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Is Neurocomputational Self-Organization a Core Mechanism of AGI Systems?

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Abstract: Artificial General Intelligence (AGI) is a term that describes a variant of a Strong AI revival in the mind sciences. Irrespective of its definition limits, and leaving aside the non-scientific metaphysical or philosophical aspirations, AGI studies the feasibility and implementation aspects of artificial systems that would have the capacity of domain non-specific (domain-general) human-level intelligence.

The importance of self-organization in natural neural systems as well as in neuromimetic computational systems, especially the class of Self-Organizing Map (SOM) neural networks, has been extensively demonstrated and supported in the literature. Neurocomputational self-organization exhibits unique characteristics, including non-deterministic epigenetic (post-genetic) behavior, which enable direct functional and structural comparisons with the neocortex more than most existing relevant computational mechanisms. If the problem of artificial general intelligence is approached from a biologically relevant computational standpoint then SOM mechanisms are currently a very strong candidate as a core component of a computational AGI system.