



# Neural Networks and Statistical Learning

By Ke-Lin Du, M. N. S. Swamy



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Providing a broad but in-depth introduction to neural network and machine learning in a statistical framework, this book provides a single, comprehensive resource for study and further research. All the major popular neural network models and statistical learning approaches are covered with examples and exercises in every chapter to develop a practical working understanding of the content.

Each of the twenty-five chapters includes state-of-the-art descriptions and important research results on the respective topics. The broad coverage includes the multilayer perceptron, the Hopfield network, associative memory models, clustering models and algorithms, the radial basis function network, recurrent neural networks, principal component analysis, nonnegative matrix factorization, independent component analysis, discriminant analysis, support vector machines, kernel methods, reinforcement learning, probabilistic and Bayesian networks, data fusion and ensemble learning, fuzzy sets and logic, neurofuzzy models, hardware implementations, and some machine learning topics. Applications to biometric/bioinformatics and data mining are also included.

Focusing on the prominent accomplishments and their practical aspects, academic and technical staff, graduate students and researchers will find that this provides a solid foundation and encompassing reference for the fields of neural networks, pattern recognition, signal processing, machine learning, computational intelligence,

and data mining.

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## **Editorial Review**

### Review

“Neural networks and statistical learning, has a lot to contribute. This comprehensive, well-organized and up-to-date text proves that the subject matter is richer when the topics of neural networks and statistical learning are studied together. Ideas drawn from both areas are hybridized to perform improved learning tasks beyond the capability of each, which is ideal for professional engineers, research scientists or graduate students. ... the book is both a great read and a great resource.” (Dragos Calitoiu, Mathematical Reviews, May, 2015)

### From the Back Cover

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### About the Author

Ke-Lin Du is currently the Chief Scientist at Enjoyor Inc., China. He is also an Affiliate Associate Professor in Department of Electrical and Computer Engineering at Concordia University, Canada. Prior to joining Enjoyor Inc. in 2012, he held positions with Huawei Technologies, the China Academy of Telecommunication Technology, the Chinese University of Hong Kong, the Hong Kong University of Science and Technology, and Concordia University. He has published two books and over 50 papers, and filed over 15 patents. His current research interests include signal processing, neural networks, intelligent systems, and wireless communications. He is a Senior Member of the IEEE.M.N.S. Swamy is currently a Research Professor and holder of the Concordia Tier I Research Chair Signal Processing in the Department of Electrical and Computer Engineering, Concordia University, where he was Dean of the Faculty of

Engineering and Computer Science from 1977 to 1993 and the founding Chair of the EE department. He has published extensively in the areas of circuits, systems and signal processing, and co-authored five books. Professor Swamy is a Fellow of the IEEE, IET (UK) and EIC (Canada), and has received many IEEE-CAS awards, including the Guillemin-Cauer award in 1986, as well as the Education Award and the Golden Jubilee Medal, both in 2000.

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