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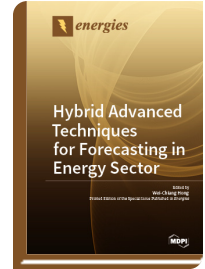
Hybrid Advanced Techniques for Forecasting in Energy Sector

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Accurate forecasting performance in the energy sector is a primary factor in the modern restructured power market, accomplished by any novel advanced hybrid techniques. Particularly in the Big Data era, forecasting models are always based on a complex function combination, and energy data are always complicated by factors such as seasonality, cyclicity, fluctuation, dynamic nonlinearity, and so on. To comprehensively address this issue, it is insufficient to concentrate only on simply hybridizing evolutionary algorithms with each other, or on hybridizing evolutionary algorithms with chaotic mapping, quantum computing, recurrent and seasonal mechanisms, and fuzzy inference theory in order to determine suitable parameters for an existing model. It is necessary to also consider hybridizing or combining two or more existing models (e.g., neuro-fuzzy model, BPNN-fuzzy model, seasonal support vector regression–chaotic quantum particle swarm optimization (SSVR-CQPSO), etc.). These advanced novel hybrid techniques can provide more satisfactory energy forecasting performances.

This book aimed to attract researchers with an interest in the research areas described above. Specifically, we were interested in contributions towards recent developments, i.e., hybridizing or combining any advanced techniques in energy forecasting, with the superior capabilities over the traditional forecasting approaches, with the ability to overcome some embedded drawbacks, and with the very superiority to achieve significant improved forecasting accuracy.

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