Analysis of Digital and Mixed-Signal Neurons for Efficient Neuromorphic Computing

Neuromorphic computing, inspired by Brain, promises extreme efficiency for certain class of computing tasks, such as classification and pattern recognition. The performance and power consumption of neuromorphic computing depends heavily on the choice of the neuron architecture. Digital neurons have been known to be accurate and efficient at high speeds. On the other hand, analog/mixed-signal neurons could be noisy, but promising for extremely low-power and low-speeds. In this talk, we will analyze, compare and contrast digital and mixed-signal neurons in terms of performance, power, frequency, noise and explore their applicability in achieving extreme energy-efficiency for neuromorphic computing.