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Titolo	Advanced query processing . Volume 1 Issues and trends / / Barbara Catania and Lakhmi C. Jain (eds.)
Pubbl/distr/stampa	Berlin ; ; New York, : Springer, 2012, c2013
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Altri autori (Persone)	CataniaBarbara JainL. C
Disciplina	005.74
Soggetti	Querying (Computer science) Database management
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	From the content: Advanced Query Processing: An Introduction -- On Skyline Queries and how to Choose from Pareto Sets -- Processing Framework for Ranking and Skyline Queries -- Preference-Based Query Personalization -- Approximate Queries for Spatial Data -- Approximate XML Query Processing -- Progressive and Approximate Join Algorithms on Data Streams.
Sommario/riassunto	This research book presents key developments, directions, and challenges concerning advanced query processing for both traditional and non-traditional data. A special emphasis is devoted to approximation and adaptivity issues as well as to the integration of heterogeneous data sources. The book will prove useful as a reference book for senior undergraduate or graduate courses on advanced data management issues, which have a special focus on query processing and data integration. It is aimed for technologists, managers, and developers who want to know more about emerging trends in advanced query processing.

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Autore	Polzehl Jorg
Titolo	Magnetic Resonance Brain Imaging : Modelling and Data Analysis Using R / / by Jörg Polzehl, Karsten Tabelow
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Disciplina	616.8047548
Soggetti	Biometry Radiology Image processing - Digital techniques Computer vision Mathematical statistics - Data processing Signal processing Biostatistics Computer Imaging, Vision, Pattern Recognition and Graphics Statistics and Computing Signal, Speech and Image Processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	Intro -- Preface to the Second Edition -- Preface to First Edition -- Contents -- Acronyms -- 1 Introduction -- 2 Magnetic Resonance Imaging in a Nutshell -- 2.1 The Principles of Magnetic Resonance Imaging -- 2.1.1 The Zeeman effect for Atomic Nuclei -- 2.1.2 Macroscopic Magnetization Vector -- 2.1.3 Spin Excitation and Relaxation -- 2.1.4 Spatial Localization and Pulse Sequences -- 2.1.5 MR Image Formation and Parallel Imaging -- 2.2 Special MR Imaging Modalities -- 2.2.1 Functional Magnetic Resonance Imaging (fMRI) -- 2.2.2 Diffusion Weighted Magnetic Resonance Imaging(dMRI) -- 2.2.3 Multi-parameter Mapping (MPM) -- 2.2.4 Inversion Recovery Magnetic Resonance Imaging (IR-MRI) -- 3 Medical Imaging Data Formats -- 3.1 DICOM Format -- 3.2 ANALYZE and NIfTI format -- 3.3 The BIDS

Standard for Neuroimaging Data -- 4 Functional Magnetic Resonance Imaging -- 4.1 Prerequisites for Running the Code in This Chapter -- 4.2 Pre-processing fMRI Data -- 4.2.1 Example Data -- Functional MRI Data on Visual Object Recognition (ds000105) -- Multi-subject and Multi-modal Neuroimaging Dataset on Face Processing (ds000117) -- Multi-modal Longitudinal Study of a Single Subject (ds000031) -- 4.2.2 Slice Time Correction -- 4.2.3 Motion Correction -- 4.2.4 Registration -- 4.2.5 Normalization -- 4.2.6 Brain Mask -- 4.2.7 Brain Tissue Segmentation -- 4.2.8 Using Brain Atlas Information -- 4.2.9 Spatial Smoothing -- 4.3 The General Linear Model (GLM) for fMRI -- 4.3.1 Modeling the BOLD Signal -- 4.3.2 The Linear Model -- 4.3.3 Simulated fMRI Data -- 4.4 Signal Detection in Single-Subject Experiments -- 4.4.1 Voxelwise Signal Detection and the Multiple Comparison Problem -- 4.4.2 Bonferroni Correction -- 4.4.3 Random Field Theory -- 4.4.4 False Discovery Rate (FDR) -- 4.4.5 Cluster Thresholds -- 4.4.6 Permutation Tests -- 4.5 Adaptive Smoothing in fMRI.
4.5.1 Analyzing fMRI Experiments with Structural Adaptive Smoothing Procedures -- 4.5.2 Structural Adaptive Segmentation in fMRI -- 4.6 Other Approaches for fMRI Analysis Using R -- 4.6.1 Multivariate fMRI Analysis -- 4.6.2 Independent Component Analysis (ICA) -- 4.7 Functional Connectivity for Resting-State fMRI -- 5 Diffusion-Weighted Imaging -- 5.1 Prerequisites -- 5.2 Diffusion-Weighted MRI Data -- 5.2.1 The Diffusion Equation and MRI -- 5.2.2 Example Data -- 5.2.3 Data Pre-processing -- 5.2.4 Reading Pre-processed Data -- 5.2.5 Basic Data Properties -- 5.2.6 Definition of a Brain Mask -- 5.2.7 Characterization of Noise in Diffusion-Weighted MRI -- 5.3 Modeling Diffusion-Weighted MRI Data -- 5.3.1 The Apparent Diffusion Coefficient (ADC) -- 5.3.2 Diffusion Tensor Imaging (DTI) -- 5.3.3 Diffusion Kurtosis Imaging (DKI) -- 5.3.4 The Orientation Distribution Function -- 5.3.5 Tensor Mixture Models -- 5.4 Smoothing Diffusion-Weighted Data -- 5.4.1 Effects of Gaussian Filtering -- 5.4.2 Multi-shell Position-Orientation Adaptive Smoothing (msPOAS) -- 5.5 Fiber Tracking Methods -- 5.6 Structural Connectivity -- 6 Multiparameter Mapping -- 6.1 Prerequisites -- 6.2 Multiparameter Mapping -- 6.2.1 Signal Model in FLASH Sequences -- 6.2.2 Data from the Multiparameter Mapping (MPM) Protocol -- 6.2.3 Reparameterization of the Signal Model by ESTATICS -- 6.2.4 Correction for Instrumental B1-Bias -- 6.2.5 Correction for the Bias Induced by Low SNR -- 6.2.6 Structural Adaptive Smoothing of Relaxometry Data -- 7 Inversion Recovery Magnetic Resonance Imaging -- 7.1 Prerequisites -- 7.2 Tissue Porosity Estimation by Inversion Recovery MRI-based Experiments -- 7.3 Generating a Simulated Dataset -- 7.4 Estimation of Parameters from IR MRI Data in a Mixture Model -- A Smoothing Techniques for Imaging Problems -- A.1 Non-parametric Regression -- A.1.1 Kernel Smoothing.
A.2 Adaptive Weigths Smoothing -- A.2.1 Local Constant Likelihood Models -- A.2.2 Patch-Wise Adaptive Weights Smoothing (PAWS) -- A.3 Special Settings in Neuroimaging Experiments -- A.3.1 Simultaneous Mean and Variance Estimation -- A.3.2 Vector Valued Data -- A.3.3 Diffusion Data -- A.3.4 Tensor-Valued Data -- A.3.5 Model-Driven Smoothing of Observed Images -- B Resources for Neuroimaging in R -- B.1 An Overview on Selected R Packages for Neuroimaging -- B.2 Open Neuroimaging Data Archives -- C Data, Software and Hardware Resources -- C.1 How to Get the Example Code -- C.2 Packages and Software to Install -- C.3 How to Acquire and Organize the Example Data -- C.3.1 Data from the `Kirby21' Reproducibility Study -- C.3.2 Data from OpenNeuro -- C.3.3 DICOM Example Data -- C.3.4 MPM Data Example -- C.3.5 Atlas Data -- C.4 How to Obtain Precomputed

Results -- C.5 System Requirements -- References -- Index.

Sommario/riassunto

This book discusses modelling and analysis of Magnetic Resonance Imaging (MRI) data of the human brain. For the data processing pipelines we rely on R, the software environment for statistical computing and graphics. The book is intended for readers from two communities: Statisticians, who are interested in neuroimaging and look for an introduction to the acquired data and typical scientific problems in the field and neuroimaging students, who want to learn about the statistical modeling and analysis of MRI data. Being a practical introduction, the book focuses on those problems in data analysis for which implementations within R are available. By providing full worked-out examples the book thus serves as a tutorial for MRI analysis with R, from which the reader can derive its own data processing scripts. The book starts with a short introduction into MRI. The next chapter considers the process of reading and writing common neuroimaging data formats to and from the Rsession. The main chapters then cover four common MR imaging modalities and their data modeling and analysis problems: functional MRI, diffusion MRI, Multi-Parameter Mapping and Inversion Recovery MRI. The book concludes with extended Appendices on details of the utilize non-parametric statistics and on resources for R and MRI data. The book also addresses the issues of reproducibility and topics like data organization and description, open data and open science. It completely relies on a dynamic report generation with knitr: The books R-code and intermediate results are available for reproducibility of the examples.