# Cognitronics: Resource-efficient Architectures for Cognitive Systems

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*Abstract:* Mapping brain-like structures and processes into electronic substrates has recently seen a revival with the availability of deep-submicron CMOS technology. The basic idea is to exploit the massive parallelism of such circuits and to create low power and fault-tolerant information-processing systems. Aiming at overcoming the big challenges of deep-submicron CMOS technology (power wall, reliability, and design complexity), bio-inspiration offers alternative ways to (embedded) artificial intelligence. The challenge is to understand, design, build, and use new architectures for nanoelectronic systems, which unify the best of brain-inspired information processing concepts and of nanotechnology hardware, including both algorithms and architectures. This talk will give an overview of our experiences in designing brain-inspired architectures for nanoelectronics.