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Nota di contenuto	About the Editors -- Notes on Contributors -- Preface -- Part I. Data Mining and Analysis Fundamentals -- 1. Foundations -- Ansel Y. Rodriguez Gonzlez, Angel Diaz Pacheco, Ramon Aranda, and Miguel Angel Carmona -- 2. Data mining and analysis in power and energy systems: an introduction to algorithms and applications -- Fernando Lezama -- 3. Deep Learning in Intelligent Power and Energy Systems -- Bruno Mota, Tiago Pinto, Zita Vale, and Carlos Ramos -- Part II. Clustering -- 4. Data Mining Techniques applied to Power Systems -- Sergio Ramos, Joo Soares, Zahra Forouzandeh, and Zita Vale -- 5. Synchrophasor Data Analytics for Anomaly and Event Detection, Classification and Localization -- Sajan K. Sadanandan, A. Ahmed, S. Pandey, and Anurag K. Srivastava -- 6. Clustering Methods for the Profiling of Electricity Consumers Owning Energy Storage System -- Ctia Silva, Pedro Faria, Zita Vale, and Juan Manuel Corchado -- Part III. Classification -- 7. A Novel Framework for NTL Detection in Electric Distribution Systems -- Chia-Chi Chu, Nelson Fabian Avila, Gerardo Figueroa, and Wen-Kai Lu -- 8. Electricity market participation profiles classification for decision support in market negotiation -- Tiago Pinto and Zita Vale -- 9. Socio-demographic, economic and behavioural analysis of electric vehicles -- Ruben Barreto, Tiago Pinto, and Zita Vale

-- Part IV. Forecasting -- 10. A Multivariate Stochastic Spatio-Temporal Wind Power Scenario Forecasting Model -- Wenlei Bai, Duehee Lee, and Kwang Y. Lee -- 11. Spatio-Temporal Solar Irradiance and Temperature Data Predictive Estimation -- Chirath Pathiravasam and Ganesh K. Venayagamoorthy -- 12. Application of decomposition-based hybrid wind power forecasting in isolated power systems with high renewable energy penetration -- Evgenii Semshikov, Michael Negnevitsky, James Hamilton, and Xiaolin Wang -- Part V. Data analysis -- 13. Harmonic Dynamic Response Study of Overhead Transmission Lines -- Dharmbir Prasad, Rudra Pratap Singh, Md. Irfan Khan, and Sushri Mukherjee -- 14. Evaluation of Shortest Path to Optimize Distribution Network Cost and Power Losses in Hilly Areas: A Case Study -- Subho Upadhyay, Rajeev Kumar Chauhan, and Mahendra Pal Sharma -- 15. Intelligent Approaches to Support Demand Response in Microgrid Planning -- Rahmat Khezri, Amin Mahmoudi, and Hirohisa Aki -- 16. Socio-Economic Analysis of Renewable Energy Interventions: Developing Affordable Small-Scale Household Sustainable Technologies in Northern Uganda -- Jens Bo Holm-Nielsen, Achora Proscovia O Mamur, and Samson Masebinu -- Part VI. Other machine learning applications -- 17. A Parallel Bidirectional Long Short-Term Memory Model for Non-Intrusive Load Monitoring -- Victor Andrean and Kuo-Lung Lian -- 18. Reinforcement Learning for Intelligent Building Energy Management System Control -- Olivera Kotevska and Philipp Andelfinger -- 19. Federated Deep Learning Technique for Power and Energy Systems Data Analysis -- Hamed Moayyed, Arash Moradzadeh, Behnam Mohammadi-Ivatloo, and Reza Ghorbani -- 20. Data Mining and Machine Learning for Power System Monitoring, Understanding, and Impact Evaluation -- Xinda Ke, Huiying Ren, Qiuhua Huang, Pavel Etingov and Zhangshuan Hou -- Conclusions -- Zita Vale, Tiago Pinto, Michael Negnevitsky, and Ganesh Kumar Venayagamoorthy.

Sommario/riassunto

"The increasing penetration of distributed renewable energy sources and the consequent empowerment of consumers to become active players in mitigating the lack of generation flexibility with demand flexibility, are driving the power and energy system towards an historic paradigm shift. The small scale, diversity, and number of new players involved in the power and energy field, potentiate a significant growth of generated data. Moreover, advances in telecommunications and digitalization hugely increased the volume of data that results from power and energy components, installations, and systems operation. This data is becoming more and more important for power and energy systems operation and planning, with relevant impact on all involved entities, from producers, consumers and aggregators, to market and system operators. However, although the power and energy community is fully aware of the intrinsic value of the data, the methods to deal with it still require significant improvements and research. Data mining and intelligent data analysis are thereby playing a crucial role in this domain, by enabling players to improve their decision-making process and gain awareness of the power and energy environment. This book brings together the state-of-the-art advances in intelligent data mining and analysis as drivers for the needed evolution of power and energy systems. Although there are some recent books on data mining in general, there is no significant review/survey material on data mining and intelligent data analysis models and their applications in power and energy systems."--

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