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Ming Hsieh Institute Seminar Series
Ming Hsieh Department of Electrical Engineering

Integrated Systems

Energy-Efficient Hardware for Embedded Vision and Deep Convolutional Neural Network

Dr. Vivienne Sze

Professor at MIT

Date: Friday, February 3rd, 2017
Time: 2:00pm   Location: EEB 132

Abstract: Visual object detection and recognition are needed for a wide range of applications including robotics/drones, self-driving cars, smart Internet of Things, and portable/wearable electronics. For many of these applications, local embedded processing is preferred due to privacy or latency concerns. In this talk, we will describe how joint algorithm and hardware design can be used to reduce the energy consumption of object detection and recognition while delivering real-time and robust performance. We will discuss several energy-efficient techniques that exploit sparsity, reduce data movement and storage costs, and show how they can be applied to popular forms of object detection and recognition, including those that use deep convolutional neural nets. We will present results from recently fabricated ASICs (e.g. our deep CNN accelerator named "Eyeriss") that demonstrate these techniques in real-time computer vision systems.

Biography: Vivienne Sze is an Assistant Professor at MIT in the Electrical Engineering and Computer Science Department. Her research interests include energy-aware signal processing algorithms, and low-power circuit and system design for multimedia applications. Prior to joining MIT, she was a Member of Technical Staff in the R&D Center at TI, where she developed algorithms and hardware for the latest video coding standard H.265/HEVC. She is a co-editor of the book entitled "High Efficiency Video Coding (HEVC): Algorithms and Architectures" (Springer, 2014).

Hosted by Prof. Dina Reda El-Damak.
Organized by Jae-Won Nam.