Bayesian Bounds for Parameter Estimation and Nonlinear Filtering/Tracking

Harry L. Van Trees and Kristine L. Bell, editors

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We do not plan to review this book.

Preface.

Introduction (Harry L. Van Trees and Kristine L. Bell).

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An accessible introduction to Bayes’ theorem and how it’s used in statistical inference to estimate parameter values for statistical and machine learning models. In this post, we’ll go over another method for parameter estimation using Bayesian inference. I’ll also show how this method can be viewed as a generalisation of maximum likelihood and in what case the two methods are equivalent. Some fundamental knowledge of probability theory is assumed e.g. marginal and conditional probability. Home » MAA Publications » MAA Reviews » Bayesian Bounds for Parameter Estimation and Nonlinear Filtering/Tracking. Bayesian Bounds for Parameter Estimation and Nonlinear Filtering/Tracking. Harry L. Van Trees and Kristine L. Bell, editors. Publisher. 2.4 R. J. McAulay and E. M. Hostetter, “Barankin bounds on parameter estimation,” IEEE Trans. Info. Theory, vol. Nonlinear filtering is the process of estimating and tracking the state of a nonlinear stochastic system from non-Gaussian noisy observation data. In this technical memorandum, we present an overview of techniques for nonlinear filtering for a wide variety of conditions on the nonlinearities and on the noise. We begin with the development of a general Bayesian approach to filtering which is applicable to all linear or nonlinear stochastic systems, 2. General Bayesian Filter. A nonlinear stochastic system can be denoted by a stochastic discrete-time state space transition (dynamical) equation, $x_n = f_{n-1}(x_{n-1}, w_{n-1})$, and the stochastic observation (measurement) process.