conferenceseries.com

Global Congress on

Tissue Engineering, Regenerative & Precision Medicine

December 1-2, 2016 | San Antonio, USA

Co-clustering of multidimensional big data with biomedical applications

Hong Yan University of Hong Kong, Hong Kong

In many biomedical applications, such as gene expression data analysis, we are interested in coherent patterns that consist of subsets of features and subsets of samples. To extract these patterns, we need clustering analysis in both feature and sample directions simultaneously using a biclustering method for two-dimensional (2D) data. When this process extends to three-dimensional (3D) data, we then need to perform triclustering. Biclustering and triclustering are examples of co-clustering, and they are naturally more complicated than the traditionally used clustering procedures. Recently, our research group has developed an effective co-clustering method for coherent pattern detection in multidimensional big data based on hyperplane detection in singular vector spaces. In our method, each subset of coherent features or samples corresponds to a linear structure after spectral decomposition of the input data. We have applied the method to gene expression data analysis and lung cancer drug effectiveness assessment with good results. The coherent patterns extracted in these applications are useful for Biomolecular data analysis, disease diagnosis and personalized treatment planning.

Biography

Hong Yan received his PhD degree from Yale University. He was Professor of Imaging Science at the University of Sydney and is currently Professor of Computer Engineering at City University of Hong Kong. His research interests include image processing, pattern recognition and Bioinformatics, and he has over 300 journal and conference publications in these areas. He is an IAPR Fellow and an IEEE Fellow. He was a Distinguished Lecturer of IEEE SMC Society during 2000 to 2015. He received the 2016 Norbert Wiener Award from IEEE SMC Society for contributions to image and bimolecular pattern recognition techniques.

h.yan@cityu.edu.hk

Notes: