

Advances in Optimization and Machine Learning in Indoor Environmental Quality and Energy in Buildings

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Message from the Guest Editors

Dear Colleagues,

This Special Issue aims at including works applying optimization and machine learning techniques in assessing indoor environmental quality and/or its relationship with building energy systems. The abovementioned techniques, coupled with Internet of Things sensors, can be utilized in real-time monitoring of various aspects related to indoor environment and energy in buildings, thus allowing for intelligent self-learning procedures towards design and operation optimization. Within this context, works investigating the development and application of optimization and machine learning techniques on indoor environmental quality and/or energy systems in buildings are of interest.

Techniques of interest include classical mathematical programming methods, AI-based techniques, deep learning models, surrogate models, derivative-free methods, etc.

Topics of interest include indoor environmental quality components, indoor environment sensors, ventilation, HVAC systems, building energy systems, energy performance of buildings, etc.

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Special Issue

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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.

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