

Efficient architectures for streaming DSP applications

This presentation will focus on algorithms and reconfigurable tiled architectures for streaming DSP applications. The tile concept will not only be applied on chip level but also on board-level and system-level. The tile concept has a number of advantages: (1) depending on the requirements more or less tiles can be switched on/off, (2) the tile structure fits well to future IC process technologies, more tiles will be available in advanced process technologies, but the complexity per tile stays the same, (3) the tile concept is fault tolerant, faulty tiles can be discarded and (4) tiles can be configured in parallel.

Because processing and memory is combined in the tiles, tasks can be executed efficiently on tiles (locality of reference).

There are a number of application domains that can be considered as streaming DSP applications: for example wireless baseband processing (for HiperLAN/2, WiMax, DAB, DRM, DVB), multimedia processing (e.g. MPEG, MP3 coding/decoding), medical image processing, color image processing, sensor processing (e.g. remote surveillance cameras) and phased array radar systems. In this presentation the key characteristics of streaming DSP applications are highlighted, and the characteristics of the processing architectures to efficiently support these types of applications are addressed.