

Kai J. Miller

Curriculum Vitae
Current as of August, 2010

Positions Held

Research Assistant

Department of Physics, Program in Neurobiology and Behavior, Neural Systems Laboratory, Harborview Hospital
University of Washington, (2000-Present)
Advisors: **Marcel denNijs, Rajesh P. N. Rao, Jeffrey G. Ojemann**

Research Assistant

Environmental Physiology Lab
NASA – Johnson Space Center, (Summer 1999; 2009 – Present)
Advisors: **Michael Gernhardt and Michael Powell (1999)**

Research Assistant

Departments of Physics (1998-2000) and Immunology (1997-1998), and California Space Institute at UCSD, UC San Diego
Advisors: **David Kleinfeld, Greg Silverman, Michael Wiskerchian**

Education

PhD. Candidate in Neurobiology and Behavior Program at the University of Washington, 2007-Present; (advanced to candidacy in June, 2008)
Category-specific neural processing in inferotemporal cortex

Medical Student at the University of Washington, 2000-Present

PhD. Physics, University of Washington, 2008
Characteristic changes in electrocorticographic power spectra of the human brain

M.S. Physics, University of Washington, 2006

B.S. Physics and Biology, University of California, San Diego, 2000

Fellowship Awards

Medical Scientist Training Program 2000-Present

NASA GSRP Fellow 2009-Present

Neurological Surgery Training Grant 2006

Poncin Award 2004- 2007

Balfour Fellow 2000-2001

National Merit Scholar 1996-2000

University of California Regent Scholar 1996-2000

University of California, San Diego Provost's Scholar 1998

NASA Research Fellow, Johnson Space Center 1999

Institutional Grants

NSF 0642848:

Exploring the Neural Dynamics of Cognition through Human Electroconvulsive Therapy

NSF / BCS-COGNEURO, 4/15/2007 -

Investigator, Written under auspice of RPN Rao and JG Ojemann;

This grant focuses on the creation and implementation of novel experiments and methodology in electroconvulsive therapy to understand the dynamics of cognition.

NSF 0930908:

Electroconvulsive Therapy Brain-Machine Interfaces for Communication and Prosthetic Control

NSF / CBET, 8/10/2009 -

Researcher, Assisted Investigator RPN Rao in concept and writing of grant

This grant reflects one of the first efforts to exploit ECoG and the brain's plasticity to build BMIs that can control devices with large degrees of freedom.

Teaching - Course Instructor

Minority Medical Education Program: Introductory Physics, University of Washington, Summer 2002, Summer 2003, Summer 2004

CSE 591B: Electroconvulsive Therapy methods, University of Washington, Spring 2008

Teaching - Guest Lecturer

CSE 590RR: Introduction to Computational Neuroscience, University of Washington
"Poisson Statistics and Stochasticity in Neuronal Spike Timing", Fall 2003

CSE/NEUBEH 528: Computational Neuroscience, University of Washington
"Compartmental Models for Potential Propagation", Winter 2005

Cogs160: Brain Computer Interfaces, University of California, San Diego
"Electroconvulsive Therapy Brain Computer Interfaces", Summer 2005

CSE 599E: Brain Computer Interfaces, University of Washington
"Using Electroconvulsive Therapy Motor Signals for Device Control", Spring 2006

CSE490I: Neurobotics, University of Washington
"Translating Brain Signals", Winter 2007

BIOEN 302 Introduction to Biomedical Instrumentation, University of Washington
"Electroconvulsive Therapy Measurement and Experiment", Fall 2007

Cogs160: Brain Computer Interfaces, University of California, San Diego
“Capturing Brain Surface Electrical Potentials for Application and Intuition”,
Summer 2009

Lecturer – Training course at the Center for Neural Communication Technology:
“Implantable Neuroprosthetics: Technologies & Techniques” *University of*
Michigan, Ann Arbor, MI, USA, May, 2010

National Science Foundation Brain-computer interface graduate student training course,
Asilomar, CA - **“An introduction to neurobiology for BCI signal acquisition”** June,
2010

Teaching - Teaching Assistant

Physics 1B: 2nd Quarter Introductory Physics, UC San Diego, Winter 2000

Physics 428A: The Physics of Biological Vision, University of Washington, Summer
2001

CSE 590RR: Introduction to Computational Neuroscience, University of Washington,
Fall 2003

CSE/NEUBEH 528: Computational Neuroscience, University of Washington, Winter
2005

HUBIO 532: P-Nervous System (Medical School Neuroanatomy), University of
Washington, Spring 2008

Mentoring

Tim Blakeley, Graduate Student (Bioengineering) 2007 – present, Research Topic:
Electrocorticography for feedback and brain mapping

Taylor Abel, Medical Student, 2007 – 2010, Research Topic: Language Studies in
Electrocorticography

Nathan Evans, Post Baccalaureate student, CSE. 2005-2006 Research Topic: Brain-
Computer Interfaces.

Beau Crawford, undergraduate student, CSE, 2003-2005. Research Topic: Brain-
Computer Interfaces and Classifier Based EMG systems..

Brian Chang, undergraduate students, CSE, 2003-2004. Research Topic: Classifier
Based EMG systems

Positions and Societies

Phi Chi Medical Fraternity,

Epsilon Kappa Chapter (Seattle)

Executive Member-at-Large of the National Welfare Board, 2006, 2007, 2008 (one of 6
annually elected National Positions)

Member of the National Welfare Board, 2004, 2005, 2009, 2010 (one of 6 annually
elected National Positions)

Sigma Chi Fraternity,
Iota Chi Chapter (San Diego)
Academic Advisor to Upsilon Upsilon Chapter (U. Washington) (2000-2001)

University of Washington Graduate Student Senate
Senator from the Physics Department (2003-2004)

Organizational

Associate Editor *Frontiers in Human Neuroscience*: “Origins and consequences of rhythmic cortical activity” *Special Issue of Frontiers in Human Neuroscience* to appear in 2010, (along with Thilo Womelsdorf, and Robert Knight)

Organizer, Moderator of “Large Scale Brain Dynamics” Symposium in Whistler, BC, Canada, December 7th and 8th, 2007
(http://www.cs.washington.edu/homes/kai/nips_07_workshop.htm)

Organizer, Moderator of “The consequences of brain rhythms in the organization of neuronal computation” Workshop in Snowbird, Utah, March 2nd, 2009
(http://cosyne.org/wiki/The_consequences_of_brain_rhythms_in_the_organization_of_neuronal_computation)

Occasional Reviewer for...

Cerebral Cortex
Frontiers in Human Neuroscience
Hippocampus
Human Brain Mapping
IEEE Eng Med Biol Soc,
IEEE Transactions on Biomedical Engineering
IEEE Transactions on Neural Systems and Rehabilitation Engineering
International Journal of Computer Assisted Radiology and Surgery
Journal of Neural Engineering
Journal of Neuroscience
Journal of Neuroscience Methods
Neural Information Processing Systems (NIPS)
NeuroImage
PLOS One
PRESENCE
Trends in Cognitive Sciences

Personal / Extracurricular

Tennis (NCAA team at UC San Diego 1996-2000), Surfing, Travel, Literature, Chess, Scuba Diving

Papers

Abel*, T.J., Miller*, K.J., Blakeley, T.M., Edwards, E., Masahiro, C.S.M., Ojemann, J.G., 2009, **Clinical localization of speech production areas from spectral changes in cortical surface potentials.** In submission

Blakeley*, T., Miller*, K.J., Rao, R.P.N., Ojemann, J.G., 2008, **Localization and classification of phonemes using high spatial resolution ECoG grids** IEEE Eng Med Biol Soc. 2008: 4964-67

Blakeley, T., Miller, K.J., Zanos, S., Rao, R.P.N., Ojemann, J.G., 2009, **Robust long term control of an electrocorticographic brain computer interface with fixed parameters.** Neurosurg Focus 27 (1):E13,

Crawford, B., Kai Miller, Pradeep Shenoy, Rajesh Rao **Real-Time Classification of Electromyographic Signals for Robotic Control** Proc. 2006 AAAI conference

Darvas, F., Miller, K.J., Rao, R.P.N., Ojemann, J.G., 2008, **Non-linear phase-phase coupling mediates communication between distant sites in human neocortex** Journal of Neuroscience 29(2):426-435

Darvas F, Scherer R, Ojemann JG, Rao RP, Miller KJ, Sorensen LB, 2010, **High gamma mapping using EEG.** Neuroimage 49:930-938.

Hebb AO, Miller KJ, 2010, **Semi-Automatic Stereotactic Coordinate Identification Algorithm for Routine Localization of Deep Brain Stimulation Electrodes** Journal of Neuroscience Methods, 15;187(1):114-9

Hermes, D, K. J. Miller, H. J. Noordmans, M. J. Vansteensel, N. F. Ramsey, 2010, **Localizing Electrodes on an Individual MRI for ECoG Research,** Journal of Neuroscience Methods, 185, (2): 293-298

Hermes, D, K. J. Miller, M. J. Vansteensel, E.J. Aarnoutse, F.S.S. Leijten, N. F. Ramsey, 2010, **Neurophysiologic correlates of fMRI in human motor cortex** (In submission)

Holmes, M.D., Micah Brown, Don M. Tucker, Russell P. Saneto, Kai J. Miller, Gagandeep S. Wig, Jeffrey G. Ojemann 2008 **Localization of Extratemporal Seizure with Noninvasive Dense-Array EEG,** Journal of Pediatric Neurosurgery, 44: 474-479

Kellis, S., K. Miller, K. Thomson, R. Brown, P. House, B. Greger, 2010, **Decoding spoken words using local field potentials recorded from the cortical surface,** Journal of Neural Engineering, In Print

Kellis S, Miller K, Thomson K, Brown R, House P, Greger B, 2010, **Classification of spoken words using surface local field potentials** IEEE Eng Med Biol Soc 2010, In print

Kim W, Miller JW, Ojemann JG, Miller KJ (2009) **Ictal Localization by Invasive Recording of Infralow Activity with DC-Coupled Amplifiers.** Journal of Clinical Neurophysiology 26: 135.

Dean J. Krusienski, DJ, Grosse-Wentrup, M, Gal' an, F, Coyle, D, Miller, KJ, Forney, E, Anderson, CW, 2010, **Fourth International BCI Meeting 2010: Workshop on Feature Extraction and Translation of Field Potentials,** Journal of Neural Engineering, In Print

Kubaneck, J., Miller, K.J., Ojemann, J.G., Schalk, G., 2009, **Decoding Flexion of Individual Fingers Using Electrographic Signals in Humans**, Journal of Neural Engineering 6:066001.

Leuthardt, E.C., Miller, K.J., Anderson, N., Schalk, G., Dowling, J., Moran, D., Ojemann, J.G., 2007 **Electrographic Frequency Alteration Mapping (EFAM), A Novel Clinical Technique for Mapping Motor Cortex** Neurosurgery 60: ONS-260–ONS-271, 2007 DOI: 10.1227/01.NEU.0000255413.70807.6E

Leuthardt, E.C., Miller, K.J., Schalk, G., Rao, R.P.N., Ojemann, J.G., **Electrographic-based brain computer interface--the Seattle experience.**, IEEE Trans Neural Syst Rehabil Eng. 2006 Jun;14(2):194-8

Miller, K.J., Leuthardt, E.C., Schalk, G., Anderson, N., Rao, R.P.N., Moran, D., Ojemann, J.G., 2007. **Spectral Changes in Cortical Surface Potentials during Motor Movement**, Journal of Neuroscience, 27(9):2424–2432

Miller, K.J., Makeig, S., Hebb, A.O., Rajesh P.N. Rao, R.P.N., denNijs, M., Ojemann, J.G., 2007, **Cortical Electrode Localization from X-Rays and Simple Mapping for Electrographic Research: The “Location On Cortex” (LOC) package for Matlab**. J Neurosci Meth, 162; 303–308

Miller, K.J., Schalk, G., Leuthardt, E.C., Shenoy, P., Rao, R.P.N., Ojemann, J.G. 2007 **Correlation in Paired One-Dimensional, Closed Loop, Overt, Motor Controlled BCI** Journal of Technical University of Graz, Special Issue: Brain Computer Interfaces, 2007

Miller, K.J., denNijs, Marcel, Shenoy, Pradeep, Miller, John W., Rao, Rajesh P.N., Ojemann, Jeffrey G., 2007, **Real-time functional brain mapping using electrographic**, NeuroImage 37 (2007) 504–507 doi: 10.1016/j.neuroimage.2007.05.029

Miller, K.J., Rao, R.P.N., and Ojemann, J.G., 2007 **The Behavioral Split in the Gamma Band** Neural Engineering, CNE '07. 3rd International IEEE/EMBS Conference on; p 465-468; DOI: 10.1109/CNE.2007.369710

Miller, K.J.; Sorensen, L.B.; Ojemann, J.G.; den Nijs, M, 2008, **ECoG observations of power-law scaling in the human cortex**. Arxiv preprint arXiv:07120846.

Miller, K.J.; Hebb, A.O.; Ojemann, J.G.; Rao, R.P.N; den Nijs, M, 2007, **Task-Related Principal Component Analysis: Formalism and Illustration** IEEE Eng Med Biol Soc. 2007: 5469-72.

Miller, K.J.; Shenoy, P.; den Nijs, M; Sorensen, L.B.; Rao, R.P.N.; Ojemann, J.G., 2008, **Beyond the Gamma Band: The Role of High Frequency Features in Movement Classification**, IEEE Trans Biomed Eng. 55(5): p. 1634-1637.

Miller, K.J., Blakeley, T., Schalk, G.S., denNijs, M., Ojemann, J.G., Rao, R.P.N., 2008, **Three Cases of Feature Correlation in an Electrographic BCI**. IEEE Eng Med Biol Soc. 2008: 5318-21

Miller, K.J., S. Zanos, E.E. Fetz, M. den Nijs, and J.G. Ojemann, 2009, **Decoupling the Cortical Power Spectrum Reveals Real-Time Representation of Individual Finger Movements in Humans**. Journal of Neuroscience, 2009. 29(10): p. 3132.

Miller, K.J.; Sorensen, L.B.; Ojemann, J.G.; den Nijs, M, 2009, **Power-Law Scaling in the Brain Surface Electric Potential**. PLOS Computational Biology, 5(12): e1000609.

- Miller, K.J., Weaver, K.E., Ojemann, J.G., 2009, **Direct electrophysiological measurement of human default network areas**, PNAS 106(29):12174.
- Miller KJ, Hermes D, Schalk G, Ramsey NF, Jagadeesh B, den Nijs, M, Ojemann, JG, Rao, R.P.N.. (2009) **Detection of spontaneous class-specific visual stimuli with high temporal accuracy in human electrocorticography**. IEEE Eng Med Biol Soc 2009, 6465-6468
- Miller, K.J. and Ojemann, J.G., 2010, **A Simple, Spectral-Change Based, Electrocorticographic Brain-Computer Interface** (In Print, *Book Chapter*, edited by Graimann, B., Allison, B, and Pfurtscheller, G)
- Miller, K.J., Schalk, G.S., Fetz, E.E., den Nijs, M., Ojemann, J.G., Rao, R.P.N. 2010 **Cortical Activity During Motor Movement, Motor Imagery, and Imagery-Based Online Feedback**, PNAS 107(9)4430-4435
- Miller, K.J. 2010 **Broadband spectral change: evidence for a macroscale correlate of population firing rate?** Journal of Neuroscience, 30(19):6477– 6479
- Miller, K.J., Hebb, A.O, Hermes, D, den Nijs, M., Ojemann, J.G., Rao, R.P.N. 2010 **Brain surface electrode co-registration using MRI and x-ray** IEEE Eng Med Biol Soc 2010, In print
- Miller, K.J., Schalk, G. 2010 **BCI Competition IV Dataset 4: Finger Movements in ECoG** (In Print, *Book Chapter*, edited by Blankertz, B)
- Miller, K.J., Hermes, D., Honey, C.J., Sharma, M., Rao, R.P.N., den Nijs, M., Gernhardt, M.L., Fetz, E.E., Sejnowski, T.J., Hebb, A.O., Ojemann, J.G., Makeig, S., Leuthardt, E.C., 2010, **Dynamic modulation of local population activity by rhythm phase in human occipital cortex during a visual search task**, In submission
- Miller, K.J., Abel, T.J., Hebb, A.O., Ojemann, J.G., 2010, **The reorganization of large scale physiology in hand motor cortex following hemispheric stroke**, In submission
- Miller, K.J., Abel, T.J., Hebb, A.O., Ojemann, J.G., 2010, **Real-time language mapping with electrocorticography**, In submission
- Ogino M, Edwards E, Blakely TM, Abel TJ, Miller KJ, Giussani G, Kershenovich A, Hebb AO, Hakimian S, Darvas F, Scherer R, Ojemann JG, 2009, **Electrocorticographical (ECoG) mapping with high frequency band oscillation; an overview from the clinical point of view**, In Submission
- Ojemann, J.G.; Leuthardt, E.C.; Miller, K.J., 2007, **Brain-Machine Interface: Restoring Neurological Function through Bioengineering**, Clin Neurosurg 54; 28 doi:0148-703/07/5401-0001
- Penny, W., Duzel, E., Miller, K.J., Ojemann, J.G., 2008, **Testing for Nested Oscillation**, Journal of Neuroscience Methods, 174: 50–61
- Roland, J., K. Miller, Z. Freudenburg, M. Sharma, M. Smyth, C. Gaona, J. Breshears, M. Corbetta, E. Leuthardt, 2010, **The Effect of Age on Human Motor Cortical Electrophysiology**, (in submission)

Schalk, G., K.J. Miller; N.R. Anderson; J.A. Wilson; M.D. Smyth, J.G. Ojemann; D.W. Moran; J.R. Wolpaw; E.C. Leuthardt, 2008, **Two-Dimensional Movement Control Using Electroencephalographic Signals in Humans** *J Neural Eng.* **5**(1): p. 75-84.

Schalk, G., Leuthardt, E.C., Moran, D., Miller, K.J., Ojemann, J., Wolpaw, J.R. 2006 **Towards two-dimensional cursor control using electroencephalographic signals.** Proceedings of the 11th International Conference on Human-Computer Interaction

Schalk, G., J. Kub'aneck, K.J. Miller, N. Anderson, E.C. Leuthardt, J.G. Ojemann, D. Limbrick, D. Moran, L.A. Gerhardt, J.R. Wolpaw 2007 **Decoding Two-Dimensional Movement Trajectories Using Electroencephalographic Signals in Humans**, *J. Neural Eng.* **4** 264–275 doi:10.1088/1741-2560/4/3/012

Scherer, R, Zanos, SP, Miller, KJ, Rao, RPN Ojemann, JG, 2009, **Classification of contralateral and ipsilateral finger movements for electroencephalographic brain-computer interfaces** *Neurosurg Focus* **26** (6):E12, 2009

Shenoy, P., K.J. Miller, J.G. Ojemann, R.P.N. Rao **Two class robust classification of ECoG signals during repeated motor movement** *Journal of Technical University of Graz, Special Issue: Brain Computer Interfaces*, 2007

Shenoy, P., Miller, K.J., Ojemann, J.G., Schalk, G., Rao, R.P.N. 2007 **Generalizable Features for Electroencephalographic BCIs** *IEEE Trans Biomed Eng.* **55**(1): p. 273-80.

Shenoy, P., Miller, K.J., Crawford, B., Rao, R.P.N. 2008 **Online Electromyographic Control of a Robotic Prosthesis** *IEEE Trans Biomed Eng.* **55**(3), 1128-1135

Shenoy, P.; Miller, K.J.; Ojemann, J.G.; Rao, R.P.N., 2007, **Finger Movement Classification for an Electroencephalographic BCI**, *Neural Engineering, CNE '07*. 3rd International IEEE/EMBS Conference on, pp192-195, doi:10.1109/CNE.2007.369644

Shon, A., Miller, K.J., Ojemann, J.G., Holmes, M.D., Rao, R.P.N. 2007 **Predicting Cortical Potentials using Simultaneous Transcranial Recordings**, (In submission)

Wang, Z., G. Schalk, K.J. Miller, J. Qiang, 2010, **Decoding Finger Flexion from Electroencephalographic Signals Using a Sparse Gaussian Process**, (In submission)

Zanos, S, Miller, K.J., Ojemann, J.G., 2008 **Electroencephalographic spectral changes associated with ipsilateral individual finger and whole hand movement** *IEEE Eng Med Biol Soc.* **2008**: 5939-42

Talks

A Finite Element Model of the Dendritic Tree To Assess Morphological Relation to Spiking Behavior – Western Medical Research Forum, February 2-5, 2005, Carmel, California

Robust Electromyographic Control of a Robotic Arm – Northwest Biomechanics Symposium, May 14-15, 2005, Seattle, Washington

The Seattle ECoG BCI Experiments – Third International Meeting of Brain-Computer Interface Technology, June 14-19, 2005, Rensselaerville, New York

Toward a Multidimensional, Robust, Brain Computer Interface – School of Engineering Industry Affiliate Meeting, November 3, 2005, Seattle, WA

Electrocorticographic Cognitive Findings: Working Memory, Attention, and Face Recognition – Helen Wills Neuroscience Center, UC Berkeley Dec. 19, 2005, Berkeley, CA; Schwartz Center for Computational Neuroscience, UCSD, Dec. 28, 2005, San Diego, CA

Electrocorticographic motor change for mapping and online feedback - Department of Radiology, UCSF, July 21, 2006, San Francisco, CA

High Frequency Electrocorticographic Changes – Helen Wills Neuroscience Center, UC Berkeley July 24, 2006, Berkeley, CA;

High-frequency Electrocorticographic Change: A Specific Marker of Cortical Activation? – Swartz Center for Computational Neuroscience, UCSD August 4, 2006, San Diego, CA

Construction of a Robust Brain Computer Interface Using Electrocorticographic Recording – MSTP Retreat, Leavenworth, WA, August 7, 2006

Feature Correlation in an Electrocorticographic BCI: Screening, 1-D and 2-D control – Third international BCI workshop, September 22-23, Graz, Austria, 2006 (Slides delivered by Pradeep Shenoy)

Electrocorticographic cortical changes during a working memory task - Society for Neuroscience Meeting, October 17, 2006, Atlanta, GA

Focal electrocorticographic activation associated with motor tasks in 20 human subjects - Society for Neuroscience Meeting, October 18, 2006, Atlanta, GA

High-Frequency Electrocorticographic Features and Their Application to BCI - Neural Information Processing Systems, Dec. 8. 2006, Whistler, BC, Canada

Frontiers in Electrical Brain Mapping - Western Student Medical Research Forum, Feb. 2, 2007, Carmel, CA

Recent Advances in Electrocorticography - Harborview Regional Epilepsy Center, Feb. 7, 2007, Seattle, WA

The Behavioral Split in the Gamma Band 3rd International IEEE EMBS Conference on Neural Engineering, May 4, 2007, Kohala Coast, Hawaii, USA

Decoupling the cortical power spectrum in ECoG (4 venues) - Ramsey Lab, Rudolf Magnus Institute of Neuroscience, 8-30-2007, Utrecht, Netherlands; Friston Lab, University College London, 9-5-2007, London, England; Graeser Lab, Bremen University, 9-11-2007, Bremen, Germany; Fries Lab, Radboud University, 9-13-2007, Nijmegen, Netherlands

Cortical spectral changes during actual and imagined motor movement, and the augmentation of spectral change with feedback – Society for Neuroscience Meeting, November 7, 2007, San Diego, CA

Decoupling and using large scale electrical correlates of cortical activity – Gazeley Lab, Univ. of Cal., San Fransisco, 11/20/2007

The peaks and the power laws in the cortical spectrum – “Large Scale Brain Dynamics” Symposium, Whistler, BC, Canada, 12/7/2007

Changes in local cortical activity are revealed by a power law in the cortical potential spectrum - Redwood Center for Theoretical Neuroscience, Berkeley, CA, 1/30/2008,
(view at http://www.archive.org/details/Redwood_Center_2008_01_30_Kai_Miller)

Phase amplitude coupling and the interaction between cortical inputs - Brain Connectivity Workshop, Sydney, Australia, June 13th, 2008, abstract at:
(<http://web.med.unsw.edu.au/bcw08/index.html>)

Phase-amplitude coupling in the electrocorticographic measurement from motor cortex (3 venues) Functional Imaging Laboratory, University College London, England June 26th, 2008; UMC-Utrecht, Utrecht, The Netherlands, July 9th, 2008; Technical University of Berlin, Germany, July 23rd, 2008

The relation between motor movement and imagery and a quantification of the spectral augmentation during imagery-based feedback BrainGain Symposium, Utrecht, Netherlands, July 4, 2008, (abstract/schedule at: <http://www.bci2008.nl/>)

Power law changes and their coupling to low frequency phase in electrocorticography Max Planck Institute for Biological Cybernetics, Tubingen, Germany, July 29th, 2008

Asynchronous changes in the cortical power spectrum, and the relation between motor movement and imagery and a quantification of the spectral augmentation during imagery-based feedback Technical University of Graz, Austria, August 1st, 2008

Experimental findings and a hypothesis for the role of rhythms in motor cortex Computational Systems Neuroscience Workshops, 3/02/2009, Snowbird, UT

Capturing Brain Surface Electrical Potentials for Application and Intuition (3 venues) University of Washington Neurological Surgery Grand Rounds, Seattle, WA, June 10th, 2009; Albany Medical Center, Albany, NY, July 29, 2009; UCLA Neurological Surgery, November 11, 2009

The role of rhythms in motor cortex (4 venues), Fetz Lab, University of Washington, June 12, 2009; Multimodal Imaging Lab/Schwartz Center, UC San Diego, July 14/15, 2009; Pesaran Lab, NYU, July 24, 2009

Population computation suppression through synchrony UC San Francisco, July 01, 2009

Category-specific subtemporal neuronal population dynamics, on a single trial basis, in humans (2 venues). Adolphs Lab, California Institute of Technology, July 03, 2009; Wadsworth Center, New York, July 30, 2009

Detection of Spontaneous Class-Specific Visual Stimuli with Temporal Accuracy in Human Electrocorticography, 31st Annual International IEEE EMBS Conference, September 2-6, 2009, Minneapolis, MN

Decoupling changes in the brain surface electrical potential to examine cortical dynamics, UCLA Brain Mapping Colloquium, Los Angeles, November 13, 2009

Spatiotemporal dynamics of category-specific processing in inferotemporal cortex UMC Utrecht, UNIEC colloquium, Utrecht, The Netherlands Jan 12, 2010

Brain surface recordings reveal that the beta rhythm dynamically modulates local cortical population activity in motor cortex during movement, The Donders Institute, Radboud University, Nijmegen, The Netherlands Jan 20, 2010

Electrocorticography for Electrical Brain-Mapping and Brain-Computer Interfacing, Neurology Grand Rounds, University of Washington, Feb 4, 2010

Robust characterization of category-specific representation in human inferotemporal cortex, University of Washington Neurological Surgery Grand Rounds, Seattle, WA, Mar 10, 2010

Electrocorticographic recording in motor cortex, UC San Francisco Neurological Surgery Grand Rounds, San Francisco, CA, April 15, 2010

Real-time electrocorticographic mapping of eloquent cortex, American Association of Neurological Surgeons annual meeting, Philadelphia, PA, May 3, 2010

Augmentation of cortical activity following use of a brain-computer interface, American Association of Neurological Surgeons annual meeting, Philadelphia, PA, May 4, 2010

Brain surface recordings reveal that the beta rhythm dynamically modulates local cortical population activity in motor cortex during movement Princeton, NJ, May 6, 2010

Decoding the timing and content of higher-order perceptual events from population recordings in human inferotemporal cortex 4th International BCI Meeting, Asilomar, CA, June 3, 2010

Electrocorticography for Electrical Brain-Mapping and Brain-Computer Interfacing Baylor College of Medicine Neurological Surgery Grand Rounds, Houston, TX, June 11, 2010

Population Computation Suppression Through Synchrony, American Society and Joint Section of Stereotactic and Functional Neurosurgery, New York, June 13, 2010

Brain surface electrode co-registration using MRI and x-ray, 32nd Annual International IEEE EMBS Conference, September 3, 2010, Buenos Aires, Argentina (scheduled)

Emerging Understanding of ECoG Signal Phenomena, 2nd International Workshop on Advances in Electrocorticography, November 12, 2010, San Diego, CA (scheduled)

The dynamic influence of rhythms on early visual cortex during task engagement, Society for Neuroscience Annual Meeting, November 16, 2010, San Diego, CA (scheduled)

Abstract Presentations (Posters)

An algorithm for calculation of gas uptake and elimination with variable blood flow. KJ Miller, MR Powell, RS Srinivasan; Undersea Biomed Res. 27, (Suppl.), 14, (2000).

Independent Component Analysis and Source Localization in Electrocorticography - National MSTP conference, July 9 – 11, 2004 Keystone, Colorado.

A Finite Element Model of Dendritic Structure - University of Washington MSTP retreat, August 20-21, 2004, Leavenworth, Washington

Real and Imagined Sources in Electrocorticography - Brain-Computer-Interface Workshop and Training Course, September 17th - 18th 2004, at the Institute for Human Computer Interfaces, Graz, Austria

Identifying and Using ECoG Signals for BCI Control Using Actual and Imagined Movements - Third International Meeting of Brain-Computer Interface Technology June 14-19, 2005, Rensselaerville, New York

Thought Controlled Cursor Movement ... a Robust Brain Computer Interface - University of Washington MSTP retreat, August 19, 2005, Seattle, Washington

Selective Attention Effects Associated with Very High Frequency Changes in Human Primary Visual Cortex – Society for Neuroscience Meeting, November 12 – 16, 2005 Washington, DC

Construction of an Intuitive, Complete, Hodgkin-Huxley Simulation of Action Potential Generation and Propagation - Society for Neuroscience Meeting, November 12 – 16, 2005 Washington, DC

Electrocorticographic Analysis of Motor Speech – Kai Miller, Gerwin Schalk, Adam Rouse, Dan Moran, and Jeff Ojemann, Eric C. Leuthardt – Society for Neuroscience Meeting, October 17, 2006, Atlanta, GA

Decoding two-dimensional movement trajectories from electrocorticographic signals in humans - Schalk, G., J. Kub'aneck, K.J. Miller, N. Anderson, E.C. Leuthardt, J.G. Ojemann, D. Limbrick, D. Moran, L.A. Gerhardt, J.R. Wolpaw – Society for Neuroscience Meeting, October 15, 2006, Atlanta, GA

Online Electrocorticographic Control of a Brain-Computer Interface – Kai J. Miller, Gerwin Schalk, Pradeep Shenoy, Eric C. Leuthardt, Rajesh P.N. Rao, Jeffrey G. Ojemann; UW CSE, Industrial Affiliates Meeting, Seattle, WA October 30-31, 2006

Real-time Functional Mapping of Cortical Motor Areas in Humans – Kai J. Miller, Pradeep Shenoy, Rajesh P.N. Rao, Jeffrey G. Ojemann; UW CSE, Industrial Affiliates Meeting, Seattle, WA October 30-31, 2006

Separation of the Cortical Spectrum to Examine Large Scale Network Dynamics – Miller, K.J., denNijs, Rao, R.P.N., Ojemann, J.G., COSYNE, February, 2007, Salt Lake City, 2007

Task-Related Principal Component Analysis: Method and Example – Miller, K.J.; Ojemann, J.G.; Rao, R.P.N.; denNijs, M; 2007 Pacific Cascade Chapter of the Society for Neuroscience Meeting, April 6, 2007, Seattle, WA

Dynamics between Supplementary and Primary Motor Areas during Finger Movement – Kai J. Miller, Rajesh P.N. Rao, Marcel denNijs, Jeffrey G. Ojemann; 2007 Pacific Cascade Chapter of the Society for Neuroscience Meeting, April 6, 2007, Seattle, WA

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