Excavating the mother lode of human-generated text: A systematic review of research that uses the Wikipedia corpus

Although primarily an encyclopedia, Wikipedia’s expansive content provides a knowledge base that has been continuously exploited by researchers in a wide variety of domains. This article systematically reviews the scholarly studies that have used Wikipedia as a data source, and investigates the means by which Wikipedia has been employed in three main computer science research areas: information retrieval, natural language processing, and ontology building. We report and discuss the research trends of the identified and examined studies. We further identify and classify a list of tools that can be used to extract data from Wikipedia, and compile a list of currently available data sets extracted from Wikipedia.
Open semantic analysis: The case of word level semantics in Danish
The present research is motivated by the need for accessible and efficient tools for automated semantic analysis in Danish. We are interested in tools that are completely open, so they can be used by a critical public, in public administration, non-governmental organizations and businesses. We describe data-driven models for Danish semantic relatedness, word intrusion and sentiment prediction. Open Danish corpora were assembled and unsupervised learning implemented for explicit semantic analysis and with Gensim's Word2vec model. We evaluate the performance of the two models on three different annotated word datasets. We test the semantic representations' alignment with single word sentiment using supervised learning. We find that logistic regression and large random forests perform well with Word2vec features.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems, Copenhagen Center for Health Technology
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Number of pages: 5
Publication date: 2017

Host publication information
Title of host publication: Proceedings of 8th Language and Technology Conference
Main Research Area: Technical/natural sciences
Conference: 8th Language and Technology Conference, Poznan, Poland, 17/11/2017 - 17/11/2017
Source: PublicationPreSubmission
Source-ID: 140579168
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Scholia and scientometrics with Wikidata
Scholia is a tool to handle scientific bibliographic information through Wikidata. The Scholia Web service creates on-the-fly scholarly profiles for researchers, organizations, journals, publishers, individual scholarly works, and for research topics.
To collect the data, it queries the SPARQL-based Wikidata Query Service. Among several display formats available in Scholia are lists of publications for individual researchers and organizations, publications per year, employment timelines, as well as coauthor and topic networks and citation graphs. The Python package implementing the Web service is also able to format Wikidata bibliographic entries for use in LaTeX/BIBTeX.

**General information**
- **State:** Published
- **Organisations:** Department of Applied Mathematics and Computer Science, Cognitive Systems, EvoMRI Communications, Maastricht University
- **Authors:** Nielsen, F. Å. (Intern), Mietchen, D. (Ekstern), Willighagen, E. (Ekstern)
- **Number of pages:** 16
- **Publication date:** 2017

**Host publication information**
- **Title of host publication:** Joint Proceedings of the 1st International Workshop on Scientometrics and 1st International Workshop on Enabling Decentralised Scholarly Communication
- **Main Research Area:** Technical/natural sciences
- **Conference:** Scientometrics and Enabling Decentralised Scholarly Communication, Portorož, Slovenia, 28/05/2017 - 28/05/2017
- **Electronic versions:** article_03.pdf
- **DOIs:** 10.5281/zenodo.1036595
- **Source:** PublicationPreSubmission
- **Source-ID:** 140578356
- **Publication:** Research - peer-review › Article in proceedings – Annual report year: 2017

**Scholia, Scientometrics and Wikidata**
Scholia is a tool to handle scientific bibliographic information through Wikidata. The Scholia Web service creates on-the-fly scholarly profiles for researchers, organizations, journals, publishers, individual scholarly works, and for research topics. To collect the data, it queries the SPARQL-based Wikidata Query Service. Among several display formats available in Scholia are lists of publications for individual researchers and organizations, plots of publications per year, employment timelines, as well as co-author and topic networks and citation graphs. The Python package implementing the Web service is also able to format Wikidata bibliographic entries for use in LaTeX/BIBTeX. Apart from detailing Scholia, we describe how Wikidata has been used for bibliographic information and we also provide some scientometric statistics on this information.

**General information**
- **State:** Published
- **Organisations:** Department of Applied Mathematics and Computer Science, Cognitive Systems, EvoMRI Communications, Maastricht University
- **Authors:** Nielsen, F. (Intern), Mietchen, D. (Ekstern), Willighagen, E. (Ekstern)
- **Pages:** 237-259
- **Publication date:** 2017

**Host publication information**
- **Title of host publication:** The Semantic Web: ESWC 2017 Satellite Events
- **Volume:** 10577
- **Publisher:** Springer
- **Series:** Lecture Notes in Computer Science
- **Volume:** 10577
- **ISSN:** 0302-9743
- **Main Research Area:** Technical/natural sciences
- **Conference:** 14th ESCW - European Semantic Web Conference 2017, Portoroz, Slovenia, 28/05/2017 - 28/05/2017
- **DOIs:** 10.1007/978-3-319-70407-4_36
- **Source:** FindIt
- **Source-ID:** 2392832888
- **Publication:** Research - peer-review › Article in proceedings – Annual report year: 2017

**Literature, Geolocation and Wikidata**
Littar was the second-prize winning entry in an app competition. It implemented a system for visualizing places mentioned in individual literary works. Wikidata acted as the backend for the system. Here I describe the Littar system and also some of the issues I encountered while developing the system: How locations and literature can be related, what types of
location-literature relations are possible within Wiki-data, what limitations there are and what questions we may ask once we have enough data in Wikidata.

**General information**
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Pages: 61-64
Publication date: 2016

**Host publication information**
Title of host publication: Proceedings of the 10th International AAAI Conference on Web and Social Media (ICWSM 2016)
Publisher: AAAI Press
BFI conference series: International Conference on Weblogs and Social Media (5010753)
Main Research Area: Technical/natural sciences
Conference: 10th International AAAI Conference on Web and Social Media (ICWSM 2016), Cologne, Germany, 17/05/2016 - 17/05/2016
Electronic versions: imm6934.pdf
Links:
http://www.aaai.org/Library/Workshops/ws16-17.php
Source: PublicationPreSubmission
Source-ID: 127115929
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2016

**Strategies of Legitimacy Through Social Media: The Networked Strategy**
How can corporations develop legitimacy when coping with stakeholders who have multiple, often conflicting sustainable development (SD) agendas? We address this question by conducting an in-depth longitudinal case study of a corporation's stakeholder engagement in social media and propose the concept of a networked legitimacy strategy. With this strategy, legitimacy is gained through participation in non-hierarchical open platforms and the co-construction of agendas. We explore the organizational transition needed to yield this new legitimacy approach. We argue that, in this context, legitimacy gains may increase when firms are able to reduce the control over the engagements and relate non-hierarchically with their publics. We contribute to the extant literature on political corporate social responsibility and legitimacy by providing an understanding of a new context for engagement that reconfigures cultural, network, and power relations between the firm and their stakeholders in ways that challenge previous forms of legitimation.

**General information**
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems, Universidad Carlos III de Madrid, Copenhagen Business School
Authors: Castelló, I. (Ekstern), Etter, M. (Ekstern), Nielsen, F. Å. (Intern)
Pages: 402-432
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Journal of Management Studies
Volume: 53
Issue number: 3
ISSN (Print): 0022-2380
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 5.112 SNIP 2.526 CiteScore 5.25
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.871 SNIP 3.165 CiteScore 6.31
BFI (2014): BFI-level 2
The Center for Integrated Molecular Brain Imaging (Cimbi) database

We here describe a multimodality neuroimaging containing data from healthy volunteers and patients, acquired within the Lundbeck Foundation Center for Integrated Molecular Brain Imaging (Cimbi) in Copenhagen, Denmark. The data is of particular relevance for neurobiological research questions related to the serotonergic transmitter system with its normative data on the serotonergic subtype receptors 5-HT$_{1A}$, 5-HT$_{1B}$, 5-HT$_{2A}$, and 5-HT$_{4}$ and the 5-HT transporter (5-HTT), but can easily serve other purposes.

The Cimbi database and Cimbi biobank were formally established in 2008 with the purpose to store the wealth of Cimbi-acquired data in a highly structured and standardized manner in accordance with the regulations issued by the Danish Data Protection Agency as well as to provide a quality-controlled resource for future hypothesis-generating and hypothesis-driven studies. The Cimbi database currently comprises a total of 1100 PET and 1000 structural and functional MRI scans and it holds a multitude of additional data, such as genetic and biochemical data, and scores from 17 self-reported questionnaires and from 11 neuropsychological paper/computer tests.

The database associated Cimbi biobank currently contains blood and in some instances saliva samples from about 500 healthy volunteers and 300 patients with e.g., major depression, dementia, substance abuse, obesity, and impulsive aggression. Data continue to be added to the Cimbi database and biobank.

General information
State: Published
Organisations: Copenhagen Center for Health Technology, Department of Applied Mathematics and Computer Science, Cognitive Systems, Copenhagen University Hospital, University of Copenhagen, University of California, Rotman Research Institute
Pages: 1213-1219
Publication date: 2016
Main Research Area: Technical/natural sciences

Purpose – How organizations’ pasts are presented to the public is crucial, because this presentation shapes corporate reputations. Increasingly, various actors contribute to the public remembering of organizations with new information and communication technologies (ICTs). The purpose of this paper is to investigate the online encyclopedia Wikipedia as a global memory place, where the pasts of organizations are communicatively co-constructed by actors of a loosely connected community.

Design/methodology/approach – The authors analyze 1,459 edits of Wikipedia pages of ten organizations from various industries. Quantitative content analysis detects Wikipedia edits for their reputational relevance and reference to formal sources, such as corporate communication or newspapers. Furthermore, the authors investigate to which degree current corporate communication in form of 177 press releases has an influence on the remembering process in Wikipedia.

Findings – The analysis shows how the continuous construction of collective memories bridges past formal corporate communication, news media, and other sources with the present, exposing, and suppressing relevant information concerning corporate reputation for large audiences. The analysis of press releases shows that current frames provided by corporate communication finds only little resonance in the ongoing remembering processes in Wikipedia.

Originality/value – Conventional approaches toward remembering of organizations embrace an organization centric view, whereby corporate communication strategically leverages organizational pasts. This paper contributes to the understanding of the ongoing, networked, and collective co-construction of organizational pasts by various authors through ICTs.
Combining text mining and coordinate-based meta-analysis

**General information**
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Number of pages: 27
Publication date: 2015

**Publication information**
Media of output: PowerPoint
Original language: English
Main Research Area: Technical/natural sciences
Online Open Neuroimaging Mass Meta-Analysis with a Wiki
We describe a system for meta-analysis where a wiki stores numerical data in a simple comma-separated values format and a web service performs the numerical statistical computation. We initially apply the system on multiple meta-analyses of structural neuroimaging data results. The described system allows for mass meta-analysis, e.g., meta-analysis across multiple brain regions and multiple mental disorders providing an overview of important relationships and their uncertainties in a collaborative environment.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems, King's College London
Authors: Nielsen, F. A. (Intern), Kempton, M. J. (Ekstern), Williams, S. C. R. (Ekstern)
Pages: 259-271
Publication date: 2015

Wikipedia may be the best-developed attempt thus far to gather all human knowledge in one place. Its accomplishments in this regard have made it a point of inquiry for researchers from different fields of knowledge. A decade of research has thrown light on many aspects of the Wikipedia community, its processes, and its content. However, due to the variety of fields inquiring about Wikipedia and the limited synthesis of the extensive research, there is little consensus on many aspects of Wikipedia's content as an encyclopedic collection of human knowledge. This study addresses the issue by systematically reviewing 110 peer-reviewed publications on Wikipedia content, summarizing the current findings, and highlighting the major research trends. Two major streams of research are identified: the quality of Wikipedia content (including comprehensiveness, currency, readability, and reliability) and the size of Wikipedia. Moreover, we present the key research trends in terms of the domains of inquiry, research design, data source, and data gathering methods. This review synthesizes scholarly understanding of Wikipedia content and paves the way for future studies.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems, Concordia University, University of Oulu
Authors: Mesgari, M. (Ekstern), Okoli, C. (Ekstern), Mehdi, M. (Ekstern), Nielsen, F. Å. (Intern), Lanamäki, A. (Ekstern)
Number of pages: 27
Pages: 219-245
Publication date: 2015
Main Research Area: Technical/natural sciences

Publication information
Journal: American Society for Information Science and Technology. Journal
Volume: 66
Issue number: 2
Action and Language Mechanisms in the Brain: Data, Models and Neuroinformatics

We assess the challenges of studying action and language mechanisms in the brain, both singly and in relation to each other to provide a novel perspective on neuroinformatics, integrating the development of databases for encoding - separately or together - neurocomputational models and empirical data that serve systems and cognitive neuroscience.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems, University of Southern California, California Institute of Technology, University of Marburg, Purdue University, Carnegie Mellon University, Ozyegin University
Authors: Arbib, M. A. (Ekstern), Bonaiuto, J. J. (Ekstern), Bornkessel-Schlesewsky, I. (Ekstern), Kemmerer, D. (Ekstern), MacWhinney, B. (Ekstern), Nielsen, F. Å. (Intern), Oztop, E. (Ekstern)
Brede Tools and Federating Online Neuroinformatics Databases
As open science neuroinformatics databases the Brede Database and Brede Wiki seek to make distribution and federation of their content as easy and transparent as possible. The databases rely on simple formats and allow other online tools to reuse their content. This paper describes the possible interconnections on different levels between the Brede tools and other databases.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Pages: 27-37
Publication date: 2014
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroInformatics
Volume: 12
Issue number: 1
ISSN (Print): 1539-2791
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.35 SNIP 1.086 CiteScore 2.72
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.31 SNIP 0.849 CiteScore 2.35
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.156 SNIP 1.022 CiteScore 2.74
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.259 SNIP 1.131 CiteScore 2.73
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.506 SNIP 1.402 CiteScore 2.93
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.221 SNIP 1.111 CiteScore 2.01
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.967 SNIP 0.957
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.948 SNIP 0.987
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.393 SNIP 1.165
Scopus rating (2007): SJR 1.562 SNIP 1.527
Scopus rating (2006): SJR 1.311 SNIP 1.203
Scopus rating (2005): SJR 1.384 SNIP 1.147
Scopus rating (2004): SJR 1.409 SNIP 0.899
Web of Science (2004): Indexed yes
Original language: English
Database, Wiki, Semantic web, Open science, Meta-analysis, Data federation
Electronic versions:
imm6346.pdf
DOIs:
Hundreds of scholarly studies have investigated various aspects of Wikipedia. Although a number of literature reviews have provided overviews of this vast body of research, none has specifically focused on the readers of Wikipedia and issues concerning its readership. In this systematic literature review, we review 99 studies to synthesize current knowledge regarding the readership of Wikipedia and provide an analysis of research methods employed. The scholarly research has found that Wikipedia is popular not only for lighter topics such as entertainment but also for more serious topics such as health and legal information. Scholars, librarians, and students are common users, and Wikipedia provides a unique opportunity for educating students in digital literacy. We conclude with a summary of key findings, implications for researchers, and implications for the Wikipedia community.
Sequential collaboration network with sentiment coloring

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Number of pages: 1
Publication date: 2013
Event: Abstract from International School and Conference on Network Science, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Electronic versions: NielsenF2013Sequential.pdf
Source: PublicationPreSubmission
Source-ID: 110843391
Publication: Research › Conference abstract for conference – Annual report year: 2015

Online open neuroimaging mass meta-analysis
We describe a system for meta-analysis where a wiki stores numerical data in a simple format and a web service performs the numerical computation. We initially apply the system on multiple meta-analyses of structural neuroimaging data results. The described system allows for mass meta-analysis, e.g., meta-analysis across multiple brain regions and multiple mental disorders.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, King's College London
Authors: Nielsen, F. Å. (Intern), Kempton, M. J. (Ekstern), Williams, S. C. R. (Ekstern)
Number of pages: 5
Publication date: 2012
Main Research Area: Technical/natural sciences
Electronic versions: E7ED5d01.pdf
Source: dtu
Source-ID: n:oai:DTIC-ART:arxiv/372775480::21787
Publication: Research - peer-review › Paper – Annual report year: 2012

Wikipedia has become one of the ten most visited sites on the Web, and the world's leading source of Web reference information. Its rapid success has inspired hundreds of scholars from various disciplines to study its content, communication and community dynamics from various perspectives. This article presents a systematic review of scholarly research on Wikipedia. We describe our detailed, rigorous methodology for identifying over 450 scholarly studies of Wikipedia. We present the WikiLit website (http://wikilit.dot.referata.dot.com), where most of the papers reviewed here are described in detail. In the major section of this article, we then categorize and summarize the studies. An appendix
features an extensive list of resources useful for Wikipedia researchers.

**General information**

State: Published  
Organisations: Department of Informatics and Mathematical Modeling, Cognitive Systems, Concordia University, University of Bergen  
Authors: Okoli, C. (Ekstern), Mehdi, M. (Ekstern), Mesgari, M. (Ekstern), Nielsen, F. Å. (Intern), Lanamäki, A. (Ekstern)  
Number of pages: 138  
Publication date: 2012  

**Publication information**

Original language: English  
Main Research Area: Technical/natural sciences  
Electronic versions:  
SSRN_id2021326.pdf  
DOIs:  
10.2139/ssrn.2021326  
Publication: Research › Report – Annual report year: 2012  

**A new ANEW: Evaluation of a word list for sentiment analysis in microblogs**

Sentiment analysis of microblogs such as Twitter has recently gained a fair amount of attention. One of the simplest sentiment analysis approaches compares the words of a posting against a labeled word list, where each word has been scored for valence, — a “sentiment lexicon” or “affective word lists”. There exist several affective word lists, e.g., ANEW (Affective Norms for English Words) developed before the advent of microblogging and sentiment analysis. I wanted to examine how well ANEW and other word lists performs for the detection of sentiment strength in microblog posts in comparison with a new word list specifically constructed for microblogs. I used manually labeled postings from Twitter scored for sentiment. Using a simple word matching I show that the new word list may perform better than ANEW, though not as good as the more elaborate approach found in SentiStrength.

**General information**

State: Published  
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling  
Authors: Nielsen, F. Å. (Intern)  
Pages: 93-98  
Publication date: 2011  

**Host publication information**

Title of host publication: Proceedings of the ESWC2011 Workshop on ‘Making Sense of Microposts’: Big things come in small packages  
Series: CEUR Workshop Proceedings  
Number: 718  
Main Research Area: Technical/natural sciences  
Conference: Workshop on ‘Making Sense of Microposts : Big things come in small packages, Heraklion, Crete, 01/01/2011  
Electronic versions:  
0A328d01.pdf  
Links:  
http://research.hypios.com/msm2011/  
http://ceur-ws.org/Vol-718/  
http://neuro.imm.dtu.dk/wiki/A_new_ANEW:_evaluation_of_a_word_list_for_sentiment_analysis_in_microblogs  
Source: orbit  
Source-ID: 312647  
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011  

**Good Friends, Bad News - Affect and Virality in Twitter**

The link between affect, defined as the capacity for sentimental arousal on the part of a message, and virality, defined as the probability that it be sent along, is of significant theoretical and practical importance, e.g. for viral marketing. The basic measure of virality in Twitter is the probability of retweet and we are interested in which dimensions of the content of a tweet leads to retweeting. We hypothesize that negative news content is more likely to be retweeted, while for non-news tweets positive sentiments support virality. To test the hypothesis we analyze three corpora: A complete sample of tweets about the COP15 climate summit, a random sample of tweets, and a general text corpus including news. The latter allows us to train a classifier that can distinguish tweets that carry news and non-news information. We present evidence that negative sentiment enhances virality in the news segment, but not in the non-news segment. Our findings may be
summarized ‘If you want to be cited: Sweet talk your friends or serve bad news to the public’.

A fielded wiki for personality genetics
I describe a fielded wiki, where a Web form interface allows the entry, analysis and visualization of results from scientific papers in the personality genetics domain. Papers in this domain typically report the mean and standard deviation of multiple personality trait scores from statistics on human subjects grouped based on genotype. The wiki organizes the basic data in a single table with fixed columns, each row recording statistical values with respect to a specific personality trait reported in a specific paper with a specific genotype group. From this basic data hard-coded meta-analysis can compute individual and combined effect sizes. The meta-analytic results are displayed in on-the-fly computed hyperlinked graphs and tables. Revision control on the basic data tracks changes and data may be exported to comma-separated files or in a MediaWiki template format.

A nonlinear relationship between cerebral serotonin transporter and 5-HT(2A) receptor binding: an in vivo molecular imaging study in humans
Serotonergic neurotransmission is involved in the regulation of physiological functions such as mood, sleep, memory, and appetite. Within the serotonin transmitter system, both the postsynaptically located serotonin 2A (5-HT2A) receptor and the presynaptic serotonin transporter (SERT) are sensitive to chronic changes in cerebral 5-HT levels. Additionally, experimental studies suggest that alterations in either the 5-HT2A receptor or SERT level can affect the protein level of the counterpart. The aim of this study was to explore the covariation between cerebral 5-HT2A receptor and SERT in vivo in
the same healthy human subjects. Fifty-six healthy human subjects with a mean age of 36 ± 19 years were investigated.

The SERT binding was imaged with \([11C]3\)-amino-4-(2-dimethylaminomethyl-phenylsulfanyl)-benzonitrile (DASB) and 5-HT2A receptor binding with \([18F]altanserin using positron emission tomography. Within each individual, a regional intercorrelation for the various brain regions was seen with both markers, most notably for 5-HT2A receptor binding. An inverted U-shaped relationship between the 5-HT2A receptor and the SERT binding was identified. The observed regional intercorrelation for both the 5-HT2A receptor and the SERT cerebral binding suggests that, within the single individual, each marker has a set point adjusted through a common regulator. A quadratic relationship between the two markers is consistent with data from experimental studies of the effect on SERT and 5-HT2A receptor binding of chronic changes in 5-HT levels. That is, the observed association between the 5-HT2A receptor and SERT binding could be driven by the projection output from the raphe nuclei, but other explanations are also at hand.

**General information**

State: Published

Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Center for Integrated Molecular Brain Imaging, Copenhagen University Hospital

Authors: Erritzoe, D. (Ekstern), Holst, K. (Ekstern), Frokjaer, V. G. (Ekstern), Licht, C. L. (Ekstern), Kalbitzer, J. (Ekstern), Nielsen, F. Å. (Intern), Svarer, C. (Ekstern), Madsen, J. (Ekstern), Knudsen, G. M. (Ekstern)

Pages: 3391-3397

Publication date: 2010

Main Research Area: Technical/natural sciences

**Publication information**

Journal: Journal of Neuroscience

Volume: 30

Issue number: 9

ISSN (Print): 0270-6474

Ratings:

- BFI (2018): BFI-level 2
- Web of Science (2018): Indexed yes
- BFI (2017): BFI-level 2
- Web of Science (2017): Indexed Yes
- BFI (2016): BFI-level 2
- Scopus rating (2016): CiteScore 5.96 SJR 4.682 SNIP 1.629
- Web of Science (2016): Indexed yes
- BFI (2015): BFI-level 2
- Scopus rating (2015): SJR 5.05 SNIP 1.709 CiteScore 6.33
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 2
- Scopus rating (2014): SJR 5.274 SNIP 1.771 CiteScore 6.66
- Web of Science (2014): Indexed yes
- BFI (2013): BFI-level 2
- Scopus rating (2013): SJR 5.703 SNIP 1.872 CiteScore 7.22
- ISI indexed (2013): ISI indexed yes
- Web of Science (2013): Indexed yes
- BFI (2012): BFI-level 2
- Scopus rating (2012): SJR 5.671 SNIP 1.968 CiteScore 7.6
- ISI indexed (2012): ISI indexed yes
- Web of Science (2012): Indexed yes
- BFI (2011): BFI-level 2
- Scopus rating (2011): SJR 5.8 SNIP 1.912 CiteScore 7.51
- ISI indexed (2011): ISI indexed yes
- BFI (2010): BFI-level 2
- Scopus rating (2010): SJR 5.954 SNIP 1.876
- Web of Science (2010): Indexed yes
- BFI (2009): BFI-level 2
- Scopus rating (2009): SJR 6.053 SNIP 1.871
- Web of Science (2009): Indexed yes
- BFI (2008): BFI-level 2
Large amounts of neuroimaging studies are collected and have changed our view on human brain function. By integrating multiple studies in meta-analysis a more complete picture is emerging. Brain locations are usually reported as coordinates with reference to a specific brain atlas, thus some of the databases offer so-called coordinate-based searching to the users (e.g., Brede, BrainMap). For such search, the publications, which relate to the brain locations represented by the user coordinates, are retrieved. We present BredeQuery – a plugin for the widely used SPM data analytic pipeline. BredeQuery offers a direct link from SPM to the Brede Database coordinate-based search engine. BredeQuery is able to 'grab' brain location coordinates from the SPM windows and enter them as a query for the Brede Database. Moreover, results of the query can be displayed in a MATLAB window and/or exported directly to some popular bibliographic file formats (BibTeX, Reference Manager, etc).
Endogenous plasma estradiol in healthy men is positively correlated with cerebral cortical serotonin 2A receptor binding

Background: Sex hormones influence brain function and are likely to play a role in the gender predisposition to mood and anxiety disorders. Acute fluctuations of sex hormone levels including hormonal replacement therapy appear to affect serotonergic neurotransmission, but it is unknown if baseline levels affect serotonergic neurotransmission. This study was undertaken to examine if baseline levels of endogenous sex hormones are associated with cerebral serotonin 2A (5-HT2A) receptor binding in men. Methods: In a group of 72 healthy men (mean age 37.5 years ±17.4 SD, range 19.6–81.7) we studied the effect of plasma sex hormone levels on neocortical 5-HT2A receptor binding as imaged with [18F]altanserin PET. The effect of endogenous sex-hormone levels was evaluated by multiple linear regression analysis. Results: Mean neocortical 5-HT2A receptor binding was positively correlated with estradiol (p = 0.0001), whereas no independent effects of testosterone could be demonstrated. Correction for other factors of importance for 5-HT2A receptor binding did not change the result. A voxel-based analysis suggested that there were no regional differences in the estradiol effect on cortical 5-HT2A receptor binding. Conclusions: Our data show a positive correlation between endogenous plasma estradiol levels and cortical 5-HT2A receptor binding in healthy men, whereas, no independent effect of testosterone was demonstrated. We speculate that this association could be mediated through effects on gene transcription.
Eye-position dependent functional connection from somatosensory to visual cortex involved in visuospatial attention

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Copenhagen University Hospital
Authors: Balslev, D. (Ekstern), Nielsen, F. Å. (Intern), Kassuba, T. (Ekstern)
Publication date: 2010
Event: Abstract from Neuroscience, San Diego, .
Main Research Area: Technical/natural sciences
Links: 
http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=ce020092-5c03-40f2-a557-cb4b6db94ec4&cKey=8831f8d8-3997-4155-8ae0-59c3cccb2774&mKey=%7bE5D5C83F-CE2D-4D71-9DD6-FC7231E090FB%7d
Source: orbit
Source-ID: 274255
Publication: Research › Conference abstract for conference – Annual report year: 2010

Genetic variants and brain binding potentials: Lost in translation?

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Knudsen, G. M. (Ekstern), Haugbol, S. (Ekstern), Arentzen, T. E. (Ekstern), Frokjaer, V. G. (Ekstern), Erritzoe, D. (Ekstern), Svarer, C. (Ekstern), Madsen, J. (Ekstern), Paulson, O. B. (Ekstern), Hasholt, L. (Ekstern), Nielsen, F. Å. (Intern)
Pages: 27-27
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 52
Issue number: 1S
Seasonal Changes in Brain Serotonin Transporter Binding in Short Serotonin Transporter Linked Polymorphic Region-Allele Carriers but Not in Long-Allele Homozygotes

A polymorphism in the promoter region of the serotonin transporter gene (5-HTTLPR) has been associated with seasonality both in patients with seasonal affective disorder and in the general population. Method: We used in vivo molecular imaging to measure cerebral serotonin transporter (5-HTT) binding in 57 healthy Scandinavians and related the outcome to season of the year and to the 5-HTTLPR carrier status. Results: We found that the number of daylight minutes at the time of scanning correlated negatively with 5-HTT binding in the putamen and the caudate, with a similar tendency in the thalamus, whereas this association was not observed for the midbrain. Furthermore, in the putamen, an anatomic region with relatively dense serotonin innervation, we found a significant gene X daylight effect, such that there was a negative correlation between 5-HTT binding and daylight minutes in carriers of the short 5-HTTLPR allele but not in homozygote carriers of the long allele. Conclusions: Our findings are in line with S-carriers having an increased response in neural circuits involved in emotional processing to stressful environmental stimuli but here demonstrated as an endophenotype with dynamic changes in serotonin reuptake.

There is a large body of evidence that the serotonergic system plays an important role in the transmission and regulation of pain. Here we used positron emission tomography (PET) with the serotonin transporter (SERT) tracer [11C]DASB to study the relationship between SERT binding in the brain and responses to noxious heat stimulation in a group of 21 young healthy volunteers. Responses to noxious heat stimuli were assessed in a separate psychophysical experiment and included measurements of pain threshold, pain tolerance, and responses to phasic noxious heat stimuli and to a long lasting (7-minute) tonic noxious heat stimulus. PET data were analyzed using both volume-of-interest (VOI) and voxel-based approaches. VOI analysis revealed a significant negative correlation between tonic pain ratings and SERT binding in the hypothalamus (r = −0.59; p = 0.008), a finding confirmed by the parametric analysis. The parametric analysis also revealed a negative correlation between tonic pain ratings and SERT binding in the right anterior insula. Measures of regional SERT binding did not correlate with pain threshold or with responses to short phasic suprathreshold phasic heat stimuli. Finally, the VOI analysis revealed a positive correlation between pain tolerance and SERT binding in the hypothalamus (r = 0.53; p = 0.02) although this was not seen in the parametric analysis. These data extend our earlier observation that cortical 5-HT receptors co-determine responses to tonic but not to phasic pain. The negative correlation between SERT binding in the hypothalamus and insula with tonic pain ratings suggests a possible serotonergic control of the role of these areas in the modulation or in the affective appreciation of pain.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Copenhagen University Hospital, University of Copenhagen
Authors: Kupers, R. (Ekstern), Frokjaer, V. G. (Ekstern), Erritzoe, D. (Ekstern), Naert, A. (Ekstern), Budtz-Joergensen, E. (Ekstern), Nielsen, F. Å. (Intern), Kehlet, H. (Ekstern), Knudsen, G. M. (Ekstern)
Pages: 1336-1343
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 54
Issue number: 2
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
COORDINATE-BASED META-ANALYTIC SEARCH FOR THE SPM NEUROIMAGING PIPELINE: The BredeQuery plugin for SPM5

Large amounts of neuroimaging studies are collected and have changed our view on human brain function. By integrating multiple studies in meta-analysis a more complete picture is emerging. Brain locations are usually reported as coordinates with reference to a specific brain atlas, thus some of the databases offer so-called coordinate-based searching to the users (e.g. Brede, BrainMap). For such search, the publications, which relate to the brain locations represented by the user coordinates, are retrieved. In this paper we present BredeQuery – a plugin for the widely used SPM5 data analytic pipeline. BredeQuery offers a direct link from SPM5 to the Brede Database coordinate-based search engine. BredeQuery is able to ‘grab’ brain location coordinates from the SPM windows and enter them as a query for the Brede Database. Moreover, results of the query can be displayed in an SPM window and/or exported directly to some popular bibliographic file formats (BibTeX, Reference Manager, etc).
Lost in localization: A solution with neuroinformatics 2.0?
The commentary by Derrfuss and Mar (Derrfuss, J., Mar, R.A., 2009. Lost in localization: The need for a universal coordinate database. NeuroImage, doi:10.1016/j.neuroimage.2009.01.053.) discusses some of the limitations of the present databases and calls for a universal coordinate database. Here I discuss further issues and propose another angle to the solution of a universal coordinate database with the use of wiki technology.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Pages: 11-13
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 48
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 6.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.573 SNIP 1.866
The Brede Wiki: A social neuroinformatics web-service with structured information from neuroscience

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2009
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 254119
Publication: Research » Conference abstract for conference – Annual report year: 2009

The personality trait openness is related to cerebral 5-HTT levels
Potentiation of serotonergic transmission increases cognitive flexibility, but can in other circumstances increase sensitivity to stressful environmental cues. The personality trait Openness to Experience reflects and is also associated with an increased risk for mood disorders. We hypothesized that the personality trait has an association with a biomarker of serotonergic transmission, the plasma membrane serotonin transporter (5-HTT). In 50 healthy volunteers, we tested for correlations between scores on the NEO-PI-R scale Openness to Experience and its subscales, and cerebral binding of the 5-HTT selective PET radioligand [11C]DASB. Subjects were genotyped for the 5-HTT long/short polymorphism, and for a single nucleotide polymorphism in the long allele, designated LA/LG. Midbrain [11C]DASB binding correlated negatively with scores for Openness to Experience and its two subscales, Openness to Actions and Openness to Values. The latter subscore was negatively correlated with [11C]DASB binding in all brain regions in which [11C]DASB binding was quantified. Genetic analysis showed that homozygote LA carriers had significantly higher [11C]DASB binding in the caudate nucleus, but no significant differences in openness scores. Thus, high scores in personality facets indicative of
cognitive flexibility and openness to change are associated with lower [11C]DASB binding. Lower abundance of 5-HTT sites may result in potentiation of serotonergic signaling, which occurs during treatment with SSRIs. We speculate that the set-point of serotonergic signaling in an individual represents a trade-off between flexibility and vulnerability when exposed to environmental stress.

**General information**

State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Kalbitzer, J. (Ekstern), Frejkaer, V. G. (Ekstern), Erritzøe, D. (Ekstern), Svarer, C. (Ekstern), Cumming, P. (Ekstern), Nielseni, F. Å. (Intern), Hashemi, S. H. (Ekstern), Baaré, W. F. (Ekstern), Madsen, J. (Ekstern), Hasselbalch, S. G. (Ekstern), Kringlebach, M. L. (Ekstern), Mortensen, E. L. (Ekstern), Knudsen, G. M. (Ekstern)
Pages: 280-285
Publication date: 2009
Main Research Area: Technical/natural sciences

**Publication information**

Journal: NeuroImage
Volume: 45
Issue number: 2
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 6.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.573 SNIP 1.866
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.859 SNIP 1.897
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 4.094 SNIP 1.765
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.7 SNIP 1.981
Web of Science (2007): Indexed yes
Visualizing data mining results with the Brede tools

A few neuroinformatics databases now exist that record results from neuroimaging studies in the form of brain coordinates in stereotaxic space. The Brede Toolbox was originally developed to extract, analyze and visualize data from one of them --- the BrainMap database. Since then the Brede Toolbox has expanded and now includes its own database with coordinates along with ontologies for brain regions and functions: The Brede Database. With Brede Toolbox and Database combined we setup automated workflows for extraction of data, mass meta-analytic data mining and visualizations. Most of the Web presence of the Brede Database is established by a single script executing a workflow involving these steps together with a final generation of Web pages with embedded visualizations and links to interactive three-dimensional models in the Virtual Reality Modeling Language. Apart from the Brede tools I briefly review alternate visualization tools and methods for Internet-based visualization and information visualization as well as portals for visualization tools.

General information
State: Published
Organisations: Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Pages: 26
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: Frontiers in Neuroinformatics
Volume: 3
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed Yes
Scopus rating (2016): SJR 2.405 SNIP 1.563 CiteScore 3.92
Scopus rating (2015): SJR 1.897 SNIP 1.258 CiteScore 3.6
Scopus rating (2014): SJR 0.989 SNIP 0.875 CiteScore 3.15
Scopus rating (2013): SJR 1.316 SNIP 0.684 CiteScore 3.4
Scopus rating (2012): SJR 1.371 SNIP 1.106 CiteScore 1.5
Scopus rating (2011): SJR 1.746 SNIP 1.206 CiteScore 1.25
Scopus rating (2010): SJR 1.434 SNIP 1.038
Scopus rating (2009): SJR 0.541 SNIP 1.12
Scopus rating (2008): SJR 0.486 SNIP 0.197
Original language: English
Neuroinformatics, neuroimaging, database
Electronic versions:
NielsenF2009Visualizing.pdf
Clustering of scientific citations in Wikipedia
The instances of templates in Wikipedia form an interesting data set of structured information. Here I focus on the cite journal template that is primarily used for citation to articles in scientific journals. These citations can be extracted and analyzed: Non-negative matrix factorization is performed on a (article x journal) matrix resulting in a soft clustering of Wikipedia articles and scientific journals, each cluster more or less representing a scientific topic.

General information
State: Published
Organisations: Cognitive Systems
Authors: Nielsen, F. Å. (Intern)
Publication date: 2008
Main Research Area: Technical/natural sciences
Scientometrics, Citation analysis, Cluster analysis, Wikipedia
Electronic versions:
NielsenF2008Clustering.pdf
Links:
http://www2.imm.dtu.dk/pubdb/views/publication_details.php?id=5666
Source: orbit
Source-ID: 224283
Publication: Research - peer-review › Paper – Annual report year: 2008

Frontolimbic serotonin 2A receptor binding in healthy subjects is associated with personality risk factors for affective disorder
Background: Serotonergic dysfunction has been associated with affective disorders. High trait neuroticism, as measured on personality inventories, is a risk factor for major depression. In this study we investigated whether neuroticism is associated with serotonin 2A receptor binding in brain regions of relevance for affective disorders. Methods: Eighty-three healthy volunteers completed the standardized personality questionnaire NEO-PI-R (Revised NEO Personality Inventory) and underwent [F-18]altanserin positron emission tomography imaging for assessment of serotonin 2A receptor binding. The correlation between the neuroticism score and frontolimbic serotonin 2A receptor binding was evaluated by multiple linear regression analysis with adjustment for age and gender. Results: Neuroticism correlated positively with frontolimbic serotonin 2A receptor binding \([r(79) = .24, p = .028]\). Post hoc analysis of the contributions from the six constituent traits of neuroticism showed that the correlation was primarily driven by two of them: vulnerability and anxiety. Indeed, vulnerability, defined as a person's difficulties in coping with stress, displayed the strongest positive correlation, which remained significant after correction for multiple comparisons \((r = .35, p = .009)\). Conclusions: In healthy subjects the personality dimension neuroticism and particularly its constituent trait, vulnerability, are positively associated with frontolimbic serotonin 2A binding. Our findings point to a neurobiological link between personality risk factors for affective disorder and the serotonergic transmitter system and identify the serotonin 2A receptor as a biomarker for vulnerability to affective disorder.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Copenhagen University Hospital, University of Copenhagen
Authors: Frokjaer, V. G. (Ekstern), Mortensen, E. L. (Ekstern), Nielsen, F. Å. (Intern), Haugbol, S. (Ekstern), Pinborg, L. H. (Ekstern), Adams, K. H. (Ekstern), Svarer, C. (Ekstern), Hasselbalch, S. G. (Ekstern), Holm, S. (Ekstern), Paulson, O. B. (Ekstern), Knudsen, G. M. (Ekstern)
Pages: 569-576
Publication date: 2008
Main Research Area: Technical/natural sciences
Publication information
Journal: Biological Psychiatry
Volume: 63
Issue number: 6
Cerebral 5-HT2A receptor binding is increased in patients with Tourette's syndrome

Experimental and clinical data have suggested that abnormalities in the serotonergic neurotransmissions in fronto-subcortical circuits are involved in Tourette's syndrome. To test the hypothesis that the brain's 5-HT2A receptor binding is increased in patients with Tourette's syndrome, PET imaging was performed. Twenty adults with Tourette's syndrome and 20 healthy control subjects were investigated with PET-[18F]altanserin using a bolus-infusion protocol. Regions of interest were delineated automatically on co-registered MRI images, and partial volume-corrected binding parameters were extracted from the PET images. Comparison between control subjects and Tourette's syndrome patients showed increased specific [18F]altanserin binding, not only in the a-priori selected brain regions hypothesized to be involved in Tourette's syndrome, but also post-hoc analysis showed a global up-regulation when testing for an overall difference with a
General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Copenhagen University Hospital, University of Copenhagen
Authors: Haugbøl, S. (Ekstern), Pinborg, L. H. (Ekstern), Regeur, L. (Ekstern), Hansen, E. S. (Ekstern), Bolwig, T. G. (Ekstern), Nielsen, F. Å. (Intern), Svarer, C. (Ekstern), Skovgaard, L. T. (Ekstern), Knudsen, G. M. (Ekstern)
Pages: 245-252
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: The International Journal of Neuropsychopharmacology
Volume: 10
Issue number: 2
ISSN (Print): 1461-1457
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.457 SNIP 0.901 CiteScore 2.95
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.645 SNIP 1.02 CiteScore 3.59
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.932 SNIP 1.113 CiteScore 4.09
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.121 SNIP 1.095 CiteScore 4.48
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.101 SNIP 1.181 CiteScore 4.54
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.959 SNIP 1.077 CiteScore 4.36
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.851 SNIP 1.022
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.844 SNIP 1.069
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.786 SNIP 1.049
Scopus rating (2007): SJR 1.774 SNIP 1.138
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.757 SNIP 1.143
Scopus rating (2005): SJR 1.337 SNIP 1.092
Scopus rating (2004): SJR 1.211 SNIP 0.961
Scopus rating (2003): SJR 1.104 SNIP 0.887
Scopus rating (2002): SJR 0.795 SNIP 0.509
Scopus rating (2001): SJR 0.51 SNIP 0.473
Scopus rating (2000): SJR 0.46 SNIP 0.384
Scopus rating (1999): SJR 0.354 SNIP 0.541
Original language: English
serotonin, Positron emission tomography, brain, human
DOIs:
A functional meta-analytic atlas with non-negative partial least squares

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Balslev, D. (Ekstern)
Number of pages: 18
Publication date: 2006

Publication information
Original language: English
Main Research Area: Technical/natural sciences
neuroinformatics, voxelization, kernel density estimation, Non-negative matrix factorization
Electronic versions:
imm4662.pdf, 1.bin.pdf
Source: orbit
Source-ID: 201250
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2006

Databasing molecular neuroimaging studies

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006

Host publication information
Title of host publication: NeuroImage
Publisher: Elsevier
Main Research Area: Technical/natural sciences
Conference: NeuroImage, 01/01/2006
Electronic versions:
imm4691.pdf
Links:
http://dx.doi.org/10.1016/j.neuroimage.2006.04.166
Source: orbit
Source-ID: 191593
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Databasing molecular neuroimaging studies

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006
Main Research Area: Technical/natural sciences
K-means, missing values, information retrieval, neuroinformatics, Positron emission tomography, imputation, database
Electronic versions:
imm4692.pdf
Source: orbit
Source-ID: 201249
Publication: Research › Poster – Annual report year: 2006

Data mining a functional neuroimaging database for functional segregation in brain regions

General information
Data mining a functional neuroimaging database for functional segregation in brain regions

**General information**
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Â. (Intern), Balslev, D. (Ekstern), Hansen, L. K. (Intern)
Publication date: 2006

**Host publication information**
Title of host publication: Proceedings fra den 15. Danske Konference i Mønstergenkendelse og Billedanalyse
Publisher: The Department of Computer Science, University of Copenhagen
Editor: Olsen, S. I.
Main Research Area: Technical/natural sciences
Electronic versions:
imm4698.pdf
Links:
http://www.diku.dk/publikationer/tekniske.rapporter/rapporter/06-08.pdf
Source: orbit
Source-ID: 191583
Publication: Research › Article in proceedings – Annual report year: 2006

**fMRI Neuroinformatics**
Functional magnetic resonance imaging (fMRI) generates vast amounts of data. The handling, processing, and analysis of fMRI data would be inconceivable without computer-based methods. fMRI neuroinformatics is concerned with research, development, and operation of these methods. Reconstruction, rudimentary analysis and visualization tools are implemented in software controlling modern MRI scanners. Research in advanced methods for analysis of subtle activation patterns, realistic physiological modeling, or for integration of data from multiple subjects etc., is the basis for a lively research field and has led to the development of a large number of tools.

**General information**
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Â. (Intern), Christensen, M. S. (Ekstern), Madsen, K. M. (Ekstern), Lund, T. E. (Ekstern), Hansen, L. K. (Intern)
Pages: 112-119
Publication date: 2006
Main Research Area: Technical/natural sciences

**Publication information**
Journal: IEEE Engineering in Medicine and Biology Magazine
Volume: 25
Issue number: 2
ISSN (Print): 0739-5175
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006
Event: Poster session presented at 2006 Nordic Network Meeting on Computational Neuroscience and Neuroinformatics
Main Research Area: Technical/natural sciences
Electronic versions:
imm5098.pdf

Bibliographical note
From a workshop at Nordita, Copenhagen organized by John Hertz
Source: orbit
Source-ID: 201218
Publication: Research › Poster – Annual report year: 2006

Similar brain networks for detecting visuo-motor and visuo-prroprioceptive synchrony
The ability to recognize feedback from own movement as opposed to the movement of someone else is important for motor control and social interaction. The neural processes involved in feedback recognition are incompletely understood. Two competing hypotheses have been proposed: the stimulus is compared with either (a) the proprioceptive feedback or with (b) the motor command and if they match, then the external stimulus is identified as feedback. Hypothesis (a) predicts that the neural mechanisms or brain areas involved in distinguishing self from other during passive and active movement are similar, whereas hypothesis (b) predicts that they are different. In this fMRI study, healthy subjects saw visual cursor movement that was either synchronous or asynchronous with their active or passive finger movements. The aim was to identify the brain areas where the neural activity depended on whether the visual stimulus was feedback from own movement and to contrast the functional activation maps for active and passive movement. We found activity increases in the right temporoparietal cortex in the condition with asynchronous relative to synchronous visual feedback from both active and passive movements. However, no statistically significant difference was found between these sets of activated areas when the active and passive movement conditions were compared. With a posterior probability of 0.95, no brain voxel had a contrast effect above 0.11% of the whole-brain mean signal. These results do not support the hypothesis that
recognition of visual feedback during active and passive movement relies on different brain areas.
Statistical Parametric Mapping (SPM)

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006
Event: Poster session presented at PhD-course, .
Main Research Area: Technical/natural sciences
general linear model, image processing, image realignment, image analysis
Electronic versions:
imm4657.pdf

Bibliographical note
From PhD-course, University of Copenhagen, 2006 March
Source: orbit
Source-ID: 201224
Publication: Research › Poster – Annual report year: 2006

Text and spatial data mining

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006
Event: Poster session presented at CIMBI 2-day meeting, Sørup Herregaard, Ringsted, 2006 october 2-3., .
Main Research Area: Technical/natural sciences
non-negative matrix factorization, neuroinformatics, text mining, voxelization
Electronic versions:
imm4984.pdf
Source: orbit
Source-ID: 201219
Publication: Research › Poster – Annual report year: 2006

Toolboxes and databases

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2006
Mining the posterior cingulate: Segregation between memory and pain components

We present a general method for automatic meta-analyses in neuroscience and apply it on text data from published functional imaging studies to extract main functions associated with a brain area --- the posterior cingulate cortex. Abstracts from PubMed are downloaded, words extracted and converted to a bag-of-words matrix representation. The combined data is analyzed with hierarchical non-negative matrix factorization. We find that the prominent themes in the PCC corpus are episodic memory retrieval and pain. We further characterize the distribution in PCC of the Talairach coordinates available in some of the articles. This shows a tendency to functional segregation between memory and pain components where memory activations are predominantly in the caudal part and pain in the rostral part of PCC.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Balslev, D. (Ekstern), Hansen, L. K. (Intern)
Pages: 520-532
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 27
Issue number: 3
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 7.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.573 SNIP 1.866
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.859 SNIP 1.897
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 4.094 SNIP 1.765
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.7 SNIP 1.981
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.41 SNIP 1.924
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 3.703 SNIP 1.918
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 3.401 SNIP 1.794
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.974 SNIP 1.003
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.885 SNIP 0.403
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.526 SNIP 0.253
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.534 SNIP 0.341
Scopus rating (1999): SJR 0.641 SNIP 0.494
Original language: English
text mining, magnetic resonance imaging, neuroimaging
Electronic versions:
imm3661.pdf
DOIs:
10.1016/j.neuroimage.2005.04.034
Source: orbit
Source-ID: 185620
Publication: Research - peer-review › Journal article – Annual report year: 2005
Non-negative partial least squares for meta-analytic parcellation of the human brain

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2005
Main Research Area: Technical/natural sciences
neuroinformatics, voxelization, kernel density estimation, Non-negative matrix factorization
Electronic versions:
imm4857.pdf
Source: orbit
Source-ID: 201226
Publication: Research › Poster – Annual report year: 2005

Right Temporoparietal Cortex Activation during Visuo-proprioceptive Conflict

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Balslev, D. (Ekstern), Nielsen, F. Å. (Intern), Paulson, O. B. (Ekstern), Law, I. (Ekstern)
Pages: 166-169
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Cerebral Cortex
Volume: 15
Issue number: 2
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.5 SJR 3.706 SNIP 1.521
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.818 SNIP 1.815 CiteScore 6.68
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.815 SNIP 2 CiteScore 6.86
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 5.34 SNIP 1.909 CiteScore 7.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 5.015 SNIP 1.924 CiteScore 7.28
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 5.128 SNIP 1.893 CiteScore 7.2
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 4.981 SNIP 1.834
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 5.005 SNIP 1.884
Similar brain networks for detecting visuo-motor and visuo-proprioceptive synchrony

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Balslev, D. (Ekstern), Nielsen, F. Å. (Intern), Lund, T. E. (Ekstern), Law, I. (Ekstern), Paulson, O. B. (Ekstern)
Publication date: 2005

Host publication information
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 185784
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

Assessing the reproducibility in sets of Talairach coordinates

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Publication date: 2004

Host publication information
Title of host publication: NeuroImage : 10th Annual Meeting of the Organization for Human Brain Mapping, HBM 2004
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 154704
Publication: Research › Article in proceedings – Annual report year: 2004

Databasing Molecular Neuroimaging

General information
State: Published
Finding related functional neuroimaging volumes
We describe a content-based image retrieval technique for finding related functional neuroimaging experiments by voxelization of sets of stereotactic coordinates in Talairach space, comparing the volumes and reporting related volumes in a sorted list. Voxelization is accomplished by convolving each coordinate with a Gaussian kernel. The scheme allows us to compare experiments represented as either lists of coordinates or volumes, and we introduce alternative entrances to databases by image-based indices constructed via novelty measures and singular value decomposition.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Pages: 141-151
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: Artificial Intelligence in Medicine
Volume: 30
Issue number: 2
ISSN (Print): 0933-3657
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.635 SNIP 1.192 CiteScore 2.65
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.791 SNIP 1.833 CiteScore 3.04
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.783 SNIP 1.953 CiteScore 2.83
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.722 SNIP 1.706 CiteScore 2.57
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.612 SNIP 1.496 CiteScore 2.3
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.54 SNIP 1.515 CiteScore 2.29
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.633 SNIP 1.34
BFI (2009): BFI-level 2
Mass meta-analysis in Talairach space
We provide a method for mass meta-analysis in a neuroinformatics database containing stereotaxic Talairach coordinates from neuroimaging experiments. Database labels are used to group the individual experiments, e.g., according to cognitive function, and the consistent pattern of the experiments within the groups are determined. The method voxelizes each group of experiments via a kernel density estimation, forming probability density volumes. The values in the probability density volumes are compared to null-hypothesis distributions generated by resamplings from the entire unlabeled set of experiments, and the distances to the null hypotheses are used to sort the voxels across groups of experiments. This allows for mass meta-analysis, with the construction of a list with the most prominent associations between brain areas and group labels. Furthermore, the method can be used for functional labeling of voxels.

Meta-analytic clustering of molecular neuroimaging studies
We provide a method for mass meta-analysis in a neuroinformatics database containing stereotaxic Talairach coordinates from neuroimaging experiments. Database labels are used to group the individual experiments, e.g., according to cognitive function, and the consistent pattern of the experiments within the groups are determined. The method voxelizes each group of experiments via a kernel density estimation, forming probability density volumes. The values in the probability density volumes are compared to null-hypothesis distributions generated by resamplings from the entire unlabeled set of experiments, and the distances to the null hypotheses are used to sort the voxels across groups of experiments. This allows for mass meta-analysis, with the construction of a list with the most prominent associations between brain areas and group labels. Furthermore, the method can be used for functional labeling of voxels.
Meta-analytic clustering of molecular neuroimaging studies

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Svarer, C. (Ekstern), Hansen, L. K. (Intern), Knudsen, G. M. (Ekstern)
Publication date: 2004
Main Research Area: Technical/natural sciences
k-means, meta-analysis, molecular imaging, positron emission tomography, neuroimaging, clustering
Electronic versions:
imm4757.pdf
Source: orbit
Source-ID: 201255
Publication: Research › Poster – Annual report year: 2004

Mining for associations between text and brain activation in a functional neuroimaging database

We describe a method for mining a neuroimaging database for associations between text and brain locations. The objective is to discover association rules between words indicative of cognitive function as described in abstracts of neuroscience papers and sets of reported stereotactic Talairach coordinates. We invoke a simple probabilistic framework in which kernel density estimates are used to model distributions of brain activation foci conditioned on words in a given abstract. The principal associations are found in the joint probability density between words and voxels. We show that the statistically motivated associations are well aligned with general neuroscientific knowledge.

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Balslev, D. (Ekstern)
Pages: 369-379
Publication date: 2004
Main Research Area: Technical/natural sciences
Testing for difference between two groups of functional neuroimaging experiments
We describe a meta-analytic method that tests for the difference between two groups of functional neuroimaging experiments. We use kernel density estimation in three-dimensional brain space to convert points representing focal brain activations into a voxel-based representation. We find the maximum in the subtraction between two probability densities and compare its value against a resampling distribution obtained by permuting the labels of the two groups. As such it appears as a general method for comparing the local intensity of two non-stationary spatial point processes. The method is applied on data from thermal pain studies where "hot pain" and "cold pain" form the two groups.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Chen, A. C. N. (Ekstern), Hansen, L. K. (Intern)
Publication date: 2004

Host publication information
Title of host publication: Den 13. Danske Konference i Mønstergenkendelse og Billedanalyse
Publisher: Department of Computer Science, University of Copenhagen (DIKU)
Brain mapping of cold/pain vs. heat/pain: A 3D VRTM analyses on the published PET/fMRI data

**General information**

State: Published

Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling

Authors: Chen, A. C. N. (Ekstern), Kold, J. (Ekstern), Arendt-Nielsen, L. (Ekstern), Hansen, L. K. (Intern), Nielsen, F. Å. (Intern)

Publication date: 2003

**Host publication information**


Main Research Area: Technical/natural sciences

Links: http://208.164.121.55/hbm2003/abstract/abstract796.htm

Source: orbit

Source-ID: 58581

Publication: Research - peer-review › Article in proceedings – Annual report year: 2003

---

Independent Component Analysis in Multimedia Modeling

**General information**

State: Published

Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling

Authors: Larsen, J. (Intern), Hansen, L. K. (Intern), Kolenda, T. (Intern), Nielsen, F. Å. (Intern), Amari et al., S. (ed.) (Ekstern)

Pages: 687-696

Publication date: 2003

**Host publication information**

Title of host publication: Fourth International Symposion on Independent Component Analysis and Blind Source Separation

Main Research Area: Technical/natural sciences

Electronic versions: imm1668.pdf


Source: orbit

Source-ID: 58538

Publication: Research - peer-review › Article in proceedings – Annual report year: 2003

---

Left parietal and posterior cingulate cortices recognize congruence between tool and effector movement

**General information**

State: Published

Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling

Authors: Balslev, D. (Ekstern), Gerlach, C. (Ekstern), Nielsen, F. Å. (Intern), Paulson, O. B. (Ekstern), Law, I. (Ekstern)

Publication date: 2003

**Host publication information**


Main Research Area: Technical/natural sciences

Source: orbit
Receiver Operating Characteristics Curves in functional magnetic resonance imaging

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2003
Event:
Main Research Area: Technical/natural sciences
functional magnetic resonance imaging (fMRI), K-means, superior temporal sulcus, binomial mixture model, macaque, Lyngby matlab toolbox, Fisher's G statistics, ROC curve, cross correlation, independent component analysis (ICA), FIR-filter, clustering
Electronic versions:
imm4851.pdf

Bibliographical note
Talk given at the meeting of the EU project MAPAWAMO headed by Guy A. Orban
Source: orbit
Source-ID: 201228
Publication: Research › Poster – Annual report year: 2003

The Brede database: a small database for functional neuroimaging

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2003

Host publication information
Main Research Area: Technical/natural sciences
Electronic versions:
imm2879.ps
imm2879.pdf
Links:
Source: orbit
Source-ID: 58584
Publication: Research - peer-review › Article in proceedings – Annual report year: 2003

The Brede database: a small database for functional neuroimaging

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2003
Main Research Area: Technical/natural sciences
Electronic versions:
imm4758.pdf
Source: orbit
Source-ID: 201256
Publication: Research › Poster – Annual report year: 2003
Visuoproprioceptive representations for tool skills

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Balslev, D. (Ekstern), Nielsen, F. Å. (Intern)
Publication date: 2003

Host publication information
Title of host publication: Presented at the 9th International Conference on Functional Mapping of the Human Brain, June 19-2, New York, NY. Available on CD-Rom
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 58579
Publication: Research - peer-review › Article in proceedings – Annual report year: 2003

Automatic anatomical labeling of Talairach coordinates and generation of volumes of interest via the BrainMap database

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Publication date: 2002

Host publication information
Title of host publication: Presented at the 8th International Conference on Functional Mapping of the Human Brain, June 2-6, 2002, Sendai, Japan
Main Research Area: Technical/natural sciences
Electronic versions:
imm195.pdf
Links:
Source: orbit
Source-ID: 58198
Publication: Research - peer-review › Article in proceedings – Annual report year: 2002

Brede Toolbox

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2002

Publication information
Original language: English
Publisher: Informatics and Mathematical Modelling, Technical University of Denmark
Main Research Area: Technical/natural sciences
visualization, non-negative matrix factorization, text-mining, binomial mixture, neuroinformatics, VRML-generation, K-means clustering, HTML-generation, independent component analysis (ICA), kernel density modeling, Matlab, clustering
Links:
http://hendrix.imm.dtu.dk/software/brede/
Source: orbit
Source-ID: 201176
Publication: Research - peer-review › Computer programme – Annual report year: 2002

Cluster analysis of activity-time series in motor learning

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Balslev, D. (Ekstern), Nielsen, F. Å. (Intern), Frutiger, S. A. (Ekstern), Sidtis, J. J. (Ekstern), Christiansen, T. (Intern), Svarer, C. (Ekstern), Strother, S. C. (Ekstern), Rottenberg, D. A. (Ekstern), Hansen, L. K. (Intern), Paulson, O. B. (Ekstern), Law, I. (Ekstern)
Exploring fMRI Data for Periodic Signal Components
We use a Bayesian framework to detect periodic components in fMRI data. The resulting detector is sensitive to periodic components with a flexible number of harmonics and with arbitrary amplitude and phases of the harmonics. It is possible to detect the correct number of harmonics in periodic signals even if the fundamental frequency is beyond the Nyquist frequency. We apply the signal detector to locate regions that are highly affected by periodic physiological artifacts, such as cardiac pulsation.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Hansen, L. K. (Intern), Nielsen, F. Å. (Intern), Larsen, J. (Intern)
Pages: 25-44
Publication date: 2002
Main Research Area: Technical/natural sciences

Publication information
Journal: Artificial Intelligence in Medicine
Volume: 25
Issue number: 1
ISSN (Print): 0933-3657
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.635 SNIP 1.192 CiteScore 2.65
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.791 SNIP 1.833 CiteScore 3.04
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.783 SNIP 1.953 CiteScore 2.83
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.722 SNIP 1.706 CiteScore 2.57
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.612 SNIP 1.496 CiteScore 2.3
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.54 SNIP 1.515 CiteScore 2.29
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.633 SNIP 1.34
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.748 SNIP 1.897
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.017 SNIP 2.103
Scopus rating (2007): SJR 1.021 SNIP 2.391
Scopus rating (2006): SJR 0.76 SNIP 2.064
Scopus rating (2005): SJR 0.712 SNIP 2.132
Scopus rating (2004): SJR 0.52 SNIP 1.81
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.758 SNIP 1.756
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.571 SNIP 1.145
Web of Science (2002): Indexed yes
Finding related functional neuroimaging volumes

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Publication date: 2002

Host publication information
Title of host publication: Presented at the 8th International Conference on Functional Mapping of the Human Brain, June 2–6, 2002, Sendai, Japan. Available on CD-ROM
Publisher: Academic Press
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 58197
Publication: Research - peer-review › Article in proceedings – Annual report year: 2002

Modeling of activation data in the BrainMapTM database: Detection of outliers
We describe a system for meta-analytical modeling of activation foci from functional neuroimaging studies. Our main vehicle is a set of density models in Talairach space capturing the distribution of activation foci in sets of experiments labeled by lobar anatomy. One important use of such density models is identification of novelty, i.e., low probability database events. We rank the novelty of the outliers and investigate the cause for 21 of the most novel, finding several outliers that are entry and transcription errors or infrequent or non-conforming terminology. We briefly discuss the use of atlases for outlier detection. Hum. Brain Mapping 15:146-156, 2002. © 2002 Wiley-Liss, Inc.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Pages: 146-156
Publication date: 2002
Main Research Area: Technical/natural sciences

Publication information
Journal: Human Brain Mapping
Volume: 15
Issue number: 3
ISSN (Print): 1065-9471
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.733 SNIP 1.346 CiteScore 5.06
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 3.184 SNIP 1.442 CiteScore 5.57
Web of Science (2015): Indexed yes
**General information**

**State:** Published

**Organisations:** Cognitive Systems, Department of Informatics and Mathematical Modeling

**Authors:** Chen, A. C. N. (Ekstern), Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Reisin et al., R. C. (ed.) (Ekstern)

**Pages:** 156-162

**Publication date:** 2002

**Host publication information**

**Title of host publication:** Advances in Clinical Neurophysiology, vol. 54

**Publisher:** Elsevier

**Main Research Area:** Technical/natural sciences

**Links:**

**Source:** orbit

**Source-ID:** 58105

**Publication:** Research - peer-review › Journal article – Annual report year: 2002

---

**Neuroimaging of human pain and virtual reality modelling**

---

**Neuroimaging of human pain and virtual reality modelling**

---

**General information**

**State:** Published

**Organisations:** Cognitive Systems, Department of Informatics and Mathematical Modeling

**Authors:** Chen, A. C. N. (Ekstern), Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Reisin et al., R. C. (ed.) (Ekstern)

**Pages:** 156-162

**Publication date:** 2002

**Host publication information**

**Title of host publication:** Advances in Clinical Neurophysiology, vol. 54

**Publisher:** Elsevier

**Main Research Area:** Technical/natural sciences

**Links:**

**Source:** orbit

**Source-ID:** 58105

**Publication:** Research - peer-review › Journal article – Annual report year: 2002
Virtual brain mapping: Meta-analysis and visualization in functional neuroimaging

Results from functional neuroimaging such as positron emission tomography and functional magnetic resonance are often reported as sets of 3-dimensional coordinates in Talairach stereotactic space. By utilizing data collected in the BrainMap database and from our own small XML database we can automatically model and visualize several studies at once. We model a set of 3-dimensional coordinates by a voxelization step where flexible probability density models such as kernel density estimators produce a voxel-volume representation of a study, allowing us to represent all coordinate data in one single data matrix. By conditioning on elements in the databases other than the coordinate data, e.g., anatomical labels associated with many coordinates we can make conditional novelty detection identifying outliers in the database that might be erroneous entries or seldom occurring patterns. In the BrainMap database we found errors, e.g., stemming from confusion of centimeters and millimeters during entering and errors in the original article. Conditional probability density modeling also enables generation of probabilistic atlases and automatic probabilistic anatomical labeling of new coordinates. By conditioning on the behavioral domains associated with each study, e.g, the words 'word' and 'visual', we can make virtual brain activations. Voxelization also permits us to find related volumes, where query volumes are matched with database items and the most related volumes are found and returned in sorted lists. Image-based indices can be created by singular value decomposition and by matching individual volumes against eigenimages. Individual experiments, sets of experiments as well as results from meta-analyses can be rendered as glyphs, cut-planes or isosurfaces in 3-dimensional Corner Cube Environments or exported as VRML97 and made available on the Internet, see http://hendrix.imm.dtu.dk.
Extracting collective probabilistic forecasts from web games

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Pennock, D. M. (Ekstern), Lawrence, S. (Ekstern), Giles, C. L. (Ekstern), Nielsen, F. Å. (Intern)
Publication date: 2001

Host publication information
Title of host publication: Proceedings of the 7th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining
Main Research Area: Technical/natural sciences
Conference: Proceedings of the 7th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 01/01/2001
web games
Source: orbit
Source-ID: 200320
Publication: Research - peer-review › Article in proceedings – Annual report year: 2001

Modeling of location in the BrainMap database: Detection of outliers

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Kjems, U. (Intern)
Publication date: 2001

Host publication information
Title of host publication: Neuroimage, 13(6, part 2), June, HBM2001, Brighton, UK, June 10-14
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 57861
Publication: Research - peer-review › Article in proceedings – Annual report year: 2001
Modelling the fMRI response using smooth FIR filters

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Goutte, C. (Intern), Hansen, L. K. (Intern)
Pages: S210
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 13
Issue number: 6
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 6.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.573 SNIP 1.866
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.859 SNIP 1.897
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 4.094 SNIP 1.765
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.7 SNIP 1.981
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.41 SNIP 1.924
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 3.703 SNIP 1.918
Web of Science (2005): Indexed yes
Neuroinformatics in Functional Neuroimaging

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 2001

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: imm201.pdf
Links:
http://www.imm.dtu.dk/~fn/fnielsenlife.html#Thesis
Source: orbit
Source-ID: 57780
Publication: Research - peer-review › Journal article – Annual report year: 2001

Persistence of Web References in Scientific Research

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Lawrence, S. (Ekstern), Coetzee, F. M. (Ekstern), Glover, E. (Ekstern), Pennock, D. (Ekstern), Flake, G. W. (Ekstern), Nielsen, F. Å. (Intern), Krovetz, R. (Ekstern), Kruger, A. (Ekstern), Giles, C. L. (Ekstern)
Pages: 26-31
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: Computer (New York)
Volume: 34
Issue number: 2
ISSN (Print): 0018-9162
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.427 SNIP 2.361 CiteScore 1.82
BFI (2015): BFI-level 2
The Real Power of Artificial Markets

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Pennock, D. M. (Ekstern), Lawrence, S. (Ekstern), Giles, C. L. (Ekstern), Nielsen, F. Å. (Intern)
Pages: 987-988
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: Science
Volume: 291
Issue number: 5506
ISSN (Print): 0036-8075
Ratings:
BFI (2018): BFI-level 3
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2

Links:
http://www.neci.nec.com/~lawrence/papers/persistence-computer01/persistence-computer01.ps.gz
Source: orbit
Source-ID: 57777
Publication: Research - peer-review › Journal article – Annual report year: 2001
Experiences with Matlab and VRML in Functional Neuroimaging Visualizations

We describe some experiences with Matlab and VRML. We are developing a toolbox for neuroinformatics and describe some of the functionalities we have implemented or will implement and how Matlab and VRML support the implementation.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Publication date: 2000

Host publication information
Title of host publication: Visualization Development Environments (VDE2000)
Publisher: Princeton Plasma Physics Laboratory
Main Research Area: Technical/natural sciences
Conference: Visualization Development Environments (VDE2000), 01/01/2000
visualization, neuroimaging, Matlab, VRML
Electronic versions:
imm1231.pdf
Source: orbit
Source-ID: 200494
Publication: Research › Article in proceedings – Annual report year: 2000

Modeling text with generalizable Gaussian mixtures

We apply and discuss generalizable Gaussian mixture (GGM) models for text mining. The model automatically adapts model complexity for a given text representation. We show that the generalizability of these models depends on the dimensionality of the representation and the sample size. We discuss the relation between supervised and unsupervised learning in the test data. Finally, we implement a novelty detector based on the density model.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Hansen, L. K. (Intern), Sigurdsson, S. (Intern), Kolenda, T. (Intern), Nielsen, F. Å. (Intern), Kjems, U. (Intern), Larsen, J. (Intern)
Pages: 3494-3497
Publication date: 2000

Host publication information
Title of host publication: IEEE Proceedings of Acoustics, Speech, and Signal Processing
Volume: 6
Place of publication: Istanbul, Turkey
Publisher: IEEE
ISBN (Print): 0-7803-6293-4
Main Research Area: Technical/natural sciences
Electronic versions:
Lars.pdf
DOI:
10.1109/ICASSP.2000.860154

Bibliographical note
Copyright: 2000 IEEE. Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the IEEE
Source: orbit
Source-ID: 176481
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

Modeling the hemodynamic response in fMRI using smooth FIR filters

Modeling the hemodynamic response in functional magnetic resonance (fMRI) experiments is an important aspect of the analysis of functional neuroimages. This has been done in the past using parametric response function, from a limited family. In this contribution, the authors adopt a semi-parametric approach based on finite impulse response (FIR) filters. In
order to cope with the increase in the number of degrees of freedom, the authors introduce a Gaussian process prior on the filter parameters. They show how to carry on the analysis by incorporating prior knowledge on the filters, optimizing hyper-parameters using the evidence framework, or sampling using a Markov Chain Monte Carlo (MCMC) approach. The authors present a comparison of their model with standard hemodynamic response kernels on simulated data, and perform a full analysis of data acquired during an experiment involving visual stimulation.

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Cognitive Systems
Authors: Goutte, C. (Intern), Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Pages: 1188-1201
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE Transactions on Medical Imaging
Volume: 19
Issue number: 12
ISSN (Print): 0278-0062
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.522 SNIP 2.369 CiteScore 4.83
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.765 SNIP 2.68 CiteScore 4.9
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.407 SNIP 2.756 CiteScore 4.66
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.916 SNIP 3.2 CiteScore 5.55
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.545 SNIP 2.794 CiteScore 4.94
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.332 SNIP 2.583 CiteScore 4.59
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.343 SNIP 2.619
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.371 SNIP 3.352
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.404 SNIP 2.906
Scopus rating (2007): SJR 1.627 SNIP 3.948
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.914 SNIP 3.337
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.796 SNIP 3.754
Scopus rating (2004): SJR 1.632 SNIP 3.777
Modelling the hemodynamic response in fMRI with smooth FIR filters

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Goutte, C. (Intern), Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Pages: 1188-
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE Transactions on Medical Imaging
Volume: 19
Issue number: 12
ISSN (Print): 0278-0062
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.522 SNIP 2.369 CiteScore 4.83
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.765 SNIP 2.68 CiteScore 4.9
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.407 SNIP 2.756 CiteScore 4.66
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.916 SNIP 3.2 CiteScore 5.55
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.545 SNIP 2.794 CiteScore 4.94
ISI indexed (2012): ISI indexed yes
Persistence of Information on the web: Analyzing citations contained in research articles

We analyze the persistence of information on the web, looking at the percentage of invalid URLs contained in academic articles within the CiteSeer (ResearchIndex) database. The number of URLs contained in the papers has increased from an average of 0.06 in 1993 to 1.6 in 1999. We found that a significant percentage of URLs are now invalid, ranging from 23% for 1999 articles, to 53% for 1994. We also found that for almost all of the invalid URLs, it was possible to locate the information (or highly related information) in an alternate location, primarily with the use of search engines. However, the ability to relocate missing information varied according to search experience and effort expended. Citation practices suggest that more information may be lost in the future unless these practices are improved. We discuss persistent URL standards and their usage, and give recommendations for citing URLs in research articles as well as for finding the new location of invalid URLs.

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Lawrance, S. (Ekstern), Coetzee, F. (Ekstern), Flake, G. (Ekstern), Pennock, D. (Ekstern), Krovetz, B. (Ekstern), Nielsen, F. Å. (Intern), Kruger, A. (Ekstern), Gilles, C. L. (Ekstern)
Publication date: 2000
Generalizable Patterns in Neuroimaging: How Many Principal Components?

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Minneapolis VA Medical Center, Danish Research Centre for Magnetic Resonance, Massachusetts General Hospital, Harvard Medical School, National University Hospital
Authors: Hansen, L. K. (Intern), Larsen, J. (Intern), Nielsen, F. Å. (Intern), Strother, S. (Ekstern), Rostrup, E. (Ekstern), Savoy, R. (Ekstern), Lange, N. (Ekstern), Sidtis, J. (Ekstern), Svarer, C. (Ekstern), Paulson, O. (Ekstern)
Pages: 534-544
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 9
Issue number: 5
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 6.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
On clustering fMRI time series

Analysis of fMRI time series is often performed by extracting one or more parameters for the individual voxels. Methods based, e.g., on various statistical tests are then used to yield parameters corresponding to probability of activation or activation strength. However, these methods do not indicate whether sets of voxels are activated in a similar way or in different ways. Typically, delays between two activated signals are not identified. In this article, we use clustering methods to detect similarities in activation between voxels. We employ a novel metric that measures the similarity between the activation stimulus and the fMRI signal. We present two different clustering algorithms and use them to identify regions of similar activations in an fMRI experiment involving a visual stimulus.
Plurality and Resemblance in fMRI Data Analysis

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Massachusetts General Hospital, Harvard Medical School, Minneapolis VA Medical Center
Authors: Lange, N. (Ekstern), Strother, S. (Ekstern), Anderson, J. (Ekstern), Nielsen, F. Å. (Intern), Holmes, A. (Ekstern), Kolenda, T. (Intern), Savoy, R. (Ekstern), Hansen, L. K. (Intern)
Pages: 282-303
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: NeuroImage
Volume: 10
Issue number: 3
ISSN (Print): 1053-8119
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.31 SJR 3.823 SNIP 1.752
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.48 SNIP 1.84 CiteScore 6.71
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.201 SNIP 2.029 CiteScore 6.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.376 SNIP 2.026 CiteScore 7.06
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.922 SNIP 1.937 CiteScore 6.86
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 3.626 SNIP 1.81 CiteScore 6.31
ISI indexed (2011): ISI indexed yes
An Empirical Study of Statistical Model Complexity in Neuro-fMRI

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Harvard Medical School, Minneapolis VA Medical Center, MGH-NMR Center, CMRR
Authors: Lange, N. (Ekstern), Hansen, L. K. (Intern), Anderson, J. (Ekstern), Nielsen, F. Å. (Intern), Savoy, R. (Ekstern), KIM, S. (Ekstern), Strother, S. (Ekstern)
Publication date: 1998

Host publication information
Title of host publication: NeuroImage
Publisher: Academic Press
Main Research Area: Technical/natural sciences

Bayesian and Maximum Likelihood Neural Networks

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
**Canonical Ridge Analysis with Ridge Parameter Optimization**

**General information**
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, VA Medical Center, PET Imaging Service
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern), Strother, S. C. (Ekstern), Paus, T. (ed.) (Ekstern), Gjedde, A. (ed.) (Ekstern), Evans, A. (ed.) (Ekstern)
Publication date: 1998
Event: Abstract from 4th International Conference on Functional Mapping of the Human Brain, Montreal, Canada.
Main Research Area: Technical/natural sciences
functional neuroimaging, orthomormalized partial least squares, canonical correlation analysis, regularization, canonical ridge

**Electronic versions:**
imm4981.pdf

**Bibliographical note**
More information about the model is available in the Phd-thesis of Finn ÅArup Nielsen.

**Host publication information**
Title of host publication: NeuroImage
Publisher: Academic Press
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 168494
Publication: Research › Article in proceedings – Annual report year: 1998

**idl2mat. IDL-Matlab Communication Package**

**General information**
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern)
Publication date: 1998

**Publication information**
Publisher: Informatics and Mathematical Modelling, Technical University of Denmark
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Interactive Information Visualization in Neuroimaging

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Pages: 62-65
Publication date: 1998

Host publication information
Title of host publication: Workshop on New Paradigms in Information Visualization and Manipulation (NPIV’97)
Place of publication: New York
Publisher: ACM Press
Main Research Area: Technical/natural sciences
Conference: NPIV’97 - Workshop on New Paradigms in Information Visualization and Manipulation, Las Vegas, 01/01/1997
Source: orbit
Source-ID: 168099
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Lyngby - A toolbox for functional neuroimaging

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling, Department of Information Technology
Authors: Nielsen, F. Å. (Intern), Toft, P. (Ekstern), Liptrot, M. G. (Intern), Hansen, L. K. (Intern)
Publication date: 1998

Publication information
Original language: English
Publisher: Informatics and Mathematical Modelling, Technical University of Denmark
Main Research Area: Technical/natural sciences
functional neuroimaging, time series, fmri, multivariate analysis, functional magnetic resonance, FIR filter, matlab, clustering
Links:
http://hendrix.imm.dtu.dk/software/lyngby/
Source: orbit
Source-ID: 201179
Publication: Research - peer-review › Computer programme – Annual report year: 1998

Neural Networks in Functional Neuroimaging

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Hansen, L. K. (Intern), Mørch, N. J. (Intern), Nielsen, F. Å. (Intern)
Pages: 1-8
Publication date: 1998

Host publication information
Title of host publication: Proceedings of NORSIG’98, IEEE Nordic Signal Processing Symposium
Place of publication: Aalborg
Publisher: Aalborg University
Neuroinformatics based on VRML

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Publication date: 1998

Host publication information
Title of host publication: Neuro Imaging
Publisher: Academic Press
Main Research Area: Technical/natural sciences
MRI, neuroinformatics, magnetic resonance imaging, PET, positron emission tomography, neuroimaging, fMRI, VRML
Electronic versions: imm4684.pdf
Source: orbit
Source-ID: 203002
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

On Clustering fMRI time series

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Danish Research Centre for Magnetic Resonance
Authors: Goutte, C. (Intern), Toft, P. A. (Intern), Rostrup, E. (Ekstern), Nielsen, F. Å. (Intern), Hansen, L. K. (Intern)
Number of pages: 33
Publication date: 1998

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Bibliographical note
A slightly different version will appear in NeuroImage in 1999.
Source: orbit
Source-ID: 169864
Publication: Research - peer-review › Report – Annual report year: 1998

Space-time analysis of fMRI by feature space clustering

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital
Authors: Goutte, C. (Intern), Nielsen, F. Å. (Intern), Svarer, C. (Ekstern), Rostrup, E. (Ekstern), Hansen, L. K. (Intern)
Publication date: 1998

Host publication information
Title of host publication: NeuroImage
Publisher: Academic Press
Main Research Area: Technical/natural sciences
Conference: 4th Int.Conf.on Functional Mapping of the Human Brain, Montreal, Canada, 01/01/1998
Source: orbit
Source-ID: 169859
Publication: Research › Article in proceedings – Annual report year: 1998
Projects:

**Explainability of uncertainty for neutral networks**
Department of Applied Mathematics and Computer Science
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:
Rieger, Laura (Ekstern)
Supervisor:
Nielsen, Finn Árup (Intern)
Main Supervisor:
Hansen, Lars Kai (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

---

**Explainability of uncertainty for neutral networks**
Technical University of Denmark
Period: 01/09/2017 → 31/08/2020
Number of participants: 3
Phd Student:
Rieger, Laura (Intern)
Supervisor:
Nielsen, Finn Árup (Intern)
Main Supervisor:
Hansen, Lars Kai (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU)
Project: PhD

---

**Mapping Visual Cortical Regions in Awake, Behaving Monkey using Functional MRI (MAPAWAMO)**
Most of our understanding of the human visual system comes from comparison with experimental data, especially single-cell data, obtained in monkeys. The problem has been that one has to compare results obtained not only in different species but also with different techniques. A considerable advance could be made if one could compare the functional imaging results in human to those obtained with the same technique in monkeys and then in a second step compare within the same species functional imaging data with single-cell or other experimental data. To that end one needs functional magnetic resonance imaging (fMRI) in the awake, behaving monkey. The overall aim is to perfect the monkey fMRI technique already in place in order to compare different types of fMRI analysis with an existing metabolic mapping standard in the monkey and to compare directly cortical networks in human and non human primates. We will use fMRI to map visual cortical regions responsive to different types of visual stimuli and active in visual discrimination tasks in monkeys and in humans. We will within the same monkey subject compare activation maps measured with fMRI and those obtained by metabolic labeling (double label 2deoxyglucose - 2DG). This latter data will serve as "ground truth" with which to compare the results of the different analysis techniques for the fMRI signals. We will also use ICA to develop new tools to estimate functional connectivity and compare this to the extensive anatomical knowledge available in the monkey.

Department of Informatics and Mathematical Modeling
Medical School
R.U. Neurophysiology
French National Institute for Computer Science and Applied Mathematics
Period: 01/09/2000 → 31/08/2003
Number of participants: 3
Project participant:
Nielsen, Finn Årup (Intern)
Dyrholm, Mads (Intern)

Project Manager, organisational:
Hansen, Lars Kai (Intern)

**Modelling, visualisering og metaanalyse af hjernebilleder**

Department of Informatics and Mathematical Modeling
Period: 01/05/1998 → 11/09/2002
Number of participants: 6
Phd Student:
Nielsen, Finn Årup (Intern)

Supervisor:
Larsen, Jan (Intern)

Main Supervisor:
Hansen, Lars Kai (Intern)

Examiner:
Thyregod, Poul (Intern)

Andersen, Jens Damgaard (Ekstern)
Roland, Per Ebbe (Ekstern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Forskningsrådsstipendium
Project: PhD

**Ph. D. Project: Finn Årup Nielsen: Analysis, Visualization and Metaanalysis of Neuroimages**

Department of Informatics and Mathematical Modeling
Period: 01/04/1998 → 31/03/2001
Number of participants: 3
Project participant:
Larsen, Jan (Intern)
Nielsen, Finn Årup (Intern)

Project Manager, organisational:
Hansen, Lars Kai (Intern)

**THOR Center for Neuroinformatics**

Neuroinformatics is a research field rooted in classical disciplines like signal processing, biology, physics, computer science and engineering. Neuroinformatics combines learning from the brain and learning about the brain. By studying information processing in the brain neuroinformatics invents new computing paradigms (e.g., artificial neural networks) with the objective of understanding the dynamics of the conscious mind. Neuroinformatics is a key component of a US research program, the Human Brain Project which is supported by all the major American governmental funding agencies and hosted by the National Institute of Health. The geographically and scientifically distributed nature of the collaborating research groups involved in this interdisciplinary neuroscience effort calls for new visual and interactive means of communication. A point strongly emphasized in this program is the need for using the World Wide Web for communication and dissemination of results. With partners in the Copenhagen area we have established the "Copenhagen Brain Research Center".

Department of Informatics and Mathematical Modeling
Period: 01/04/1998 → …
Number of participants: 3
Project participant:
Larsen, Jan (Intern)
Nielsen, Finn Årup (Intern)

Project Manager, organisational:
Hansen, Lars Kai (Intern)

**Financing sources**
Human Brain Project

Neuroscience is expanding nationally and internationally. The 90's were proclaimed "Decade of the Brain" by the US Congress, and a large funding program the so-called "Human Brain Project" was established. Nationally the Danish Research Councils created a substantial funding program for Interdisciplinary Neuroscience. New technology is key to the growth of neuroscience and engineering and informatics competences are of vital importance for large neuroscience projects. The DTU Human Brain Project group collaborates with an international consortium of researchers from leading neuroscience labs in the USA and Japan on new data analytic strategies for functional neuroimaging. In the 1996 the group was funded by the US Human Brain Project and by the Danish Research Councils. Functional neuroimaging by Positron Emission Tomography (PET) and functional Magnetic Resonance Imaging (fMRI) is opening a new window to the working human brain. These brain scan techniques provide highly complex data sets. The scans are indirect measures of brain activity while subjects perform well defined mental tasks. The work of the DTU group concerns basic signal processing, pattern recognition and visualization. A fast volume "warp" algorithm was developed for co-registration of PET brain scans using anatomical MRI applied to co-registration of PET group studies at Rigshospitalet, University of Copenhagen. Markov Field methods were developed for edge preserving smoothing of PET scans. Artificial neural network models were designed, evaluated, and visualized for detection of brain activation in PET scans under saccadic eye movements. Noise levels in PET scans were analyzed. A number of data analytic strategies for fMRI were compared on data sets from Massachusetts General Hospital. Artificial neural networks were used to estimate Glucose Metabolism from dynamic PET scans.

Department of Informatics and Mathematical Modeling
University of Copenhagen
Minneapolis VA Medical Center
University of Minnesota
Research Institute of Brain & Blood Vessels
University of Chicago
Massachusetts General Hospital
Harvard Medical School

Period: 01/01/1994 → …
Number of participants: 21
Project participant:
Ohlsson, Børje Ola Mattias (Intern)
Toft, Peter Aundal (Intern)
Nielsen, Finn Årup (Intern)
Mørch, Niels J.S. (Intern)
Kjems, Ulrik (Intern)
Philipsen, Peter Alshede (Intern)
Rasmussen, Carl Edward (Intern)
Larsen, Jan (Intern)
Pauison, Olaf B. (Ekstern)
Svarer, Claus (Ekstern)
Law, Ian (Ekstern)
Gade, Anders (Ekstern)
Lautrup, Benny (Ekstern)
Rotterberg, David (Ekstern)
Strother, Stephen (Ekstern)
Kim, Seong-Gi (Ekstern)
Kanno, Iwao (Ekstern)
Chen, Chin-Tu (Ekstern)
Savoy, Robert (Ekstern)
Lange, Nicholas (Ekstern)
Project Manager, organisational:
Hansen, Lars Kai (Intern)

**Financing sources**
Source: Unknown
Name of research programme: Ukendt
Amount: 845,377.00 Danish Kroner

**Activities:**

**WikiCite 2016**
Period: 25 May 2016 → 26 May 2016
Finn Årup Nielsen (Participant)
Department of Applied Mathematics and Computer Science
Cognitive Systems

**Description**
Participation in Wikicite 2016

**Related event**

**WikiCite 2016**
25/05/2016 → 26/05/2016
Berlin, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Combining text mining and coordinate-based meta-analysis**
Period: 21 Apr 2015
Finn Årup Nielsen (Invited speaker)
Department of Applied Mathematics and Computer Science
Cognitive Systems

**Description**
From invited talk given at Neuroimaging meta-analysis methods workshop in Paris and organized by Bertrand Thirion.
2015 April.
Documents:
NielsenF2015Combining_slides

**Related external organisation**

**Unknown external organisation**
Activity: Talks and presentations › Conference presentations

**Meta-analysis and databasing of neuroimaging studies**
Period: 7 Oct 2009
Finn Årup Nielsen (Speaker)
Department of Informatics and Mathematical Modeling
Cognitive Systems

**Description**
Note: From PhD course Advances in magnetic resonance imaging of human brain structure and function at Hvidovre Hospital, University of Copenhagen.
Place: Hvidovre Hospital, Denmark
Documents:
Clustering of scientific citations in Wikipedia: Wikimania 2008
Period: 19 Jun 2008
Finn Årup Nielsen (Speaker)
Department of Informatics and Mathematical Modeling
Cognitive Systems

Description
The instances of templates in Wikipedia form an interesting data set of structured information. Here I focus on the cite journal template that is primarily used for citation to articles in scientific journals. These citations can be extracted and analyzed: Non-negative matrix factorization is performed on a (article x journal) matrix resulting in a soft clustering of Wikipedia articles and scientific journals, each cluster more or less representing a scientific topic.
Place: Bibliotheca Alexandrina, Alexandria, Egypt
Documents:
Nielsen2008Clustering_slides.pdf

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Links:

Links:

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations