chained form. A reinforcement associative memory has been distributed between some of Hopfield neural networks as each stage reduces noise from input pattern. It works based on parallel processing and real time learning that distributes memory in multilayer ANN and so noisy input pattern gradually reaches to main pattern with reduction of noise by piecemeal in each stage of multilayer Hopfield. The proposed structure is applied in gait and character recognition and face image recovery applications. Experimental results show successful recovery of main patterns even with increasing the number of learning patterns and decreasing of signal to noise ratio down to 4 decibel. Comparing the proposed structure with the standard Hopfield ANN shows their superior performance.

Using Genetic Algorithms to Find Temporal Patterns Indicative of Time Series Events

Richard J. Povinelli
Marquette University, USA

Abstract:
A new framework for analyzing time series data called Time Series Data Mining (TSDM) is introduced. This framework adapts and innovates data mining concepts to analyzing time series data. In particular, it creates methods that reveal hidden temporal patterns that are characteristic and predictive of time series events. The TSDM framework, concepts, and methods, which use a genetic algorithm to search for optimal temporal patterns, are explained and the results are applied to real-world time series from the engineering and financial domains.

A Parallel Implementation of Survival Algorithm

Behbood Mashoufi, *Urmia University, Iran*
Mohammad Reza Meybodi and Seyyed Ahmad Motamedi
AmirKabir University of Technology, Iran

Abstract:
A major limitation in the research of neural networks is the long computing time needed for their learning. One solution for reducing learning time is using intrinsic parallelism of neural networks and mapping them on parallel computer. One of the mapping methods is neuron partitioning. In this method a large amount of data are communicated beetwen processors and the communication copmplexity is high. So data communication is time consuming and training time is high. The communication cost is proportional with the number of neurons. If the numbers of neurons are very low the communication cost will be low but the neural network can not learn the problem well. On the other hand networks with large amount of neurons will lead to overfitting and poor generalization performance. Furthermore the training of these networks needs high communication costs. So there are needs for algorithms that can determine appropriate number of neurons. One of the existent algorithms is survival algorithm.In this paper a parallel algorithm named parallel survival algorithm is presented. Using proposed algorithm, we can reduce the interprocessor communication cost and therefore training time. This algorithm is applied to Persian phonemes recognition application. Simulation results show that the proposed algorithm have the higher speed than neuron partioning method.

SC4: Computer Networks (I)

Substar Reliability of the Star Network Under Link Failure Model

Shahram Latifi and Venka Palaniappan
UNLV, U.S.A

Abstract:
Hierarchical networks may be divided into sub networks having the same topological properties of the original network. The Star graph, an example of hierarchical networks, has been studied extensively as a viable candidate for massively parallel systems. For a given number of faulty links and using a combinatorial approach, lower bounds on probability of having one or more -stars in an -star are determined. An identification algorithm is presented to find an available -star in an -star containing a set of faulty links.