

Séminaire ETIS : Alexandre Pitti

07 Mai 2019, 11:00 – 12:00

Orateur

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Date et lieu

Mardi 7 mai 2019, 11h.

ENSEA Cergy, salle du conseil.

Résumé

Learning long-range sequences is still a difficult task in AI due to variability in inputs and intrinsic noise that degrade the predictability to a certain temporal horizon only. Several neural architectures have been proposed to overcome this issue such as the long-short-term memory networks (LSTM) that use a gating mechanism for updating memory units dynamically and to add some flexibility/stability.

Besides, the prefrontal cortex has evolved with some interesting mechanisms for learning sequences based on a gain-modulated mechanism that differs in several ways with the gating mechanism in LSTM. We introduce this learning mechanism in a novel gating spiking neural networks capable to learn underlying temporal structure of sequences in a compact way (population coding), to retrieve X% of hidden items in a sequence in the correct order, to generation new sequences from scratch based on a learnt grammar (compositionality).

We will discuss about a developmental neural architecture for learning-to-learn of memory sequences with less loss.