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Optimal resource allocation and scheduling for the CELL BE platform. (English)

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Summary: Resource allocation and scheduling for multicore platforms is one of the most critical challenges in today's embedded computing. In this paper we focus on a well-known multicore platform, namely the Cell BE processor, and we address the problem of allocating and scheduling its processors, communication channels and memories, with the goal of minimizing execution time for complex data streaming applications.

We propose three complete approaches that optimally solve the problem and prove optimality. The first is based on the recursive application of the Logic Based Benders decomposition, resulting in a three stage algorithm. The second is a pure CP approach while the third is a hybrid approach integrating the first two.

Extensive experimental evaluation shows the features of each approach and its effectiveness on a specific instance structure.

MSC:

[90B35](#) Deterministic scheduling theory in operations research

[90C10](#) Integer programming

Cited in 1 Document

Keywords:

[constraint based scheduling](#); [resource allocation](#); [hybrid solvers](#); [constraint programming](#); [integer linear programming](#); [multicore platforms](#)

Software:

[ILOG SCHEDULE](#); [QUICKXPLAIN](#)

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