

Parallel implementation on improved error signal of backpropagation algorithm

ABSTRACT

Improved error signal of the backpropagation (BP) algorithm on single processors has shown a tremendous result compared to its counterpart [1]. Further study on the improved BP algorithm is carried out on many processors, which is implemented using the Sequent Symmetry SE30 machine. Data partitioning method, with columnwise block striped and batch mode weight updating strategy, is applied on the BP algorithms. Twenty-six patterns consisting of uppercase letters from A to Z are tested in terms of speed and recognition rates. The parallel version of the BP algorithm produces good speedup as the numbers of processors are increased and a 100% recognition rate for trained and untrained data is achieved.

Keyword: Standard BP; Improved BP; Mean squared error (MSE); Speedup; Data partitioning; Columnwise block striped; Batch mode weight updating