

Taehwan Kim

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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 Student Researcher Integrated Systems Group, University of California, Berkeley (Advisor: Vladimir Stojanović) <ul style="list-style-type: none">Optical phased-array based 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 optical phased arraysDeveloping building blocks for 1) laser modulation/synchronization (optical PLL for FMCW modulation/multi-laser synchronization) 2) large-scale phase-array implementation (optical phase-shifter drivers, algorithms for programming the array) 3) high-sensitivity FMCW receiverVarious system-level budget analysis for LIDAR/communication applicationsFirst tape-out done in early 2016 in 65nm 10LPeModel 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>Aug. 2014 to present</i> <i>Jun. 2012 to Feb. 2014</i>
PUBLICATIONS	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, accepted. 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 <i>Proc. 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,” in <i>Proc. Custom Integrated Circuits Conference (CICC)</i> , 2013.	
HONORS & AWARDS	Kwanjeong Scholarship for Abroad Studies National Scholarship for Science and Engineering, Korea Science Foundation	<i>2014-2018</i> <i>2007-2013</i>
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	