

## **Professor Stephen Smith      FMRIB, Oxford**

Centre for Functional Magnetic Resonance Imaging of the Brain (FMRIB),  
Nuffield Department of Clinical Neurosciences, Oxford University

### **Contact Details**

Work address    FMRIB, John Radcliffe Hospital, Headington, Oxford OX3 9DU, UK  
Telephone        (+44) 1865 222726  
Fax                (+44) 1865 222717  
Email             steve@fmrib.ox.ac.uk

### **Positions**

2005 –            University Professor of Biomedical Engineering, Department of Clinical Neurology, Oxford University  
                      Head of Analysis, FMRIB Centre  
2004 – 2005    University Reader in Biomedical Image Analysis, Department of Clinical Neurology, Oxford University  
2003 –            Associate Director, FMRIB  
2002 – 2007    EPSRC Advanced Research Fellow  
2000 – 2004    University Research Lecturer, Faculty of Clinical Medicine, Oxford University  
1997 – 2003    Head of Image Analysis, FMRIB, Oxford University  
1989 – 1997    Grade 7 Scientist (final post), Computer Vision and Image Processing Group,  
                      Defence Research Agency, UK

### **Education**

1996             CEng MIEE  
1989 – 1992    D.Phil. in Computer Vision, Dept. Engineering, Oxford University  
1986 – 1989    B.A. (hons, first class) in Physics, Oxford University

### **Brief Biography**

Steve Smith is Professor of Biomedical Engineering and the Associate Director at The Oxford University Centre for Functional Magnetic Resonance Imaging of the Brain (FMRIB). The Analysis Group, which he started in 1997, now comprises about 20 research fellows, postdocs, students and support staff, carrying out brain image analysis and statistics research: image reconstruction, artefact removal, motion correction, image and signal filtering, registration, 4-dimensional statistical modelling, diffusion morphometry and tractography, segmentation, structural brain change mapping and pathology analysis.

The Analysis Group also provides the tools, environment and training for FMRI and MRI analysis, supporting a large number of imaging applications researchers. It has produced the brain image analysis software package FSL (FMRIB Software Library) which is widely used in many laboratories internationally.

Prior to taking up the position at FMRIB, Smith worked on a number of projects in the areas of computer vision, image processing, artificial intelligence, robotics and parallel processing for real-time systems, during his DPhil and at the Defence Research Agency.

## Publications

Scopus: h-index=57, 138 papers, average citations per paper ~130

## Journal Papers

- [1] E.P. Duff, A.J. Tractenberg, C.E. Mackay, M.A. Howard, F. Wilson, **S.M. Smith**, and M.W. Woolrich. Task-driven ICA feature generation for accurate and interpretable prediction using fMRI. *NeuroImage*, 2012. in press.
- [2] N. Filippini, L.D. Nickerson, C.F. Beckmann, K.P. Ebmeier, G.B. Frisoni, P.M. Matthews, **S.M. Smith**, and C.E. Mackay. Age-related adaptations of brain function during a memory task are also present at rest. *NeuroImage*, 2012. in press.
- [3] **S.M. Smith**, P.A. Bandettini, K.L. Miller, T.E.J. Behrens, K.J. Friston, O. David, T. Liu, M.W. Woolrich, and T.E. Nichols. The danger of systematic bias in group-level fMRI-lag-based causality estimation. *NeuroImage*, 59:1228–9, 2012.
- [4] **S.M. Smith**. The future of fMRI connectivity. *NeuroImage*, 2012. in press.
- [5] **S.M. Smith**, K.L. Miller, S. Moeller, J. Xu, E.J. Auerbach, M.W. Woolrich, C.F. Beckmann, M. Jenkinson, J. Andersson, M.F. Glasser, D. Van Essen, D. Feinberg, E. Yacoub, and K. Ugurbil. Temporally-independent functional modes of spontaneous brain activity. *Proc Natl Acad Sci USA (PNAS)*, 109(8):3131–6, 2012.
- [6] A.J. Trachtenberg, N. Filippini, K.P. Ebmeier, **S.M. Smith**, F. Karpe, and C.E. Mackay. The effects of APOE on the functional architecture of the resting brain. *NeuroImage*, 59(1):565–572, 2012.
- [7] K.E. Watkins, A. Cowey, A. Alexander, N. Filippini, J. Kennedy, **S.M. Smith**, N. Ragge, and H. Bridge. Language networks in anophthalmia: maintained hierarchy of processing in visual cortex. *Brain*, 2012. in press.
- [8] M.J. Brookes, M.W. Woolrich, H. Luckhoo, D. Price, J.R. Hale, M.C. Stephenson, G.R. Barnes, **S.M. Smith**, and P.G. Morris. Investigating the electrophysiological basis of resting state networks using magnetoencephalography. *Proc Natl Acad Sci USA (PNAS)*, 108(40):16783–16788, 2011.
- [9] M.J. Donahue, H. Hoogduin, **S.M. Smith**, J.C.W. Siero, M. Chappell, N. Petridou, P. Jezzard, P.R. Luijten, and J. Hendrikse. Spontaneous BOLD fMRI signal is modulated by behavioral state and correlates with evoked response in sensorimotor cortex: A 7.0 Tesla fMRI study. *Human Brain Mapping*, 2011. In press.
- [10] G. Douaud, S. Jbabdi, T. Behrens, R. Menke, A. Gass, A. Monsch, A. Rao, B. Whitcher, G. Kindlmann, P. Matthews, and **S. Smith**. DTI measures in crossing-fibre areas: Increased diffusion anisotropy reveals early white matter alteration in MCI and mild Alzheimer's disease. *NeuroImage*, 55(3):880–890, 2011.
- [11] N. Filippini, K.P. Ebmeier, B.J. MacIntosh, A.J. Trachtenberg, G.B. Frisoni, G.K. Wilcock, C.F. Beckmann, **S.M. Smith**, P.M. Matthews, and C.E. Mackay. Differential effects of the APOE genotype on brain function across the lifespan. *NeuroImage*, 54(1):602–610, 2011.
- [12] A.R. Groves, C.F. Beckmann, **S.M. Smith**, and M.W. Woolrich. Linked independent component analysis for multi-modal data fusion. *NeuroImage*, 54(3):2198–2217, 2011.
- [13] M. Jenkinson, C.F. Beckmann, T.E.J. Behrens, M.W. Woolrich, and **S.M. Smith**. FSL. *NeuroImage*, 2011. In press.
- [14] A.R. Laird, P.M. Fox, S.B. Eickhoff, J.A. Turner, K.L. Ray, D.R. McKay, D.C. Glahn, C.F. Beckmann, **S.M. Smith**, and P.T. Fox. Behavioral interpretations of intrinsic connectivity networks. *Journal of Cognitive Neuroscience*, 23(12):4022–4037, 2011.
- [15] K.L. Miller, C.J. Stagg, G. Douaud, S. Jbabdi, **S.M. Smith**, T.E. Behrens, M. Jenkinson, S.A. Chance, M.M. Esiri, N.L. Voets, N. Jenkinson, T.Z. Aziz, M. Turner, H. Johansen-Berg, and J.A. McNab. Diffusion imaging of whole, post-mortem human brains on a clinical MRI scanner. *NeuroImage*, 57(1):167–181, 2011.

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- [17] G. Salimi-Khorshidi, **S.M. Smith**, and T.E. Nichols. Adjusting the effect of nonstationarity in cluster-based and TFCE inference. *NeuroImage*, 54(3):2006–2019, 2011.
- [18] G. Salimi-Khorshidi, T.E. Nichols, **S.M. Smith**, and M.W. Woolrich. Using Gaussian-process regression for meta-analytic neuroimaging inference based on sparse observations. *IEEE Trans. on Medical Imaging*, 30(7):1401–1416, 2011.
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- [21] David M. Cole, **Stephen M. Smith**, and Christian F. Beckmann. Advances and pitfalls in the analysis and interpretation of resting-state fMRI data. *Frontiers in Systems Neuroscience*, 4(8):1–15, 2010.
- [22] D.A. Feinberg, S. Moeller, **S.M. Smith**, E. Auerbach, S. Ramanna, M.F. Glasser, K.L. Miller, K. Ugurbil, and E. Yacoub. Multiplexed echo planar imaging for sub-second whole brain fMRI and fast diffusion imaging. *PLoS ONE*, 5(12):e15710, 2010.
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