Alexander JS Beckett, PhD

Address:	Helen Wills Neuroscience Institute
	UC Berkeley
	CA 94720
Phone:	(510) 602-7835
E-mail:	ajsbeckett@berkeley.edu

Employment & Education

2018-present:	Research Scientist, Advanced MRI Technologies, LLC, Sebastopol, CA
	Research Assistant, University of California, Berkeley, CA
2015-2018:	Postdoctoral Scholar, University of California, Berkeley
2013-2015:	Research Scientist, Advanced MRI Technologies, LLC, Sebastopol, CA
	Visiting Scholar, University of California, Berkeley, CA (Honorary Affiliation)
	Supervisor: Dr David Feinberg
2009-2013:	University of Nottingham: Ph.D. Visual Neuroscience
	Supervisor: Dr Denis Schluppeck.
	'The use of High-field fMRI to study neural selectivity in the human visual system'
2008-2009:	University of Nottingham: M.Sc. Cognitive Neuroscience and Neuroimaging (Distinction*)*
	Supervisor: Dr Denis Schluppeck.
	• **'Investigating the benefits of multi-Echo EPI fMRI in the Ventral Temporal area'**
2003-2007:	University of Nottingham: B.Sc. (Hons.) Psychology and Cognitive Neuroscience, 1st class.

Research Interests

I am interested in the use of novel functional MRI techniques (at 3T and 7T) to study the processing of visual stimuli, in particular investigating the ways in which high-resolution scanning can offer improvements and advantages in this area. This includes both the use of non-GE BOLD pulse sequences (e.g. Spin-Echo, VASO) to increase the functional specificity of acquired data, and incorporating a variety of different analysis techniques to extract information from that data.

Skills

- Analysing fMRI data in MATLAB (advanced) using different toolboxes such as mrTools (advanced) and SPM (familiarity), and with standalone software such as FSL (advanced), AFNI (familiarity) and others.
- Processing anatomical MRI data using FreeSurfer (advanced) and other software.
- Creating, programming, and displaying visual stimuli using MATLAB toolboxes such as MGL (advanced) and Psychtoolbox (advanced), and PsychoPy (familiarity).
- Experience with bash scripting, and coding in Python, Java and C++.
- Extensive experience maintaining data servers using Ubuntu.
- Advanced expertise in operating MRI scanners (Siemens Tim Trio 3T, Siemens

Magnetom 7T, Siemens Terra 7T), including use of custom sequences, custom reconstruction pipelines and optimizing sequences for high-resolution. Some experience with Phillips scanners (Achieva 3T & 7T)

- Grant writing experience (NIH R01 and SBIR grants)

Teaching Experience

2010:	Demonstrator, Computer programming for stimuli and analysis with demonstration of fMRI data analysis packages – Assisted in teaching MSc students to use MATLAB for general analysis and stimulus presentation, and to use SPM for the analysis of fMRI data. Also marked the assessment at the end of the module.
2008-2010:	Demonstrator, Practical Methods in Psychology and Cognitive Neuroscience – Assisted 2nd year lab class focussing on using visual psychophysics to study the effect of spatial frequency on motion detection, and marked the lab reports.

Awards

September 2012:	Guarantors of Brain Travel Grant
April 2011:	Guarantors of Brain Travel Grant
December 2010:	AVA Meeting Travel Bursary

Journal Articles

Park, Torrisi, Townsend, **Beckett** & Feinberg (In Press) 'Highly Accelerated Sub-Millimeter Resolution 3D GRASE with Controlled T2 Blurring in T2-Weighted FMRI at 7T: Feasibility Study' Magnetic resonance in medicine

Beckett, Dadakova, Townsend, Huber, Park & Feinberg (2020) 'Comparison of BOLD and CBV using 3D EPI and 3D GRASE for cortical layer fMRI at 7T' Magnetic resonance in medicine 84 (6): 3128-3145

Park, Chen, **Beckett** & Feinberg (2019) 'Virtual slice concept for improved simultaneous multi-slice MRI employing an extended leakage constraint' Magnetic Resonance in Medicine, 82 (1): 377-386

Feinberg, Vu & **Beckett** (2018) 'Pushing the limits of ultra-high resolution human brain imaging with SMS-EPI demonstrated for columnar level fMRI' Neuroimage, 154: 155-163

Vu, **Beckett**, Setsompop & Feinberg (2018) 'Evaluation of SLIce Dithered Enhanced Resolution Simultaneous MultiSlice (SLIDER-SMS) for human fMRI' Neuroimage, 164: 164-171

Chen, **Beckett**, Verma & Feinberg (2015) 'Dynamics of respiratory and cardiac CSF motion revealed with real-time simultaneous multi-slice EPI velocity phase contrast imaging' Neuroimage, 122: 281-287

Feinberg, **Beckett** & Chen (2013) 'Arterial spin labeling with simultaneous multi-slice echo planar imaging' Magnetic Resonance in Medicine, 70 (6): 1500-1506

Sanchez-Pancheulo, Besle, **Beckett**, Bowtell, Schluppeck & Francis (2012) 'Within-Digit Functional Parcellation of Brodmann Areas of the Human Primary Somatosensory Cortex Using Functional Magnetic Resonance Imaging at 7 Tesla' Journal of Neuroscience, 32 (45): 15815-15822

Beckett, Peirce, Sanchez-Panchuelo, Francis & Schluppeck (2012) 'Contribution of large scale biases in decoding of direction-of-motion from high-resolution fMRI data in human early visual cortex' Neuroimage, 63 (3): 1623-1632.

Bowns & **Beckett** (2010) 'An independent effect of spatial frequency on motion integration reveals orientation resolution' Vision Research, 50 (15): 1445-51.

Conference Abstracts

Park, Torrisi, Townsend, **Beckett** & Feinberg 'Highly accelerated sub-millimeter resolution 3D GRASE with controlled T2 blurring in T2-weighted FMRI at 7T: feasibility study' ISMRM, 2020

Townsend, Yi, **Beckett**, Leonard, Vu, Chang & Feinberg (2019) 'Non-invasive mapping of acoustic-phonetic speech features in human superior temporal gyrus using ultra-high field 7T fMRI' Neuroscience, 2019

Park, **Beckett** & Feinberg 'Sub-Millimeter Resolution Compressed Sensing GRASE for T2-Weighted Functional MRI at 7 Tesla' ISMRM, 2019

Vu, **Beckett**, Feinberg & Mukherjee 'StImulus Locked K-space shuffling (SILK) for ultra-high resolution fMRI' ISMRM, 2018

Vu, **Beckett**, Feinberg & Mukherjee 'Dual reconstructions of SLIDER-XD for high spatial and temporal resolution resting state fMRI at 7T' ISMRM, 2018

Dadakova, **Beckett**, Vu, Polimeni & Feinberg 'Blood-volume imaging using GRASE-VASO at ultra-high field for layer specific fMRI in human brain' ISMRM, 2018

Beckett, Vu, Schillak & Feinberg 'A high density 24 channel array coil extendable to 48 channels for human cortical MRI at 7T' ISMRM, 2017

Beckett, Vu, Schillak & Feinberg 'Array coils for ultra-high resolution columnar imaging in visual cortex' Neuroscience, 2016

Beckett, Vu, Keil, Setsompop, Wald, Schillak & Feinberg 'Assessment of coil arrays with small loop diameter at 7T for micron-scale resolution fMRI of human neocortex.' ISMRM, 2016

Feinberg, **Beckett**, Vu & Chen 'Cine Phase Contrast Simultaneous Multi-Slice Imaging of blood flow and CSF motion.' ISMRM, 2016

Vu, **Beckett**, Setsompop & Feinberg 'Evaludation of SLIce Dithered Enhanced Resolution Simultaneous Multislice (SLIDER-SMS) for human fMRI at 3T.' ISMRM, 2016

Beckett, Chen & Feinberg 'Novel coil designs for ultra-high resolution cortical fMRI at 7T.' Neuroscience, 2015

Beckett, Chen, Verma & Feinberg 'Velocity phase imaging with simultaneous multi-slice EPI reveals respiration driven motion in spinal CSF' ISMRM, 2015

Beckett, Chen, Vu & Feinberg 'A novel design 20-channel head coil for cortical imaging with ultra-high resolution' ISMRM, 2015

Chen, **Beckett** & Feinberg 'Background suppressed arterial spin labeling with simultaneous multi-slice echo planar imaging' ISMRM, 2015

Feinberg, Chen & **Beckett** 'Arterial Spin Labeling with Simultaneous Multi- Slice EPI compared to EPI and 3D GRASE' ISMRM, 2014

Chen, **Beckett**, Verma & Feinberg '7D velocity phase imaging with zoomed simultaneous multi-slice EPI reveals respiration driven motion in brain and CSF' ISMRM, 2014

Beckett, Peirce, Francis, Sanchez-Panchuelo & Schluppeck 'Multivariate classification of pattern-motion in human visual cortex using high-field fMRI' Neuroscience, 2012

Beckett, Peirce, Francis & Schluppeck 'Multivariate classification of motion direction using high-field fMRI' VSS, 2011

Bowns & **Beckett** 'A tool for investigating orientation resolution in the human vision system' ECVP, 2010

Professional Activities

Member of International Society for Magnetic Resonance in Medicine (2017)
Member of Society for Neuroscience (2012-2018)