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Abstract

In this paper, we address on the deep face representation learning with imbalanced data. With large number of available face images of different people for training, Convolutional Neural Networks could learn deep face representation through classifying these people. However, uniformed distributed data for all people are hard to get. Some people come with more images but some come with less. In learning the deep face representation, the imbalanced images between people introduce the bias towards these people that have more images. Existing methods focus on the intra-class and inter-class variations but not well address the imbalanced data problem. To generate a robust and discriminative face representation for all people, we propose a center invariant loss which adds penalty to the differences between each center of classes. The center invariant loss could align the center of each person to the mean of all centers, which could force the deeply learned face features to have a good representation for all people with better generalization ability. Extensive experiments well demonstrate the effectiveness of the proposed approach. Many existing methods in learning deep face representation are further improved after adding the proposed center invariant loss.

Keywords: Face Recognition, Convolutional Neural Network, Center Invariant Loss