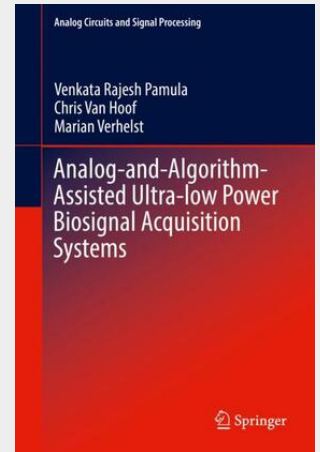


## Analog-and-Algorithm-Assisted Ultra-low Power Biosignal Acquisition Systems

This book discusses the design and implementation aspects of ultra-low power biosignal acquisition platforms that exploit analog-assisted and algorithmic approaches for power savings. The authors describe an approach referred to as “analog-and-algorithm-assisted” signal processing. This enables significant power consumption reductions by implementing low power biosignal acquisition systems, leveraging analog preprocessing and algorithmic approaches to reduce the data rate very early in the signal processing chain. They demonstrate savings for wearable sensor networks (WSN) and body area networks (BAN), in the sensors’ stimulation power consumption, as well in the power consumption of the digital signal processing and the radio link. Two specific implementations, an adaptive sampling electrocardiogram (ECG) acquisition and a compressive sampling (CS) photoplethysmogram (PPG) acquisition system, are demonstrated. - First book to present the so called, “analog-and-algorithm-assisted” approaches for ultra-low power biosignal acquisition and processing platforms; - Covers the recent trend of “beyond Nyquist rate” signal acquisition and processing in detail, including adaptive sampling and compressive sampling paradigms; - Includes chapters on compressed domain feature extraction, as well as acquisition of photoplethysmogram, an emerging optical sensing modality, including compressive sampling based PPG readout with embedded feature extraction; - Discusses emerging trends in sensor fusion for improving the signal integrity, as well as lowering the power consumption of biosignal acquisition systems.

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