

Special Issue

Generative AI and Computational Intelligence for Structural Engineering and Design Automation

Message from the Guest Editor

AI transforms structural engineering: ML enables prediction; GenAI (GANs, LLMs, agents) delivers generation, reasoning, design automation. Addressing optimization, uncertainty, multi-objective needs, this SI highlights AI's role in replacing/extending workflows across lifecycle, uniting academic-industry research AI, generative/computational optimization. Submissions invited (non-exhaustive):

- Generative AI: Form-finding, synthetic datasets, design exploration; LLMs/agents automated documentation, code compliance
- Computational Intelligence: Metaheuristics, multi-objective/surrogate-based optimization, ML-optimization workflows
- Structural Applications: AI-based analysis/uncertainty quantification, SHM/damage detection, digital twins, design automation
- Trustworthy AI: Explainability, AI design validation/reliability, ethical/regulatory considerations safety-critical systems

Significance: This issue links structural engineering to AI, showcases solutions, emphasizes accountability, fosters cross-field collaboration—accelerating automation in design/consulting firms.

Accepted Manuscripts: Original research, reviews, industry case studies, communications: all original, peer-reviewed.

Guest Editor

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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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manuscripts are peer-reviewed and a first decision is provided to authors approximately 15.1 days after submission; acceptance to publication is undertaken in 2.9 days (median values for papers published in this journal in the second half of 2025).