GeoAI: Artificial Intelligence Techniques for Geographic Knowledge Discovery

Special Issue of International Journal of Geographical Information Science

Open Call for Submissions

The theme and scope
Novel Artificial Intelligence (AI) techniques are transforming a range of fields from computer vision and natural language processing to autonomous driving and healthcare. With the availability of heterogenous, high-resolution geographic data and high-performance computing, techniques such as deep learning are enabling the discovery of new geographic knowledge, providing fast and accurate object detection and inferences, and supporting the development of more intelligent geographic information systems (GIS). For example, recent studies have shown that AI techniques coupled with volunteered geographic information can accurately extract buildings from satellite images for humanitarian mapping. Machine learning and natural language processing are facilitating the extraction of geographic information from unstructured text data, such as news articles and Wikipedia pages. Semantic Web technologies, ontologies, and Linked Data are being employed to improve geographic information retrieval and to construct advanced geographic knowledge graphs for geo-enrichment. A combination of multiple techniques, also helps integrate autonomous vehicles with intelligent transport systems by incorporating real-time information gathered by traffic cameras and other sensors. There are many other potential applications of AI in geospatial research. This special issue aims to bring together the latest research on this exciting topic focusing on the interface on deductive and inductive techniques.

The special issue complements the 2017 ACM SIGSPATIAL Workshop on AI and Deep Learning for Geographic Knowledge Discovery ([https://udi.ornl.gov/geoai](https://udi.ornl.gov/geoai)) and the relevant special sessions in 2018 AAG Annual Meeting. However, submissions to the special issue are open to all interested authors regardless of their participations in the workshops.

Relevant Topics Include
- General AI techniques for geographic knowledge discovery
- Deep learning/machine learning for object recognition and geographic information extraction
- Geo-ontologies and knowledge graphs for geographic information retrieval and enrichment
- Geographic Linked Data and Geospatial Semantic Web for AI development and geographic knowledge discovery
- AI techniques for gazetteer construction and enrichment
- Deductive and Inductive methods for geographic knowledge discovery
- AI in autonomous transportation and high-precision maps
- High-Performance Computing (HPC) architecture for deep learning in geospatial domains
- Applications of machine learning and general AI in disaster response
- Social sensing and semantic signatures
- Generation of geospatial datasets and novel techniques to study data quality
Submission Procedure
The IJGIS special issue welcomes submissions from all scholars. Interested authors should first submit a short abstract (250 words) to Krzysztof Janowicz (janowicz@ucsb.edu) and Song Gao (song.gao@wisc.edu) before November 30th, 2017. All the guest editors will review the submitted abstracts and will evaluate whether the submissions fit the themes of this SI. Authors of abstracts with suitable topics will be invited to submit full manuscripts, while the invitation does not guarantee acceptance to the SI.

Full manuscripts, including any supporting materials, should be submitted using the journal's online Manuscript Central facility (http://mc.manuscriptcentral.com/ijgis) by April 30, 2018, and the authors should specify this SI as the target during their submission. Guideline for submission of full manuscripts can be found at: http://www.tandfonline.com/action/authorSubmission?journalCode=tgis20&page=instructions/.

The International Journal of Geographical Information Science considers all manuscripts on the strict condition that they have been submitted only to the International Journal of Geographical Information Science, that they have not been published already, nor are they under consideration for publication or in press elsewhere. Authors who fail to adhere to this condition will be charged with all costs that the International Journal of Geographical Information Science incurs for their papers, and their papers will not be published.

Important Dates
· Abstracts (no more than 250 words) Due: Nov. 30, 2017
· Decisions on abstracts: Jan. 5, 2018
· Full manuscripts Due: Apr. 30, 2018

Tentative schedule:
We expect initial editorial decisions to be made in July 2018, with manuscript revisions taking place over September and December 2018. Final decisions are expected in late March 2019. Accepted manuscripts will go online (including a DOI) within weeks after acceptance. We expect the special issue to be published in early July 2019.

Special Issue Guest Editors
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