

hycnn

Experimental results related to the paper Spectral-Spatial Classification of Hyperspectral Images Based on Convolutional Neural Networks (under revision).

Abstract

Hyperspectral images contain a large amount of information that can be used to improve the classification accuracy. This information is both spatial and spectral. Recently, deep learning techniques based on Convolutional Neural Networks (CNN) have started to be used for classification of hyperspectral images. In this paper we propose a spectral-spatial classification scheme based on CNNs. The scheme comprises convolutional filters with several spectral components for processing the spectral information and a patch around each pixel to take the spatial information into account. To reduce the size of the filters, the dimensionality of the image is previously reduced using Principal Component Analysis (PCA). The accuracy results improve those of other schemes based on deep learning or CNNs, using a low number of training samples, similar to those used in the classical schemes based on Support Vector Machines (SVM).

The number of samples used in the experiments is the same as in the survey 2013 (PDF at univ-grenoble-alpes.fr). Results are also shown for 80% and 60% of available samples in the ground-truth, and for 200 samples per class.

Execution outputs for HYCNN:

For information see the README.txt files in the archives.

- University of Pavia samples and maps: [paviau_hycnn_output.zip](#)
- Pavia centre samples and maps: [pavia_centre_hycnn_output.zip](#)
- Indian pines samples and maps: [indian_pines_hycnn_output.zip](#)
- Salinas samples and maps: [salinas_hycnn_output.zip](#)

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