

## Special Issue

# Data-Enhanced Engineering Structural Integrity Assessment and Design

### Message from the Guest Editors

Engineering structures, such as construction, offshore platforms, machinery, and equipment, face significant challenges in maintaining structural integrity under complex and uncertain conditions. This Special Issue seeks to develop advanced structural integrity assessment and design strategies for complex engineering structures by integrating advanced computational techniques and real-world data. The specific objectives include, but are not limited to:

- Physics-informed machine learning;
- Multifidelity modeling and optimization;
- Uncertainty quantification and propagation;
- Generative design and data augmentation;
- Digital twin technology;
- AI-augmented multidisciplinary design optimization (MDO);
- Probabilistic design optimization;
- Topology optimization with machine learning;
- Real-time optimization using edge computing;
- Energy-efficient computational methods;
- Resilient infrastructure design;
- Surrogate-assisted optimization;
- Multi-objective optimization with explainable AI;
- Robust and adaptive algorithms for dynamic systems;
- Hybrid optimization frameworks for renewable energy systems.

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### Guest Editors

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### Deadline for manuscript submissions

closed (20 February 2026)



## Applied Sciences

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### Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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### Editor-in-Chief

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