

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, high-performing/efficient IO technology	
EDUCATION	University of California, Berkeley Ph.D. Student in Electrical Engineering and Computer Sciences Seoul National University B.S. in Electrical and Computer Engineering B.A. in Economics (Double Major)	<i>Aug. 2014 to Present</i> <i>Mar. 2007 to Feb. 2014</i>
RESEARCH EXPERIENCE	Graduate Technical Intern PHY Research Lab, Intel Labs, Santa Clara, CA <ul style="list-style-type: none">Advanced system-level techniques for integrated optical links<ul style="list-style-type: none">US patent filed Graduate Student Researcher Integrated Systems Group, University of California, Berkeley (Advisor: Vladimir Stojanović) <ul style="list-style-type: none">Free-space optical systems in electronic-photonic integration platform<ul style="list-style-type: none">Goal: realization of an integrated solution for ultra high-resolution FMCW LIDAR and free-space optical communication links leveraging silicon photonics technologyDeveloping system and circuit-level techniques for 1) laser modulation/synchronization (optical PLL for FMCW modulation/multi-laser synchronization) 2) scalable beam-steering system 3) high-sensitivity FMCW receiverVarious system-level budget analysis for LIDAR/communication applicationsFirst tape-out done in early 2016 in 65nm 10LPe CMOS/300mm photonics 3D-integration platformModel Predictive Control algorithm (MPC) based equalization of high-speed links<ul style="list-style-type: none">Demonstration of TX-side equalization scheme based on channel models for flexible, energy-efficient equalization of asymmetric high-speed interfaces (e.g. processor-memory, switches)Built/measured chips in 28nm FDSOI & 45nm SOI, paper accepted Undergraduate Researcher Mixed-Signal IC and System Group, Seoul National University (Advisor: Jaeha Kim) <ul style="list-style-type: none">Formal verification of analog/mixed-signal circuits<ul style="list-style-type: none">Developed an algorithm to verify correctness of start-up behavior of ring oscillators in presence of variabilityImplemented GCHECK: a Python-based tool for detection of start-up failures of coupled ring oscillators (transferred to Samsung Electronics, patent issued)Variability-aware circuit optimization<ul style="list-style-type: none">Developed global optimizer for analog/mixed-signal circuits based on statistical metamodeling	<i>May. 2017 to present</i> <i>Aug. 2014 to present</i> <i>Jun. 2012 to Feb. 2014</i>
PUBLICATIONS	T. Kim , P. Bhargava, V. Stojanović, “Optimal Spectral Estimation and System Trade-Off in Long-Distance Frequency-Modulated Continuous-Wave LIDAR,” <i>IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)</i> , 2018. T. Kim , P. Bhargava, V. Stojanović, “A Model Predictive Control Equalization Transmitter for Asymmetric Interfaces in 28nm FDSOI,” <i>IEEE Asian Solid-State Circuits Conference (ASSCC)</i> , 2016. 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,” <i>IEEE/ACM International Conference on Computer-Aided Design (ICCAD)</i> , 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,” <i>Custom Integrated Circuits</i>	

Conference (CICC), 2013.

HONORS &
AWARDS

Kwanjeong Scholarship for Abroad Studies
National Scholarship for Science and Engineering, Korea Science Foundation

2014-2018
2007-2013

SKILLS

Languages: C, C++, Python, Verilog, Verilog-A
Tools: Custom IP block and VLSI design/verification tools (Virtuoso, ADS, DC, ICC, RC, SOC-ENC, Calibre), MATLAB