Special Issue

Machine Learning-Driven Modeling and Optimization in Structural Engineering

Message from the Guest Editors

This Special Issue of *Buildings*, titled “Machine Learning-Driven Modeling and Optimization in Structural Engineering”, will focus on the in-depth integration of machine learning with structural engineering. It will center fundamental modeling of structural mechanics, leveraging machine learning to enhance analytical accuracy. To improve durability and predict carbonation effects, it will explore the application value of intelligent algorithms. With green and low carbon as core goals, it will tap into the potential of machine learning in CO2 emission reduction pathways. Additionally, it will address structural design and optimization as well as structural engineering reliability analysis, helping to boost engineering design efficiency and safety performance. Altogether, this Special Issue aims to synthesize interdisciplinary research outcomes and provide innovative solutions for the intelligent and low-carbon development of structural engineering.

Guest Editors

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About the Journal

Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

Editor-in-Chief

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