Nonlinear Multivariate Analysis with Batch-Learning Self-Organizing Map Associate Professor Makoto Kinouchi



Batch-Learning Self-Organizing Map (Nonlinear).

Gene classification by codon usage.

Content:

Multivariate analysis methods such as factor corresponding analysis and principal component analysis (PCA) have been successfully used. However, clustering powers of the conventional multivariate analysis methods become rather poor when a large amount of data are analyzed. We introduce a novel neural-network algorithm with high clustering power, a self-organizing map (SOM). The unsupervised neural network algorithm is an effective tool for clustering and visualizing high-dimensional data; it converts complex nonlinear relations among high-dimensional data into simple geometric relations that can be viewed in two dimensions. This method can be used to identify categories from raw data with a high clustering power and trace factors reflected in individual categories. On the basis of batch-learning, we modified the conventional SOM to make the learning process and resulting map independent of the order of data input.

Yamagata University Graduate School of Science and Engineering Research Interest : Bioinformatics

E-mail : kinouchi@yz.yamagata-u.ac.jp Tel : +81-238-26-3363 Fax : +81-238-26-3363



HP : http://ei4web.yz.yamagata-u.ac.jp/~kinouchi/