



ABSTRACT

Technical report IDE0713

Evolution in Architectures and Programming Methodologies of Coarse-Grained Reconfigurable Computing

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In order to meet the increased computational demands of, e.g., multimedia applications, such as video processing in HDTV, and communication applications, such as baseband processing in telecommunication systems, the architectures of reconfigurable devices have evolved to coarse-grained compositions of functional units, which are operated in a coordinated manner to improve performance and energy efficiency.

In this survey we explore the field of coarse-grained reconfigurable computing on the basis of the hardware aspects of granularity, reconfigurability, and interconnection networks, and discuss the effects of these on energy related properties and scalability. We also consider the computation models that are being adopted for programming of such machines, models that expose the parallelism inherent in the application in order to achieve better performance. Finally, we identify the emerging trends of introduction of asynchronous techniques at the architectural level and the use of nano-electronics from technological perspective in the reconfigurable computing discipline.

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