Optimal filtering applied to stationary and non-stationary signals provides the most efficient means of dealing with problems arising from the extraction of noise signals. Moreover, it is a fundamental feature in a range of applications, such as in navigation in aerospace and aeronautics, filter processing in the telecommunications industry, etc. This book provides a comprehensive overview of this area, discussing random and Gaussian vectors, outlining the results necessary for the creation of Wiener and adaptive filters used for stationary signals, as well as examining Kalman filters which are used in relation to non-stationary signals. Exercises with solutions feature in each chapter to demonstrate the practical application of these ideas using MATLAB.

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