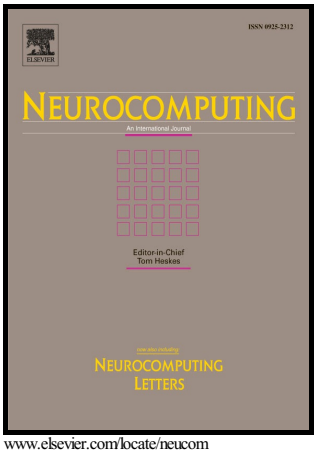

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HyperSSR: A Hypergraph Based Semi-supervised Ranking Method for Visual Search Reranking

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Abstract

Recently, considerable efforts have been made in visual search reranking towards refining initial text-based image search results. In this paper, we propose a hypergraph based semi-supervised ranking method called HyperSSR for image search reranking. According to the basic visual consistency principle that visually similar images should have similar ranking scores, we introduce the hypergraph to capture the intrinsic geometrical structure of the data distribution. To build a robust hypergraph, a novel hypergraph construction approach is developed to incorporate relevance and pseudo relevance degree information from labeled and unlabeled samples, respectively. Based on the premise that a ranking model should work better with the prior pairwise preferences, we jointly incorporate the hypergraph regularizer and the prior pairwise preferences information into a unified ranking learning framework. Experimental results on MSRA-MM 1.0 dataset suggest our proposed approach produces superior performances compared with several state-of-the-art methods.

Keywords: Image retrieval, visual search reranking, hypergraph, relevance degree, pseudo relevance degree, pairwise preference

1. Introduction

Over the past decades, web image retrieval [1] [2] [3] [4] [5] [6] has been an active and challenging research area with the amount of online images growing at an exponential rate. The common approach to retrieve intended images is implemented by extracting features from metadata associated with

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