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Preface

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Abstract: With the advancement of digital technologies and sustainable development goals, civil engineering is experiencing significant transformation toward intelligent, resilient, and low-carbon infrastructure systems. New approaches in structural design, construction methods, and materials engineering are improving safety, efficiency, and environmental performance in modern infrastructure. The integration of artificial intelligence, data-driven analysis, and smart sensing technologies further enhances construction management and lifecycle monitoring of civil systems. ACES 2025 provides an international platform for researchers, engineers, and industry professionals to share recent advances in advanced civil engineering. The symposium covers topics including smart construction, sustainable materials, infrastructure resilience, structural health monitoring, and urban engineering solutions. It aims to promote academic exchange, strengthen industry cooperation, and encourage innovative solutions to address global challenges in civil engineering.

Keywords: civil engineering; bridge and Tunnel Engineering; hydromechanics; data driven; advanced control theory and algorithms; modern infrastructure; interdisciplinary application; Intelligent Construction

1. Conference introduction

The Advanced Civil Engineering Symposium (ACES 2025) was successfully held from December 5 to 7, 2025, in Xiangtan, China. The symposium was organized to provide an academic platform for researchers, engineers, and industry professionals in the field of advanced civil engineering.

ACES 2025 featured 7 keynote speakers and 2 invited keynote speakers, who delivered presentations on recent advances in civil engineering theory, intelligent construction, sustainable materials, and infrastructure systems. In addition, approximately 20 workshops were organized, covering topics such as structural engineering, smart construction technologies, and urban infrastructure development. The symposium attracted active participation and promoted academic exchange among attendees from different institutions. ACES 2025 aimed to foster collaboration between academia and industry and to support innovation in modern civil engineering research and practice.

1.1. Scope of this conference and keynote talk list

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The scope of ACES 2025 includes, but is not limited to, the following areas, which reflect the latest developments and interdisciplinary integration in modern civil engineering, intelligent construction, and urban infrastructure systems:

- Civil Engineering
- Structural Engineering
- Geological Engineering
- Seismic Engineering
- Bridge and Tunnel Engineering
- Road Engineering and Transportation Systems
- Municipal Engineering
- Water Supply and Sewerage Engineering
- Hydromechanics
- Ocean and Port Engineering
- Disaster Prevention and Mitigation Engineering
- Construction Technology and Management
- Engineering Geology and Soil Mechanics
- Intelligent Construction
- Smart Buildings and Urban Infrastructure
- Smart Transportation and Intelligent Transportation Systems
- Internet of Things for Infrastructure Monitoring
- Computer Simulation and Data-driven Engineering Analysis
- Advanced Control Theory and Engineering Algorithms
- Smart Environment and Urban Monitoring
- Interdisciplinary Applications in Modern Infrastructure Systems

1.2. Peer review statement

All papers included in the proceedings of the Advanced Civil Engineering Symposium (ACES 2025), held from December 5 to 7, 2025, in Xiangtan, China, were presented at the symposium. By submitting this proceedings volume, the proceedings editors confirm that:

– The peer-review process was coordinated by the proceedings editors in accordance with established academic standards, ensuring fairness, rigor, and scientific integrity throughout the evaluation process. Appropriate measures were taken to maintain the quality and reliability of all published contributions.

– Each submission was reviewed by qualified expert referees, who provided independent, objective, and constructive evaluations to support the improvement of the manuscripts.

– The final acceptance or rejection decisions were made exclusively by the proceedings editors, based on the scientific merit, originality, and relevance of each paper to the scope and objectives of ACES 2025.

Proceedings editors:

Prof. Wenbing Wu, China University of Geosciences, China

Type of review: single-blind review

Number of submissions received: 36

Number of submissions accepted: 9
Number of reviews received: 72
Number of reviewers: 15
Average number of reviews per paper: 2

2. Organization

2.1. General Chair

Kai Qian, Guilin University of Technology, China
Wei Guo, Central South University, China
Liu Jin, Beijing University of Technology, China

2.2. Co-Chairs

Honggang Tang, Guizhou University, China
Yao Wu, Soochow University, China
Wei Xu, Kunming University of Science and Technology, China
Jun Wang, Wenzhou University, China
Xuanming Ding, Hunan Institute of Engineering, China

2.3. Conference committee

Technical Chairs
Dillip Kumar Das, University of KwaZulu- Natal, South Africa
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Zhen Guo, Zhejiang University, China
Peng Wang, Kunming University of Science and Technology, China
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Yulin Zhan, Southwest Jiaotong University, China
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Mengfu Wang, Hunan University, China
Marco Cimillo, Xi’ an Jiaotong-liverpool University, China
Hazem Samih Mohamed, Fujian Agriculture and Forestry University, China
Qiaoyun Wu, Wuhan Institute of Technology, China
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Li Zhou, Guizhou University, China
Samuel Li, Concordia University, Canada
Gao Ma, Hunan University, China
Zhiqi He, Southeast University, China
Junsheng Su, Tianjin University, China
Zhenhua Duan, Tongji University, China
Biao Li, Concordia University, Canada
Peng Wei, South China University of Technology, China
Guan Lin, Southern University of Science and Technology, China
Zhenyu Mei, Zhejiang University, China
Zhan Shu, Shanghai University, China
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Xiao Liu, Yunnan Design Institute Group, China
Dat Doan, Auckland University of Technology, New Zealand
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Yongchang Guo, Foshan University, China
Zhe Xiong, Guangdong University of Technology, China
Lin Chen, Chongqing University, China
Weihua, Fang, Ministry of Water Resources, China
Xiaolong Tong, Hunan Institute of Science and Technology, China
Fu Xu, Xiangtan University, China
Liqiang Jiang, Central South University, China
Zhongkai Huang, Tongji University, China

Bin Feng, Guangdong Mechanical & Electrical Polytechnic, Department of Logistics, China

Acknowledgments

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