海外学者学术报告
Mobile NPU for Intelligent Human Machine

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校内邀请人：张建伟，电信学部 人工智能学院

Abstract： Deep learning is influencing not only the technology itself but also our everyday lives. In this presentation, the status of AI and DNN SoCs will be reviewed from the viewpoint of the mobile and edge AIs, and the evolution of DNN accelerators. Especially, low power NPU and reconfigurable NPU will be introduced for mobile, embedded, and IoT platforms. In addition, Dynamically Reconfigurable Processor architecture will be explained in detail with the real chip measurement results, such as human emotion recognition for intelligent HCI. Moreover, the on-chip training, which will be the next wave over the current AI revolution, and low power training processors will be explained with algorithms and hardware co-optimization methods for personalized and privacy protected AI applications. NPU examples such as Real-time training, GAN, DRL, Depth Camera and 3D Rendering examples will be introduced for the many exciting low-power and high-performance applications in Gaming, AR/VR, Intelligent Robotics, Drones, Autonomous Driving, Security Camera, Health Monitoring and IoT. Lastly, the future of NPU such as PIM (Processing In Memory) and Spike Neural Network Chips which are realized with custom memories including non-volatile memories, will be introduced.

Biography： Hoi-Jun Yoo is an IEEE Fellow and ICT Chair Professor of School of Electrical Engineering and the Director of the Institute of Information Technology Convergence (ITC), Advanced Institute of Processing In Memory (AI-PIM), and System Design Innovation and Application Research Center (SDIA) at KAIST. His current research interests are Bio-Inspired AI Chip Design, Multicore AI-SoC design including DNN accelerators, Network-on-a-Chip, and high-speed and low-power memory. He has published more than 250 papers, and wrote or edited 5 books including "DRAM Design" (1997, Hongneung). He is the Chair of the A-SSCC Steering Committee (2020-2024), VLSI Symposium Executive Committee member, ISSCC 2015 TPC Chair, and a ISSCC 2019 Plenary Speaker. Prof. Yoo received the Order of Service Merit from the Korean President (2011) for his contribution to the Korean memory industry, Best Research of KAIST Award (2007), Excellent Scholar of KAIST Award (2011), Best Scholar of KAIST Award (2019), Best KAIST Achievement Award (2022), and was a co-recipient of ASP-DAC Design Award (2001), A-SSCC Outstanding Design Awards (2005, 2006, 2007, 2010, 2011, 2014, 2020, 2021), ISSCC/DAC Student Design Contest Awards (2007, 2008, 2010, 2011), and ISSCC Demonstration Session Recognitions (2016, 2017, 2019, 2020), and Best Paper Award of IEEE AI-CAS (2019, 2022).