

Chris Gorgolewski

Co-director of the Stanford Center for Reproducible Neuroscience
Research Associate at Department of Psychology, Stanford University

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Research Interests

I am interested in how we can use modern technology to improve the way we study human behaviour and its neuronal underpinnings. This involves building tools and services (such as Nipype, OpenNeuro, and NeuroVault.org) that allow neuroscientists, psychologists and clinicians to be more efficient and less biased in the way they collect, share and analyze data. I'm also involved in efforts to maximise the impact of behavioural and brain research through data sharing and data standards (Brain Imaging Data Structure). This work goes beyond tools and services, also including policy making and publishing culture research.

Postdoctoral Work Experience

- 2015 -** **Center for Reproducible Neuroscience, Stanford University, USA**
Co-director <http://reproducibility.stanford.edu>
- 2015 -** **Stanford University, Stanford, USA**
Research Associate
Russell Poldrack Lab, Department of Psychology
- 2014 - 2015** **Stanford University, Stanford, USA**
Postdoctoral Research Fellow
Russell Poldrack Lab, Department of Psychology
- 2012 - 2014** **Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany**
Postdoctoral Research Fellow
Neuroanatomy and Connectivity Research Group

Education

- 2017** **Stanford Manager Academy**
A development program designed to enhance the effectiveness of staff managers at all levels of experience and create a community of managers across the university.
- 2009 - 2012** **University of Edinburgh, UK**
PhD in Neuroimaging Methods
Thesis topic "Using probabilistic models of white and grey matter activation for presurgical planning of tumour extraction", supervisors: Mark Bastin, Cyril Pernet, and Amos Storkey.
- 2010** **Harvard Medical School, Cambridge, USA**
Visiting Research Fellow
Work at Surgical Planning Laboratory. Collaboration with Dr Alexandra Golby (Harvard) and Dr Satrajit Ghosh (MIT).
- 2008 - 2009** **University of Edinburgh, UK**
MRes with Distinction in Neuroinformatics
Thesis topic: "Noise Contributions to Functional Diffusion Tensor Imaging", supervisor: Mark Bastin

2004 - 2008 **Poznan University of Technology, Poland**
BSc in Computer Science
Graduated with grade A (excellent), **merit-based scholarship**

Grants

- NIH R24 BIDS-Derivatives: A data standard for derived data and models 2017 (\$955k over 2 years)
- Laura and John Arnold Foundation Grant to fund Center for Reproducible Neuroscience 2015 (\$3.7 million over 3 years)
- INCF Special Grant for development of NeuroVault.org 2014 (20k EUR over 6 months)

Professional Society and Technical Committee Activities

- General Chair of the Open Science Special Interest Group at the Organization for Human Brain Mapping - 2017-2018
- Programme chair of the Pattern Recognition in Neuroimaging Workshop - 2016-2017

Most notable projects

- **Nipype** - a flexible Python framework for building and efficiently running neuroimaging data processing pipelines. A vibrant open source project with >100 contributors.
<https://github.com/nipy/nipype>
- **NeuroVault.org** - a repository for sharing and analysis of statistical maps of the human brain. Since launch in 2013 amassed 36k brain maps and >300 paper mentions.
<http://NeuroVault.org>
- **Brain Imaging Data Structure** - a community driven standard for organizing and describing neuroimaging data. Adopted by projects such as OpenfMRI, FCP-INDI, SchizConnect and Developing Human Connectome Project as well as a growing number of labs around the world.
<http://bids.neuroimaging.io>
- **MRIQC** and **FMripREP** - a pair of data analysis applications for quality control and robust preprocessing of neuroimaging data. Downloaded ~20k times.
<https://github.com/poldracklab/fmriprep> and <https://github.com/poldracklab/mriqc>
- **OpenNeuro.org** - a science as a service platform delivering reproducible computationally intensive analysis as an incentive for data sharing. First of its kind.
<http://OpenNeuro.org>

Publications

Statistics:

- [Google Scholar](#): citation count: 1623, h-index: 23
- [Semantic Scholar](#): citation count: 3118, citation velocity: 1044

Journal Articles and selected conference papers

Gorgolewski, K. J., Durnez, J., & Poldrack, R. A. (2017). Preprocessed Consortium for Neuropsychiatric Phenomics dataset. F1000Research. (preprint)

Gorgolewski, K. J., Nichols, T., Kennedy, D., Poline, JB., & Poldrack, R.A.. (2017) *Promoting Replications through Positive Incentives*. Figshare. (preprint)

Esteban, O., Birman, D., Schaer, M., Koyejo, O. O., Poldrack, R. A., & **Gorgolewski, K. J.** (2017) *MRIQC: Predicting Quality in Manual MRI Assessment Protocols Using No-Reference Image Quality Measures*. PLoS ONE.

Kiar, G., **Gorgolewski, K. J.**, Kleissas, D., Roncal, W. G., Litt, B., Wandell, B., Poldrack, R. A., et al. (2017). *Science In the Cloud (SIC): A use case in MRI Connectomics*. GigaScience.

Acikalin, M. Y., **Gorgolewski, K. J.**, & Poldrack, R. A. (2017). *A Coordinate-Based Meta-Analysis of Overlaps in Regional Specialization and Functional Connectivity across Subjective Value and Default Mode Networks*. Frontiers in neuroscience.

- Poldrack, R. A., Congdon, E., Triplett, W., **Gorgolewski, K. J.**, Karlsgodt, K. H., Mumford, J. A., Sabb, F. W., et al. (2016). A phenome-wide examination of neural and cognitive function. *Nature Scientific Data*.
- 115 Poldrack, R. A., Baker, C. I., Durnez, J., **Gorgolewski, K. J.**, Matthews, P. M., Munafò, M. R., Nichols, T. E., et al. (2017). *Scanning the horizon: towards transparent and reproducible neuroimaging research*. *Nature Reviews Neuroscience*.
- Pernet, C. R., **Gorgolewski, K. J.**, Job, D., Rodriguez, D., Whittle, I., & Wardlaw, J. (2016). A structural and functional magnetic resonance imaging dataset of brain tumour patients. *Nature Scientific Data*.
- 120 **Gorgolewski, K. J.**, Alfaro-Almagro, F., Auer, T., Bellec, P., Capota, M., Mallar Chakravarty, M., Churchill, N. W., et al. (2017). *BIDS Apps: Improving ease of use, accessibility and reproducibility of neuroimaging data analysis methods*. *PLoS Computational Biology*.
- Gorgolewski, K. J.**, & Poldrack, R. A. (2016). A Practical Guide for Improving Transparency and Reproducibility in Neuroimaging Research. *PLoS Biology*.
- 125 **Gorgolewski, K. J.**, Auer, T., Calhoun, V. D., Craddock, R. C., Das, S., Duff, E. P., Flandin, G., et al. (2016). The brain imaging data structure, a format for organizing and describing outputs of neuroimaging experiments. *Nature Scientific Data*.
- Sochat, V. V., **Gorgolewski, K. J.**, Koyejo, O., Durnez, J., & Poldrack, R. A. (2015). Effects of thresholding on correlation-based image similarity metrics. *Frontiers in neuroscience*.
- 130 Shine, J. M., Oluwasanmi, K., Bell, P. T., **Gorgolewski, K. J.**, Gilat, M., & Poldrack, R. A. (2015). Estimation of dynamic functional connectivity using Multiplicative Analytical Coupling. *NeuroImage*.
- Pernet, C. R., McAleer, P., Latinus, M., **Gorgolewski, K. J.**, Charest, I., Bestelmeyer, P. E. G., Watson, R. H., et al. (2015). The human voice areas: Spatial organization and inter-individual variability in temporal and extra-temporal cortices. *NeuroImage*.
- Poldrack, R. A., & **Gorgolewski, K. J.** (2015). *OpenfMRI: Open sharing of task fMRI data*. *NeuroImage*.
- 135 Shine, J. M., Oluwasanmi, K., Bell, P. T., **Gorgolewski, K. J.**, Gilat, M., & Poldrack, R. A. (2015). Estimation of dynamic functional connectivity using Multiplicative Analytical Coupling. *NeuroImage*.
- Gorgolewski, K. J.**, Varoquaux, G., Rivera, G., Schwartz, Y., Sochat, V. V., Ghosh, S. S., Maumet, C., et al. (2015). *NeuroVault.org: A repository for sharing unthresholded statistical maps, parcellations, and atlases of the human brain*. *NeuroImage*.
- 140 **Gorgolewski, K. J.**, Varoquaux, G., Rivera, G., Schwarz, Y., Ghosh, S. S., Maumet, C., Sochat, V. V., et al. (2015). *NeuroVault.org: a web-based repository for collecting and sharing unthresholded statistical maps of the human brain*. *Frontiers in neuroinformatics*.
- Gorgolewski, K. J.**, Mendes, N., Wilfling, D., Wladimirow, E., Gauthier, C., Bonnen, T., Ruby, F. J. M., et al. (2015). A high resolution 7-Tesla resting-state fMRI test-retest dataset with cognitive and physiological measures. *Nature Scientific Data*.
- 145 Zuo, X-N., Anderson, J., Pierre Bellec, P., Birn, B., Biswal, B., Blautzik, J., Breitner, J., Buckner, R., Calhoun, V., Castellanos, F., Chen, A., Chen, B., Chen, J., Chen, X., Colcombe, S., Courtney, W., Craddock, C., Di Martino, A., Dong, H-M., Fu, X., Gong, Q., **Gorgolewski, K. J.**, et al. (2014). An Open Science Resource for Establishing Reliability and Reproducibility in Functional Connectomics. *Nature Scientific Data*.
- 150 Poldrack, R. A. and **Gorgolewski, K. J.** (2014) *Making big data open: Data sharing in neuroimaging*. *Nature Neuroscience*.
- Gorgolewski, K. J.**, Lurie, D., Urchs, S., Kipping, J. A., Craddock, R. C., Milham, M. P., Margulies, D. S., et al. (2014). A correspondence between individual differences in the brain's intrinsic functional architecture and the content and form of self-generated thoughts. *PloS ONE*.
- 155 Schaefer, A., Margulies, D. S., Lohmann, G., **Gorgolewski, K. J.**, Smallwood, J., Kiebel, S. J., & Villringer, A. (2014). Dynamic network participation of functional connectivity hubs assessed by resting-state fMRI. *Frontiers in human neuroscience*.
- Gorgolewski, K. J.**, Storkey, A. J., Bastin, M. E., Whittle, I., & Pernet, C. (2013). Single subject fMRI test-retest reliability metrics and confounding factors. *NeuroImage*.
- 160 Baird, B., Smallwood, J., **Gorgolewski, K. J.**, & Margulies, D. S. (2013). Medial and Lateral Networks in Anterior Prefrontal Cortex Support Metacognitive Ability for Memory and Perception. *Journal of Neuroscience*.
- Margulies, D. S., Böttger, J., Watanabe, A., & **Gorgolewski, K. J.** (2013). Visualizing the human connectome. *NeuroImage*.

- Gorgolewski, K. J.**, Margulies, D. S., & Milham, M. P. (2013). *Making Data Sharing Count: A Publication-Based Solution*. *Frontiers in brain imaging methods*.
- 165 **Gorgolewski, K. J.**, Bazin, P.-L., Engen, H., & Margulies, D. S. (2013). *Fifty Shades of Gray, Matter: Using Bayesian priors to improve the power of whole-brain voxel- and connexelwise inferences*. 2013 International Workshop on Pattern Recognition in NeuroImaging (PRNI).
- Smallwood, J., **Gorgolewski, K. J.**, Golchert, J., Ruby, F. J. M., Engen, H., Baird, B., Vinski, M. T., et al. (2013). *The default modes of reading: modulation of posterior cingulate and medial prefrontal cortex connectivity associated with comprehension and task focus while reading*. *Frontiers in human neuroscience*.
- 170 **Gorgolewski, K. J.**, Storkey, A., Bastin, M. E., Whittle, I. R., Wardlaw, J. M., & Pernet, C. R. (2013). *A test-retest fMRI dataset for motor, language and spatial attention functions*. *GigaScience*.
- Buchanan, C. R., Pernet, C. R., **Gorgolewski, K. J.**, Storkey, A. J., & Bastin, M. E. (2013). *Test-retest reliability of structural brain networks from diffusion MRI*. *NeuroImage*.
- 175 Poline, J.-B., Breeze, J. L., Ghosh, S., **Gorgolewski, K. J.**, Halchenko, Y. O., Hanke, M., Haselgrove, C., et al. (2012). *Data sharing in neuroimaging research*. *Frontiers in human neuroscience*.
- Gorgolewski, K. J.**, Storkey, A. J., Bastin, M. E., & Pernet, C. R. (2012). *Adaptive thresholding for reliable topological inference in single subject fMRI analysis*. *Frontiers in human neuroscience*.
- 180 **Gorgolewski, K. J.**, Burns, C. D., Madison, C., Clark, D., Halchenko, Y. O., Waskom, M. L., & Ghosh, S. S. (2011). *Nipype: A Flexible, Lightweight and Extensible Neuroimaging Data Processing Framework in Python*. *Frontiers in neuroinformatics*.

Awards

- > OHBM Abstract Merit award, 2015
- > OHBM Travel Award, 2013
- > ISMRM Educational Stipend, 2011

185 > Edinburgh Neuroscience Neuroresearcher Fund, 2011

- > Neuroinformatics and Computational Neuroscience Doctoral Training Centre Fellowship, 2008-2012

Invited talks

- > *Avoiding the Tower of Babel - The Role of Data Description Standards in Biomedical Imaging, The Big Data to Knowledge (BD2K) Guide to the Fundamentals of Data Science 2017*

190 > *Replicability, Reproducibility, and Transparency in Human Neuroscience ICHBD 2017*

- > *Towards open and reproducible neuroscience in the age of big data Imperial College London September 2017*
- > *OpenNeuro.org: a free online platform for sharing and analysis of neuroimaging data OHBM 2017*
- > *Towards open and reproducible neuroscience in the age of big data MIT February 2017*

195 > *Towards open and reproducible neuroscience in the age of big data NIH January 2017*

- > *Brain Imaging Data Structure, June 2016 Organization for Human Brain Mapping 2016*
- > *Brain Imaging Data Structure and Center for Reproducible Neuroscience. December 2015, Montreal Neurological Institute, Canada*
- > *Brain Imaging Data Structure. INCF Congress, August 2015, Cairns*

200 > *Data sharing in neuroimaging: incentives, tools, and challenges. February 2015, Albuquerque*

- > *Some neuroinformatics tools for data sharing and reproducibility. December 2014, Berkeley*
- > *NeuroVault and the vision for data sharing in neuroimaging. January 2014, London*
- > *Data processing for MRI resting state. September 2013, York*
- > *Data processing using Nipype - beginners workshop. May 2013, Trento*

205 > *Nipype Connectivity Workshop. September 2012, Magdeburg*

- > *Using fMRI for presurgical planning: advancements in statistical methods. May 2012 Leipzig*
- > *Data processing using Nipype. April 2012, Iowa City*
- > *Data processing using Nipype. April 2012, Munich*

Teaching experience

- > *Sharing data & code for Reproducible NeuroImaging. Birmingham, Oxford, and Glasgow 2017*
- > *Best practices for reproducible neuroscience. Seattle 2017, NeuroHackWeek*
- > *Better Science, Los Angeles 2017*
- > *Docker for scientists. Seattle 2016, NeuroHackWeek*

210 > *How to organize and share data easily and at low cost. Geneva 2016, Organization for Human Brain Mapping Educational Session*

215

- Brain Data Sharing, Trento June 2016, Pattern Recognition in Neuroimaging (PRNI) Tutorial
- Advanced fMRI Methods, Beijing - 5 day hands on course, (2015)
- Invited Lecturer: Berkeley neuroimaging class (2014)
- Lecturer: Introduction to Research Computing, 2010-2011
- Teaching Assistant: Data Mining and Exploration, 2009-2011
- Tutor: Processing Natural and Formal Languages (2009-2010), Introduction to Applied Machine Learning (2009-2010), Machine Learning and Pattern Recognition (2010-2011)
- Supervision of numerous interns and masters students.

Other experience

- **INCF Data Sharing Task Force**
Active member since 2010.
- **Neuroimaging Data Processing Workshop, Edinburgh 2010**
Organized a two day INCF founded workshop with international speakers for 30 participants.
- **IDEA Sequence Development course, Boston 2010**
Five day long Siemens MRI sequence programming course.
- **Leading developer of Nipype data processing software**
Actively involved in development and user support since 2009.
- **Software Developer Engineer at Microsoft**
Summer 2008 internship with Content Access Protection team - Redmond, WA, USA.

Skills

- Neuroimaging: paradigm design (Presentation and OpenSesame) and analysis of fMRI, DTI, T1, T2 data using SPM, FSL, Freesurfer, Diffusion Toolkit, MRTrix, and Nipy
- Software development: C, C++, C#, Java, Python, Django, MATLAB, Git, and SVN
- System administration: Linux
- Statistics and machine learning: R, SPSS, sklearn
- <https://github.com/chrisfilo>

Ad-hoc reviewer

- eLife
- Nature Human Behaviour
- Scientific Data
- NeuroImage
- PLoS ONE
- Frontiers in Human Neuroscience
- PeerJ
- F1000Research
- GigaScience
- Frontiers in Neuroinformatics
- PLoS Biology
- IEEE Transactions on Medical Imaging
- Journal of Neuroscience Methods
- Research Ideas and Outcomes