Large-Scale Inverse Problems and Quantification of Uncertainty

From Wiley

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley

This book focuses on computational methods for large-scale statistical inverse problems and provides an introduction to statistical Bayesian and frequentist methodologies. Recent research advances for approximation methods are discussed, along with Kalman filtering methods and optimization-based approaches to solving inverse problems. The aim is to cross-fertilize the perspectives of researchers in the areas of data assimilation, statistics, large-scale optimization, applied and computational mathematics, high performance computing, and cutting-edge applications.

The solution to large-scale inverse problems critically depends on methods to reduce computational cost. Recent research approaches tackle this challenge in a variety of different ways. Many of the computational frameworks highlighted in this book build upon state-of-the-art methods for simulation of the forward problem, such as, fast Partial Differential Equation (PDE) solvers, reduced-order models and emulators of the forward problem, stochastic spectral approximations, and ensemble-based approximations, as well as exploiting the machinery for large-scale deterministic optimization through adjoint and other sensitivity analysis methods.

Key Features:

• Brings together the perspectives of researchers in areas of inverse problems and data assimilation.

• Assesses the current state-of-the-art and identify needs and opportunities for future research.

• Focuses on the computational methods used to analyze and simulate inverse problems.

• Written by leading experts of inverse problems and uncertainty quantification.

Graduate students and researchers working in statistics, mathematics and engineering will benefit from this book.

Large-Scale Inverse Problems and Quantification of Uncertainty

From Wiley

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley

This book focuses on computational methods for large-scale statistical inverse problems and provides an introduction to statistical Bayesian and frequentist methodologies. Recent research advances for approximation methods are discussed, along with Kalman filtering methods and optimization-based approaches to solving inverse problems. The aim is to cross-fertilize the perspectives of researchers in the areas of data assimilation, statistics, large-scale optimization, applied and computational mathematics, high performance computing, and cutting-edge applications.

The solution to large-scale inverse problems critically depends on methods to reduce computational cost. Recent research approaches tackle this challenge in a variety of different ways. Many of the computational frameworks highlighted in this book build upon state-of-the-art methods for simulation of the forward problem, such as, fast Partial Differential Equation (PDE) solvers, reduced-order models and emulators of the forward problem, stochastic spectral approximations, and ensemble-based approximations, as well as exploiting the machinery for large-scale deterministic optimization through adjoint and other sensitivity analysis methods.

Key Features:

• Brings together the perspectives of researchers in areas of inverse problems and data assimilation.

• Assesses the current state-of-the-art and identify needs and opportunities for future research.

• Focuses on the computational methods used to analyze and simulate inverse problems.

• Written by leading experts of inverse problems and uncertainty quantification.

Graduate students and researchers working in statistics, mathematics and engineering will benefit from this book.

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley Bibliography

- Sales Rank: #3679170 in Books
- Published on: 2010-11-15
- Original language: English
- Number of items: 1
- Dimensions: 9.30" h x .91" w x 6.20" l, 1.70 pounds
- Binding: Hardcover
- 388 pages
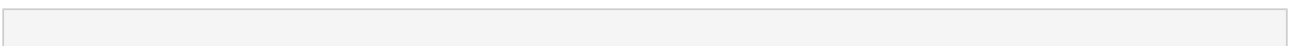
Download and Read Free Online Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley

Editorial Review

From the Inside Flap
Large-Scale Inverse Problems and Quantification of Uncertainty

Editors

Lorenz Biegler, Carnegie Mellon University, USA

George Biros, Georgia Institute of Technology, USA

Omar Ghattas, University of Texas at Austin, USA

Matthias Heinkenschloss, Rice University, USA

David Keyes, KAUST and Columbia University, USA

Bani Mallick, Texas A&M University, USA

Luis Tenorio, Colorado School of Mines, USA

Bart van Bloemen Waanders, Sandia National Laboratories, USA

Karen Wilcox, Massachusetts Institute of Technology, USA?

Youssef Marzouk, Massachusetts Institute of Technology, USA

????

This book focuses on computational methods for large-scale statistical inverse problems and provides an introduction to statistical Bayesian and frequentist methodologies. Recent research advances for approximation methods are discussed, along with Kalman filtering methods and optimization-based approaches to solving inverse problems. The aim is to cross-fertilize the perspectives of researchers in the areas of data assimilation, statistics, large-scale optimization, applied and computational mathematics, high performance computing, and cutting-edge applications.

The solution to large-scale inverse problems critically depends on methods to reduce computational cost. Recent research approaches tackle this challenge in a variety of different ways. Many of the computational frameworks highlighted in this book build upon state-of-the-art methods for simulation of the forward problem, such as, fast Partial Differential Equation (PDE) solvers, reduced-order models and emulators of the forward problem, stochastic spectral approximations, and ensemble-based approximations, as well as exploiting the machinery for large-scale deterministic optimization through adjoint and other sensitivity analysis methods.

Key Features:

• Brings together the perspectives of researchers in areas of inverse problems and data assimilation.

• Assesses the current state-of-the-art and identify needs and opportunities for future research.

• Focuses on the computational methods used to analyze and simulate inverse problems.

• Written by leading experts of inverse problems and uncertainty quantification.

Graduate students and researchers working in statistics, mathematics and engineering will benefit from this book.

From the Back Cover

Users Review

From reader reviews:

Wesley Powell:

Book is actually written, printed, or created for everything. You can recognize everything you want by a reserve. Book has a different type. As we know that book is important issue to bring us around the world. Close to that you can your reading ability was fluently. A publication Large-Scale Inverse Problems and Quantification of Uncertainty will make you to end up being smarter. You can feel a lot more confidence if you can know about almost everything. But some of you think which open or reading the book make you bored. It is far from make you fun. Why they could be thought like that? Have you in search of best book or suitable book with you?

Anthony Callahan:

Nowadays reading books become more and more than want or need but also become a life style. This reading behavior give you lot of advantages. The advantages you got of course the knowledge even the information inside the book that improve your knowledge and information. The knowledge you get based on what kind of e-book you read, if you want send more knowledge just go with knowledge books but if you want sense happy read one with theme for entertaining for example comic or novel. Often the Large-Scale Inverse Problems and Quantification of Uncertainty is kind of reserve which is giving the reader erratic experience.

Arlene Farmer:

Are you kind of busy person, only have 10 as well as 15 minute in your time to upgrading your mind talent or thinking skill also analytical thinking? Then you are experiencing problem with the book compared to can satisfy your short space of time to read it because all of this time you only find book that need more time to be learn. Large-Scale Inverse Problems and Quantification of Uncertainty can be your answer mainly because it can be read by anyone who have those short free time problems.

Kathe Waller:

With this era which is the greater particular person or who has ability to do something more are more valuable than other. Do you want to become one among it? It is just simple approach to have that. What you need to do is just spending your time very little but quite enough to experience a look at some books. One of many books in the top record in your reading list is usually Large-Scale Inverse Problems and Quantification of Uncertainty. This book that is certainly qualified as The Hungry Hillsides can get you closer in getting precious person. By looking up and review this guide you can get many advantages.

Download and Read Online Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley #DROXNVP0FK4

Read Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley for online ebook

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley books to read online.

Online Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley ebook PDF download

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley Doc

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley Mobipocket

Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley EPub