



CALL FOR PAPERS
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Special Issue on
“AI boosted Spatio-Temporal Sequence Prediction for Remote Sensing images and data”

Spatio-temporal sequence prediction, a crucial area for Remote Sensing image and data, has witnessed remarkable progress due to the advanced AI methodologies, e.g., environmental monitoring, disaster management, and urban planning. It is a challenging task with widespread applications in forecasting future values, behaviors, or events using historical observations from Remote Sensing tasks in both temporal and spatial dimensions. On the other hand, remote sensing data plays a pivotal role in this prediction, providing information on environmental changes, disasters, agriculture, and urban growth.

However, traditional methods struggle with the complexity and heterogeneity of remote sensing data, demanding advanced approaches that effectively learn from vast spatio-temporal data. Recent progress in AI and neural network architectures, particularly RNNs for temporal dependencies and CNNs for spatial patterns, shows promise in handling these complexities. Notably, RNNs excel in sequential data with hidden states capturing temporal dependencies. CNNs perform well in spatial pattern identification and feature extraction. By integrating these AI networks with traditional sequence prediction methods, spatio-temporal sequence complexities in Remote Sensing can be effectively addressed.

This special issue aims to bridge the gap between remote sensing and the spatio-temporal sequence prediction, by showcasing innovative research that harnesses the power of AI. We invite submissions that demonstrate novel AI architectures, techniques, networks and applications focused on predicting spatio-temporal phenomena using remote sensing image and data.

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

- Novel neural network architectures for spatio-temporal sequence prediction with remote sensing data.
- Efficient deep learning approaches tailored for handling large-scale and heterogeneous remote sensing datasets.
- Explainable and interpretable AI networks for predictions based on remote sensing image and data.
- Applications of remote sensing-enhanced neural network-based spatio-temporal sequence prediction.
- Multi-modal deep learning approaches that integrate remote sensing data with complementary sources for cross-modal spatio-temporal prediction.
- Transfer learning and domain adaptation techniques for improving prediction performance in remote sensing.
- Integration of attention mechanisms and memory networks for capturing long-term dependencies within remote sensing time series.
- Hybrid models that combine the strengths of AI networks and traditional time-series analysis methods, enriched with remote sensing data.

Schedule

Feb 1, 2024, Submission system opening

Aug 31, 2024, 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 “AI boosted Spatio-Temporal Sequence Prediction for Remote Sensing images and data” 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 as of Jan. 1, 2020, IEEE J-STARS has become a fully open-access journal charging a flat publication fee \$1,250 per paper.

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