



Remote Sensing

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# Artificial Intelligence Remote Sensing for Earth Observation

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Remote sensing imaging captures electromagnetic radiation across various wavelengths, producing multimodal images with rich information. Consequently, remote sensing images have a wide range of applications in Earth observation, including environmental monitoring, agriculture, urban planning, and geological exploration. The development of artificial intelligence (AI) presents both opportunities and challenges for remote sensing-based Earth observations. Over the past decade, researchers have observed significant advancements in remote sensing image processing techniques driven by deep learning.

This Reprint captures the latest advancements in AI-driven remote sensing image analysis, featuring 13 peer-reviewed articles that explore both established and emerging applications. It includes research on image segmentation, fusion techniques, and innovative uses of models like CLIP and VLMs in remote sensing contexts. This collection also highlights cutting-edge work in remote sensing-based visual question answering (VQA) and AI-enabled scientific discovery, reflecting the field's shift toward more intelligent, interpretable, and scalable solutions. By integrating state-of-the-art AI methods with domain-specific knowledge, this Reprint serves as a comprehensive resource for researchers and practitioners aiming to advance Earth observation technologies.

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