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SpiNNaker2: A Platform for Bio-Inspired Artificial Intelligence

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Über den Vortrag:

SpiNNaker is an ARM-based processor platform optimized for the simulation of spiking neural networks. This brief describes the roadmap in going from the current SPiNNaker1 system, a 1 Million core machine in 130nm CMOS, to SpiNNaker2, a 10 Million core machine in 22nm FDSOI. Apart from pure scaling, we will take advantage of specific technology features, such as runtime adaptive body biasing, to deliver cutting-edge power consumption. Power management of the cores allows a wide range of workload adaptivity, i.e. processor power scales with the complexity and activity of the spiking network. Additional numerical accelerators will enhance the utility of SpiNNaker2 for simulation of spiking neural networks as well as for executing conventional deep neural networks. The interplay between these two domains will provide a wide field for bio-inspired algorithm exploration on SpiNNaker2, bringing machine learning and neuromorphics closer together. Apart from the platforms' traditional usage as a neuroscience exploration tool, the extended functionality opens up new application areas such as automotive AI, tactile internet, industry 4.0 and biomedical processing.

Curriculum Vitae



Christian Mayr is a Professor of Electrical Engineering at TU Dresden, heading the Chair of Highly-Parallel VLSI-Systems and Neuromorphic Circuits. His career encompasses postings at Infineon, Philips, University Zurich, TU Dresden und John-Hopkins University Baltimore.

His research interests include bio-inspired circuits, brain-machine interfaces, AD converters and general mixed-signal VLSI-design. He is author/co-author of over 80 publications and holds four patents. He is a PI in the EU flagship 'Human Brain Project' as well as in the German excellency clusters CETI and cfaed. Among his honours are the Meyer-Struckmann Wissenschaftspreis and the Heinrich Barkhausen Preis.

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