging optical phased arrays
  - Tape-out in early 2016 (65nm 10LPe process)
- Model-predictive control based algorithm for equalization of high-speed links
  - Transmitter-side algorithm based on digital channel models for modular, energy-efficient equalization of asymmetric high-speed interfaces
  - Built chips in 28nm FDSOI & 45nm SOI process
  - Chip measurement in progress

Undergraduate Researcher *Jun. 2012 to Feb. 2014*
Mixed-Signal IC and System Group, Seoul National University (Advisor: Jaeha Kim)

- Formal verification of analog/mixed-signal circuits
  - Developed an algorithm to verify the correct start-up behavior of ring oscillators in presence of variability
  - Implemented GCHECK: a Python-based tool for detection of start-up failures of coupled ring oscillators (transferred to Samsung Electronics)
- Variability-aware circuit optimization
  - Developing global optimizer for analog/mixed-signal circuits based on statistical metamodeling

Publications

T. Kim, D.-G. Song, S. Youn, J. Park, H. Park, and J. Kim, "Verifying Start-Up Failures in Coupled Ring Oscillators in Presence of Variability Using Predictive Global Optimization," in *Proc. IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2013.

J. Kim, J. Lee, D.-G. Song, **T. Kim**, K.-H. Kim, S. Jung, and S. Youn, "Discretization and Discrimination Methods for Design, Verification, and Testing of Analog/Mixed Signal Circuits," in *Proc. Custom Integrated Circuits Conference (CICC)*, 2013.

Honors & Awards

Kwanjeong Scholarship for Abroad Studies *2014-2018*
National Scholarship for Science and Engineering, Korea Science Foundation *2007-2013*

Skills

Languages: C, C++, Python, Verilog
Tools: Custom IC (Virtuoso, ADS) and VLSI design tools (DC, ICC, RC, SOC-ENC), Matlab
Operating Systems: OSX, Linux, Windows