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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing

Special Issue on "AI-Driven Remote Sensing Big Data Mining"

Along with the blooming proliferation of aeronautics and astronautics platforms with the ever-increasing remote sensors, humans have entered an era of remote sensing big data (RSBD). In this era, the real benefit is not related to the RSBD itself, but associated with data mining technologies that are capable of extracting image, information and knowledge from big data in a tolerable elapse time. To fully excavate the value of RSBD, we have to overcome three basic issues including large-scale image retrieval, efficient information extraction and change detection, and knowledge discovery. Although the rapid progress of AI promotes the practicability of massive computer vision methods, the overwhelming majority of existing AI-based methods (even the tuned methods for remote sensing) still can't well address RSBD mining because of the following main points: 1) interpreting one large remote sensing image as a whole is necessary to capture the global context, but challenging because remote sensing imagery has a well-known high-dimensional characteristic in terms of the width and height, and the spectral channel; 2) RSBD mining is, essentially, a weakly supervised learning problem as the crowd-sourced data labels may contain corrupted ones and the manually labeled data is incredibly limited compared with the RSBD; 3) knowledge discovery from RSBD is an incredibly complex task of multi-disciple involving knowledge engineering, natural language processing, machine learning, remote sensing, and so on. To boost the continuous development of RSBD mining, it needs to fully consider the intrinsic characteristics of RSBD and leverage the most recent development in the AI domain. This Special Issue aims to collect the most recent AI-driven research works related to various tasks in RSBD mining.

Topics for this special issue include, but are not limited to:

- Remote sensing big data mining-dedicated methods: large-scale image retrieval, efficient information extraction and change detection, and knowledge discovery.
- Deep hashing methods for oversized remote sensing image retrieval including uni-modal retrieval and cross-modal retrieval (e.g., image-sketch retrieval, image-text retrieval, and image-audio retrieval).
- Robust deep learning (e.g., error-tolerant deep learning, transferable deep learning, and evolutionary deep learning) for information extraction (e.g., semantic segmentation, object recognition, scene classification).
- Siamese deep learning for change detection (e.g., pixel-level change detection, object-level change detection, and scene-level change detection).
- Knowledge graph construction by interpreting remote sensing big data.
- Coupling analysis between remote sensing big data analysis and global issues (e.g., COVID-19, urban expansion, climate change, food security, and humanitarian aid).
- Mass storage system and high performance computing for remote sensing big data mining.

Schedule
May 1, 2021   Submission system opening
November 30, 2021   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-Driven Remote Sensing Big Data Mining"** 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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