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

**Special Issue on**
**"Lightweight Deep Learning Models for Earth Observation"**

The fast growth of remote sensing (RS) technologies has made Earth Observation (EO) step into a new era. Massive volumes of multimodal RS images with higher spatial resolution and more frequent temporal coverage have provided us valuable data resources for better understanding the planet we live in. These big EO data significantly facilitate the development of elaborate methodologies for achieving intelligent interpretation. Owing to the prominent capabilities of capturing high-level semantics, such as land-use or land-cover classes, deep learning has gained increased attention from many RS researchers and has been successfully applied on various areas including weather forecasting, disaster monitoring, urban planning, among others.

Unfortunately, such achievement cannot happen if the deep learning models are without massive amounts of parameters and complicated architectures. Although powerful calculation units, such as graphics processing units (GPU), have enabled the optimization of those models, the required exhausting computation has limited their deployments on the payloads carried by satellites or unmanned aerial vehicles (UAV). After all, some tasks such as disaster monitoring indeed require efficient responses after the intelligent interpretation of large-scale RS images based on deep learning models. Therefore, lightweight deep learning models can be more useful in those realistic scenarios when real-time imagery interpretation is needed.

However, simultaneously optimizing the architectures and preserving the prominent performances of deep learning models cause new technical challenges for researchers. To this end, the objective of this special issue is to provide a platform for researchers to share cutting-edge technologies in this field and to promote research and development activities in lightweight deep learning models and their applications of earth observation.

The broad topics include (but are not limited to):
- Lightweight models for resolution enhancement
- Lightweight models for scene classification
- Lightweight models for image segmentation
- Lightweight models for object detection
- Lightweight models for change detection
- Deep learning model compression methods
- Neural Architecture Search of lightweight models
- Earth observation with embedded edge devices

**Schedule**
September 1, 2022, Submission system opening
March 31, 2023, 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 "**Lightweight Deep Learning Models for Earth Observation**" 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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