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CECS Seminar



“Pareto exploration methodology for future logic technology options in domain-specific processors”

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Tuesday, September 26th

2:00-3:00 p.m.

Location: EH 2430

Abstract: Scaling of Si-CMOS based logic processor circuits is hitting limits on application-level performance (throughput and latency), dynamic and leakage power, and even cost characteristics. For that reason, several researchers have started to study alternatives based on so-called beyond CMOS devices. Many emerging devices have been studied in the last decade, especially in academia. And some of these looks promising for specific figures of-merit, like only dynamic power (but not energy), only leakage (but not dynamic power) and so on. Hence, they are almost never simultaneously improving several axes (the desirable figures-of-merit) in the Pareto trade-off space. And as a result, they rarely improve the true Pareto front in that space.

A need exists to better compare potential options in a systematic way, with emphasis on their system-level impact, and as much as possible in a future-proof way, including the link to the processor architecture design and hence to the overall processing platform. In this talk a systematic approach will be advocated to characterize these options in a multi-dimensional Pareto exploration space, and a few interesting directions will be positioned in this space to highlight the potential of this approach. The main architecture context will be domain-specific processor instances.

Biography: Francky Catthoor received a Ph.D. in EE from the Katholieke Univ. Leuven, Belgium in 1987. Between 1987 and 2000, he has headed several research domains in the area of synthesis techniques and architectural methodologies. Since 2000 he is strongly involved in other activities at IMEC including deep submicron technology aspects, IoT and biomedical platforms, and smart photovoltaic modules, all at IMEC Leuven, Belgium. Currently he is an IMEC fellow. He is also part-time full professor at the EE department of the KULeuven. He has been associate editor for several IEEE and ACM journals and was elected IEEE fellow in 2005.

Hosted By: Prof. Nikil Dutt and Prof. Jeffery Krichmar