

Topic: Baseband Design and Implementation for 5G and Beyond

Abstract: This talk focuses on Advanced Baseband Processing Circuits and Systems for 5G and beyond: an emerging research field enabling 5G and beyond from theory to practice. By committing itself to the emerging techniques of baseband processing circuits and systems, this talk means to bring a synthesized source and wide view of recent progress and existing challenges in this particular but very important research area, including: 1) algorithm and code construction for baseband processing; 2) algorithm and implementation co-design; 3) architecture and implementation optimization for baseband; and 4) artificial intelligence (AI) for 5G baseband. The tutorial will identify technical challenges and recent results related to 5G and beyond applications such as Internet of Things, Autonomous Vehicles, Robotics and UAVs, and Smart Buildings and Cities.

Speaker's Profile

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Chuan Zhang is now an associate professor of National Mobile Communications Research Laboratory, School of Information Science and Engineering, Southeast University, Nanjing, China. He received B.E. degree (summa cum laude) in microelectronics and M.E. degree (summa cum laude) in VLSI design from Nanjing University, Nanjing, China, in 2006 and 2009, respectively. He received both M.S.E.E. degree and Ph.D. degree in Department of Electrical and Computer Engineering, University of Minnesota, Twin Cities (UMN), USA, in 2012. His current research interests include low-power high-speed VLSI design for digital signal processing and digital communication, bio-chemical computation and neuromorphic engineering, and quantum communication. Dr. Zhang is a member of Seasonal School of Signal Processing (S3P) and Design and Implementation of Signal Processing Systems (DISPS) TC of the IEEE Signal Processing Society; Circuits and Systems for Communications (CASCOM) TC, VLSI Systems and Applications (VSA) TC, and Digital Signal Processing (DSP) TC of IEEE Circuits and Systems Society. He serves as the Secretary of the 7th Committee on Science and Technology – Information Division, Ministry of Education, China.

Dr. Zhang received the Excellent Bachelor Dissertation Award of Nanjing University in 2006, and the Excellent Master Dissertation Award of Jiangsu Province in 2009. He received the Three-Year University-Wide Graduate School Fellowship of UMN in 2009, and Doctoral Dissertation Fellowship of UMN in 2012. He has been selected by the first Innovative and Entrepreneurial Doctoral Talent Program of Jiangsu Province in 2014, Outstanding Young Faculty Teaching and Research Support Program of Southeast University in 2016, and the first Young Scientific Talent Lift Program of Jiangsu Province in 2017. He received the Leike Excellence in Teaching Award of Southeast University in 2016, the Qingyun Sun Excellence in Teaching Award of Southeast University in 2017, and the University-Wide Excellence in Teaching Award of Southeast University in 2017.

He is also a (co-)recipient of Best Paper Award of IEEE Asia Pacific Conference on Circuits and Systems (APCCAS) in 2016, Best (Student) Paper Award of IEEE International Conference on Digital Signal Processing (DSP) in 2016, (three) Excellent Paper Awards and Excellent Poster Presentation Award of International collaboration Symposium on Information Production and Systems (ISIPS) in 2016 and 2017, (two) Best (Student) Paper Awards of IEEE International Conference on ASIC (ASICON) in 2015 and 2017, the Best Paper Award Nomination of IEEE Workshop on Signal Processing Systems (SiPS) in 2015, Excellent Master Dissertation Nomination of the Chinese Institute of Electronics in 2017, Excellent Master Dissertation Award of Jiangsu Province in 2009, (three) Excellent Bachelor Dissertation Award of Jiangsu Province in 2015 and 2016, (seven) Excellent Bachelor Dissertation Award of Southeast University in 2015 and 2016, (two) Excellent Bachelor Dissertation Award of Nanjing University in 2015 and 2016, the Merit (Student) Paper Award of IEEE Asia Pacific Conference on Circuits and Systems (APCCAS) in 2008.