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**IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing**  
**Special Issue on “AI for Remote Sensing”**

Artificial intelligence (AI) is rapidly being integrated into remote sensing science, bringing opportunities for the advancement of the field. However, it also has the potential to undermine the fundamental methods and expertise of remote sensing science, potentially overlooking the ability of traditional approaches in physical processes and mathematical derivation. Therefore, we emphasize the uniqueness and irreplaceability of remote sensing science in the AI era and advocate for the mutual benefits of integrating AI with remote sensing science, as well as the challenges and opportunities that this integration brings. We call for a balanced relationship between the two disciplines and stronger interdisciplinary collaboration. At the same time, over decades, the field of remote sensing science has accumulated a vast amount of knowledge, evidence, datasets, and methodologies, which we believe can also contribute to the development, innovation, benchmarking, and governance of AI.

This special issue aims to bring together cutting-edge research, innovative methodologies, and practical applications at the intersection of AI and remote sensing. Advanced AI methodologies (such as Self-supervised Learning, Task Transfer Transformers, Pulse Neural Networks) specifically tailored for remote sensing applications, interdisciplinary collaboration between AI and remote sensing communities, case studies and real-world applications demonstrating the transformative impact of AI in remote sensing are encouraged. Additionally, we welcome contributions that explore new remote sensing tasks (such as security-related monitoring, illegal activity detection, and real-time geospatial intelligence) and new remote sensing data, which open up novel avenues for AI-driven insights and applications in environmental monitoring, disaster response, and natural resource management.

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

- AI-driven techniques for remote sensing quantitative inversion theories, algorithms, architectures, and applications.
- Innovative AI methodologies, such as Self-supervised Learning, Task Transfer Transformers, Pulse Neural Networks, specifically tailored for remote sensing applications.
- Integration of AI with Internet of Things (IoT) and edge computing for real-time remote sensing.
- Ethical considerations and explainability of AI models in remote sensing.
- Reinforcement learning and generative models for remote sensing.
- New Earth observation data and AI-driven approaches for new remote sensing tasks, such as security-related monitoring, illegal activity detection, and real-time geospatial intelligence.
- Applications of advanced AI in Earth observation, including land use/land cover mapping, climate change analysis, and biodiversity monitoring, in disaster management, agriculture, forestry, urban planning, and more.
- AI technologies in remote sensing for animal abnormal states monitoring and behaviors analysis.
- Remote sensing data security protection, including real-time encryption collection, secure transmission, and data integrity protection, and more.

**Schedule**

March 1, 2025      Submission system opening  
December 31, 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 “AI for Remote Sensing” 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](http://www.ieee.org/publications_standards/publications/authors/author_templates.html) to download a template for transactions. Please note that since Jan. 1, 2025, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee \$1,800 per paper.

**Guest Editors**

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