Integrated Tracking, Classification, and Sensor Management: Theory and Applications
Mahendra Mallick (Editor), Vikram Krishnamurthy (Editor), Ba-Ngu Vo (Editor)

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DESCRIPTION

A unique guide to the state of the art of tracking, classification, and sensor management

This book addresses the tremendous progress made over the last few decades in algorithm development and mathematical analysis for filtering, multi-target multi-sensor tracking, sensor management and control, and target classification. It provides for the first time an integrated treatment of these advanced topics, complete with careful mathematical formulation, clear description of the theory, and real-world applications.

Written by experts in the field, Integrated Tracking, Classification, and Sensor Management provides readers with easy access to key Bayesian modeling and filtering methods, multi-target tracking approaches, target classification procedures, and large scale sensor management problem-solving techniques. Features include:

• An accessible coverage of random finite set based multi-target filtering algorithms such as the Probability Hypothesis Density filters and multi-Bernoulli filters with focus on problem solving

• A succinct overview of the track-oriented MHT that comprehensively collates all significant developments in filtering and tracking

• A state-of-the-art algorithm for hybrid Bayesian network (BN) inference that is efficient and scalable for complex classification models

• New structural results in stochastic sensor scheduling and algorithms for dynamic sensor scheduling and management
• Coverage of the posterior Cramer-Rao lower bound (PCRLB) for target tracking and sensor management

• Insight into cutting-edge military and civilian applications, including intelligence, surveillance, and reconnaissance (ISR)

With its emphasis on the latest research results, Integrated Tracking, Classification, and Sensor Management is an invaluable guide for researchers and practitioners in statistical signal processing, radar systems, operations research, and control theory.

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