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Sommario/riassunto

Discover the essential guide to harnessing the power of cutting-edge smart sensors in Industry 4.0, offering deep insights into fundamentals, fabrication techniques, and real-world IIoT applications, equipping you with the knowledge to revolutionize your industrial processes and stay ahead in the digital era. Over the last decade, technologies like the Internet of Things (IoT), big data, cloud computing, blockchain, artificial intelligence (AI), machine learning, device automation, smart sensors, etc., have become highly developed fundamental supports of Industry 4.0, replacing the conventional production systems with advanced methods, and thereby endorsing the smart industry vision. Industry 4.0 is more flexible and agile in dealing with several risk factors, further enabling improved productivity and efficiency, distribution, increased profitability, data integrity, and enhancing customer experience in the current commercial environment. For understanding and analyzing the environment, sensors play a major role in performing the measurements based on computation-produced results from the surrounding environment. Sensors have a wide range of applications for smart industrial operations. The evolution of flexible, low-cost, and multipurpose sensors and their system integration has been examined to develop advanced devices with applications in numerous fields of technology.

With the development of both the Internet of Things (IoT) and the Industrial IoT (IIoT), advanced sensors and their associated applications are developing, resulting in the necessity for IoT sensors to be used for several industrial applications. Beneficial aspects of this book include: The latest research in materials and methodology for the fabrication of intelligent sensors, its IoT system integration, and IIoT applications are brought together; Promotes a vision towards making sensor-based monitoring and control of smart industry; Recent advances and challenges of smart sensors are discussed with an emphasis on unmet challenges and future directions of a roadmap to Industry 4.0.

Audience This book is highly recommended to a wide range of researchers and industry engineers working in the area of fabrication and integration of industrial smart sensors for IIoT applications, advanced materials for sensor technology, fabrication and characterization of IoT sensors, development of low-cost sensors, sensor system design and integration, and its industrial applications. Post-graduate students from different streams like computer science, electronics and electrical engineering, information technology, electronic communication, etc. will benefit from reading this book.
