Title: Mobile/Embedded DNN and AI SoCs

Abstract:

Recently, deep neural network (DNN) is one of the fastest growing fields in artificial intelligence due to its simple learning mechanisms and overwhelming performances. This course focuses on SoC implementations for mobile/embedded DNN. In the course, mobile/embedded DNN will be discussed firstly with the edge-oriented HW-based approach. Then, the challenges and issues associated with the implementations of mobile/embedded DNN SoCs will be explained. After that, algorithm, architecture, and circuit level techniques for DNN SoCs are discussed. Also, real implementation results of the state-of-the-art DNN SoCs and their applications in AI will be introduced. In addition, the future of AI SoC and its architectures will be explored with the processor-in-memory and the non-volatile memory architectures.

Bio:

Hoi-Jun Yoo graduated from the Electronic Department of Seoul National University and received the M.S. and Ph.D. degrees in electrical engineering from the KAIST. Now, he is the full professor of Department of Electrical Engineering at KAIST, the director of SDIA (System Design Innovation and Application Research Center). Since 2010, he has served the general chair of Korean Institute of Next Generation Computing. His current interests are intelligent SoC, computer vision SoC, body area networks, biomedical devices and circuits. He published more than 300 papers, and is the author and the co-author of 12 books. He has served as a member of the executive committee of ISSCC, Symposium on VLSI, and A-SSCC and the TPC chair of the A-SSCC 2008 and ISWC 2010, IEEE Fellow, IEEE Distinguished Lecturer (’10-’11), Far East Chair of ISSCC (‘11-‘12), Technology Direction Sub-Committee Chair of ISSCC (’13), TPC Vice Chair of ISSCC (’14), and TPC Chair of ISSCC (’15).