Special Issue

Symmetry and Asymmetry in Deep Learning for Computer Vision

Message from the Guest Editor

Deep learning has revolutionized computer vision, enabling machines to perceive, analyze, and understand visual data with unprecedented accuracy. Applications range from image classification, object detection, and scene segmentation to medical imaging, agriculture, industrial inspection, and autonomous systems. Despite this rapid progress, fundamental concepts such as symmetry and asymmetry—which are deeply rooted in mathematics, physics, and human perception—have not been thoroughly investigated in the context of deep learning for vision. Symmetry offers valuable insights into invariance, equivariance, and structural regularities, while asymmetry often provides essential cues for anomaly detection, irregular patterns, or directional features. This Special Issue aims to explore theoretical advances, methodological innovations, and practical applications that address the roles of symmetry and asymmetry in deep learning. It seeks to attract high-quality original research and review papers that expand our understanding of how these concepts can be leveraged to improve model robustness, interpretability, and efficiency. I look forward to receiving your contributions.

Guest Editor

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About the Journal

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.

Editor-in-Chief

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