Jin Zhou and Jianxun Zhu win a prestigious IEEE Solid-State Circuits Society Predoctoral Achievement award

Ph.D. students Jin Zhou and Jianxun Zhu won a 2015-2016 IEEE Solid-State Circuits Society (SSCS) (http://sscs.ieee.org/) Predoctoral Achievement (http://sscs.ieee.org/awards/predoctoral-achievement-award.html) Award for their excellent academic record and outstanding doctoral research achievements among a competitive slate of applicants from world-wide premier academic institutions.

"Jin Zhou won the award for his research on "Integrated Self-Interference-Cancelling Circuits and Systems for Full-Duplex Wireless". Full-duplex (FD) wireless (http://engineering.columbia.edu/new-technology-may-double-radio-frequency-data-capacity) – simultaneous transmission and reception at the same frequency – has the potential to significantly improve wireless network performance. However, the biggest challenge associated with FD wireless is the tremendous amount of transmitter self-interference (SI) right on top of the desired signal. Jin's doctoral research at Columbia University in CoSMIC lab (http://cosmic.ee.columbia.edu) under the advisement of Professor Harish Krishnaswamy has made three important contributions towards the realization of self-interference-cancelling full-duplex radios using integrated circuit (IC) technology, including elimination of the noise and distortion of the cancellation circuitry, enhancing cancellation bandwidth, and performing joint RF, analog and digital cancellation to achieve cancellation with nearly 1 part-per-billion accuracy. As first author, Jin has published two IEEE Journal of Solid-State Circuits (JSSC) papers and three IEEE International Solid-State Circuits Conference (ISSCC) papers based on his doctoral research. JSSC and ISSCC are the most prestigious venues for journal and conference publication in the integrated circuits area. Jin also won the 2015-2016 Qualcomm Innovation Fellowship (http://engineering.columbia.edu/electrical-engineering-phd-students-win-qualcomm-innovation-fellowship) in collaboration with Jelena Marasevic for their interdisciplinary research proposal related to FD wireless. This interdisciplinary research has formed the basis for the FlexICoN (http://flexicon.ee.columbia.edu) project at Columbia University.

"Jianxun Zhu won the award for his master research on Energy-Harvesting Active Networked Tags (EnHANTs) (http://enhants.ee.columbia.edu/) and doctoral research on "High-Performance Field-Programmable Circuits for Software Defined Radios (SDRs)." SDRs are important enablers for next generation wireless communications systems, where a single wireless receiver can be reconfigured into different standards/operation modes to support multiple applications with the same hardware. Furthermore, operation under different signal strength and interferer levels demands in-field performance tradeoffs which can only be realized with highly programmable architectures. Jianxun's doctoral research at Columbia University in Professor Peter Kinget's group (http://www.cisl.columbia.edu/kinget_group) has been progressively pushing the state of the art in the performance of programmable wireless receivers and their components. His innovations in LNA/receiver architectures enable the in-field, dynamic trade-off of noise, linearity, power consumption and concurrency. Jianxun so far has published one paper inIEEE Journal of Solid-State Circuits (JSSC), one in IEEE International Solid-State Circuits Conference (ISSCC), one in IEEE Custom Integrated Circuits Conference (CICC), and two in IEEE Radio Frequency Integrated Circuits (RFIC) Symposium. His pioneering contributions on realizing an ultra-wideband pulse-radio communication link for the EnHANTs project led to two publications in IEEE INFOCOM and ACM TOSN. With the EnHANTs team, he also won the Best Student Demo Award in ACM Conference on Embedded Networked Sensor Systems (SenSys'11).

Posted: Jan 11 2016