

Abstract

A guiding principle in deep learning is that more data leads to better models. However, even when superclass information is available in a dataset, this extra information has often gone unused. In this paper, we investigate the use of two-level class hierarchies, composed of subclasses grouped under mutually disjoint superclasses. We introduce ReSGNet, a new model that takes advantage of superclass information during training and is based off of a residual neural network. We accomplish this by adding an auxiliary classifier that is trained on superclass information and utilize the feature maps from the auxiliary classifier to assist the main classifier in classifying the subclass. Additionally, we demonstrate that it is possible to add superclass information to an existing dataset and use the augmented dataset to achieve higher accuracy.