Public Abstract

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Title:Performance Analysis of Mix-Kernel Convolutional Neural Network

Deep convolutional neural networks (DCNN) have achieved the state-of-the-art performance in a number of computer vision tasks in recent years, including object detection, classification and recognition. The DCNN is very computation-intensive, whose computational complexity can be controlled by a set of network configuration parameters. The relationship between the DCNN computational complexity and its classification accuracy has not been well understood. In this thesis, we aim to conduct a series of training-testing experiments with DCNN on benchmark datasets, such as MNIST and CIFAR-10, to characterize the complexity-accuracy behavior of DCNN. We demonstrate that, with proper configuration of the DCNN, we are able to significantly reduce the computational complexity of DCNN without much degradation on the classification accuracy. This provides important guidelines for practical implementation and use of DCNN.