

Implementation of a Self-Organizing Map

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Overview

Algorithm

Bibliography

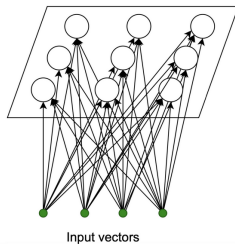
OVERVIEW

What is a SOM ?

Definition

It is a neural network of just one layer : the output layer.

An SOM with 9 neurons in a 3x3 lattice



Wikipedia

A self-organizing map (SOM) is used to produce a low-dimensional (typically two-dimensional) representation of a higher dimensional data set, while preserving the topological structure of the data.

Motivation

The Self-Organizing Maps permit to :

- ▶ Analyse and visualise the data. It represents multidimensional data on a map of only two or three dimensions (see Convergence slide).
- ▶ Detect patterns from data. Clustering (see K-means slide).
- ▶ Improve a deep neuronal network by sorting the data at the beginning.

Similarities with the Perceptron

Similarities with K-means algorithm

Convergence

ALGORITHM

BIBLIOGRAPHY

<https://www.baeldung.com/cs/som-algorithm>