

Continual Learning Using Data Generation for Hyperspectral Remote Sensing Scene Classification

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Abstract : When providing a massive number of tasks successively to a deep learning process, a good performance of the model requires preserving the previous tasks data to retrain the model for each upcoming classification. Otherwise, the model performs poorly due to the catastrophic forgetting phenomenon. To overcome this shortcoming, we developed a successful continual learning deep model for remote sensing hyperspectral image regions classification. The proposed neural network architecture encapsulates two trainable subnetworks. The first module adapts its weights by minimizing the discrimination error between the land-cover classes during the new task learning, and the second module tries to learn how to replicate the data of the previous tasks by discovering the latent data structure of the new task dataset. We conduct experiments on HSI dataset Indian Pines. The results confirm the capability of the proposed method.

Keywords : continual learning, data reconstruction, remote sensing, hyperspectral image segmentation

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