

NEW APPLICATIONS ON STATE-OF-THE-ART RC MULTIPROCESSING SYSTEMS

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Abstract

This paper introduces new algorithms mappings using reconfigurable computing (RC) systems and specifically chooses one of the prototypes in this field, MorphoSys (M1). Several recent mappings are discussed, and a new mapping of linear finite state machines algorithm onto this hardware is proposed. A performance analysis study of the M1 system is presented to evaluate the execution efficiency of the suggested algorithms on the system. Comparisons of findings are tabulated and discussed showing the advantages of using the M1 system for three different application areas; namely, two-dimensional geometrical transformations in computer graphics, FIR filter algorithms in digital signal processing, and parallel linear sequential circuits in digital coding. An example (8-input vector on the 8x8 RC array M1) for the new parallel digital coding algorithm was run, to validate results, using the MorphoSys mULATE program, which simulates MorphoSys operations.

Keywords

Reconfigurable Computing, Geometrical Transformations, FIR Filter, Linear Sequential Circuits.