A New Semantic Oriented Approach for Image Retrieval Using Low-level Image Features
By Amal Awad AlHabahbeh Aldajah
Supervised by Dr. Yousef Alqasrawi
Amman – Jordan
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Abstract

Due to the extensive spread of internet, social media, search engines, smart phones and image capturing devices, millions of digital images are generated every day, which implies an urgent need to an efficient approach for searching, browsing and retrieving relevant image from image collections in an easy, fast and effective way. Text-based Image retrieval techniques; using annotated images manually with keywords, captions, tags or description, cannot follow the rapid growth of available images anymore. Hence, with the appearance of Content-based Image Retrieval (CBIR), which is defined as a technique for searching and organizing digital images by their low-level features; like color, texture, shape instead of metadata. The problem with current CBIR systems is the semantic gap. That is, in CBIR techniques two images are considered similar based on their visual content meanwhile they are different in their semantic interpretation from user's perception. This problem is commonly known as semantic gap. However, simple low-level features are not efficient alone to do retrieval because of the semantic gap. Therefore, our motivation for this study is to propose three approaches that use simple low-level image feature extracted from image regions containing spatial information to represent image contents and enhance the performance of image retrieval. The first approach divides images into regions from which feature are extracted. The second approach excludes borders from images. In the third approach after excludes images borders, image divides into two halves. Spatial information considers pixel locations, which represent the semantic of image regions. Images will be partitioned into regions to get spatial information that contained in the image through the three approaches that mentioned above. Results obtained from experiments shows improvements on retrieval compared to baseline methods.