

Challenges in Hybrid DSP/FPGA Implementations of Optimal Beamforming

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Abstract

Recent advances in software defined radio and MIMO technology for wireless communication have spurred a new interest in systems capable of supporting multi-channel operation. The Hybrid DSP/FPGA model is ideal for exploring the realization of these systems in hardware. However, managing the required multiple-DSP and multiple-FPGA components is difficult. Sundance DSP, in conjunction with the US Navy, has developed a 'Beamforming Reference Design' platform which addresses these issues. This talk will describe the Sundance approach and cover topics in multi-sensor signal conditioning and integration, partitioning of computation load between several FPGA and DSP processors, system modeling and realization in fixed and floating-point methods.

Biography

Mr. Bogdan Vacaliuc holds a Masters Degree ('92) in Signal Processing from Northwestern University, Evanston IL. He has been involved in parallel computing architectures throughout his career, beginning with the TMS320C80 multi-processor DSP. His interests include optimization and implementation of algorithms, multi-processor system development and communications systems. Mr. Vacaliuc currently serves as Chief Technical Officer of Sundance DSP, Inc.