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Automatic Monitoring of Mines Mining based on Multitemporal Remote Sensing Image Change Detection

Chengyi Li

China University of Geosciences(Beijing), School of Earth Sciences and Resources, China (lcy@cugb.edu.cn)

For the country and human society, it is a very important and meaningful work to make the mines mining controlled and rationally. Otherwise, illegal mining and unreasonable abandonment will cause waste and loss of resources. With the features of convenient, cheap, and instantaneous, remote sensing technology makes it possible to automatic monitoring the mines mining in large-scale.

We proposed a mine mining change detection framework based on multitemporal remote sensing images. In this framework, the status of mine mining is divided into mining in progress and stopped mining. Based on the multitemporal GF-2 satellite data and the mines mining data from Beijing, China, we have built a mines mining change dataset(BJMMC dataset), which includes two types, from mining to mining, and from mining to discontinued mining. And then we implement a new type of semantic change detection based on convolutional neural networks (CNNs), which involves intuitively inserting semantics into the detected change regions.

We applied our method to the mining monitoring of the Beijing area in another year, and combined with GIS data and field work, the results show that our proposed monitoring method has outstanding performance on the BJMMC dataset.