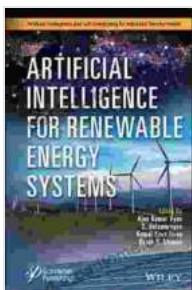


Design and Development of Efficient Energy Systems Using Artificial Intelligence: A Comprehensive Guide for Engineers and Researchers

In an era marked by rising energy demands and environmental concerns, the development of efficient energy systems has become paramount. Artificial intelligence (AI) is emerging as a powerful tool that can transform the way we design, operate, and manage energy systems, leading to significant improvements in energy efficiency and sustainability.

Chapter 1: Fundamentals of Energy Systems and AI

This chapter provides an to the fundamentals of energy systems, including energy sources, conversion technologies, and distribution networks. It also covers the basics of AI, including machine learning, deep learning, and natural language processing, and explores their potential applications in energy systems.



Design and Development of Efficient Energy Systems (Artificial Intelligence and Soft Computing for Industrial Transformation) by Suman Lata Tripathi

★★★★★ 5 out of 5

Language : English
File size : 16166 KB
Text-to-Speech : Enabled
Screen Reader : Supported
Enhanced typesetting : Enabled
Print length : 351 pages
Lending : Enabled

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Chapter 2: Intelligent Energy System Design

This chapter explores the application of AI in designing energy systems that are optimized for efficiency and sustainability. It covers topics such as:

- Load forecasting using machine learning
- Renewable energy integration using deep learning
- Optimal energy storage system design using AI



Intelligent energy system design

Chapter 3: Energy System Monitoring and Diagnostics

This chapter focuses on the use of AI for monitoring and diagnosing energy systems. It covers techniques such as:

- Fault detection and diagnosis using AI

- Energy consumption pattern analysis using machine learning
- Predictive maintenance using deep learning



Chapter 4: Energy System Control and Optimization

This chapter explores the application of AI for controlling and optimizing energy systems. It covers topics such as:

- Demand response management using AI
- Microgrid energy management using machine learning
- Distributed energy resource optimization using deep learning

5 ways to optimise your microgrid with an open source IoT energy management solution



Energy system control and optimization

Chapter 5: Case Studies and Applications

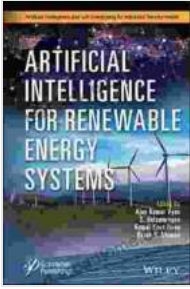
This chapter presents real-world case studies and applications of AI in energy systems. It provides examples of how AI has been used to improve energy efficiency, reduce costs, and enhance sustainability in various sectors, including:

- Smart grids
- Renewable energy integration
- Energy-efficient buildings



This book provides a comprehensive overview of the design and development of efficient energy systems using artificial intelligence. It covers the fundamentals of energy systems, the basics of AI, and the latest advancements in AI applications for energy efficiency. With its in-depth analysis, real-world case studies, and expert insights, this book is a valuable resource for engineers, researchers, and anyone interested in harnessing the power of AI to create a more sustainable and energy-efficient future.

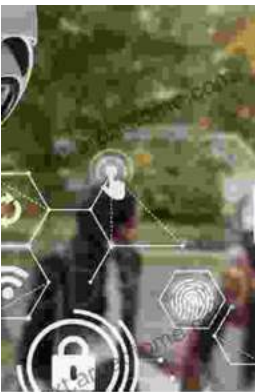
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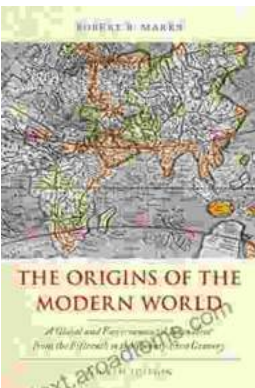
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