Special Issue

AI-Driven Optimization for EDA: Balancing Symmetry and Asymmetry

Message from the Guest Editors

The growing complexity of Electronic Design Automation (EDA) calls for intelligent, adaptive solutions. As AI-driven optimization methods—such as machine learning, deep learning, and metaheuristics—become integral to EDA workflows, the roles of symmetry and asymmetry in circuit structures and design processes have become increasingly relevant. Symmetry often underpins balanced circuit topologies and regular layouts, contributing to improved performance and manufacturability. In contrast, asymmetry arises naturally due to design constraints, parasitics, mismatches, or performance trade-offs, and, when properly exploited, can offer optimization advantages. This Special Issue aims to explore how understanding and leveraging symmetry and asymmetry can enhance AI-driven optimization techniques in EDA. We invite high-quality original research and review articles that address this interplay and contribute to smarter, more efficient electronic system design.

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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.

Editor-in-Chief

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