



Compressive Sensing for Urban Radar

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With the emergence of compressive sensing and sparse signal reconstruction, approaches to urban radar have shifted toward relaxed constraints on signal sampling schemes in time and space, and to effectively address logistic difficulties in data acquisition. Traditionally, these challenges have hindered high resolution imaging by restricting both bandwidth and aperture, and by imposing uniformity and bounds on sampling rates.

Compressive Sensing for Urban Radar is the first book to focus on a hybrid of two key areas: compressive sensing 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:

- 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 exploitation
- Provides numerous supporting examples using real data and computational electromagnetic modeling

Featuring 13 chapters written by leading researchers and experts, **Compressive Sensing for Urban Radar** is a useful and authoritative reference for radar engineers and defense contractors, as well as a seminal work for graduate students and academia.



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Editorial Review

Review

"The essential feature of this book is that it brings together the areas of compressive sensing and radar imaging for urban sensing. These areas of attributes are highly relevant to promote sustainability and for a range of civil and military applications, such as search and rescue missions, hostage rescue situations, urban design, and surveillance and reconnaissance in urban environments."

?Fulvio Gini, University of Pisa, Italy

About the Author

Dr. Moeness G. Amin has been a faculty member of the Department of Electrical and Computer Engineering at Villanova University, Pennsylvania, USA for nearly 30 years. In 2002, he became the director of the Center for Advanced Communications, College of Engineering. Currently he is the chair of the Electrical Cluster of the Franklin Institute Committee on Science and the Arts, as well as an IEEE, SPIE, and IET fellow. The recipient of many prestigious awards, he has conducted extensive research in radar signal processing, authored over 650 journal and conference papers, and served as an editor for numerous publications.

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