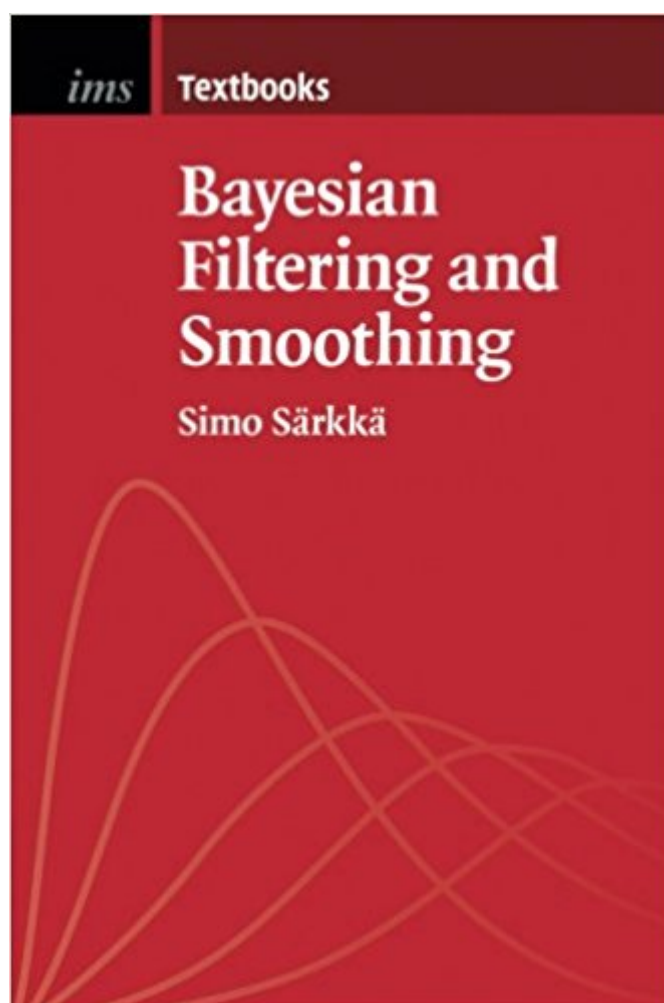


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# Bayesian Filtering And Smoothing (Institute Of Mathematical Statistics Textbooks)



## Synopsis

Filtering and smoothing methods are used to produce an accurate estimate of the state of a time-varying system based on multiple observational inputs (data). Interest in these methods has exploded in recent years, with numerous applications emerging in fields such as navigation, aerospace engineering, telecommunications and medicine. This compact, informal introduction for graduate students and advanced undergraduates presents the current state-of-the-art filtering and smoothing methods in a unified Bayesian framework. Readers learn what non-linear Kalman filters and particle filters are, how they are related, and their relative advantages and disadvantages. They also discover how state-of-the-art Bayesian parameter estimation methods can be combined with state-of-the-art filtering and smoothing algorithms. The book's practical and algorithmic approach assumes only modest mathematical prerequisites. Examples include MATLAB computations, and the numerous end-of-chapter exercises include computational assignments. MATLAB/GNU Octave source code is available for download at [www.cambridge.org/sarkka](http://www.cambridge.org/sarkka), promoting hands-on work with the methods.

## Book Information

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## Customer Reviews

This compact, informal introduction for graduate students and advanced undergraduates draws together modern state estimation methods including non-linear Kalman filters, particle filters, and the related smoothing algorithms. Its practical and algorithmic approach assumes only modest

mathematical prerequisites. End-of-chapter exercises include computational assignments, and Matlab code is available for download.

Simo Särkkä worked, from 2000 to 2010, with Nokia Ltd, Indagon Ltd and Nalco Company in various industrial research projects related to telecommunications, positioning systems and industrial process control. Currently, he is a Senior Researcher with the Department of Biomedical Engineering and Computational Science at Aalto University, Finland, and Adjunct Professor with Tampere University of Technology and Lappeenranta University of Technology. In 2011 he was a visiting scholar with the Signal Processing and Communications Laboratory of the Department of Engineering at the University of Cambridge. His research interests are in state and parameter estimation in stochastic dynamic systems, and in particular, Bayesian methods in signal processing, machine learning, and inverse problems with applications to brain imaging, positioning systems, computer vision and audio signal processing. He is a Senior Member of IEEE.

I bought this because it is one of the few books I've seen that spells out the extended RTS filter. Nice explanation. This author has some lecture notes up on the web, and they go nicely with this book. The price is great. The only downside I found is that it could use a few COMPLETE examples. Most are set up and then graphical results given. I'd like to see a few more intermediate steps or results. Like my title says, the notation is a little different than I've seen in other books, but that shouldn't slow you down too much.

Very comprehensive. It is a very updated book, covering most of the main methods used today. It does not go into the details, it's more like a reference book.

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