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Education

Harvard University, Extension (MA) Montgomery College (MD) Foundation for Adv. Edu. in Sci. (MD)	non-degree coursework in biology, chemistry and humanities	2006- current
Stanford University (CA)	Ph.D., Applied Physics Ph.D. Minor, Electrical Engineering	2006
Tsinghua University (China)	M.S., Physics	1999
Huazhong University of Science and Technology (China)	B.Eng., Optoelectronic Engineering (earned at age 15, & <i>cum laude</i>)	1996

Research

National Institute of Neurological Disorders and Stroke, National Institutes of Health (MD)	Research Fellow. Studying neural effects of general anesthesia, and correspondence between functional and structural organizations in sensorimotor cortex, using fMRI in non-human primates. Advisor: <u>Afonso C. Silva</u> .	2008 – current
Massachusetts Institute of Technology (MA)	Research Associate. Conducted first visual fMRI experiments in ferrets. Advisors: <u>Mriganka Sur</u> .	2006 – 2007
Vision Science and Neuroimaging Group, Stanford University (CA)	Doctoral thesis research, with graduate research assistantship. Studied neural mechanism of color vision, and developed programs for visual fMRI in human patients. Advisor: <u>Brian A. Wandell</u> .	2000 – 2005
Dept. of Physics, Stanford University (CA)	First-year graduate research in biophysics. Advisor: <u>Steven Chu</u> .	1999 – 2000
Dept. of Physics, Tsinghua University (China)	Master thesis research in theoretical condensed matter physics. Advisor: <u>Bing-Lin Gu</u> .	1997 – 1999

Honors and activities

Poster Award (4 out of 50), Intramural Retreat of Nat. Inst. of Neuro. Disorders & Stroke (2009).
Educational Stipend, International Society for Magnetic Resonance in Medicine (2008, 2009).
Peer-reviewer for International Society for Magnetic Resonance in Medicine (2009).

Ad-hoc peer-reviewer for <Experimental Brain Research>, <Journal of Neuroscience>, <Journal of Cerebral Blood Flow and Metabolism>.

Members of Society for Neuroscience (2002-current), International Society for Magnetic Resonance in Medicine, International Society of Cerebral Blood Flow and Metabolism.

Journal Publications

Anesthesiology

- [1] **Liu J.V.**, Hirano Y., Nascimento G.C., Stefanovic B. and Silva A.C. (2010). Anesthesia decreases functional connectivity in somatosensory pathway: evidence from functional magnetic resonance imaging of marmoset brain. *To be submitted to Neuroimage*.

Neuroscience

- [2] Hirano Y., **Liu J.V.**, Stefanovic B. and Silva A.C. (2010). Spatiotemporal investigation of the fMRI response to brief somatosensory stimulation in awake marmosets. *In preparation*.
- [3] Bock N.A., Kocharyan A., **Liu J.V.** and Silva A.C. (2010). Visualizing the entire cortical myelination pattern in marmosets with magnetic resonance imaging. *Journal of Neuroscience Methods*, in press and available online.
- [4] Ress D., Glover G.H., **Liu J.** and Wandell B.A. (2007). Laminar profiles of functional activity in the human brain. *Neuroimage* 34(1): 74-84.
- [5] **Liu J.V.**, Ashida H., Smith A.T. and Wandell B.A. (2006). Assessment of stimulus induced changes in human V1 visual field maps. *Journal of Neurophysiology* 96(6): 3398-408.
- [6] **Liu J.** and Wandell B.A. (2005). Specializations for chromatic and temporal signals in human visual cortex. *Journal of Neuroscience* 25(13): 3459-68.
This paper was featured in the "This Week in The Journal" section by the editors, and was recommended by Faculty of 1000, an expert group that selects the most significant research work.
- [7] Brewer A.A., **Liu J.**, Wade A.R. and Wandell B.A. (2005). Visual field maps and stimulus selectivity in human ventral occipital cortex. *Nature Neuroscience* 8(8): 1102-09.

Physics

- [8] **Liu J.V.**, Bock N.A. and Silva A.C. (2010). A new method for rapid and precise T_1 mapping using inversion recovery. *To be submitted to Magnetic Resonance in Medicine*.
- [9] Wu J., Gu B.L., **Liu J.**, Guo Y., Zhu J.L., Yu J.Z. and Kawazoe Y. (1999). Transmission through a mesoscopic ring with a quantum dot. *Physics Letters A* 262: 245-250.
- [10] **Liu J.**, Zhang G. and Gu B.L. (1999). Persistent currents in toroidal single-wall carbon nanotubes. *Journal of Materials Science and Technology* 15: 342-344.

Conference Abstracts

- [1] **Liu J.V.**, Kocharyan A., Bock N.A. and Silva A.C. (2009). Correlation between myeloarchitecture and spatial profiles of fMRI responses in the primary somatosensory cortex of a non-human primate. Society for Neuroscience Annual Meeting, Chicago, IL.

- [2] Liu J., Bock N., Kocharyan A., Hirano Y. and Silva A. (2009). Structural MRI-measured T1 map reflects functional topography in primary somatosensory cortex of a non-human primate. International Society for Cerebral Blood Flow and Metabolism Annual Meeting, Chicago, IL.
- [3] Liu J.V., Bock N.A., Hirano Y. and Silva A.C. (2009). Cortical boundaries revealed by T1 mapping: comparison with fMRI in awake marmosets. ISMRM Annual Meeting, Honolulu, HI.
- [4] Liu J.V. and Silva A.C. (2009). Effects of propofol anesthesia on functional response in somatosensory brain regions of a new-world monkey (marmoset). International Anesthesia Research Society Annual Meeting, San Diego, CA.
- [5] Liu J.V., Stefanovic B., Nascimento G. and Silva A.C. (2008). FMRI responses to somatosensory stimulation in primary and secondary cortices of awake marmosets. Society for Neuroscience Annual Meeting, Washington, DC.
- [6] Liu J.V., Sur M., Moore C.I. and Sharma J. (2008). Orientation maps in ferret visual cortex measured by multi-slice fMRI. ISMRM Annual Meeting, Toronto, Canada.
- [7] Liu J.V., Sharma J., Moore C.I. and Sur M. (2007). Maps of retinotopy and orientation in ferret measured with BOLD fMRI at 9.4T. Society for Neuroscience Annual Meeting, San Diego, CA.
- [8] Liu J. and Wandell B.A. (2005). Color- and luminance-preferring stripes in human V2 measured using fMRI. Society for Neuroscience Annual Meeting, Washington, DC.
- [9] Liu J. and Wandell B.A. (2005). Contrast perception and discrimination of chromatic temporal modulations. Vision Sciences Society Annual Meeting, Sarasota, FL.

Sixteen other published abstracts are omitted here. Available upon request.

Skills

Medical Imaging: Expert in functional magnetic resonance imaging (fMRI) in human volunteers and patients, and animal subjects including rat, ferret, marmoset and squirrel monkey.

Mastery of operating GE and Bruker MRI scanners and optimization of scan protocols.

Familiar with MRI hardware setup, debugging, and pulse programming.

Neuroscience: Mastery of human patient handling, veterinary anesthesia, training and handling of marmosets. Familiar with visual psychophysics, electroencephalogram and craniotomy.

Computation: Mastery of Matlab®-based programming, signal processing and medical image processing. Familiar with C++, Fortran and Mathematica.

Electronics: Designed and manufactured radio-frequency coils for human and animal MRI.

Physics: Familiar with theory and simulation of electromagnetics in solid-state matter.

Service: 100+ hours volunteering at Dept. of Anesthesiology and Surgical Services, and 50+ hours volunteering as language interpreter, at the National Institutes of Health Clinical Center. 150 hours volunteering at emergency room of Mass. General Hospital and oncology department of Montgomery General Hospital.