Keynote 1

Deep and compositional, or shallow and direct: two routes and one loop for a new approach to language understanding in conversation

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Abstract

Language understanding is a complex task, integrating different sources of information, from sounds and gestures to context. However, in spite of its complexity, this process is extremely fast and robust, performed in real-time during conversations. Many studies have shown that this robustness and efficiency are made possible by different mechanisms: the ability to predict, the possibility of directly accessing entire pieces of meaning and the possibility to perform a "good-enough" processing, sufficient to access the meaning. These mechanisms, by substituting to the classical incremental and compositional architecture, facilitate access to the meaning. However, existing models do not explain precisely when these facilitation mechanisms are triggered and whether they inhibit or on the contrary work in parallel with the standard ones.

I propose in this presentation a new model integrating both facilitation and standard mechanisms by revisiting the different stages of the processing: segmentation of the input, access to the corresponding meaning in long-term memory and integration to the interpretation under construction. This architecture is based on different features: unique representation of linguistic objects (independently from their granularities), control of memory access (in particular thanks to search space reduction) and multiple-level prediction. This neuro-cognitive model provides a new framework explaining how deep and shallow mechanisms of language processing can cohabit. It is also a good candidate for explaining different effects of mismatch observed at the brain level.