CS 290 Paper Reviews

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Computing with Spikes

Computing with Spikes [1] gives a quick overview of the idea behind computing models based on *spiking neurons* and the (then) current research that the author (Wolfgang Maass) and his colleagues were conducting.

The field that studies spiking neurons models is in the intersection of complexity theory and computational learning theory.

Theoretical ideas regarding cognition and learning organization of information processing in the human brain

Questions Computational function of neural microcircuit principles by which learning and memory are organized organization principles by which millions of neural microcircuit can communicate and collaborate in our brains

temporal dynamics of a neuron time instead of frequency neuron, soma, dendritic trees, axonal trees, synapses, neurotransmitter, channels, spike-sudden voltage increase, action potential excitatory post-synaptic potentials inhibitory post-synaptic potentials

no synchronization, mixed digital and analog synapse as learning component

Spiking Neural P Systems

References

[1] Wolfgang Maass. Computing with Spikes. *Special Issue on Foundations of Information Processingof TELEMATIK*, 2002.