

Supervised spike-timing dependent plasticity: A convergence proof

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Abstract

How can an animal learn from experience? How can it train sensors, such as the auditory or tactile system, based on other sensory input like the visual system? “Supervised spike timing dependent plasticity” (supervised STDP) is a possible answer. Supervised STDP trains one modality using input from another one as “supervisor”. Quite complex time-dependent relationships between the senses can be learned. We now prove [1] that, under very general conditions, supervised STDP converges to stable synaptic weights leading to a reconstruction of primary sensory input.

[1] J.-M.P. Franosch & J.L. van Hemmen, TU Munich preprint (2007).