



77 Top Geospatial Trends to Watch in 2022

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89 In Memoriam — Friedrich Ackermann

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93 Spatiotemporal Temperature Fusion Based on a Deep Convolutional Network

Xuehan Wang, Zhenfeng Shao, Xiao Huang, and Deren Li

High-spatiotemporal-resolution land surface temperature (LST) images are essential in various fields of study. However, due to technical constraints, sensing systems have difficulty in providing LSTs with both high spatial and high temporal resolution. In this article, we propose a multi-scale spatiotemporal temperature-image fusion network (MSTTIFN) to generate high-spatial-resolution LST products.

103 Three-Dimensional Point Cloud Analysis for Building Seismic Damage Information

Fan Yang, Zhiwei Fan, Chao Wen, Xiaoshan Wang, Xiaoli Li, Zhiqiang Li, Xintao Wen, and Zhanyu Wei

This article presents a method of seismic damage information extraction using Terrestrial Laser Scanning data. This new method is based on principal component analysis calculating the local surface curvature of each point in the point cloud. Then use the nearest point angle algorithm, combined with the data features of the actual measured value to identify point cloud seismic information, and filter the points that tend to the plane by setting the threshold value.

113 Effectiveness of Deep Learning Trained on SynthCity Data for Urban Point-Cloud Classification

Steven Spiegel, Casey Shanks, and Jorge Chen

3D object recognition is one of the most popular areas of study in computer vision. Many of the more recent algorithms focus on indoor point clouds, classifying 3D geometric objects, and segmenting outdoor 3D scenes. One of the challenges of the classification pipeline is finding adequate and accurate training data. Hence, this article seeks to evaluate the accuracy of a synthetically generated data set called SynthCity, tested on two mobile laser-scan data sets.

121 Estimating the Aboveground Biomass of Urban Trees by Combining Optical and Lidar Data: A Case Study of Hengqin, Zhuhai, China

Linze Bai, Qimin Cheng, Yuxuan Shu, and Sihang Zhang

The aboveground biomass (AGB) of trees plays an important role in the urban ecological environment. Unlike forest biomass estimation, the estimation of AGB of urban trees is greatly influenced by human activities and has strong spatial heterogeneity. In this article, using Hengqin, China, as an example, we extract the tree area accurately and design a collaborative scheme of optical and lidar data.

129 Cloud Detection in ZY-3 Multi-Angle Remote Sensing Images

Haiyan Huang, Qimin Cheng, Yin Pan, Neema Nicodemus Lyimo, Hao Peng, and Gui Cheng

Cloud pollution on remote sensing images seriously affects the actual use rate of remote sensing images. Aiming at the lack of short-wave infrared and thermal infrared bands in ZY-3 high-resolution satellite images resulting in the poor detection effect, considering the obvious difference in geographic height between cloud and ground surface objects, this paper proposes a thick and thin cloud detection method combining spectral information and digital height model (DHM) based on multi-scale features-convolutional neural network (MF-CNN) model.

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