

CALL FOR PAPERS — PE&RS SPECIAL ISSUE

Photogrammetric Engineering & Remote Sensing (PE&RS) Special Issue “3D Reconstruction and Applications of Urban Scenes”

With the advancement of smart city infrastructure and the rapid growth of low-altitude applications such as drone delivery, UAM (Urban Air Mobility), and urban monitoring, there is a growing demand for accurate, high-resolution, and semantically rich 3D models of complex urban environments. These models serve not only as digital twins of physical cities but also as foundations for intelligent urban governance, emergency response, infrastructure planning, and immersive visualization. Recent breakthroughs in photogrammetry, lidar, remote sensing, and computer vision have significantly enhanced our ability to capture and reconstruct urban scenes in both indoor and outdoor settings. However, transforming multi-source geospatial data into coherent, interpretable, and application-driven 3D models remains a major technical challenge. Bridging the gap between data acquisition and decision-making requires innovative solutions in 3D reconstruction algorithms, data fusion strategies, and application-oriented modeling techniques.

This special issue aims to showcase cutting-edge research in 3D reconstruction, scene understanding, and application-driven urban analysis, with a strong focus on real-world implementation in smart cities, digital twins, and low-altitude scenarios. Contributions that highlight novel methodologies, scalable processing pipelines, and cross-domain applications of 3D models are especially encouraged.

This special issue seeks to contribute to the evolution of geospatial intelligence by providing a platform for research that enhances both the structural fidelity and functional utility of urban 3D models. By advancing methods for scalable, interpretable, and integrative modeling, we aim to support next-generation applications in urban planning, infrastructure development, and intelligent city management.

Topics of interest include, but are not limited to:

1. 3D Structural Reconstruction of Indoor and Outdoor Urban Environments: Techniques for generating detailed, geometry-accurate models of building interiors and exteriors, including walls, rooms, furniture, and façade details.
2. Vegetation Modeling and Biophysical Parameter Estimation: High-resolution reconstruction of urban vegetation (trees, shrubs, green infrastructure) and estimation of structural or ecological parameters from lidar, imagery, or hyperspectral data.
3. 2D–3D Urban Scene Understanding and Semantic Interpretation: Scene parsing, segmentation, and classification using multimodal data for enhanced interpretation of urban space across scales.
4. Low-Altitude UAV Applications in 3D Urban Modeling: Utilization of unmanned aerial systems (UAS) for real-time 3D reconstruction, inspection, and navigation in complex city environments.
5. Applications of Photorealistic 3D Models (Reality Mesh Models): Urban planning, simulation, and visualization using high-fidelity models generated through photogrammetry or hybrid reconstruction pipelines.
6. Air-Ground Cooperative Sensing and Multi-Platform Data Fusion: Frameworks for coordinated urban data acquisition and modeling using aerial drones, ground robots, mobile mapping systems, and stationary sensors.

Important Dates

Submission system opening: July 01, 2025,

Submission system closing: December 31, 2026.

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