Special Issue

Integrated Information Theory and Consciousness II

Message from the Guest Editor

IIT is unique in its methodology, mathematical model, theoretical framework, and philosophical perspective. For instance, methodologically, IIT starts from ‘axioms’ of consciousness and draws ‘postulates’ about physical substrates of consciousness. From these postulates, it suggests that a maximally integrated conceptual structure (MICS) generated by a system is a conscious experience. The □ value of MICS, which measures the irreducible causal power of a system as a whole, captures the levels of consciousness, and the ‘shape’ of MICS represented in multidimensional space specifies the qualities of consciousness. Since IIT directly identifies MICS with consciousness, everything that generates MICS is conscious. All these features raise some questions: Is such ‘phenomenology first’ well grounded? Is there any precise and efficient way to get around the computational burden in applying IIT to real biological systems? Further, is □ well defined enough to be generally applied to all physical systems? Is MICS-experience identification justifiable? Is there any problematic consequence of such an identification?

Guest Editor

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The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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