

## Editorial

# Advanced Sensor Technologies in Geospatial Sciences and Engineering 2020

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Advanced sensor technologies in geospatial sciences and engineering research have contributed to (1) geographic mapping and (2) understanding the geological, ecological, hydrological, and environmental characteristics of Earth surfaces. Various studies on recent advances in sensor technology in geospatial sciences and engineering have been found in several special issues. In this special issue, a total of 19 original research articles addressing the advanced sensor technologies in the geospatial sciences and engineering have been published. The papers published in this special issue can be summarized as follows:

R. Han et al. in their paper entitled “Advantage of Combining OBIA and Classifier Ensemble Method for Very High-Resolution Satellite Imagery Classification” tested the feasibility of GF-1 and GF-2 very high-resolution imagery in urban land use and land cover classification using the random forest ensemble classifier with the object-based image analysis (OBIA) method.

Y. Shi et al. in their paper entitled “On Time-Series InSAR by SA-SVR Algorithm: Prediction and Analysis of Mining Subsidence” integrated the small baseline subset SAR interferometry (SBAS-InSAR) method into the simulated annealing support vector regression (SA-SVR) algorithm for mining subsidence prediction.

Y. Song et al. in their paper entitled “Hybrid PSO and Evolutionary Game Theory Protocol for Clustering and Routing in Wireless Sensor Network” proposed an efficient

method to optimize the selection and formation of clusters at the initial stage by using an improved protocol.

W. Zhu et al. in their paper entitled “Spatiotemporal Characterization of Land Subsidence in Guandu (China) Revealed by Multisensor InSAR Observations” investigated the time-series two-dimensional ground deformation in Guandu using the multisensor InSAR observation.

Y. O. Ouma et al. in their paper entitled “Modelling Reservoir Chlorophyll-*a*, TSS, and Turbidity Using Sentinel-2A MSI and Landsat-8 OLI Satellite Sensors with Empirical Multivariate Regression” demonstrated the effectiveness of Sentinel-2A/MSI (S2A) and Landsat-8/OLI (L8) satellite sensors for the estimation of Chl-*a*, turbidity, and TSS water quality parameters in a large reservoir (case 2 water body).

D. Ahn et al. in their paper entitled “Integrating Image and Network-Based Topological Data through Spatial Data Fusion for Indoor Location-Based Services” proposed a methodology for the data fusion of image and network-based topological data without undertaking data conversion, using a separate data model, or reference data.

M. Seo et al. in their paper entitled “Characteristics of the Reanalysis and Satellite-Based Surface Net Radiation Data in the Arctic” assessed the net radiation products over the Arctic using validation and intercomparison analyses.

D. G. Lee et al. in their paper entitled “Land Cover Classification Using SegNet with Slope, Aspect, and Multidirectional Shaded Relief Images Derived from Digital Surface

Model” proposed an efficient way to classify terrain features using a convolutional neural network- (CNN-) based SegNet model by utilizing 3D geospatial data including infrared (IR) orthoimages, digital surface model (DSM), and derived information.

W. Zhu et al. in their paper entitled “Pre- and Postcollapse Ground Deformation Revealed by SAR Interferometry: A Case Study of Foshan (China) Ground Collapse” investigated the ground deformation in the vicinity of the collapsed sinkhole in the Foshan collapse event using multitemporal SAR interferometry. A total of 55 C-band Sentinel-1A images were used for the study.

S. Lee and T. Kim in their paper entitled “Search Space Reduction for Determination of Earthquake Source Parameters Using PCA and  $k$ -Means Clustering” presented a new search space reduction algorithm based on machine learning techniques to determine the earthquake source parameters.

L. Fan et al. in their paper entitled “Adaptive Magnetic Anomaly Detection Method with Ensemble Empirical Mode Decomposition and Minimum Entropy Feature” proposed an adaptive method of magnetic anomaly detection (MAD) with ensemble empirical mode decomposition and minimum entropy (EEMD-ME) feature to improve the detection performance in the case of low SNR and the complex magnetic environment.

A. Chang et al. in their paper entitled “Measurement of Cotton Canopy Temperature Using Radiometric Thermal Sensor Mounted on the Unmanned Aerial Vehicle (UAV)” developed a UAV-based thermal system using a quadcopter platform and a radiometric thermal sensor.

F. Cui et al. in their paper entitled “Prediction Model of Thermal Thawing Sensibility and Thaw Depth for Permafrost Embankment along the Qinghai-Tibet Engineering Corridor Using MODIS Data” developed prediction models of permafrost thermal thawing sensibility and thaw depth by incorporating the MODIS and in situ soil temperature observation data to reveal the distribution law of permafrost thermal thawing sensibility and thaw depth caused by road construction in Qinghai-Tibet engineering corridor (QTEC).

A. R. Claridades and J. Lee in their paper entitled “Developing a Data Model of Indoor Points of Interest to Support Location-Based Services” proposed a spatial-temporal Indoor POI data model to provide direction for the establishment of indoor POI data and to address limitations in currently available data specifications.

S. Lee et al. in their paper entitled “Priority Analysis of Remote Sensing and Geospatial Information Techniques to Water-Related Disaster Damage Reduction for Inter-Korean Cooperation” identified remote sensing and GIS techniques that could be useful in reducing the damage caused by water-related disasters while considering inter-Korean relations and the disasters that occur in Democratic People's Republic of Korea.

J. Ning et al. in their paper entitled “An Improved Full-Aperture ScanSAR Imaging Method Integrating the MIAA Based Aperture Interpolation” proposed an improved algorithm based on the missing-data iterative adaptive approach (MIAA) effectively to suppress the spikes, which adversely

affect the ScanSAR-related applications, such as target detection and interferometry.

P. Liu et al. in their paper entitled “RS and GIS Supported Urban LULC and UHI Change Simulation and Assessment” designed a remote sensing-based framework that investigates and analyzes how the land use and land cover changes (LULCC) in the process of urbanization affected the thermal environment.

X. Wang and X. Wang in their paper entitled “Spatiotemporal Fusion of Remote Sensing Image Based on Deep Learning” proposed a residual convolution neural network to improve the accuracy of spatiotemporal fusion.

X. Zhu et al. in their paper entitled “Regional Patch Detection of Road Traffic Network” proposed a regional patch detection (RPD) analysis for the road traffic network (RTN) structure.

## Conflicts of Interest

The editors declare that they have no conflicts of interest regarding the publication of this special issue.

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