

# James P. O'Shea

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- Objective:** A research scientist or software engineering position applying knowledge of the visual system and computer graphics to the research and development of tools for analyzing images, displaying 2D and 3D data, and enhancing human interaction with visual information.
- Education:**
- 2011 **PhD in Vision Science** (expected)  
*University of California, Berkeley*  
*Co-advisors: Martin Banks (Vision Science) and Maneesh Agrawala (Computer Science)*  
*Thesis: Shape, lighting, and material perception in images*
  - 1999 **BS in Computer Science**  
*University of New Hampshire*  
*Magna Cum Laude*
- Employment:**
- 2006-current **University of California, Berkeley** *Berkeley, CA*  
*Graduate Researcher in Vision Science Dept. and Computer Science Dept.*  
Conducted studies on human perception of 3D shape, lighting and material properties in images. Explored computational methods to recover or estimate specific scene properties. Developed C++ code for 3D model generation, shape analysis, and interactive 3D graphics experiments.
  - 2003-2006 **Brigham and Women's Hospital** *Boston, MA*  
*Computer Programmer in the Golby Lab, Neurosurgery Dept.*  
Developed C++ code for 3D medical-visualization and surgical-planning software (slicer.org). Created C++/Tcl/Tk modules to integrate neuronavigation application with intraoperative MRI system, and localize intracranial electrodes within surgical area.
  - 2002-2006 **Harvard University** *Cambridge, MA*  
*IT Support Associate in the Affective Neuroscience Lab, Psychology Dept.*  
Designed and implemented C++ and Matlab code for managing and analyzing fMRI and EEG neuroimaging data. Maintained small network of Linux workstations and servers for collecting, processing, and storing data.
  - 1999-2002 **Vividata, Inc** *Berkeley, CA*  
*Software Developer*  
Updated and maintained C software for Unix image-processing applications and back-end utilities for online photo commerce site (pictopia.com).
  - 1998-1999 **Fidelity Investments** *Merrimack, NH*  
*Software Developer in Employer Services*  
Created C++ software for human resources and payroll system.
- Technical Experience:**
- Languages: C/C++, Matlab, Java, HTML, JavaScript, Tcl/Tk, Python, PHP, Shell scripting
  - Operating Systems: Linux, Unix (mainly Solaris, also IRIX, HP-UX, AIX), MacOS (Darwin), Windows
  - Graphics Tools: OpenGL, VTK, PBRT
  - Development Tools: g++/gcc, gdb, svn
- Relevant Coursework:**
- Graduate CS Courses: Computer Vision, Visualization, Advanced Computer Graphics
  - Course Projects: Monte-Carlo Global Illumination, Image-based relighting, Subdivision surfaces, Bezier surfaces, Cloth simulation, Ikeuchi & Horn shape-from-shading
- Awards:**
- 2006-2009 NIH Trainee fellowship recipient
- Research Experience:**
- Experimental psychophysics, including experiment design and data analysis
  - Data modeling using Bayesian statistics framework
  - Calibration and testing of 2D and 3D display devices for controlled visual output

<b>Teaching</b>	Anatomy and physiology of the eye	Fall 2008
<b>Experience:</b>	Neuroanatomy and neurophysiology of the eye and visual system	Fall 2008
	Occulomotor functions and neurology	Spring 2007, Spring 2008
	Binocular Vision and Space Perception	Spring 2007, Spring 2008
<b>Conference Papers:</b>	<b>The assumed light direction for perceiving shape from shading.</b> James P. O'Shea, Martin S. Banks, Maneesh Agrawala. <i>ACM Symposium on Applied Perception in Graphics and Visualization (APGV)</i> . August, 2008. 135-142.	
	<b>Using surface normals to localize electrodes placed during neurosurgery.</b> James P. O'Shea, William M. Wells, Alexandra J. Golby. <i>IEEE International Symposium on Biomedical Imaging (ISBI)</i> . April, 2006. 331-334.	
<b>Journal Articles:</b>	<b>Pneumatically-driven finger movement: A novel, passive fMRI technique for pre-surgical motor and sensory mapping.</b> Sargent Shriver, Kyle E. Knierim, James P. O'Shea, Gary H. Glover, Alexandra J. Golby. <i>American Journal of Neuroradiology</i> . July 2011. ( <i>Epub ahead of print</i> ).	
	<b>The influence of shape cues on the perception of lighting direction.</b> James P. O'Shea, Maneesh Agrawala, Martin S. Banks. <i>Journal of Vision</i> . Oct 2010. vol 10, no 12. 1-21	
	<b>A surgical planning method for functional MRI assessment of language dominance: Influences from threshold, region-of-interest, and stimulus mode.</b> Ralph Suarez, Stephen Whalen, James P. O'Shea, Alexandra J. Golby. <i>Brain Imaging and Behavior</i> . June 2008. vol 2, no 2. 59-73	
	<b>Object naming is a more sensitive measure of speech localization than number counting: Converging evidence from direct cortical stimulation and fMRI.</b> Nicole Petrovich Brennan, Stephen Whalen, Daniel M. Branco, James P. O'Shea, Isaiah H. Norton, Alexandra J. Golby. <i>Neuroimage</i> . 2007; 37, S100-S108	
	<b>Integrated image- and function-guided surgery in eloquent cortex: A technique report.</b> James P. O'Shea, Stephen Whalen, Daniel M. Branco, Nicole Petrovich Brennan, Kyle E. Knierim, Alexandra J. Golby. <i>International Journal of Medical Robotics and Computer-Assisted Surgery</i> . 2006; 2: 75-83.	
	<b>Functional MRI of memory in the hippocampus: Laterality indices may be more meaningful if calculated from whole voxel distributions.</b> Daniel M. Branco, Ralph O. Suarez, Stephen Whalen, James P. O'Shea, Kyle E. Knierim, Aaron P. Nelson, Jaderson C. da Costa, Alexandra J. Golby. <i>Neuroimage</i> . 2006; 32, 592-602.	
	<b>Memory encoding in Alzheimer's disease: An fMRI study of explicit and implicit memory.</b> Alexandra J. Golby, Gerald Silverberg, Elizabeth Race, Susan Gabrieli, James P. O'Shea, Kyle Knierim, Glenn Stebbins, John Gabrieli. <i>Brain</i> . 2005; 128, 773-787.	
	<b>Toward an objective characterization of an anhedonic phenotype: A signal detection approach.</b> Diego A. Pizzagalli, Allison L. Jahn, James P. O'Shea. <i>Biological Psychiatry</i> . 2005; 57, 319-327.	
<b>Conference Talks:</b>	<b>How is the perception of shape from shading affected by revealing the lighting properties?</b> Presented at the 2009 Vision Sciences Society Meeting (VSS). Naples, FL. May 2009	
	<b>What is the assumed light direction when perceiving shape from shaded images?</b> Presented at the 2008 Applied Perception in Graphics and Visualization Meeting (APGV). Los Angeles, CA. August 2008.	
	<b>Using surface normals to localize electrodes placed during neurosurgery.</b> Presented at the 2006 International Symposium on Biomedical Imaging (ISBI). Alexandria, VA. April 2006.	
<b>Professional Activities:</b>	Member: Association of Computing Machinery (ACM) Institute of Electrical and Electronics Engineers (IEEE) Vision Sciences Society (VSS)	