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Editorial

Qualitative Analysis of Dynamic Activity Patterns in Neural Networks

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Neural networks have recently been widely used to model some of the human activities in many areas of science and engineering. Mathematical modeling in neural networks has been based on "neurons" that is different both from real biological neurons and from the realistic functioning of simple electronic circuits. These models have received increasing interest due to their impressive applications in areas such as classification, parallel computing, associative memory, pattern recognition, computer vision, and solving some optimization problem. Such applications heavily depend on the dynamic behavior of networks; therefore, the qualitative analysis of these dynamic behaviors is a necessary step for practical design of neural networks.

Neural networks have broad applicability to real-world business problems. In fact, they have already been successfully applied in many industries. Since neural networks are best at identifying patterns or trends in data, they are well suited for prediction or forecasting needs including sales forecasting, industrial process control, customer research, data validation, risk management, and target marketing.

In this special issue on multimedia networking, we have invited a few papers that address such issues.

In the first paper, shunting inhibitory cellular neural networks with delay are studied. By using the Lyapunov functional and contraction mapping, a set of criteria are established for the global exponential stability, the existence, and uniqueness of pseudo-almost-periodic solutions.

The second paper is on a bidirectional associative memory (BAM) model. Several interesting properties of the BAM architecture have been investigated. The analysis of the