

COMPUTER SCIENCE SEMINAR SERIES

Department of Computer Science
City University of Hong Kong

Image Categorization with Spatial Mismatch Kernels

Mr LU Zhiwu
PhD Student

Department of Computer Science
City University of Hong Kong

Date :

25 August 2009 (Tuesday)

Time :

10:30am - 11:00am

Venue

AIMtech Centre Conference Room, MMW4415, 4th Floor, Mong Man Wai Building,
City University of Hong Kong, Tat Chee Avenue, Kowloon Tong

Abstract

This paper presents a new class of 2D string kernels, called spatial mismatch kernels, for use with support vector machine (SVM) in a discriminative approach to the image categorization problem. We first represent images as 2D sequences of those visual keywords obtained by clustering all the blocks that we divide images into on a regular grid. Through decomposing each 2D sequence into two parallel 1D sequences (i.e. the row-wise and column-wise ones), our spatial mismatch kernels can then measure 2D sequence similarity based on shared occurrences of k-length 1D subsequences, counted with up to m mismatches. While those bag-of-words methods ignore the spatial structure of an image, our spatial mismatch kernels can capture the spatial dependencies across visual keywords within the image. Experiments on the natural and histological image databases then demonstrate that our spatial mismatch kernel methods can achieve superior results.

This paper was presented in the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR 2009), Florida, USA, June 20-25, 2009.

Supervisor: Prof Horace Ip

Research Interest: Machine Learning, Multimedia Content Analysis and Retrieval, Computer Vision

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All are welcome!

In case of questions, please contact Prof Horace Ip at Tel: 2788 8641, E-mail: cship@cityu.edu.hk, or visit the CS Departmental Seminar Web at <http://www.cs.cityu.edu.hk/>.