

Charles L. Brown Department of Electrical and Computer Engineering

University of Virginia

Friday, April 14, 2006 at 3:30 PM in Thornton E-316



Eminent Speaker: Vasily Moshnyaga

Professor

Computer Systems Laboratory

Department of Electronics Engineering and Computer Science

Fukuoka University

Adaptive Techniques for Energy-Efficient Video Processing

Abstract:

The recent explosive growth of portable applications, such as video phones, PDA, digital video cameras, etc., has elevated needs for low-energy video processing hardware and software. This talk will introduce new algorithmic and architectural techniques which can significantly shrink the energy consumption of video coding and decoding tasks. Unlike traditional methods, the techniques exploit picture correlation and input statistics to dynamically adjust the number of operations, memory accesses, operational bit-width and supply voltage to varying picture content. Applications to motion estimation, discrete cosine transform and memory access optimization will be presented. Practical issues and open problems will be outlined.

Who should attend?

Anyone interested in new developments and design issues of modern energy-efficient computing systems. The talk is suited for both hardware and software developers. Students, researchers and professionals will find value in this talk.

Biography:

Vasily Moshnyaga received Computer Engineering Degree with Honors from Technical State University, Sevastopol, USSR in 1980 and Ph.D. in computer engineering from Moscow Aviation Institute in 1986. Till 1992 he was a faculty of Technical University of Moldova, Chisinau, Moldova. From 1992 to 1998 he was a lecture at the Department of Electronics and Communication of Kyoto University, Japan. Since 1998 he has been with Fukuoka University, Japan, where he is currently a Professor at the Department of Electronics Engineering and Computer Science. His research interests are in the areas of computer architecture, computer arithmetic, video processing, VLSI design and design methodologies with a particular emphasis on energy-efficient design techniques. He has authored or co-authored over 150 referred journal and conference publications and has five patents. Dr. Moshnyaga is a member of organizing committees of the Asia-Pacific Design Automation Conference, Asia Pacific Conference on Chip Design Languages, and a technical program committee member of several conferences including IEEE International Symposium on Circuits and Systems, ACM/IEE International Symposium on Low-Power Electronics and Design, IEEE System on Chip Conference, etc. He is an Associate Editor of the IEICE Transactions on Fundamentals of Electronics, Communication and Computer Sciences. Dr. Moshnyaga is a senior member of IEEE, Computer System Society and Circuits and System Society, a member of Information Processing Society of Japan, and Engineering Sciences Society of Japan.