Abstract

Medical image retrieval to search for clinically relevant and visually similar images depicting suspicious lesions have been attracting research interest. Content-based image retrieval (CBIR) is an important alternate and complement to traditional text-based retrieval using keywords. We have implemented CBIR system based on effective use of texture information within the images obtained by statistical cooccurrence matrix method. Also, the method is improved by bridging the semantic gap between low-level visual features and the high-level semantic concepts using automated image annotations. In this paper, we have proposed a classification-based multi-class multi-label semantic model and the corresponding learning procedure to address the problem of automatic image annotation using J48 decision tree classifier and show its application to medical image retrieval. Hash structure is used to index images. Euclidean distance measure is used for similarity measurement. Both the methods are compared using precision and recall measures. Semantic indexing is shown to outperform CBIR for MR-T2 axial brain images.

References
Automated Image Annotation for Semantic Indexing and Retrieval of Medical Images

- Rong Jin Joyce Y and Chai Luo Si, Effective Automatic Image Annotation Via A Coherent Language Model and Active Learning, MM04, October 10-16, 2004, New York, USA, ACM 1-58113-000-0/00/0004.
- Bai Xing-li, Qian Xu, Medical Image Classification based on Fuzzy Support Vector
Automated Image Annotation for Semantic Indexing and Retrieval of Medical Images

- Bai Xingli, Tian Zhengjun, Medical Images Classification Based on Least Square Support Vector Machines, 978-1-4244-4507-3 2009 IEEE.
- Jan Larsen, Lars Nonboe Andersen, Mads Hintx-Madsen and Lars Kai Hansen, Design of Robust Neural Network Classifiers, 0-78034428-6198, 1998 IEEE.
- Qiang Ye, Paul W. Munro, Improving a Neural Network Classifier Ensemble with Multi-Task Learning, 2006 International Joint Conference on Neural Networks Sheraton Vancouver Wall Centre Hotel, Vancouver, BC, Canada July 16-21, 2006.
- Jiang Yun, Li Zhanhuai, Wang Yong and Zhang Longbo, A Better Classifier Based on Rough Set and Neural Network for Medical Images, Sixth IEEE International Conference on Data Mining - Workshops (ICDMW&apos;06) 0-7695-2702-7 2006 IEEE.
- Boaz Lerner and Roy Malka, Learning Bayesian Networks for Cytogenetic Image Classification, 18th Int. Conf. on Pattern Recognition (ICPR&apos;06) 0-7695-2521-0/06 2006 IEEE.
Automated Image Annotation for Semantic Indexing and Retrieval of Medical Images

(IJAIA), Vol. 1, No. 4, October 2010.
- Anil Rajput et al., Approaches of Classification to Policy of Analysis of Medical Data, IJCSNS International Journal of Computer Science and Network Security, VOL. 9 No. 11, November 2009.
- Wei Li and Maosong Sun, Multi-modal Multi-label Semantic Indexing of Images using Unlabeled Data, Int. Conf. on Advanced Language Processing and Video Technology, 978-0-7695-3273-8/08 2008 IEEE.

Index Terms

Computer Science Medical Applications

Keywords

Cooccurrence matrix Decision tree classifier Semantic indexing ifx