

Self-Organizing Map

Definition and purpose

A self-organizing map (SOM) or self-organizing feature map (SOFM) is an unsupervised machine learning technique used to **produce a low-dimensional (typically two-dimensional) representation of a higher dimensional data set** while **preserving the topological structure of the data**. This can make high-dimensional data easier to visualize and analyze.

An SOM is a type of **artificial neural network** but is trained **using competitive learning rather than the error-correction learning (e.g., backpropagation with gradient descent)** used by other artificial neural networks, but still like most artificial neural networks, **operate in two modes: training and mapping**.