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Green Computing through Adaptive Multi-core Architectures

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Abstract:
Current homogeneous and heterogeneous multi-cores consist of processors with static architectures and fixed sets of hardware resources. In contrast, the computational demands of many applications vary not only from one task to the other, but also temporally, during the execution of a single task. Such high level of diversity results in a mismatch between the requirements of the application and the hardware resources provided by the multi-core, causing an energy inefficient execution. We will discuss in this presentation adaptive multi-core architectures that are capable of adjusting their hardware resources in real time to match the current computational needs of the executing application.

Short Bio:
Israel Koren is a Professor of Electrical and Computer Engineering at the University of Massachusetts, Amherst and a fellow of the IEEE. He has been a consultant to companies like IBM, Analog Devices, Intel, AMD and National Semiconductors. His research interests include Fault-Tolerant systems, cyber-physical systems, secure cryptographic devices, Computer architecture and computer arithmetic. He publishes extensively and has over 300 publications in refereed journals and conferences. He is the author of the textbook "Computer Arithmetic Algorithms," 2nd Edition, A.K. Peters, Ltd., 2002, and a co-author of the textbook "Fault Tolerant Systems," Morgan-Kaufman, 2007.