Advances in Imaging Technology and Data Analytics

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Abstract: *Imaging technology and data analytics play vital roles in satellite technology, offering unparalleled insights into the Earth's surface. This paper reviews the significant advancements in imaging technology and data analytics, emphasizing their impact, applications, challenges, and future prospects. Key topics include high-resolution, hyperspectral, thermal, and Synthetic Aperture Radar (SAR) imaging, along with technological innovations such as advances in sensor technology, miniaturization, optics, and materials. The integration of artificial intelligence (AI) and machine learning (ML) in data analytics has revolutionized the processing and interpretation of satellite imagery, enhancing applications in environmental monitoring, agriculture, urban planning, disaster management, and military operations. The paper also discusses the technical, ethical, and regulatory challenges faced by the field and explores emerging technologies and future research directions that promise to further advance satellite imaging and data analytics.*

Keywords: Imaging technology