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Titolo	Battlefield Acoustics / / by Thyagaraju Damarla
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-16036-2
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (267 p.)
Disciplina	620
Soggetti	Signal processing Image processing Speech processing systems Acoustical engineering Acoustics System safety Signal, Image and Speech Processing Engineering Acoustics Security Science and Technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction to Acoustics -- Basic Concepts in Probability -- Detection Theory -- Estimation Theory -- Atmospheric Acoustics -- Acoustic Arrays -- Bearing Estimation using Acoustic Arrays -- Tracking -- Localization of Transient Events -- Classifiers -- Target Discrimination for Situational Awareness -- Sensor Data Fusion.
Sommario/riassunto	This book presents all aspects of situational awareness in a battlefield using acoustic signals. It starts by presenting the science behind understanding and interpretation of sound signals. The book then goes on to provide various signal processing techniques used in acoustics to find the direction of sound source, localize gunfire, track vehicles, and detect people. The necessary mathematical background and various classification and fusion techniques are presented. The book contains majority of the things one would need to process acoustic signals for all aspects of situational awareness in one location. The book also presents array theory, which is pivotal in finding the direction of arrival

of acoustic signals. In addition, the book presents techniques to fuse the information from multiple homogeneous/heterogeneous sensors for better detection. MATLAB code is provided for majority of the real application, which is a valuable resource in not only understanding the theory but readers, can also use the code as a spring-board to develop their own application based software code. · Shows how acoustic signal processing can aid in situational awareness, intelligence, surveillance and reconnaissance (ISR) · Presents background on the type of microphone arrays one has to use and the techniques used to find the direction of sound source
· Focuses on direction finding, transient event (such as gunfire) detection and localization, tracking targets and personnel detection
· Provides multi-sensor data fusion techniques to achieve higher probability of detection with fewer false alarms and higher confidence.