

Automatic Learning Techniques in Power Systems

Automatic learning is a complex, multidisciplinary field of research and development, involving theoretical and applied methods from statistics, computer science, artificial intelligence, biology and psychology. Its applications to engineering problems, such as those encountered in electrical power systems, are therefore challenging, while extremely promising. More and more data have become available, collected from the field by systematic archiving, or generated through computer-based simulation. To handle this explosion of data, automatic learning can be used to provide systematic approaches, without which the increasing data amounts and computer power would be of little use. is dedicated to the practical application of automatic learning to power systems. Power systems to which automatic learning can be applied are screened and the complementary aspects of automatic learning, with respect to analytical methods and numerical simulation, are investigated.

This book presents a representative subset of automatic learning methods - basic and more sophisticated ones - available from statistics (both classical and modern), and from artificial intelligence (both hard and soft computing). The text also discusses appropriate methodologies for combining these methods to make the best use of available data in the context of real-life problems.

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Power Electronics and Power System Series

160,49 €

149,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780792380689

Medium: Buch

ISBN: 978-0-7923-8068-9

Verlag: Humana

Erscheinungstermin: 30.11.1997

Sprache(n): Englisch

Auflage: 1. Auflage 1997

Serie: Power Electronics and Power Systems

Produktform: Gebunden

Gewicht: 1370 g

Seiten: 280

Format (B x H): 160 x 241 mm

