Abstract

A common problem encountered in such disciplines as statistics, data analysis, signal processing and neural network research is finding a suitable representation of multivariate data. For computational and conceptual simplicity such a representation is often sought as a linear transformation of the original data. Well known linear transformation methods include for example principal component analysis (PCA), factor analysis (FA) and projection pursuit. Independent component analysis (ICA) is a useful extension of PCA in which the desired representation is the one that minimizes the statistical dependence of the components of the representation. Such a representation seems to capture the essential structure of the data in many applications.

In this paper we propose a multiplayer neural network structure based for feature extraction based on ICA. We built a graphical user interface (GUI) in order to impose different type of noise to the experimental images and extract the uncorrelated components from natural scenes.