Topic 18
Embedded Parallel Systems

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Topic Chairs

Multi-processor systems implemented in System-on-a-Chip technology (MPSoC) are emerging for processing embedded applications such as consumer electronics, mobile phones, computer graphics, and medical imaging, to name a few. Contrary to cluster and grid processing, their design and required compilation techniques are driven by multiple conflicting design objectives simultaneously such as power consumption, speed, monetary cost, and physical as well as memory size. Here, new specification techniques, special parallelization and mapping techniques are needed in order to embed computations optimally into the parallel architecture. Various architectural concepts ranging from fine-grain to coarse-grain parallel SoC architectures with focus on dynamic programmability or reconfigurability are currently emerging in academia and industry.

On account of the outlined importance of MPSoCs in todays and future embedded systems, the topic *Embedded Parallel Systems* is included in the program of Euro-Par for the first time. Unfortunately, the number of submitted papers was comparatively small but nevertheless after a rigorous review process we accepted three papers which form one session at the conference. In the following, we provide a brief outline of the topics addressed in these contributions.

The paper titled "Optimal Localization of Data Dependencies in Algorithm Partitioning Under Resource Constraints" by S. Siegel and R. Merker deals with the communication in dedicated processor arrays. The authors propose an integer linear program in order to minimize the number of necessary channels and the amount of local memory.

The work "FPGA implementation of a Prototype Hierarchical Control Network for Large-Scale Signal Processing Applications" by J. Lemaitre and E. Deprettere presents a prototypical FPGA implementation of a hierarchical control network coupled with a distributed dataflow network. For modeling the network, communicating Finite State Machines and Kahn Process Networks are used.

The third paper "An Embedded Systems Programming Environment for C" by B. Burgstaller, B. Scholz, and A. Ertl presents a programming environment for mixed-mode execution, i.e. code is either executed on the CPU or in a virtual machine. Trade-offs between highly compressed byte-code and the speed of machine code are discussed.

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