Iterative Least Squares Functional Networks Classifier

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Abstract

This paper proposes unconstrained functional networks as a new classifier to deal with the pattern recognition problems. Both methodology and learning algorithm for this kind of computational intelligence classifier using the iterative least squares optimization criterion are derived. The performance of this new intelligent systems scheme is demonstrated and examined using real-world applications. A comparative study with the most common classification algorithms in both machine learning and statistics communities is carried out. The study was achieved with only sets of second-order linearly independent polynomial functions to approximate the neuron functions. The results show that this new framework classifier is reliable, flexible, stable, and achieves a high-quality performance.

***Index Terms*—Functional networks, minimum description length, statistical pattern recognition.**