

Table of Contents

Coding and Decoding

A Comparative Study of Algorithms for Intra- and Inter-subjects fMRI Decoding	1
<i>Vincent Michel, Alexandre Gramfort, Evelyn Eger, Gaël Varoquaux, and Bertrand Thirion</i>	
Beyond Brain Reading: Randomized Sparsity and Clustering to Simultaneously Predict and Identify	9
<i>Alexandre Gramfort, Gaël Varoquaux, and Bertrand Thirion</i>	
Searchlight Based Feature Extraction	17
<i>Shahar Jamshy, Omri Perez, Yehezkel Yeshurun, Talna Hendler, and Nathan Intrator</i>	
Looking Outside the Searchlight	26
<i>Joset A. Etzel, Michael W. Cole, and Todd S. Braver</i>	
Population Codes Representing Musical Timbre for High-Level fMRI Categorization of Music Genres	34
<i>Michael Casey, Jessica Thompson, Olivia Kang, Rajeev Raizada, and Thalia Wheatley</i>	
Induction in Neuroscience with Classification: Issues and Solutions	42
<i>Emanuele Olivetti, Susanne Greiner, and Paolo Avesani</i>	
A New Feature Selection Method Based on Stability Theory – Exploring Parameters Space to Evaluate Classification Accuracy in Neuroimaging Data	51
<i>Jane M. Rondina, John Shawe-Taylor, and Janaina Mourão-Miranda</i>	
Identification of OCD-Relevant Brain Areas through Multivariate Feature Selection	60
<i>Emilio Parrado-Hernández, Vanessa Gómez-Verdejo, Manel Martínez-Ramon, Pino Alonso, Jesús Pujol, José M. Menchón, Narcís Cardoner, and Carles Soriano-Mas</i>	
Deformation-Invariant Sparse Coding for Modeling Spatial Variability of Functional Patterns in the Brain	68
<i>George H. Chen, Evelina G. Fedorenko, Nancy G. Kanwisher, and Polina Golland</i>	

Decoding Complex Cognitive States Online by Manifold Regularization in Real-Time fMRI	76
<i>Toke Jansen Hansen, Lars Kai Hansen, and Kristoffer Hougaard Madsen</i>	

Neuroscience

Modality Neutral Techniques for Brain Image Understanding	84
<i>David B. Keator</i>	
How Does the Brain Represent Visual Scenes? A Neuromagnetic Scene Categorization Study	93
<i>Pavan Ramkumar, Sebastian Pannasch, Bruce C. Hansen, Adam M. Larson, and Lester C. Loschky</i>	
Finding Consistencies in MEG Responses to Repeated Natural Speech	101
<i>Miika Koskinen</i>	
Categorized EEG Neurofeedback Performance Unveils Simultaneous fMRI Deep Brain Activation	108
<i>Sivan Kinreich, Ilana Podlipsky, Nathan Intrator, and Talma Hendler</i>	
Predicting Clinically Definite Multiple Sclerosis from Onset Using SVM	116
<i>Philip P. Kwok, Olga Ciccarelli, Declan T. Chard, David H. Miller, and Daniel C. Alexander</i>	
MKL-Based Sample Enrichment and Customized Outcomes Enable Smaller AD Clinical Trials	124
<i>Chris Hinrichs, N. Maritza Dowling, Sterling C. Johnson, and Vikas Singh</i>	
Pairwise Analysis for Longitudinal fMRI Studies	132
<i>Diego Sona, Paolo Avesani, Stefano Magon, Gianpaolo Basso, and Gabriele Miceli</i>	

Dynamics

Non-separable Spatiotemporal Brain Hemodynamics Contain Neural Information	140
<i>Felix Bießmann, Yusuke Murayama, Nikos K. Logothetis, Klaus-Robert Müller, and Frank C. Meinecke</i>	
The Dynamic Beamformer	148
<i>Ali Bahrnisharif, Marcel A.J. van Gerven, Jan-Mathijs Schoffelen, Zoubin Ghahramani, and Tom Heskes</i>	

Covert Attention as a Paradigm for Subject-Independent Brain-Computer Interfacing	156
<i>Hans J.P. Wouters, Marcel A.J. van Gerven, Matthias S. Treder, Tom Heskes, and Ali Bahramisharif</i>	
The Neural Dynamics of Visual Processing in Monkey Extrastriate Cortex: A Comparison between Univariate and Multivariate Techniques	164
<i>Muxime Cauchoix, Ali Bilgin Arslan, Denis Fize, and Thomas Serre</i>	
Statistical Learning for Resting-State fMRI: Successes and Challenges	172
<i>Gaël Varoquaux and Bertrand Thirion</i>	
Relating Brain Functional Connectivity to Anatomical Connections: Model Selection	178
<i>Fani Deligianni, Gaël Varoquaux, Bertrand Thirion, Emma Robinson, David J. Sharp, A. David Edwards, and Daniel Rueckert</i>	
Information-Theoretic Connectivity-Based Cortex Parcellation	186
<i>Nico S. Gorbach, Silvan Siep, Jenia Jitsev, Corina Melzer, and Marc Tittgemeyer</i>	
Inferring Brain Networks through Graphical Models with Hidden Variables	194
<i>Justin Dauwels, Hang Yu, Xueou Wang, Francois Vialatte, Charles Latchoumane, Jaeseung Jeong, and Andrzej Cichocki</i>	
Pitfalls in EEG-Based Brain Effective Connectivity Analysis	202
<i>Stefan Haufe, Vadim V. Nikulin, Guido Nolte, and Klaus-Robert Müller</i>	

Probabilistic Models and Machine Learning

Data-Driven Modeling of BOLD Drug Response Curves Using Gaussian Process Learning	210
<i>Orla M. Doyle, Mitul A. Mehta, Michael J. Brammer, Adam J. Schwarz, Sara De Simoni, and Andre F. Marquand</i>	
Variational Bayesian Learning of Sparse Representations and Its Application in Functional Neuroimaging	218
<i>Evangelos Roussos, Steven Roberts, and Ingrid Daubechies</i>	
Identification of Functional Clusters in the Striatum Using Infinite Relational Modeling	226
<i>Kasper Winther Andersen, Kristoffer Hougaard Madsen, Hartwig Siebner, Lars Kai Hansen, and Morten Mørup</i>	

A Latent Feature Analysis of the Neural Representation of Conceptual Knowledge 234
 Kai-min Chang, Brian Murphy, and Marcel Just

Real-Time Functional MRI Classification of Brain States Using Markov-SVM Hybrid Models: Peering Inside the rt-fMRI Black Box 242
 Ariana Anderson, Dianna Han, Pamela K. Douglas, Jennifer Bramen, and Mark S. Cohen

Restoring the Generalizability of SVM Based Decoding in High Dimensional Neuroimage Data 256
 Trine Julie Abrahamsen and Lars Kai Hansen

Author Index 265