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Binary Classification of Remote Sensing Images Using a CNN-based Learning

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Geospatial information often use spatial information and observation system for spatial data processing and analysis to meet the need of applications in different fields. Remote sensing is regarded as the main technique for acquiring a wide range of surface observation data, while Geodatabase integrates location and attribute data. In the face of big data satellite images and various types of geospatial data on the Internet, it is hard for users to analyze such huge images and data with great load. In order to effectively conduct image interpretation and earth observation applications, it is no longer possible to work in a traditional manner. In this study, we firstly integrate the remote sensing images and POI geospatial databases to automatically generate the huge remote sensing images that are necessary for the development of artificial intelligence technology.

The classification method has always been a typical research topic in the field of image recognition. From the early pixel-based and object-based classification, the classification method evolved to a scene-based process, which opened a new horizon for image recognition. The convolution neural network (CNN) in deep learning is popular for image recognition

We proposed a scene classification model of optical remote sensing based on convolution neural network (CNN). Four convolution layers, three maximum pooling layers and one full connection layer were designed in the model for binary scene classification. There were a total of 5,280 training images and a total of 4,000 test images. It was found that the accuracy of scene classification was 90.32%.