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Sommario/riassunto

This book explores the distinct problems, trends, and future trajectories for constructing cohesive, sustainable data infrastructures that correspond with the United Nations Sustainable Development Goals (SDGs). In the contemporary digital ecosystem, the amalgamation of data across diverse platforms and environments—from cloud to edge to IoT—has become imperative for fostering creativity, sustainability, and efficiency. “Learning-Driven Data Fabric for Sustainable Cloud-to-Thing Continuum” examines the optimization of integration through sophisticated data fabrics enhanced by machine learning and AI. This book initiates its exploration by analyzing the fundamental concepts of a learning-driven data fabric that integrates cloud and IoT ecosystems, facilitating real-time decision-making and minimizing energy consumption. It offers comprehensive insights into how intelligent data management throughout the cloud-to-thing continuum may be utilized to enhance resource efficiency, facilitate smart city planning, and promote advancements in sectors such as healthcare, transportation, and agriculture. This book emphasizes how data fabrics may advance objectives related to affordable and clean energy (SDG 7), industrial innovation (SDG 9), and sustainable cities and communities (SDG 11), with sustainability as its central theme. This book illustrates how learning-driven data architectures are revolutionizing businesses and tackling global challenges through real-world case studies and upcoming trends. Subjects encompass edge computing, real-time data analytics, safe data transmission, and the reduction of carbon footprints via effective data processing. This study examines how data fabrics might alleviate the risks associated with cyberattacks and data breaches, while ensuring regulatory compliance and fostering sustainable, ethical AI operations. This book offers a detailed framework for utilizing data fabric technologies to create sustainable, safe, and intelligent cloud-to-thing ecosystems, regardless of whether you are a data scientist, IoT specialist, cloud architect, or policymaker. This book promotes data-driven decision-making throughout the infrastructure, enabling organizations to design scalable and sustainable solutions that advance global development objectives.