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Artificial Intelligence and Buildings: Design, Analysis, and Construction

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Message from the Guest Editors

Dear Colleagues,

The integration of artificial intelligence (AI) into the building sector marks a revolutionary shift, promising to reshape traditional practices and unlock unparalleled opportunities for innovation and efficiency.

In the fields of architectural design and civil engineering, AI has already demonstrated remarkable impacts and potentials. For instance, AI-powered generative design algorithms entail employing evolutionary search or optimization techniques to achieve predefined objectives, enhancing creativity and resource utilization. Furthermore, AI algorithms can analyze data from sensors installed on buildings, predicting potential structural issues and allowing for timely repairs to prevent failures.

We cordially invite scholars worldwide to contribute to this Special Issue and share their innovative research and practical applications of AI in the building sector. We aim to foster a deeper understanding of AI's potential in architecture and civil engineering and propel the industry toward a more sustainable, efficient, and intelligent future.

Dr. Shi-Yu Xu
Dr. Dave T. F. Kuo
Guest Editors

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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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