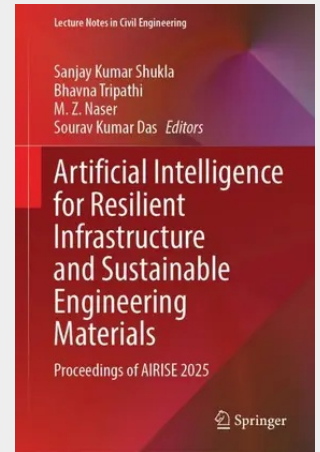


Artificial Intelligence for Resilient Infrastructure and Sustainable Engineering Materials

Proceedings of AIRISE 2025

This book presents selected proceedings from the International Conference on Artificial Intelligence for Resilient Infrastructure and Sustainable Building Materials (AIRISE 2025) and addresses the urgent need for resilient infrastructure. Current challenges such as resource scarcity and colossal carbon footprint demand innovative solutions in design and construction. Artificial Intelligence (AI) is a promising tool which can process large datasets, predict outcomes, and optimize solutions, enhancing infrastructure resilience. It aids in identification, predictive modelling, forecasting, and real-time monitoring, providing essential insights for damage detection, pattern recognition, and predictive maintenance. Developing sustainable construction materials in civil engineering is crucial to meet the demand for high-performance structures. Research in this area focuses on AI applications, such as artificial neural networks (ANNs) for concrete evaluation, deep learning models, and life cycle assessment (LCA) for a circular economy. AI-driven innovation in smart cities, metaheuristic techniques, and soft computing is increasingly essential for material testing, characterization, and waste utilization. Hence, this book volume explores the challenges of resilient infrastructure, examines AI's potential solutions, and explores real-world AI applications in design and construction.

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