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

Special Issue on
"GeoAI Trust, Safety and Security in Earth Observation Sciences"

GeoAI systems, including techniques and tools based on machine learning and deep learning, hold greater automation potential on a variety of Earth Observation (EO) Science challenges. Though, the current progress of GeoAI systems is lagging in key areas that are tempering its effectiveness in a variety of EO applications in support of decision making. This includes decision making challenges for high-consequence international agendas and safety critical missions. For example, few studies are advancing EO based models toward reliable and trustworthy results for monitoring targets and indicators for the UN sustainable developments goals. Additional key and neglected GeoAI focus areas with potential to revolutionize decision making with EO and machine learning can be mentioned. These range from understanding the vulnerabilities of models, to interpretability, to explainability, to transparency, to robustness, to geoprivacy and data bias, and finally cyber-attacks in GeoAI systems. Lack of publications in these key areas severely limits progress to achieving systems that are acceptable for impacting high-consequence international agendas and safety critical missions.

With this special issue, we seek to promote collaboration between GeoAI, machine learning, computer vision, social sciences, Geo-cyber and EO communities.

The broad topics include (but are not limited to):
- Transparency of machine learning in Earth observation
- Privacy and data bias in Earth sciences
- Safety in AI for remote sensing applications
- Explainability and Trustworthiness in Earth observation science
- Robustness and resilience of AI in Earth science challenges
- Spatial and temporal consistency of AI models in Earth observation
- Adversarial attacks in Earth observation
- Deception discernment and mitigation in GeoAI systems
- Machine learning vulnerabilities in Earth observation
- Accountability of deep learning methods in Earth observation
- Transferability of machine learning models
- Domain-awareness and interpretability of AI systems in remote sensing
- Threat anticipation and assessment with machine learning in Earth observation
- Governance and ethics of AI in Earth observation
- Uncertainty quantification of data and deep learning methods in Earth sciences

Schedule

March 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 "**GeoAI Trust, Safety and Security in Earth Observation Sciences**" 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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