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   Nota di contenuto   Chapter 1: Introduction to the Real-World Data Circulation Paradigm --
                         Chapter 2: A study on environmental sound modeling based on deep
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                         underdetermined source separation and its application -- Chapter 4: A
                         study on recognition of students' multiple mental states during
                         discussion using multimodal data -- Chapter 5: Towards practically
                         applicable quantitative information flow analysis -- Chapter 6:
                         Research on high-performance high-precision elliptical vibration
                         cutting -- Chapter 7: A study on efficient light field coding -- Chapter
                         8: Point cloud compression for 3D LiDAR sensor -- Chapter 9:
                         Integrated planner for autonomous driving in urban environments
                         including driving intention estimation -- Chapter 10: Direct numerical
                         simulation on turbulent/non-turbulent interface in compressible
                         turbulent boundary layers -- Chapter 11: Efficient text autocompletion
                         for online services -- Chapter 12: Coordination analysis and term
                         correction for statutory sentences using machine learning -- Chapter
                         13: Research of ICT utilization for consideration of town scape --
                         Chapter 14: Measuring efficiency and productivity of Japanese
                         manufacturing industry considering spatial interdependence of
                         production activities.

   Sommario/riassunto   Proposing the concept of real-world data circulation (RWDC), this book
                         presents various practical and industry-related studies in human,

mechanical, and social data domains. RWDC is a new field of study, established by the information technology (IT) community. In the real world, the speed of data transmission between computers surpassed that of human communications long ago and has since expanded exponentially. As a result, the origin of the majority of data has become non-human, mechanical, or natural sources; in fact, humans are merely the source of a small part of the current data explosion. Such expanding data transmission does not simply consist of single source–destination pairs, but actually circulates over a complex network connecting numerous sources and destinations. Such circulation is an important aspect of the underlying systems. Based on this concept, in order to tame and control the massive amount of data originating from non-human sources, the authors have been considering the insertion of acquisition, analysis, and implementation processes in the flow of data circulation. This book introduces the outcome of the RWDC degree program organized at Nagoya University, Japan, collecting contributions from graduate students enrolled in the program from various research fields targeting diverse applications. Through examples of RWDC, the resulting creation of social value is illustrated. This book will be useful not only for those working on the topics discussed, but also to anyone who is interested in RWDC, digital transformation, and Industry 4.0.