

CALL FOR PAPERS — PE&RS SPECIAL ISSUE

Photogrammetric Engineering & Remote Sensing (PE&RS) Special Issue “Lidar and Photogrammetry for Mining”

Scope and Topical Areas

Recent advancements in Lidar, photogrammetry, and geometric modeling are fundamentally reshaping engineering applications across the entire mining lifecycle. However, the application of these technologies in mining environments—both surface and underground—remains a frontier of immense challenges and opportunities. The mining industry presents some of the most demanding operational settings for 3D mapping technologies, where conditions such as dust, low light, repetitive geometric features, and the absence of GNSS signals pose extreme challenges to sensor performance and data processing algorithms.

This special issue aims to explore the emerging intersection between advanced geospatial sensing technologies and their application to solve critical problems in modern resource operations. While the value of high-density point clouds and photogrammetric models is well understood, their robust and autonomous implementation in geometrically complex and GNSS-denied settings is still an active area of research. By integrating multi-sensor systems and developing novel algorithms, researchers can enable precise deformation monitoring, automate geotechnical analysis, and provide robust navigation for autonomous systems, thereby driving significant improvements in safety, efficiency, and sustainability.

The goal of this proposed special issue is to highlight and advance research that pushes the boundaries of photogrammetry and Lidar in these extreme environments. We seek to showcase innovations in multi-sensor calibration, feature extraction in degraded visual environments, SLAM in texture-less spaces, and large-scale point cloud analytics. Contributions are expected to demonstrate not only applied solutions but also fundamental advancements in core disciplines that are directly transferable to other fields such as civil infrastructure, forestry, planetary exploration, and disaster management.

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Topics of Interest

Topics of interest focus on the integration of Lidar, photogrammetry, and advanced geometric processing for the mining industry. They include, but are not limited to:

Advanced 3D Mapping and Geotechnical Analysis:

- High-fidelity 3D reconstruction of complex subterranean excavations and open-pit environments.
- Advanced point cloud analytics for geotechnical assessments, including slope stability, rock mass characterization, and deformation monitoring.
- Novel methods for quantifying the effects of mining on the natural and built environment.

Autonomous Systems, Navigation, and Sensor Fusion:

- Robust localization, mapping, and navigation techniques for autonomous systems in GNSS-denied settings.
- Synergistic fusion of Lidar, photogrammetry, and inertial data for comprehensive environment perception.
- Calibration, registration, and data management strategies for multi-sensor systems and “big data” from life-of-mine surveys.

Sustainable Operations and Smart Technologies:

- Strategies for the sustainable and responsible extraction of mineral resources, promoting circular economy principles.
- Application of smart technologies and logistics to optimize transportation, mobility, and safety within mining operations.
- - Advanced approaches for the synergistic management of underground, surface, and above-ground resource exploration activities.

Important Dates

Manuscript Submission Deadline: May 28, 2026

Final Decisions Communicated: Aug 15, 2026

Final Manuscripts Due to Publisher: Sep 30, 2026

