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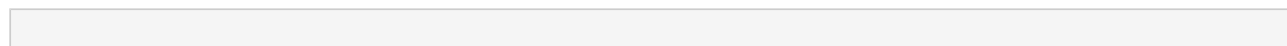
Download and Read Free Online Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley

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:

Lisa Gaither:

Information is provisions for people to get better life, information these days can get by anyone at everywhere. The information can be a expertise or any news even a concern. What people must be consider whenever those information which is inside former life are challenging to be find than now could be taking seriously which one is suitable to believe or which one the actual resource are convinced. If you have the unstable resource then you obtain it as your main information you will have huge disadvantage for you. All those possibilities will not happen in you if you take Large-Scale Inverse Problems and Quantification of Uncertainty as your daily resource information.

Shalon Dougherty:

Exactly why? Because this Large-Scale Inverse Problems and Quantification of Uncertainty is an unordinary book that the inside of the e-book waiting for you to snap the idea but latter it will jolt you with the secret that inside. Reading this book next to it was fantastic author who write the book in such wonderful way makes the content within easier to understand, entertaining means but still convey the meaning totally. So , it is good for you because of not hesitating having this ever again or you going to regret it. This excellent book will give you a lot of gains than the other book have such as help improving your talent and your critical thinking method. So , still want to hesitate having that book? If I have been you I will go to the publication store hurriedly.

Michael Ogden:

Are you kind of hectic person, only have 10 or perhaps 15 minute in your moment to upgrading your mind expertise or thinking skill perhaps analytical thinking? Then you are having problem with the book in comparison with can satisfy your short time to read it because pretty much everything time you only find publication that need more time to be go through. Large-Scale Inverse Problems and Quantification of

Uncertainty can be your answer as it can be read by a person who have those short time problems.

David Blackwood:

In this age globalization it is important to someone to find information. The information will make a professional understand the condition of the world. The health of the world makes the information easier to share. You can find a lot of sources to get information example: internet, paper, book, and soon. You can view that now, a lot of publisher which print many kinds of book. The particular book that recommended for your requirements is Large-Scale Inverse Problems and Quantification of Uncertainty this publication consist a lot of the information with the condition of this world now. This kind of book was represented so why is the world has grown up. The words styles that writer use to explain it is easy to understand. Typically the writer made some investigation when he makes this book. That is why this book ideal all of you.

Download and Read Online Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley #S6YNCXP1J9B

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

S6YNCXP1J9B: Large-Scale Inverse Problems and Quantification of Uncertainty From Wiley