Special Issue

Symmetry and Asymmetry in Computer Algorithms: Properties and Applications

Message from the Guest Editors

Symmetry and asymmetry are key concepts in the formulation, optimization, and practical deployment of modern computer algorithms. Symmetry can simplify computation, enable invariance-based reasoning, and improve effiffifficiency by exploiting structural regularities in data, models, or problem domains. Conversely, asymmetry introduces diversity, specialization, and adaptability—characteristics often required to address realistic settings where information, constraints, and environments are heterogeneous and dynamic. This Special Issue seeks contributions that explore both theoretical and practical perspectives on the use of symmetry and asymmetry in algorithmic research. In addition to fundamental studies, we particularly welcome works that demonstrate the practical impact of these concepts in solving real-world problems. Applications may span energy systems, healthcare, transportation, education, smart cities, robotics, cybersecurity, and large-scale data analysis. We are especially interested in contributions in machine learning and data mining that show how symmetry-aware or asymmetry-driven models and algorithms improve performance.....

Guest Editors

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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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