

Title: Designing Energy-Efficient Information Processing Systems

Abstract: The semiconductor industry is facing some extraordinary challenges, including process and aging-induced variability of nano-devices as well as excessive power dissipation and heat generation in VLSI circuits and systems. In order for the industry to continue to expand and prosper, it is critical to address these challenges heads on. It is against this backdrop that I provide examples of some techniques used to improve the energy efficiency of VLSI circuits and systems. More precisely, my talk will include a discussion of the following topics: (i) Logical-effort-based optimization of FinFET gates operating in multiple voltage regimes and (ii) Power/performance models of multi-core server systems and an online CPU consolidation algorithm.

Biosketch: Massoud Pedram is the Stephen and Etta Varra Professor in the EE department at the University of Southern California. He received his B.S. degree in EE from Caltech in 1986 and PhD in EECS from UC-Berkeley in 1991. He is a recipient of the 1996 Presidential Faculty Fellows Award, a Fellow of the IEEE, an ACM Distinguished Scientist, and the Editor-in-Chief of the ACM Transactions on Design Automation of Electronic Systems and the IEEE Journal on Emerging and Selected Topics in Circuits and Systems. Dr. Pedram's research focuses on energy-efficient computing, energy storage systems, low power electronics and design, and computer aided design of VLSI circuits and systems. Dr. Pedram and his research group have published more than 450 papers, and received six Conference and two IEEE Transactions Best Paper awards for their work.