An Optimality Principle for Unsupervised Learning

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Abstract: We propose an optimality principle for training an unsu(cid:173) pervised feedforward neural network based upon maximal ability to reconstruct the input data from the network out(cid:173) puts. We describe an algorithm which can be used to train either linear or nonlinear networks with certain types of nonlinearity. Examples of applications to the problems of image coding, feature detection, and analysis of random(cid:173) dot stereograms are presented.