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April 1, 2019

MO805: Topics on Information Retrieval – Content-Based Image Retrieval
$6^{th} Assignment$

1. **Consider the enclosed paper.**

   (a) **Paper Summary (What is the paper about? Please, be concise, 3 to 5 sentences)**

   The work presents a content-based image retrieval (CBIR) system. Specifically, they propose a new descriptor and matching method for an image, based on the colors of salient objects and their relationship inside and between the objects. The proposed method was compared with state-of-the-art methods and some conventional methods using two datasets (Corel-1k and Corel-10k). Likewise, four metrics were used to measure the performance of the proposed method, these are: ARR, ANMRR, MAP and P(10) [1]. Finally, The results show that the proposed method provides better performance during image retrieval process than conventional and previous methods based on color.

   (b) **Paper Strengths (Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc). For instance, a theoretical paper may need no experiments, while a paper with a new approach may require comparisons to existing methods)**

Methodology shows with clarity sequence of steps used to image retrieval.

Proposed method based on retrieval objects using spatial distributions of colors in the salient regions provide better results during image retrieval of compared to previous methods based on color. To measure recovery performance objectively, four performance measures are used: ARR, ANMRR, MAP and P(10)[1].

(c) Paper Weaknesses (Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty ? given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error. Also remember that theoretical results/ideas are essential to the conference (some theoretical papers may not need to have experiments). If the theory is novel and interesting, but the results did not outperform other existing algorithms, it is not necessarily a reason for rejection. It is not appropriate to ask for comparisons with unpublished papers and papers published after the conference deadline. In all cases, please be polite and constructive

Although experiments were performed on standard data sets (Corel-1k and Corel-10k), the method propoused was compared with conventional methods that are not very novel [2] (2008) and [3] (2010). There is a need to perform experiments using the bag-of-feature (BOF) approach. Although in the paper it was mentioned that this method was not used because it requires more calculation time; as indicated by [4], because using clustering algorithms like k-means requires a very high calculation time. However, there are other publications that use scale invariant feature transform (SIFT) [5], local binary pattern (LBP) [6] or SURF [7] as an alternative and obtain high results. For example: Yuan et al. [8] proposded a image retrieval system based on bag-

of-features (bof) model by integrating SIFT and LBP. Yuan et al. [8]'s experiments was performed on Corel-1k dataset, and obtain results similar to those presented by the analyzed paper. Therefore, the analyzed paper does not present novel results.

(d) Rationale for the Recommendation (Please indicate to the ACs and the authors your opinion on the paper. Please tell the ACs what points you think have the most weight in your review and why)

This paper states that propoused method is the-state-of-the-art but you compare your results with conventional methods based on color.
This area is constantly changing, for example the-state-of-art in image retrieval is now the models known as bag-of-feature. Why are the results obtained compared against conventional and previous methods based on color? There are no more current models that solve the problem combine bof with histograms?
However, the proposed method based on retrieval objects using spatial distributions of colors in the salient regions seems promising. I recommend combining your technique with the bag-of-feature model to improve your results. There is a conference in a few months and it would be interesting to propose this new method.

(e) Recommendation * (visible to author during feedback, visible to author after notification, visible to other reviewer, visible to meta-reviewer)
(✓) Probable Reject

References

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[3] S. Kiranyaz, M. Birinci, and M. Gabbouj, "Perceptual color descriptor based on spatial distribution: A top-down approach," *Image and Vision Computing*, vol. 28, no. 8, pp. 1309–1326, 2010.

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[5] D. G. Lowe, "Distinctive image features from scale-invariant keypoints," *International journal of computer vision*, vol. 60, no. 2, pp. 91–110, 2004.

[6] T. Ojala, M. Pietikäinen, and T. Mäenpää, "Multiresolution gray-scale and rotation invariant texture classification with local binary patterns," *IEEE Transactions on Pattern Analysis & Machine Intelligence*, no. 7, pp. 971–987, 2002.

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[8] X. Yuan, J. Yu, Z. Qin, and T. Wan, "A sift-lbp image retrieval model based on bag of features," in *IEEE international conference on image processing*, 2011, pp. 1061–1064.