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Abstract

Image representation and ranking are crucial parts in image retrieval. These two steps are independently constructed in most retrieval models, but the compatibility between descriptors and ranking algorithms play an important role. Inspired by human vision perception and manifold learning, we propose a novel image retrieval framework in this paper. We first propose an image representation called texton uniform descriptor, and then illustrate the preservation of the intrinsic manifold structure through visualizing the distribution of image representations on the two-dimensional manifold. This characteristic provides the foundation for subsequent manifold-based ranking. To further improve the efficiency in image retrieval, we propose modified manifold ranking (MMR) which aims at selecting small-scale images randomly as landmarks to propagate adjacent similarity among images iteratively. The extensive experiments in four public datasets demonstrate that our framework has better performance than other state-of-the-art methods in image retrieval.

Keywords: image retrieval, texton uniform descriptor, modified manifold ranking, landmark

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