



symmetry

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Artificial Intelligence, Adaptation and Symmetry/Asymmetry

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Message from the Guest Editor

Dear Colleagues,

Since the Dartmouth Summer School in 1956, artificial intelligence has become one of the most active cross-discipline research areas, attracting mathematicians, physicists, logicians, biologists, and so on. In fact, the dream of humankind to explore the order of nature and the capability of man-made machines can even be traced back to thousands of years ago. Through this process, recognizing the intrinsic features or principles of real-world or artificial systems has been a key problem which is still far from being completely resolved.

Adaptation and symmetry are two critical features for understanding the order and evolution of complex systems. As such, some interesting problems can be raised: How can AI work better with adaptation? Can AI understand symmetry or nonsymmetry? Is it possible to construct AI with a symmetric structure or block for certain real problems? What can be expected if we regard a human as an AI agent or vice versa? Does the relationship between AI and humans exhibit some degree of symmetry? Can a process of adaptation be designed or fused into AI for discovering order-like symmetry...



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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