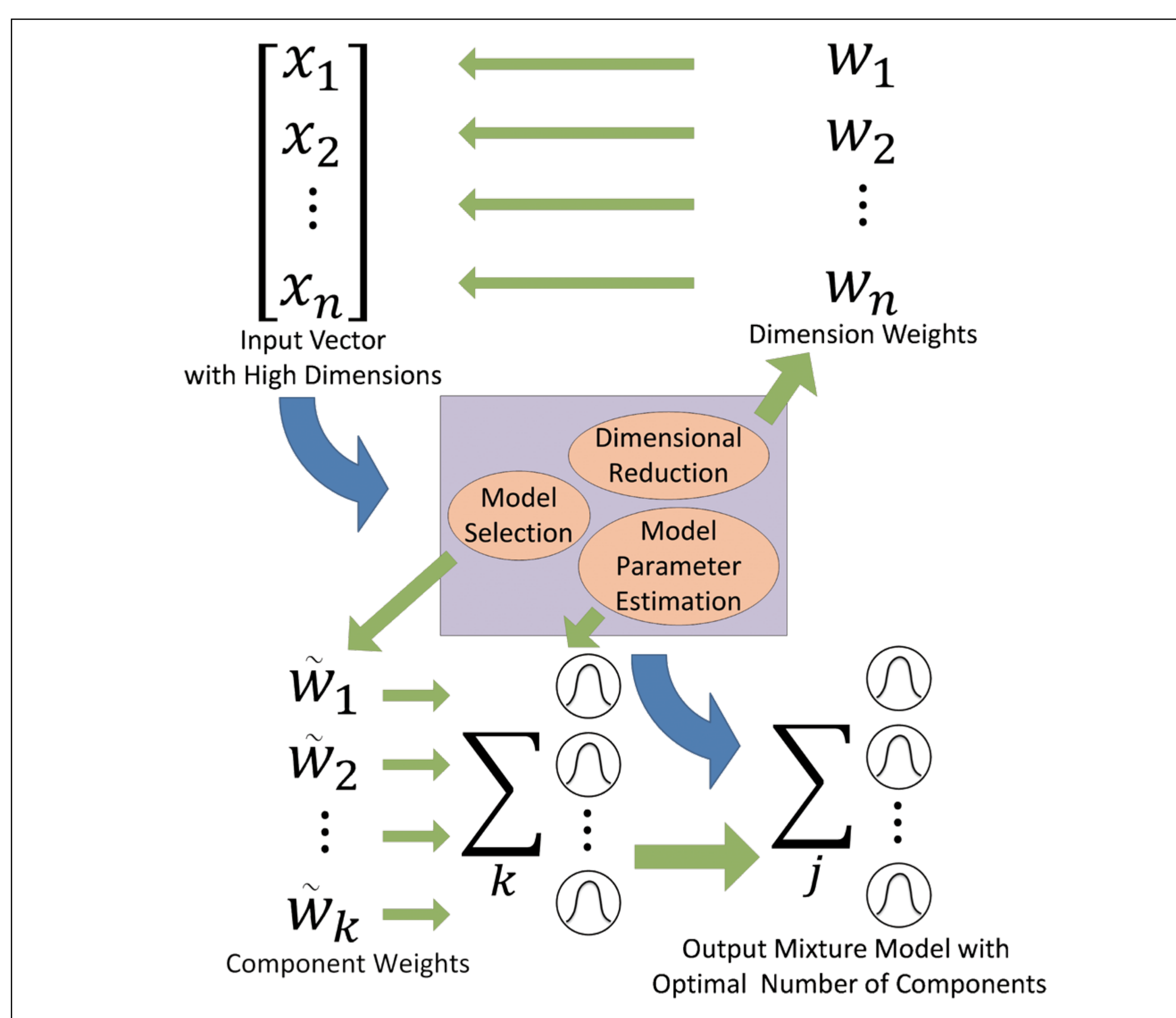


HIGHLIGHTS

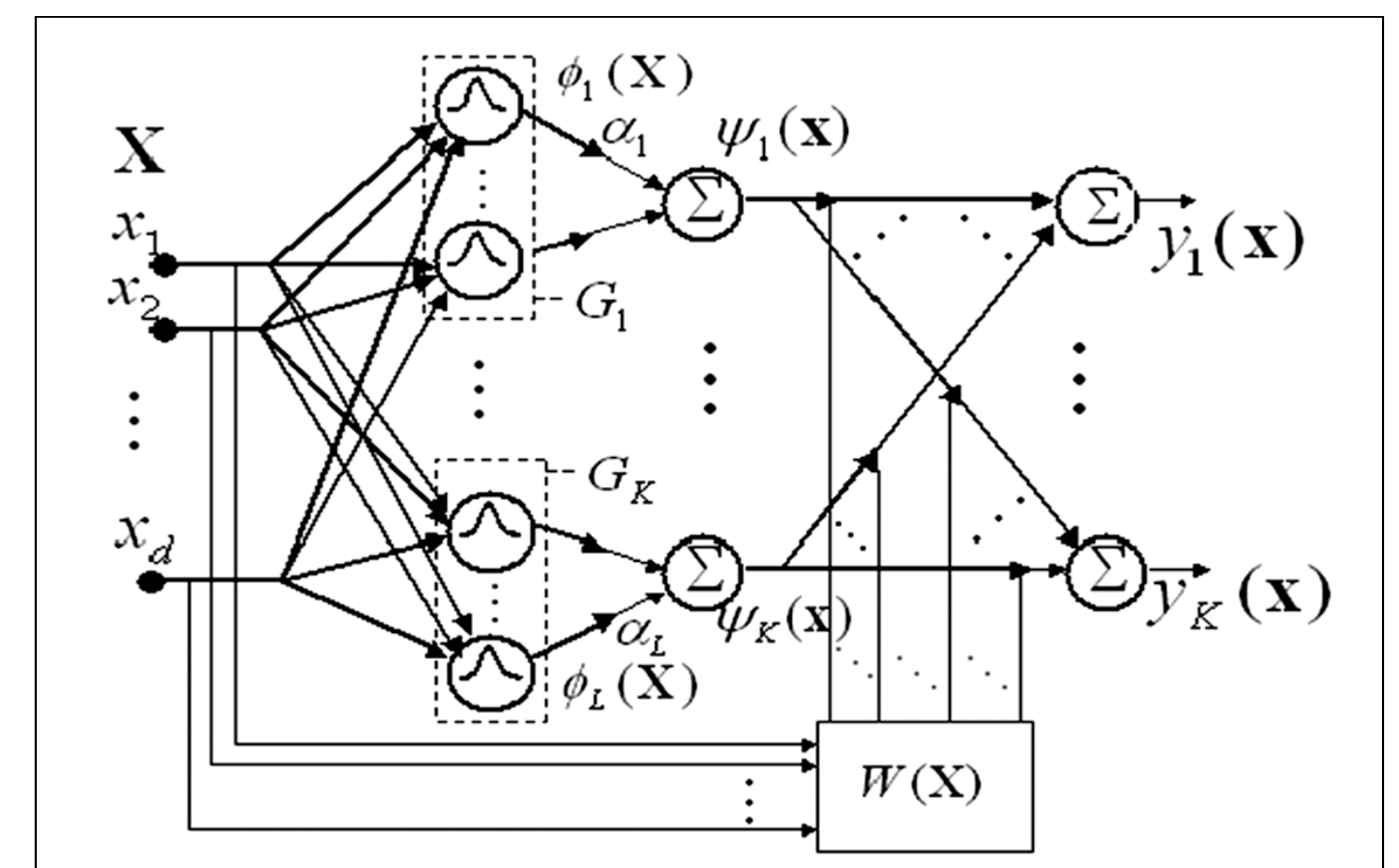
A single learning paradigm for three tasks in high-dimensional data clustering analysis:

1. Dimensional Reduction
2. Model Selection
3. Model Parameter Estimation



APPLICATIONS

1. Identification of Chinese Herbal Species, Origins and Growth Mode (Supported by GRFs: HKBU 22156/04E & HKBU 210306)



The Architecture of LGM-RBF Network

Round	L	N _{iter}	E _{mean}	Err _{train}	Err _{test}
1	122	213	0.0499	0	0
2	113	221	0.0499	0	0.0287
3	120	203	0.0499	0	0.0230
4	119	176	0.0500	0	0.0287
5	106	225	0.0498	0	0.0402

The Results on the Danshen IRS Fingerprints

RESEARCH GRANTS IN THE CAPACITY OF PI

- ◆ 3 GRF Projects (funding amount: over 1 Million)
- ◆ 11 FRG Grants from HKBU (funding amount: over 1 Million)

RESEARCH OUTPUTS IN RECENT 5 YEARS

- ◆ 28 refereed journal articles, including 12 IEEE Transactions like PAMI, TIP, TKDE, TNN, etc.
- ◆ 36 refereed international conference papers, including ICIP, ICPR, ICASSP, ICDM, etc.
- ◆ An Infrared-Spectrum Based Recognition System for Identifying Chinese Herbal Species, Origins and Growth Mode with High-recognition Rate (Patent Number: 200810005068.3, issued by the State Intellectual Property Office of P.R. China)

SELECTED PUBLICATIONS

1. H. Zeng and Y. M. Cheung, "Feature Selection and Kernel Learning for Local Learning Based Clustering", IEEE Transactions on Pattern Analysis and Machine Intelligence, in press.
2. H. Zeng and Y. M. Cheung, "Semi-supervised Maximum Margin Clustering with Pairwise Constraints", IEEE Transactions on Knowledge and Data Engineering, in press.
3. Y.M. Cheung and H. Zeng, "Local Kernel Regression Score for Selecting Features of High-dimensional Data", IEEE Transactions on Knowledge and Data Engineering, Vol. 21, No. 12, pp. 1798-1802, 2009.
4. H. Zeng and Y.M. Cheung, "A New Feature Selection Method for Gaussian Mixture Clustering", Pattern Recognition, Vol. 42, Number 2, pp. 243-250, February, 2009.
5. Y.M. Cheung and L.T. Law, "Rival-model Penalized Self-Organizing Map", IEEE Transactions on Neural Networks, Vol. 18, No. 1, pp. 289-295, 2007.
6. Y.M. Cheung, "Maximum Weighted Likelihood via Rival Penalized EM for Density Mixture Clustering with Automatic Model Selection", IEEE Transactions on Knowledge and Data Engineering, Vol. 17, No. 6, pp. 750-761, 2005.
7. Y.M. Cheung, "On Rival Penalization Controlled Competitive Learning for Clustering with Automatic Cluster Number Selection", IEEE Transactions on Knowledge and Data Engineering, Vol. 17, No. 11, pp. 1583-1588, 2005.

2. Off-line Text-independent Writer Identification of Handwriting Document Using Non-separable Wavelet Transform (Supported by GRF: HKBU 210309)

