IMPLEMENTATION OF CONTENT BASED IMAGE RETRIEVAL WITH NORMALIZED INFORMATION DISTANCE

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Abstract

The main idea of the content-based image retrieval (CBIR) is to find the visual content of image directly. Typically, features such as color, shape, texture are extracted from every image and arranged in a feature vector. Retrieval is done with a query image as an input by the user and the measuring tool used to find the best matching results in a feature space.

This final project implements the measurement of image dissimilarities using the basic theory of normalized information distance (NID). The measuring tool of this NID based image retrieval system uses an approach of Kolmogorov complexity. Such an approach is made by using the GZIP compression techniques. NID distance calculation has two methods. They are by using simple NID and by using NID with interleaving. Our experiments used image dataset of the University of Washington and the SIVAL benchmark. The experiments showed that this approach is promising and appropriate for image retrieval system.

The main advantage of this method is that there is no feature extraction step needed. Therefore this method can be applied to any type of images.
Keywords: content based image retrieval, normalized information distance (NID), Kolmogorov Complexity, compression, normalized compression distance (NCD).