

Title:

Software Define Silicon (SDSi) and its application research on digital signal processing and deep learning

Abstract:

The integrated circuit industry has been dominated by two scaling laws for quite a long time. One is Moore's Law, and another is Dennard's Scaling Law. However, these two laws are dying out gradually. The end of Dennard Scaling and Moore's Law indicates that "A New Golden Age for Computer Architecture" has already arrived, the innovation will be largely exploited in terms of architecture. Software Define Silicon (SDSi) is the mainstream of integrated circuit development. It can perform well on both the programmability and energy efficiency, and the Reconfigurable Computing (RC) is the implementation architecture to achieve SDSi.

In this talk, the speaker will go over the reconfigurable computing issues involved in high-performance radar application oriented systems, and an effective and efficient edged computing system toward deep learning applications. After presenting the background, design challenge and overall architecture. The speaker will explain how to overcome those challenges. The speaker's group has already successfully developed a general-purpose reconfigurable processor for radar applications, which has been tape-out on the 40-nm and 28-nm CMOS technology. Also, the ongoing design for efficient edged computing system toward deep learning applications will be introduced and analyzed as examples.

Biography:

Li Li is now a professor of VLSI Design Institute, School of Electronic Science and Engineering, Nanjing University, Nanjing, China. She is the Vice President of School of microelectronics. She is also the vice president of Nanjing Integrated Circuit Industry Association. She is also honored to be the national scientist training object of "333 Project" and the leading talent of "Six Talent Peak" in Jiangsu Province. Dr. Li is a member of Circuits & Systems for Communications (CASCOM) TC of IEEE CAS Society. She received the B.S. degree and Ph.D. degree from Hefei University of Technology, Hefei, China, in 1996 and 2002 respectively. Her current research interests include VLSI design for digital signal processing systems and artificial intelligence, reconfigurable computing and multiprocessor system-on-a-chip (MPSoC) architecture design methodology. She has presided over more than 20 national and enterprise entrusted scientific research projects, published more than 100 academic papers, and obtained 14 national invention patents.