Title:

Incremental Training of Deep Convolutional Neural Networks

Abstract:

We propose an incremental training method that partitions the original network into sub-networks, which are then gradually incorporated in the running network during the training process. To allow for a smooth dynamic growth of the network, we introduce a look-ahead initialization that outperforms the random initialization. We demonstrate that our incremental approach reaches the reference network baseline accuracy. Additionally, it allows to identify smaller partitions of the original state-of-the-art network, that deliver the same final accuracy, by using only a fraction of the global number of parameters. This allows for a potential speedup of the training time of several factors. We report training results on CIFAR-10 for ResNet and VGGNet.