CENTER FOR SENSORIMOTOR NEURAL ENGINEERING

*Improving lives by connecting brains and technology*

**November, 2017**

**Honors and Awards**

- Congratulations to **Bing Brunton** who has received an Air Force Office of Scientific Research Young Investigator Research Program Award: https://www.biology.washington.edu/news/news/1507757400/bing-brunton-wins-afosr-young-investigator-research-program-award

- Congratulations to CSNE Diversity Manager **Scott Bellman** for his appointment as Chair of the Washington State Governor's Committee on Disability Issues and Employment membership committee.

- Congratulations to **Dave Wolczyk**, Director of Math Science Upward Bound (UW STEMsub), for obtaining a new grant to fund UW STEMsub for another five years. UW STEMsub is a CSNE precollege education partner.

- Please welcome **Brinda Kodira Cariappa** and **Abhivyakti Gautam** as the President and Vice-President of the CSNE Student Leadership Council at San Diego State University.

**Upcoming Seminars, Lectures, Courses, Conferences**

- UW Physiology and Biophysics 2017 Lamport Lecture, Dr. Gilles Laurent (Director, Max Planck Institute for Brain Research), “Evolution and brain computation,” UW HSB T-739, Thursday, November 2, 2017, 4:00-5:00 pm.

- UW Graduate Program in Neuroscience Seminar, Dr. Steve Ramirez, (Principal Investigator, Junior Fellow of the Society of Fellows, Harvard University), “Artificially modulating positive and negative memories in healthy and maladaptive states,” UW HSB T-639, Monday, November 6, 2017, 3:30-4:30 pm.

- UWIN seminar, Short talks by UWIN faculty Wyeth Bair ("Comparing shape representation in mid-level visual cortex to that in a deep convolutional neural network") and Sawyer Fuller (“Fly-inspired visual flight control of insect-sized robots using wind sensing”), Wednesday, November 8, 2017, 3:30 pm, Husky Union Building (HUB) 337.

- **CSNE Seminar,** Dr. Jan Kubanek (Departments of Neurobiology and Radiology, Stanford University School of Medicine), “Characterization and treatment of neurological disorders with focused ultrasound,” CSNE, 1414 NE 42nd Street, 2nd Floor, Friday, November 17, 2017, 3:30-4:30 pm. This talk will be live streamed at: https://global.gotomeeting.com/join/443801917

- "FActing: The Act of Bringing Passion to Science Communication", Wednesday, November 15, 7:00pm, Floyd and Delores Jones Playhouse, a free workshop on science communication by Catherine Madden, School of Drama faculty and Alyssa-Lois Gehman, post-doctoral fellow, marine parasite ecology, University of British Columbia,

https://drama.washington.edu/events/2017-11-15/facting-act-bringing-passion-science-communication

- Graduate Program in Neuroscience Seminar, Dr. Andre Berndt (UW Department of Bioengineering), Monday, November 27, 2017, 3:30 pm, T-639 HSB

**New CSNE Publications**

- Machens, C. and **Fairhall, A.,** Editorial overview: Computational neuroscience. Curr Opin Neurobiol. 2017 Sep 28. pii: S0959-4388(17)30236-2. doi:10.1016/j.conb.2017.09.009.

- Budzilloa, A., Duffy, A., Miller, K.E., **Fairhall, A.L**. and Perkel, D.J. Dopaminergic modulation of basal ganglia output through coupled excitation–inhibition, PNAS, 114:5713–5718, 2017.

- CSNE Abstracts at the 2017 Society for Neuroscience Annual Meeting (Washington, D.C.; November 11-15, 2017)

    - Characterization of human cortical neurons using an In vitro single cell characterization platform. J. BERG, S.A. SORENSEN, J.T. TING, C A. ANASTASSIOU, C. COBBS, N. DEE, S.-L. DING, N.W. GOUWENS, R.P. GWINN, C.D. KEENE, A.L. KO, C. LEE, M. MCGRAW, P.R. NICOVICH, J.G. OJEMANN, L. POTEKHINA, S.M. SUNKIN, A. SZAFER, Z. ZHOU, C. KOCH, H. ZENG, E. LEIN

    - Divergent electrophysiological properties of supragranular pyramidal neurons in the human vs. mouse cerebral cortex. B.E. KALMBACH, R. DE FRATES, P.N. CHONG, C. COBBS, R.P. GWINN, A.L. KO, J.G. OJEMANN, E.S. LEIN, J.T. TING

    - Predicting belief from accuracy in perceptual decisions. K. KHALVATI, R. KIANI, R. P. RAO

    - Interhemispheric interactions modulate behavioral responses during a reaction time task in non-human primates. R. YUN, A.R. BOGAARD, A.G. RICHARDSON, S. ZANOS, E.E. FETZ

    - Ethical considerations for gene therapy in people with Alzheimer's disease. J. M. VIAÑA, F. GILBERT

    - Neural signature of Bayesian interval timing in dorsomedial frontal cortex. H. SOHN, D. NARAIN, M. JAZAYERI

    - A thalamocortical substrate for flexible motor timing. J. WANG, M. JAZAYERI

    - Modulation of single-neuron and network activity in motor cortex by clinically realistic transcranial direct current stimulation in non-human primates. R. BOGAARD, H.M. BOYD, A. MORSE, S. ZANOS, E.E. FETZ

- Predictive coding of temporal events through regulation of cortical dynamics. S.W. EGGER, C.-J. CHANG, M. JAZAYERI
- Reasoning about errors in humans and nonhuman primates. M. SARAFYAZD, JR, M. JAZAYERI
- Human perception and psychophysics of direct cortical stimulation of somatosensory cortex. J.A. CRONIN, D.J. CALDWELL, G.M. BOYNTON, K.E. WEAVER, R.P.N. RAO, J.G. OJEMANN
- Parameterization of electrical stimulation for modulating intensity of a sensory percept. D.A. BJANES, S. KASSEGNE, C.T. MORITZ
- Spectrotemporal analysis of direct cortical stimulation compared to haptic stimulation in a response timing task in humans. D.J. CALDWELL, J.A. CRONIN, J. WU, J.N. KUTZ, B.W. BRUNTON, K.E. WEAVER, R.P. RAO, J.G. OJEMANN
- Magnetic nanotransducers for wireless neural excitation. P. ANIKEEVA
- Evaluating electrocorticography signals during sustained grasping and upper-limb kinectic output. K. LY, J. WU, R.P. RAO, J.G. OJEMANN
- Transient paresthesias experienced during closed-loop deep brain stimulation. M.C. THOMPSON, B.C. HOUSTON, T.E. BROWN, J.G. OJEMANN, A.L. KO, H.J. CHIZECK
- Neural prediction of motor activity in natural data with multimodal techniques. X. WANG, A. FARHADI, J. OJEMANN, R. RAO, B. BRUNTON
- Human parahippocampal dynamics during visuomotor rotation tasks. J. WU, L. LEVINSON, K. CASIMO, R.P. RAO, J.G. OJEMANN
- The “Oops” Detector: Spontaneous vs in-task error-related potentials in long-term humanelectrocorticography. N.R. WILSON, X. WANG, R.C. SHEAN, J.G. OJEMANN, R.P. RAO, B. BRUNTON
- Persistent changes in resting state connectivity following skill learning. K. CASIMO, J. WU, J.G. OJEMANN, K.E. WEAVER
- Movement-dependent electrochemical stimulation for promoting cortico-cortical plasticity. S. MOORJANI, S.I. PERLMUTTER, E.E. FETZ
- Combining computational neuroscience and electrophysiology for optimal cortical electric stimulation. M. DANNHAUER, K. SHAYESTEHFARD, S. GULER, D.J. CALDWELL, J.A. CRONIN, A. GKOGKIDIS, R. MACLEOD, T. BALL, J.G. OJEMANN, D. BROOKS

- High resolution micro-electrocorticographic studies of human sensorimotor cortex during finger movements. C.-H. KUO, T.M. BLAKELY, J. WU, K. CASIMO, D. SARMA, D.J. CALDWELL, J. A. CRONIN, K.L. COLLINS, K.E. WEAVER, J.D. WANDER, H. SUN, J.D. OLSON, R.P. RAO, J.G. OJEMANN

- An open online course in neural engineering for high school students. K. CASIMO, D. WOLCZYK

- BrainWorks: a television series about neuroscience for children. E.H. CHUDLER, C. PODENSKI

**CSNE in the News**

- Human Evolution Will Be About 'Designing How We Evolve Our Brains' Says Stanford Neuroscientist: https://interestingengineering.com/human-evolution-will-be-about-designing-how-we-evolve-our-brains-says-stanford-neuroscientist

- UW CSNE graduate student **Kaitlyn Casimo** discusses the scientific and ethical issues of Frankenstein at the Pacific Science Center: http://www.dailyuw.com/science/article_caffc580-bd25-11e7-ba0a-cbf994426038.html

- **Eb Fetz** and past CSNE graduate student **Matthew Sample** mentioned in McGill Daily article about BCI: https://www.mcgilldaily.com/2017/10/risk-benefit-analysis-of-brain-computer-interface-technology/

**New CSNE Blog Posts**

- YSP-REACH offers secondary students an introduction to neural engineering http://csne-erc.org/engage-enable/post/ysp-reach-offers-secondary-students-introduction-neural-engineering

**Recent Papers of Interest to the CSNE Community**

- Rejc et al., Motor recovery after activity-based training with spinal cord epidural stimulation in a chronic motor complete paraplegic, Scientific Reports (2017). DOI: 10.1038/s41598-017-14003-w

- Serino et al., Upper limb cortical maps in amputees with targeted muscle and sensory reinnervation, Brain, 140:2993–3011, 2017.

- Varone et al., The potential of Antheraea pernyi silk for spinal cord repair, Scientific Reports. (2017). doi:10.1038/s41598-017-14280-5

**Fellowship/Job Opportunities**

- NIH Blueprint Diversity Specialized Predoctoral to Postdoctoral Advancement in Neuroscience (D-SPAN) Award (F99/K00)
  https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-18-007.html

**Grant Opportunities**

- Collaborative Research in Computational Neuroscience (CRCNS)
  https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5147

- BRAIN Initiative: Exploratory Research Opportunities Using Invasive Neural Recording and Stimulating Technologies in the Human Brain (U01)
  http://www.grants.gov/web/grants/view-opportunity.html?oppId=297861

- BRAIN Initiative: Proof of Concept Development of Early Stage Next Generation Human Brain Imaging
  http://www.grants.gov/web/grants/view-opportunity.html?oppId=297862

- BRAIN Initiative: Development of Next Generation Human Brain Imaging Tools and Technologies (U01)
  http://www.grants.gov/web/grants/view-opportunity.html?oppId=297863

- BRAIN Initiative: Theories, Models and Methods for Analysis of Complex Data from the Brain
  http://www.grants.gov/web/grants/view-opportunity.html?oppId=297947

Please send additional news and events items for inclusion in this newsletter to Dr. Eric Chudler (CSNE, Executive Director) at chudler@uw.edu.