Random Processes: Filtering, Estimation and Detection (Hardback)

By Lonnie C. Ludeman

John Wiley Sons Inc, United States, 2003. Hardback. Condition: New. New. Language: English . Brand New Book. An understanding of random processes is crucial to many engineering fields-including communication theory, computer vision, and digital signal processing in electrical and computer engineering, and vibrational theory and stress analysis in mechanical engineering. The filtering, estimation, and detection of random processes in noisy environments are critical tasks necessary in the analysis and design of new communications systems and useful signal processing algorithms. Random Processes: Filtering, Estimation, and Detection clearly explains the basics of probability and random processes and details modern detection and estimation theory to accomplish these tasks. In this book, Lonnie Ludeman, an award-winning authority in digital signal processing, joins the fundamentals of random processes with the standard techniques of linear and nonlinear systems analysis and hypothesis testing to give signal estimation techniques, specify optimum estimation procedures, provide optimum decision rules for classification purposes, and describe performance evaluation definitions and procedures for the resulting methods. The text covers four main, interrelated topics: Probability and characterizations of random variables and random processes Linear and nonlinear systems with random excitations Optimum estimation theory including both the Wiener and Kalman Filters Detection theory for both...

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