北京大学高能效计算与应用中心学术报告

Invited Talk, Center for Energy-Efficient Computing and Applications

COARSE-GRAINED RECONFIGURABLE COMPUTING-ARCHITECTURE, METHODOLOGY AND DESIGN

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ABSTRACT: Coarse-grained reconfigurable computing is intended to fill the gap between application specific integrated circuits (ASICs) and general purpose instruction set processors, achieving potentially much higher performance than instruction set processors, while maintaining a higher level of flexibility than ASICs. A typical reconfigurable computing architecture consists of reconfigurable hardware along with a control unit. The reconfigurable hardware is responsible for accelerating regular and parallel computation; the control unit is responsible for controlling the reconfigurable hardware and executing sequential computation. Our talk starts with a brief introduction of the background and motivation of coarse-grained reconfigurable architectures (CGRAs), followed by the discussions on high level synthesis approaches for mapping applications to such platforms. Finally, we show some domain-specific CGRA designs.

BIOGRAPHY: Dr. Shouyi Yin received B.S, M.S. and Ph.D. from Tsinghua University in 2000, 2002 and 2005 respectively. He has been with Imperial College London, London, U.K., as a Research Associate. He is currently with the Institute of Microelectronics, Tsinghua University, as an Associate Professor. He is now leading the division of Computer-Aided Design. His current research interests include reconfigurable computing, mobile computing and neuromorphic computing. Dr. Yin has published one book, a handful of book chapters, and more than 100 journal and conference papers. He has been granted with 45 China patents with other 39 pending applications.