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Managing dynamic concurrent tasks on low-power heterogeneous platforms

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Resumen

The merging of computers, consumer and communication disciplines gives rise to very fast growing markets for personal communication, multi-media and broadband networks. Technology advances lead to heterogeneous platforms with enormous processing capacity that are however not matched with the increasing demand on energy efficiency combined with the required increase in handling system design productivity. One of the most critical bottlenecks is the very dynamic concurrent behaviour of many of these new applications. The main issue is that fully design-time based solutions as proposed earlier cannot solve the problem, and run-time solutions are too inefficient in terms of cost optimisation and are also not adapted for the real-time constraints. In order to deal with these dynamic issues, a "task concurrency management" (TCM) problem formulation will be proposed, where power/energy consumption while meeting performance requirements is one of the main objectives. The concept of Pareto curve based exploration is crucial in these formulations and their solutions.

Sobre Francky Catthoor

Prof. Francky Catthoor is a fellow at IMEC, Heverlee, Belgium. He received the Eng. degree and a Ph.D. in El. Eng. from the K.U.Leuven, Belgium in 1982 and 1987 respectively. Since 1987, he has headed research domains in the area of architectural and system-level synthesis methodologies, within the DESICS (formerly VSDM) division at IMEC. His current research activities belong to the field of architecture design methods and system-level exploration for power and memory footprint within real-time constraints, oriented towards data storage management, global data transfer optimization and concurrency exploitation. Platforms that contain both customizable/configurable architectures and (parallel) programmable instruction-set processors are targeted.