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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on
“Digital Twin and Spatio-temporal Remote Sensing Analysis for Disaster Management”

Disaster management is a critical global challenge that requires innovative and efficient approaches to mitigate risks, respond effectively, and aid in recovery efforts. This special issue proposes to explore the convergence of Digital Twin technologies and Spatio-temporal Remote Sensing Analysis to enhance disaster management strategies. Digital Twins, virtual representations of physical entities, offer the potential to create dynamic simulations of disaster-prone regions, while Spatio-temporal Remote Sensing Analysis provides real-time and historical data to monitor, assess, and predict natural disasters. The special issue seeks to bring together cutting-edge research, methodologies, case studies, and practical applications that demonstrate how the fusion of these technologies can revolutionize disaster management, improve situational awareness and facilitate proactive decision-making.

The broad topics include (but are not limited to):

- Digital Twin Creation for Disaster-prone Areas: Development of Digital Twins to model geographical regions susceptible to natural disasters, including floods, wildfires, earthquakes, hurricanes, and landslides.
- Spatio-temporal Remote Sensing for Disaster Monitoring: Utilizing remote sensing data from satellites, drones, and other platforms to monitor and assess disaster events in real-time and over extended periods.
- Integrated Decision Support Systems: Design and implementation of decision support systems that combine Digital Twin simulations and spatio-temporal remote sensing data to aid disaster management agencies in planning and response activities.
- Predictive Modeling and Early Warning Systems: Leveraging Digital Twins and spatio-temporal analysis to create predictive models and early warning systems for disaster risk assessment and timely evacuation.
- Post-Disaster Damage Assessment: Employing Digital Twins and remote sensing data to assess and analyze the extent of damage caused by disasters, enabling rapid and accurate response and recovery efforts.
- Machine Learning for Disaster Management: Integrating machine learning algorithms with Digital Twins and remote sensing analysis for automated disaster detection, damage assessment, and decision-making.
- Multi-source Data Fusion: Techniques for integrating data from various remote sensing platforms and other sources with Digital Twins to create comprehensive disaster management models.
- Case Studies and Best Practices: Demonstrating successful implementations and applications of Digital Twin and spatio-temporal remote sensing analysis in disaster management scenarios worldwide.
- Ethical and Legal Considerations: Addressing ethical and legal aspects related to data privacy, ownership, and sharing in the context of Digital Twins and disaster management.

Schedule

1-August-2024, Submission system opening

31-March-2025, Submission system closing

Format

All submissions will be peer reviewed according to the IEEE Geoscience and Remote Sensing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on <http://mc.manuscriptcentral.com/jstars>, using the Manuscript Central interface and select the “**Digital Twin and Spatio-temporal remote sensing analysis for disaster management**” special issue manuscript type. Prospective authors should consult the site <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9082768> for guidelines and information on paper submission. All submissions must be formatted using the IEEE standard format (double column, single spaced). Please visit http://www.ieee.org/publications_standards/publications/authors/author_templates.html to download a template for transactions. Please note that since Jan. 1, 2024, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee \$1,496 per paper.

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