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Titolo	Adapted Compressed Sensing for Effective Hardware Implementations : A Design Flow for Signal-Level Optimization of Compressed Sensing Stages // by Mauro Mangia, Fabio Pareschi, Valerio Cambareri, Riccardo Rovatti, Gianluca Setti
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Descrizione fisica	1 online resource (XIV, 319 p. 180 illus., 142 illus. in color.)
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Soggetti	Electronic circuits Signal processing Image processing Speech processing systems Electronics Microelectronics Circuits and Systems Signal, Image and Speech Processing Electronics and Microelectronics, Instrumentation
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Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Chapter 1. Introduction to Compressed Sensing: Fundamentals and Guarantees -- Chapter 2.How (Well) Compressed Sensing Works in Practice -- Chapter 3. From Universal to Adapted Acquisition: Rake that Signal! -- Chapter 4.The Rakeness Problem with Implementation and Complexity Constraints -- Chapter 5.Generating Raking Matrices: a Fascinating Second-Order Problem -- Chapter 6.Architectures for Compressed Sensing -- Chapter 7.Analog-to-information Conversion -- Chapter 8.Low-complexity Biosignal Compression using Compressed Sensing -- Chapter 9.Security at the analog-to-information interface using Compressed Sensing.
Sommario/riassunto	This book describes algorithmic methods and hardware implementations that aim to help realize the promise of Compressed

Sensing (CS), namely the ability to reconstruct high-dimensional signals from a properly chosen low-dimensional “portrait”. The authors describe a design flow and some low-resource physical realizations of sensing systems based on CS. They highlight the pros and cons of several design choices from a pragmatic point of view, and show how a lightweight and mild but effective form of adaptation to the target signals can be the key to consistent resource saving. The basic principle of the devised design flow can be applied to almost any CS-based sensing system, including analog-to-information converters, and has been proven to fit an extremely diverse set of applications. Many practical aspects required to put a CS-based sensing system to work are also addressed, including saturation, quantization, and leakage phenomena.
