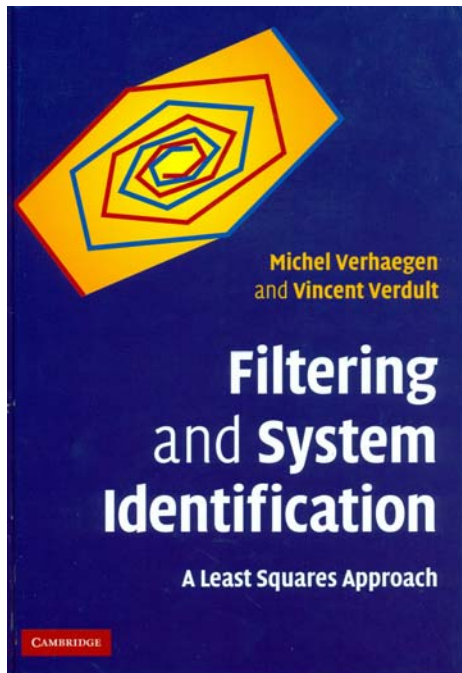# MICHAEL VERHAEGEN AND VINCENT VERDULT

FILTERING AND SYSTEM IDENTIFICATION
A LEAST SQUARES APPROACH

Presented book discusses the design of reliable numerical methods to retrieve missing information in models derived using these techniques. Emphasis is on the least squares approach as applied to the linear state-space model, and problems of increasing complexity are analyzed and solved within this framework, starting with the Kalman filter and concluding with the estimation of a full model, noise statistics and state estimator directly from the data.

Key background topics, including linear matrix algebra, signal transforms, linear system theory and random variables, are covered, followed by different estimation and identification methods in the state-space model. The book is accomplished with a system-identification cycle, helping readers to tackle with real-world problems.

Each chapter comprises exercises, MATLAB simulations and numerous illustrations, appealing in this way to graduate students and researchers in electrical, mechanical, and aerospace engineering.

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