

Dimensionality Reduction in Large Scale Image

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Abstract:

Large-scale image retrieval is one of the critical technological fields using Big Data effectively. Content-Based Image Retrieval (CBIR) has become the popular method, which detects and extracts visual features of image (global and local features) automatically by means of image processing and computer vision algorithm. In most of cases, a retrieval system extracts visual features of a query image, and then compare to a set of image features stored in the database. As result, a list of images having similar features with the query are shown to the user [1]. CBIR methods mainly include two key parts: feature extraction and similarity measures. Considering the rapid development of digital image intake equipment, the diversity and complexity of high resolution image content increases the size of image files and images databases. High dimension features are usually extracted to describe image content accurately, especially for large scale image retrieval system [2], where the number of features is large-scale as well. If these high-dimensional data are processed directly, this may lead to the “Curse of Dimensionality” phenomenon which cannot improve search algorithms performances. Dimensionality reduction is one of the effective methods used to overcome these problems [3]. The idea behind these approaches is that Image features are pre-processed by projecting the original data form high dimensional space to a lower dimensional one [4]. Therefore, dimensionality reduction methods play important and significant role to overcome the “Curse of Dimensionality.

Keywords:

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