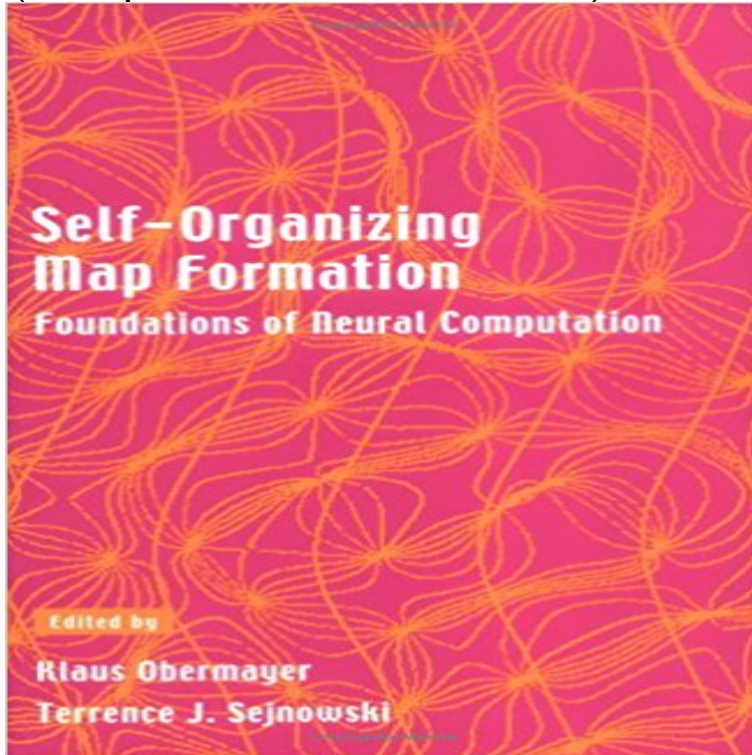


Self-Organizing Map Formation: Foundations of Neural Computation (Computational Neuroscience)



This book provides an overview of self-organizing map formation, including recent developments. Self-organizing maps form a branch of unsupervised learning, which is the study of what can be determined about the statistical properties of input data without explicit feedback from a teacher. The articles are drawn from the journal *Neural Computation*. The book consists of five sections. The first section looks at attempts to model the organization of cortical maps and at the theory and applications of the related artificial neural network algorithms. The second section analyzes topographic maps and their formation via objective functions. The third section discusses cortical maps of stimulus features. The fourth section discusses self-organizing maps for unsupervised data analysis. The fifth section discusses extensions of self-organizing maps, including two surprising applications of mapping algorithms to standard computer science problems: combinatorial optimization and sorting. Contributors J. J. Atick, H. G. Barrow, H. U. Bauer, C. M. Bishop, H. J. Bray, J. Bruske, J. M. L. Budd, M. Budinich, V. Cherkassky, J. Cowan, R. Durbin, E. Erwin, G. J. Goodhill, T. Graepel, D. Grier, S. Kaski, T. Kohonen, H. Lappalainen, Z. Li, J. Lin, R. Linsker, S. P. Luttrell, D. J. C. MacKay, K. D. Miller, G. Mitchison, F. Mulier, K. Obermayer, C. Piepenbrock, H. Ritter, K. Schulten, T. J. Sejnowski, S. Smirnakis, G. Sommer, M. Svensen, R. Szeliski, A. Utsugi, C. K. I. Williams, L. Wiskott, L. Xu, A. Yuille, J. Zhang.

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Hinton's Publications: in reverse chronological order** The Self-Organizing Map (SOM), with its variants, is the most popular artificial neural network algorithm in the unsupervised learning Self-Organizing Map Formation: Foundations of Neural Computation (Computational Neuroscience). **Self-Organizing Map Formation : Foundations of Neural Computation** Self-Organizing Map Formation: Foundations of Neural Computation Self-organizing maps form a branch of unsupervised learning, which is the study of what and Insights from Neuroscience, Bio-Inspired Computing and Communication: First maps, Proceedings of the 2008 IEEE world conference on Computational **Graphical Models: Foundations of Neural Computation** S. Amari, On the Topological Foundations of Diakoptics and Codiakoptics. . S. Amari, Dynamics of Pattern Formation in Lateral-Inhibition Type Neural . S. Amari, Field theory of self-organizing neural nets, IEEE Trans. . S. 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