

1. Record Nr.	UNINA9910462093103321
Titolo	Terrorism, the laws of war, and the Constitution [[electronic resource] ] : debating the enemy combatant cases // edited by Peter Berkowitz
Pubbl/distr/stampa	Stanford, Calif., : Hoover Institution Press, c2005
ISBN	0-8179-4623-3
Descrizione fisica	1 online resource (217 p.)
Collana	Hoover Institution Press publication series ; ; no. 537
Altri autori (Persone)	BerkowitzPeter <1959->
Disciplina	343.73/01
Soggetti	Combatants and noncombatants (International law) War (International law) Constitutional law - United States Detention of persons - United States Terrorism - United States Terrorism - Prevention - Law and legislation - United States National security - United States Electronic books.
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 index.
Nota di contenuto	Front Cover; Book Title; Copyright; Contents; Acknowledgments; Introduction -Peter Berkowitz; 1. The Combatant Detention TrilogyThrough the Lenses of History -Seth P. Waxman; 2. The Supreme Court Goes to War -Patricia M. Wald; 3. Enemy Combatants and theProblem of Judicial Competence -John Yoo; 4. Judicial Baby-Splitting and theFailure of the Political Branches -Benjamin Wittes; 5. "Our Perfect Constitution" Revisited -Mark Tushnet; 6. The Supreme Court and theGuantanamo Controversy -Ruth Wedgwood; Contributors; Index
Sommario/riassunto	Terrorism, the Laws of War, and the Constitution examines three enemy combatant cases that represent the leading edge of U.S. efforts to devise legal rules, consistent with American constitutional principles, for waging the global war on terror. The distinguished contributors analyze the crucial questions these cases raise about the balance between national security and civil liberties in wartime and call for a reexamination of the complex connections between the Constitution

and international law.

2. Record Nr.	UNINA9910751383603321
Autore	Polzehl Jorg
Titolo	Magnetic Resonance Brain Imaging : Modelling and Data Analysis Using R // by Jörg Polzehl, Karsten Tabelow
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	9783031389498 3031389492
Edizione	[2nd ed. 2023.]
Descrizione fisica	1 online resource (268 pages)
Collana	Use R!, , 2197-5744
Altri autori (Persone)	TabelowKarsten
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 Cervell Ressonància magnètica Simulació per ordinador R (Llenguatge de programació) Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
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 Weights 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

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## 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.

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