Executing synchronous dataflow graphs on a SPM-based multicore architecture

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Abstract— In this paper we are concerned about executing synchronous dataflow (SDF) applications on a multicore architecture where a core has a limited size of scratchpad memory (SPM). Unlike traditional multi-processor scheduling of SDF graphs, we consider the SPM size limitation that incurs code and data overlay overhead. Since the scheduling problem is intractable, we propose an EA(evolutionary algorithm)-based technique. To hide memory latency, prefetching is aggressively performed in the proposed technique. The experimental results show that our approach reduces the overlay overhead significantly compared to a non-optimized approach and the previous approach.

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