

A Survey of Pruning Methods for Efficient Person Re-identification Across Domains

Abstract

In recent times we are witnessing tremendous increase in deep learning architectures proposed for vision-based recognition such as person re-identification, in which people are identified with help of distributed shots on several cameras. This paper provides a survey of state-of-the-art pruning techniques that are suitable for compressing deep Siamese networks applied to person re-identification. The computational complexity of CNNs hinders the deployment of Deep Siamese networks on platforms with lesser resource, though they've improved accuracy, but cannot be used in applications with real time data constraints, and thus we can compress these without losing accuracy. There are various techniques which could be effective for the compression of the networks which are analysed and compared based on their strategy and pruning criterion, in different design scenarios fine-tuning networks by applying pruning methods for targeted applications. Pruning can drastically reduce the complexities in network according to experimental outcomes from Siamese networks with ResNet feature extractors and keeping track of good accuracy. This reduces the number of FLOPS required by ResNet feature extractor by half when dealing with large pre-training and fine-tuning datasets, while maintaining good accuracy. Pruning can improve the performance while training a larger CNNs than fine-tuning smaller ones.

Keywords: Deep Learning, Convolutional Neural Networks, Siamese Networks, Complexity, Pruning, Domain Adaptation, Person Re-identification.