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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing Special Issue on “Perception-Driven Enhancement and Detection Methods for Remote Sensing Images in Non-Ideal Environments”

Remote sensing technology plays a pivotal role in monitoring, analyzing, and understanding various aspects of our planet. However, non-ideal environments, such as those characterized by low light, heavy atmospheric interference (e.g., fog, haze, or rain), and dynamic conditions like rapid underwater changes, often degrade the quality of remote sensing images. Traditional image processing techniques struggle to provide reliable results in these situations, hindering accurate data interpretation and decision-making.

This special issue, "Perception-Driven Enhancement and Detection Methods for Remote Sensing Images in Non-Ideal Environments," seeks to address these challenges by exploring innovative, perception-driven approaches for image enhancement. By leveraging the human-like perception capabilities of advanced algorithms and artificial intelligence, the aim is to improve image clarity, contrast, and overall quality under adverse conditions. These new techniques will enhance the usability of remote sensing data for critical applications such as environmental monitoring, disaster response, agricultural management, and urban planning.

This special issue will bring together state-of-the-art research on perception-based image processing techniques designed to overcome the limitations of traditional methods, especially in challenging environmental conditions. By focusing on the synergy between perception-driven models and remote sensing, the issue aims to foster interdisciplinary collaboration and push the boundaries of image enhancement technology.

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

- Perception-driven algorithms for image enhancement in low-visibility conditions (haze, rain, underwater etc.)
- Multi-sensor fusion techniques integrating optical, infrared, and radar data to improve image clarity
- Deep learning models inspired by human visual perception for remote sensing image restoration
- Adaptive exposure correction and noise reduction for low-light remote sensing images
- Real-time image enhancement for dynamic, non-ideal environments
- AI-based methods for removing atmospheric interference in satellite and aerial imagery
- Perception-aware object detection and scene understanding in degraded remote sensing data
- Applications of perception-driven enhancement in environmental monitoring and disaster management

Schedule

| | |
|-------------------|---------------------------|
| May 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 “**Perception-Driven Enhancement and Detection Methods for Remote Sensing Images in Non-Ideal Environments**” 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, 2025, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee \$1,800 per paper.

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