Special Issue

Advancing Construction Management with BIM and AI Agent Technology

Message from the Guest Editors

This Special Issue of *Buildings* aims to foster academic dialog and innovation on focused topics surrounding the integration of building information modeling (BIM) and AI agent technologies using large language models (LLMs) and retrieval-augmented generation (RAG) to enhance construction and project management. As construction processes become increasingly complex and data driven, AI agents capable of autonomous reasoning and decision making can extend the potential of BIM by automating construction management, building operation and maintenance processes, and schedule and resource management. We invite original research, reviews, and case studies that demonstrate how BIM and AI agent integration can improve efficiency, quality, and decision making in construction. Topics may include energy and resource management, intelligent scheduling, rule-based quality checking, predictive maintenance, digital twin integration, generative AI design and human–AI collaboration in construction environments.

Guest Editors

Dr. Taewook Kang

Department of Future Technology and Convergence Research, Korea Institute of Civil Engineering and Building Technology (KICT), Goyang 10223, Republic of Korea

Dr. Soo-Young Moon

Department of Building Research, Korea Institute of Civil Engineering and Building Technology (KICT), Goyang 10223, Republic of Korea

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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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

Prof. Dr. David Arditi
Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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