

Ústav aplikovanej informatiky FIIT STU
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Spoločný seminár Umelej inteligencie

Pozvánka

Vo štvrtok dňa 12. 2. 2009 o 14.00 hod. v zasadacej
miestnosti FIIT STU, blok D, druhé poschodie
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Doc. RNDr. Ľubice Beňuškovéj, CSc.
Department of Computer Science
University of Otago, Dunedin, New Zealand

How neurons learn: insights from computational models

Abstract

All of our cognitive functions, including our sense of identity, are underpinned by what we have learned and what we can remember. To understand learning and memory formation in the brain, it is necessary to study how neurons change their mutual connections in response to synaptic stimulation, i.e. phenomenon of synaptic plasticity. I will demonstrate the predictive power of computational modeling by presenting a novel model of heterosynaptic plasticity in the hippocampal dentate gyrus, which is the brain structure crucially involved in formation of long-term memories. This model combines computational properties of both metaplasticity and spike timing-dependent plasticity. As a result it can reproduce (1) homosynaptic long-term potentiation of the stimulated input, and (2) heterosynaptic long-term depression of the unstimulated input, as observed in real experiments.

Ján Šefránek

Vladimír Kvasnička