

## COMPUTER SCIENCE COLLOQUIUM

Department of Computer Science  
City University of Hong Kong  
and  
Hong Kong Web Society

### Structure-based Multivariate Time Series Clustering

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**Date :**

26 May 2008 (Monday)

**Time :**

2:30pm - 3:30pm (Refreshment will be served at 2:15pm)

**Venue :**

CS Seminar Room, Rm Y6405, 6th Floor Yellow Zone, Academic Building,  
City University of Hong Kong, Tat Chee Avenue, Kowloon Tong.

#### Abstract

In this talk, we will discuss a new method for clustering multivariate time series based on global data structure. A univariate time series can be represented by a fixed-length vector whose components are statistical features of the time series, capturing the global structure. These descriptive vectors, one for each component of the multivariate time series, are concatenated, before being clustered using a standard fast clustering algorithm such as k-means or hierarchical clustering. Such statistical feature extraction also serves as a dimension-reduction procedure for multivariate time series. We demonstrate the effectiveness and simplicity of our proposed method by clustering human motion sequences: dynamic and high-dimensional multivariate time series. The proposed method based on univariate time series structure and statistical metrics provides a novel, yet simple and flexible way to cluster multivariate time series data efficiently with promising accuracy. The success of our method on the empirical study suggests that clustering can be a valuable addition to the tools available for human motion pattern recognition research.

#### Biography

Xiaozhe (Catherine) Wang is a research fellow in Computer Science and Software Engineering Department, University of Melbourne, Australia. She got B.Sc., M.Bsys. and Ph.D. in three different disciplines. While and after these studies, Catherine worked for more than six organizations in both academia and industry. She is the winner of the Mollie Holman Doctoral Medal for Best PhD Thesis, and a recipient of the Monash Postgraduate Publication Award. Her research interests include algorithms and their applications (in data mining, Pattern Recognition in computer vision & image/video processing, and Epidemiology and Bioinformatics). More details about her can be found from: <http://www.cs.mu.oz.au/~catwang/>

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*In case of questions, please contact Prof Qing Li at Tel: 2788 9695, E-mail: [itqli@cityu.edu.hk](mailto:itqli@cityu.edu.hk),  
or visit the CS Departmental Seminar Web at <http://www.cs.cityu.edu.hk/>.*