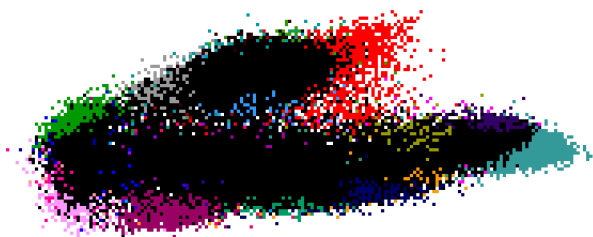


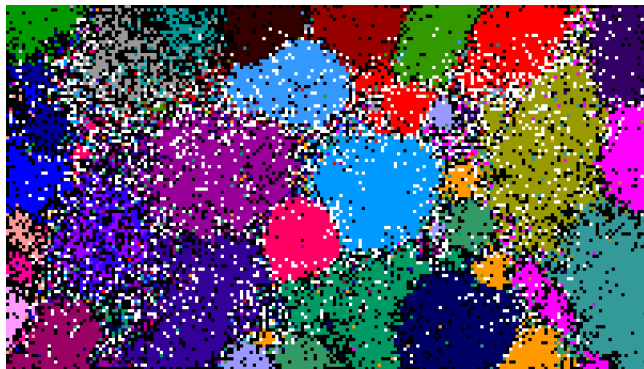
Nonlinear Multivariate Analysis with Batch-Learning Self-Organizing Map

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Illustration



Principal Component Analysis (Linear).



Batch-Learning Self-Organizing Map (Nonlinear).

Gene classification by codon usage.

Content :

Clustering powers of the conventional multivariate analysis methods such as principal component analysis (PCA) 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.

Appealing point :

Batch-Learning Self-Organizing Maps have a wide range of applications. As we developed the BL-SOM software from scratch, we can customize it according to the application.

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