Optimal State Estimation. Kalman, H Infinity, and Nonlinear Approaches

Description: A bottom-up approach that enables readers to master and apply the latest techniques in state estimation

This book offers the best mathematical approaches to estimating the state of a general system. The author presents state estimation theory clearly and rigorously, providing the right amount of advanced material, recent research results, and references to enable the reader to apply state estimation techniques confidently across a variety of fields in science and engineering.

While there are other textbooks that treat state estimation, this one offers special features and a unique perspective and pedagogical approach that speed learning:
- Straightforward, bottom-up approach begins with basic concepts and then builds step by step to more advanced topics for a clear understanding of state estimation
- Simple examples and problems that require only paper and pen to solve lead to an intuitive understanding of how theory works in practice
- MATLAB(r)-based source code that corresponds to examples in the book, available on the author's Web site, enables readers to recreate results and experiment with other simulation setups and parameters

Armed with a solid foundation in the basics, readers are presented with a careful treatment of advanced topics, including unscented filtering, high order nonlinear filtering, particle filtering, constrained state estimation, reduced order filtering, robust Kalman filtering, and mixed Kalman/H? filtering.

Problems at the end of each chapter include both written exercises and computer exercises. Written exercises focus on improving the reader's understanding of theory and key concepts, whereas computer exercises help readers apply theory to problems similar to ones they are likely to encounter in industry. With its expert blend of theory and practice, coupled with its presentation of recent research results, Optimal State Estimation is strongly recommended for undergraduate and graduate-level courses in optimal control and state estimation theory. It also serves as a reference for engineers and science professionals across a wide array of industries.

Contents: Acknowledgments.

Acronyms.

List of algorithms.

Introduction.

PART I INTRODUCTORY MATERIAL.

1 Linear systems theory.

1.1 Matrix algebra and matrix calculus.

1.1.1 Matrix algebra.

1.1.2 The matrix inversion lemma.

1.1.3 Matrix calculus.

1.1.4 The history of matrices.

1.2 Linear systems.

1.3 Nonlinear systems.
1.4 Discretization.
1.5 Simulation.
1.5.1 Rectangular integration.
1.5.2 Trapezoidal integration.
1.5.3 RungeKutta integration.
1.6 Stability.
1.6.1 Continuous-time systems.
1.6.2 Discrete-time systems.
1.7 Controllability and observability.
1.7.1 Controllability.
1.7.2 Observability.
1.7.3 Stabilizability and detectability.
1.8 Summary.
Problems.
Probability theory.
2.1 Probability.
2.2 Random variables.
2.3 Transformations of random variables.
2.4 Multiple random variables.
2.4.1 Statistical independence.
2.4.2 Multivariate statistics.
2.5 Stochastic Processes.
2.6 White noise and colored noise.
2.7 Simulating correlated noise.
2.8 Summary.
Problems.
3 Least squares estimation.
3.1 Estimation of a constant.
3.2 Weighted least squares estimation.
3.3 Recursive least squares estimation.
3.3.1 Alternate estimator forms.
3.3.2 Curve fitting.
3.4 Wiener filtering.

3.4.1 Parametric filter optimization.

3.4.2 General filter optimization.

3.4.3 Noncausal filter optimization.

3.4.4 Causal filter optimization.

3.4.5 Comparison.

3.5 Summary.

Problems.

4 Propagation of states and covariances.

4.1 Discretetime systems.

4.2 Sampled-data systems.

4.3 Continuous-time systems.

4.4 Summary.

Problems.

PART II THE KALMAN FILTER.

5 The discrete-time Kalman filter.

5.1 Derivation of the discrete-time Kalman filter.

5.2 Kalman filter properties.

5.3 One-step Kalman filter equations.

5.4 Alternate propagation of covariance.

5.4.1 Multiple state systems.

5.4.2 Scalar systems.

5.5 Divergence issues.

5.6 Summary.

Problems.

6 Alternate Kalman filter formulations.

6.1 Sequential Kalman filtering.

6.2 Information filtering.

6.3 Square root filtering.

6.3.1 Condition number.

6.3.2 The square root time-update equation.
6.3.3 Potter's square root measurement-update equation.
6.3.4 Square root measurement update via triangularization.
6.3.5 Algorithms for orthogonal transformations.
6.4 U-D filtering.
6.4.1 U-D filtering: The measurement-update equation.
6.4.2 U-D filtering: The time-update equation.
6.5 Summary.
Problems.
7 Kalman filter generalizations.
7.1 Correlated process and measurement noise.
7.2 Colored process and measurement noise.
7.2.1 Colored process noise.
7.2.2 Colored measurement noise: State augmentation.
7.2.3 Colored measurement noise: Measurement differencing.
7.3 Steady-state filtering.
7.3.1 a-P filtering.
7.3.2 a-P-y filtering.
7.3.3 A Hamiltonian approach to steady-state filtering.
7.4 Kalman filtering with fading memory.
7.5 Constrained Kalman filtering.
7.5.1 Model reduction.
7.5.2 Perfect measurements.
7.5.3 Projection approaches.
7.5.4 A pdf truncation approach.
7.6 Summary.
Problems.
8 The continuous-time Kalman filter.
8.1 Discrete-time and continuous-time white noise.
8.1.1 Process noise.
8.1.2 Measurement noise.
8.1.3 Discretized simulation of noisy continuous-time systems.
8.2 Derivation of the continuous-time Kalman filter.
8.3 Alternate solutions to the Riccati equation.
8.3.1 The transition matrix approach.
8.3.2 The Chandrasekhar algorithm.
8.3.3 The square root filter.
8.4 Generalizations of the continuous-time filter.
8.4.1 Correlated process and measurement noise.
8.4.2 Colored measurement noise
8.5 The steady-state continuous-time Kalman filter
8.5.1 The algebraic Riccati equation.
8.5.2 The Wiener filter is a Kalman filter.
8.5.3 Duality.
8.6 Summary.
Problems.

9 Optimal smoothing.
9.1 An alternate form for the Kalman filter.
9.2 Fixed-point smoothing.
9.2.1 Estimation improvement due to smoothing.
9.2.2 Smoothing constant states.
9.3 Fixed-lag smoothing.
9.4 Fixed-interval smoothing.
9.4.1 Forward-backward smoothing.
9.4.2 RTS smoothing.
9.5 Summary.
Problems.

10 Additional topics in Kalman filtering.
10.1 Verifying Kalman filter performance.
10.2 Multiple-model estimation.
10.3 Reduced-order Kalman filtering.
10.3.1 Anderson's approach to reduced-order filtering.
10.3.2 The reduced-order Schmidt-Kalman filter.
10.4 Robust Kalman filtering.
10.5 Delayed measurements and synchronization errors.
10.5.1 A statistical derivation of the Kalman filter.
10.5.2 Kalman filtering with delayed measurements.
10.6 Summary.

Problems.

PART III THE H, FILTER.

11 The H, filter.
11.1 Introduction.
11.1.1 An alternate form for the Kalman filter.
11.1.2 Kalman filter limitations.
11.2 Constrained optimization.
11.2.1 Static constrained optimization.
11.2.2 Inequality constraints.
11.2.3 Dynamic constrained optimization.
11.3 A game theory approach to H, filtering.
11.3.1 Stationarity with respect to xo and wk.
11.3.2 Stationarity with respect to 2 and y.
11.3.3 A comparison of the Kalman and H, filters.
11.3.4 Steady-state H, filtering.
11.3.5 The transfer function bound of the H, filter.
11.4 The continuous-time H, filter.
11.5 Transfer function approaches.
11.6 Summary.

Problems.

12 Additional topics in H, filtering.
12.1 Mixed Kalman/H, filtering.
12.2 Robust Kalman/H, filtering.
12.3 Constrained H, filtering.
12.4 Summary.

Problems.

PART IV NONLINEAR FILTERS.

13 Nonlinear Kalman filtering.
13.1 The linearized Kalman filter.
13.2 The extended Kalman filter.
13.2.1 The continuous-time extended Kalman filter.
13.2.2 The hybrid extended Kalman filter.
13.2.3 The discrete-time extended Kalman filter.
13.3 Higher-order approaches.
13.3.1 The iterated extended Kalman filter.
13.3.2 The second-order extended Kalman filter.
13.3.3 Other approaches.
13.4 Parameter estimation.
13.5 Summary.

Problems.

14 The unscented Kalman filter.
14.1 Means and covariances of nonlinear transformations.
14.1.1 The mean of a nonlinear transformation.
14.1.2 The covariance of a nonlinear transformation.
14.2 Unscented transformations.
14.2.1 Mean approximation.
14.2.2 Covariance approximation.
14.3 Unscented Kalman filtering.
14.4 Other unscented transformations.
14.4.1 General unscented transformations.
14.4.2 The simplex unscented transformation.
14.4.3 The spherical unscented transformation.
14.5 Summary.

Problems.

15 The particle filter.
15.1 Bayesian state estimation.
15.2 Particle filtering.
15.3 Implementation issues.
15.3.1 Sample impoverishment.
15.3.2 Particle filtering combined with other filters.

15.4 Summary.

Problems.

Appendix A: Historical perspectives.

Appendix B: Other books on Kalman filtering.

Appendix C: State estimation and the meaning of life.

References.

Index.

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