Reduced Pattern Recognizing Neural Nets

Orly Yadid-Pecht and Moshe Gur

Julius Silver Institute and Department of Biomedical Engineering,

Technion – Israel Institute of Technology, Haifa 32000, Israel

ABSTRACT

A scheme that fits a reduced number of feature extractors to a particular recognition task is suggested. The main motivation of the work is to cope with the "curse of dimensionality" which exists in pattern classification systems.

A special scheme is proposed for grading and selecting the "best" features for specific recognition tasks. The "best" features for each class are then assembled to a reduced feature set. The size of the reduced set is determined by the performance quality required. The initial "bank" of feature extractors used is biologically inspired, but the same process can be implemented on any set of input features. Results show that feature reduction is drastic and that very compact nets, of the order of tens of neurons, can be used to classify patterns, even in a noisy environment.