

How to Simulate the Brain without a Computer

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Abstract. The brain is fundamentally different from numerical information processing devices. On the system level it features very low power consumption, fault tolerance and the ability to learn. On the microscopic level it is composed of constituents with a high degree of diversity and adaptability forming a rather uniform fabric with universal computing capabilities.

Neuromorphic architectures attempt to build physical models of such neural circuits with the aim to capture the key features and exploit them for information processing. In the talk I will review recent work and discuss future developments.