

Satellite Imagery Classification Based on Deep Convolution Network

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Abstract : Satellite imagery classification is a challenging problem with many practical applications. In this paper, we designed a deep convolution neural network (DCNN) to classify the satellite imagery. The contributions of this paper are twofold — First, to cope with the large-scale variance in the satellite image, we introduced the inception module, which has multiple filters with different size at the same level, as the building block to build our DCNN model. Second, we proposed a genetic algorithm based method to efficiently search the best hyper-parameters of the DCNN in a large search space. The proposed method is evaluated on the benchmark database. The results of the proposed hyper-parameters search method show it will guide the search towards better regions of the parameter space. Based on the found hyper-parameters, we built our DCNN models, and evaluated its performance on satellite imagery classification, the results show the classification accuracy of proposed models outperform the state of the art method.

Keywords : satellite imagery classification, deep convolution network, genetic algorithm, hyper-parameter optimization

Conference Title : ICMLA 2016 : International Conference on Machine Learning and Applications

Conference Location : Copenhagen, Denmark

Conference Dates : June 27-28, 2016