



# Pattern Recognition by Self-Organizing Neural Networks

Edited by Gail A. Carpenter, Edited by Stephen Grossberg



Pattern Recognition by Self-Organizing Neural Networks presents the most recent advances in an area of research that is becoming vitally important in the fields of cognitive science, neuroscience, artificial intelligence, and neural networks in general. Pattern Recognition by Self-Organizing Neural Networks presents the most recent advances in an area of research that is becoming vitally important in the fields of cognitive science, neuroscience, artificial intelligence, and neural networks in general. The 19 articles take up developments in competitive learning and computational maps, adaptive resonance theory, and specialized architectures and biological connections. Introductory survey articles provide a framework for understanding the many models involved in various approaches to studying neural networks. These are followed in Part 2 by articles that form the foundation for models of competitive learning and computational mapping, and recent articles by Kohonen, applying them to problems in speech recognition, and by Hecht-Nielsen, applying them to problems in designing adaptive lookup tables. Articles in Part 3 focus on adaptive resonance theory (ART) networks, selforganizing pattern recognition systems whose top-down template feedback signals guarantee their stable learning in response to arbitrary sequences of input patterns. In Part 4, articles describe embedding ART modules into larger architectures and provide experimental evidence from neurophysiology, event-related potentials, and psychology that support the prediction that ART mechanisms exist in the brain. Contributors: J.-P. Banquet, G.A. Carpenter, S. Grossberg, R. Hecht-Nielsen, T. Kohonen, B. Kosko, T.W. Ryan, N.A. Schmajuk, W. Singer, D. Stork, C. von der Malsburg, C.L. Winter.

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