Compressive Sensing for Urban Radar

Editor/Affiliation

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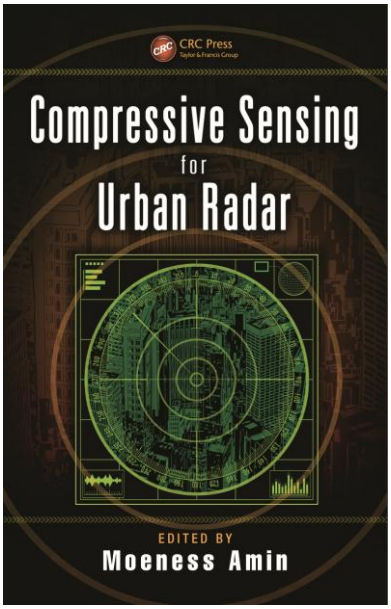
This is the first book to focus on a hybrid of compressive and urban sensing. It explains how reliable imaging, tracking, and localization of indoor targets can be achieved using compressed observations that amount to a tiny percentage of the entire data volume. Capturing the latest and most important advances in the field, this state-of-the-art text includes successful applications of compressive sensing for target detection and revealing building interiors, sparse reconstruction techniques for urban environments, and supporting examples using real data and computational electromagnetic modeling.

Key Features

- Captures the latest and most important advances in compressive sensing for urban radar
- Covers both ground-based and airborne synthetic aperture radar (SAR) and uses different signal waveforms
- Demonstrates successful applications of compressive sensing for target detection and revealing building interiors
- Describes problems facing urban radar and highlights sparse reconstruction techniques applicable to urban environments
- Deals with both stationary and moving indoor targets in the presence of wall clutter and multipath
- Provides numerous supporting examples using real data and computational electromagnetic modeling
- Contains 13 chapters written by leading researchers and experts in the field



Selected Contents

Compressive Sensing Fundamentals. Overcomplete Dictionary Design for Sparse Reconstruction of Building Layout Mapping. Compressive Sensing for Radar Imaging of Underground Targets. Wall Clutter Mitigations for Compressive Imaging of Building Interiors. Compressive Sensing for Urban Multipath Exploitation. Compressive Sensing Kernel Design for Imaging of Urban Objects. Compressive Sensing for Multi-Polarization Through-Wall Radar Imaging. Sparsity-Aware Human Motion Indication. Time-Frequency Analysis of Micro-Doppler Signals based on Compressive Sensing. Urban Target Tracking using Sparse Representations. 3D Imaging of Vehicles from Sparse Apertures in Urban Environment. Compressive Sensing for MIMO Urban Radar. Compressive Sensing Meets Noise Radar.

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