

## ACM ICMR 2014 best papers in image retrieval

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The ACM International Conference on Multimedia Retrieval (ICMR) is the top multimedia retrieval conference worldwide. This year it was held in Glasgow, Scotland by the general chairs: Joemon Jose and Keith van Rijsbergen. It is my honor to present in this issue the extended versions of the best image retrieval papers which were selected on the basis of the evaluations from the program committee (special thanks to the program chairs: Mohan Kankanhalli, Stefan Rueger and R. Manmatha).

One of the grand challenges for multimedia information retrieval is automatic image annotation because it can provide a direct bridge over the semantic gap from low-level features to human level tags and annotations. The paper “A Sparse Kernel Relevance Model for Automatic Image Annotation” by Sean Moran and Victor Lavrenko introduces a new form of the Continuous Relevance Model which can perform adaptive kernel selection per feature type. Also, they describe two novel data-adaptive kernels which improve the modeling of image feature distributions. Their findings show that the adaptive kernel assignment can yield significantly higher annotation accuracy.

After the initial results have been found from an image retrieval query, a fundamental problem is to re-rank the images toward providing the user with more accurate and relevant results. The paper “Image re-ranking system based on frequent closed patterns” by Winn Voravuthikunchai, Bruno

Cremilleux and Frederic Jurie performs mining for closed frequent patterns under the hypothesis that non-relevant patterns will be more scattered than relevant ones. They describe a high-performance algorithm using multiple random projections which shows performance suitable for real-time searches.

When dealing with very large image collections and libraries, performance becomes increasingly important because users typically will not want to wait more than a few seconds for the results of a query. The paper “Indexing Heterogeneous Features with Superimages” by Qingjun Luo, Shiliang Zhang, Tiejun Huang, Wen Gao and Qi Tian introduces a novel approach toward representing the image collection where similar images are packed into superimages. The new representation improves efficiency in both memory costs and retrieval time.

Nearest neighbor graphs are frequently used in the retrieval community to represent similarity between items. The work “Improving the Quality of K-NN Graphs for Image Databases through Vector Sparsification” by Michael E. Houle, Xiguo Ma, Vincent Oria and Jichao Sun addresses the problem of improving the quality of K-NN graphs. Specifically, they introduce a new algorithm called NNF-Descent which is able to increase the semantic quality of the graph as measured by the proportion of semantically related images versus unrelated images in the set of neighbors.

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