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Titolo	Artificial Intelligence Techniques for a Scalable Energy Transition : Advanced Methods, Digital Technologies, Decision Support Tools, and Applications / / Moamar Sayed-Mouchaweh, editor
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ISBN	3-030-42726-9 9783030427269
Descrizione fisica	1 online resource (383 pages) : illustrations
Disciplina	363.70028563
Soggetti	Artificial intelligence - Engineering applications Power resources - Data processing Electrical engineering Computational intelligence Artificial intelligence Data mining Big data Communications Engineering, Networks Computational Intelligence Artificial Intelligence Data Mining and Knowledge Discovery Big Data/Analytics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Definition, motivation and impact of digitalization in energy transition -- Definition of a general scheme (layers) of a digitalized system in energy transition -- Challenges of digitalization in energy transition -- Artificial Intelligence for energy transition -- General principals and classification of Artificial Intelligence techniques for energy transition -- Artificial Intelligence for Smart Energy Management -- Smart energy management (intrusive and non-intrusive load monitoring) -- Artificial Intelligence for Cyber Security and Privacy

	-- Artificial Intelligence for Mobility and Electrical Vehicles -- Mobility and electrical vehicles -- Artificial Intelligence for Micro Grid Operations and Dynamic Pricing Revenue Management -- Micro Grid operations and Dynamic Pricing Revenue Management -- Artificial Intelligence for Renewable Energy Penetration and Demand Side Management -- Renewable Energy Penetration and Demand Side Management -- Emerging Trends, Open problems, and Future Challenges -- Conclusion.
Sommario/riassunto	This book presents research in artificial techniques using intelligence for energy transition, outlining several applications including production systems, energy production, energy distribution, energy management, renewable energy production, cyber security, industry 4.0 and internet of things etc. The book goes beyond standard application by placing a specific focus on the use of AI techniques to address the challenges related to the different applications and topics of energy transition. The contributions are classified according to the market and actor interactions (service providers, manufacturers, customers, integrators, utilities etc.), to the SG architecture model (physical layer, infrastructure layer, and business layer), to the digital twin of SG (business model, operational model, fault/transient model, and asset model), and to the application domain (demand side management, load monitoring, micro grids, energy consulting (residents, utilities), energy saving, dynamic pricing revenue management and smart meters, etc.). Uses examples and applications to facilitate the understanding of AI techniques for scalable energy transitions Includes examples, problems, and techniques in order to increase transparency and understanding of the methodological concepts Dedicated to researchers, practitioners, and operators working with industrial systems.