Dynamic linear models with R

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Petris, Giovanni

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Monografía

State space models have gained tremendous popularity in recent years in as disparate fields as engineering, economics, genetics and ecology. After a detailed introduction to general state space models, this book focuses on dynamic linear models, emphasizing their Bayesian analysis. Whenever possible it is shown how to compute estimates and forecasts in closed form; for more complex models, simulation techniques are used. A final chapter covers modern sequential Monte Carlo algorithms. The book illustrates all the fundamental steps needed to use dynamic linear models in practice, using R. Many detailed examples based on real data sets are provided to show how to set up a specific model, estimate its parameters, and use it for forecasting. All the code used in the book is available online. No prior knowledge of Bayesian statistics or time series analysis is required, although familiarity with basic statistics and R is assumed. Giovanni Petris is Associate Professor at the University of Arkansas. He has published many articles on time series analysis, Bayesian methods, and Monte Carlo techniques, and has served on National Science Foundation review panels. He regularly teaches courses on time series analysis at various universities in the US and in Italy. An active participant on the R mailing lists, he has developed and maintains a couple of contributed packages. Sonia Petrone is Associate Professor of Statistics at Bocconi University,Milano. She has published research papers in top journals in the areas of Bayesian inference, Bayesian nonparametrics, and latent variables models. She is interested in Bayesian nonparametric methods for dynamic systems and state space models and is an active member of the International Society of Bayesian Analysis. Patrizia Campagnoli received her PhD in Mathematical Statistics from the University of Pavia in 2002. She was Assistant Professor at the University of Milano-Bicocca and currently works for a financial software company

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Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es