

JARED DEAN OLSON, MD

January 22, 2021

EDUCATION:

Sep 1998-Dec 2000 Bachelor of Science (BS), Mechanical Engineering, University of Colorado at Boulder
Jan 2003-Aug 2003 Post-Baccalaureate, University of Colorado at Boulder
Aug 2004-Jun 2008 Doctor of Medicine (MD), University of Chicago Pritzker School of Medicine

Post-Graduate Clinical Training:

Jun 2008-Jun 2012 Residency in Physical Medicine and Rehabilitation, University of Washington

Post-Graduate Research Training:

2012-2017 Rehabilitation Medicine Scientist Training Program (RMSTP) Research Fellow, University of Washington, Association of Academic Physiatrists/ NIH (see also "Grants")
2015-2016 StrokeNet Fellowship, University of Washington, NIH (see also "Grants")

FACULTY POSITIONS HELD:

Jul 2012-Jun 2016 Acting Instructor, University of Washington School of Medicine
Sep 2014-Present Center for Neurotechnology (previously the Center for Sensorimotor Neural Engineering), Faculty Member (2014-16) and Testbed Co-Lead (2015-16)
May 2016-Present Clinical Assistant Professor, University of Colorado School of Medicine

HOSPITAL POSITIONS HELD:

Jul 2012-Jun 2016 Attending Physician, Harborview Medical Center, Seattle, WA
Jul 2012-Jun 2016 Attending Physician, University of Washington, Seattle, WA
Nov 2016-Present Attending Physician, UCHealth University of Colorado Hospital, Aurora, CO
Dec 2016-Present Physician, Boulder Community Health, Boulder, CO
Medical Director of Rehabilitation Services Mar 2017 to Mar 2019
Aug 2019-Present Attending Physician, UCHealth Broomfield Hospital, Broomfield, CO

HONORS/ AWARDS:

2004-2008 Pritzker Medical School Scholarship, University of Chicago Pritzker School of Medicine
2005 NIH/NIDDK training grant 5T35DK062719-18, Sub-award Trainee. The Effects of Provider Awareness of Hospitalized Patient Functional Limitations on Patient Functional Decline After Discharge
2009-2012 Rehabilitation Medicine Scientist Training Program Scholarship, Association of Academic Physiatrists
2013 Junior Investigator Travel Award and Invited Contributor at the 2013 International Workshop on Clinical Brain Machine Interface (BMI) Systems, Houston, TX
2014 Fellow, American Academy of Physical Medicine and Rehabilitation (FAAPMR)

BOARD CERTIFICATION:

2013-present American Board of Physical Medicine and Rehab (ABPMR/ABMS), Certified Jun 2013 (10-year cycle)
2016-present Brain Injury Medicine Subspecialty (ABPMR/ABMS), Certified Nov 2016 (10-year cycle)

CURRENT LICENSES:

2011-present Physician and Surgeon License, State of Washington (expires 05/13/2021)
2016-present Physician License, State of Colorado (expires 4/30/2021)

PROFESSIONAL MEMBERSHIPS:

1999-present Tau Beta Pi Engineering Honor Society
2009-present Association of Academic Physiatrists (AAP)
2011-present American Academy of Physical Medicine and Rehabilitation (AAPM&R)
2014-present International Society of Physical and Rehabilitation Medicine (ISPRM)
2014-2018 American Congress of Rehabilitation Medicine (ACRM)
2015-2017 American Heart Association (AHA)
2016-2018 Colorado Biosciences Association
2016-present Colorado Clinical & Translational Sciences Institute (CCTSI) at the University of Colorado
2016-present Colorado Medical Society
2016-present Boulder County Medical Society

TEACHING/ MENTORING RESPONSIBILITIES:

Department of Rehabilitation Medicine, University of Washington, Seattle, WA

2011	Electromyography Practicum Instructor for Second Year Residents
2011	Plasticity in Neurorehabilitation lecturer to Medical Students for Rehab Med Clerkship
2013-2016	Disorders of Consciousness lecturer for Neurorehabilitation Course
2014	Clinical Advisor for PhD Candidate Devapratim Sarma, Cerebral Palsy Assistive Walker, NeuroVentures
2014-2016	Clinical Advisor for PhD Candidates Brian Mogen, Tyler Libey, Dimitrios Gklezakos, vHAB Upper Limb Rehab Treatment, MultiModal Health University Spinout/ Startup
2014-2015	Group leader for resident Neurorehabilitation Course
2014	Clinical Advisor for PhD candidates Newsha Farahani and Bonghoe Kim, Prevention of Urinary Catheter Related Infections. Engineering Innovation in Medicine Course
2014- 2016	Mentor for Jeneva Cronin, Bioengineering PhD Candidate (Received NSF Fellowship Award)
2014- 2016	Mentor for David Caldwell, MSTP Bioengineering PhD Candidate
2015	Mentor for CoMotion Mary Gates Scholar: Victoria Chambers- vHAB Children and Family Project
2015-2016	Mentor for Mahdi Ramadan, UW Institute for Neuroengineering Fellow

EDITORIAL RESPONSIBILITIES:

2013-present	The Journal of Rehabilitation Medicine, Occasional Reviewer
2013-present	Archives of Physical Medicine and Rehabilitation, Occasional Reviewer

SPECIAL NATIONAL RESPONSIBILITIES:

2013	Invited Contributor to the 2013 International Workshop on Clinical Brain Machine Interface (BMI) Systems, Roadmap Development, Houston, TX
2015	Invited Contributor to the 2015 Cleveland Neural Engineering Workshop, Roadmap Development, Cleveland, OH
2016-2018	Rehabilitation Research Experience for Medical Students (RREMS) Grant Application Reviewer
2016-2017	Program Committee, Cleveland Neural Engineering Workshop (NEW) 2017 meeting

SPECIAL LOCAL RESPONSIBILITIES:

2011	House Staff Association Research Grant Reviewer, University of Washington
2011	Committee to Improve Resident Vacation Scheduling, Rehab Medicine, University of Washington
2011-2012	Resident Quality Improvement Committee (RQuIC), Founder and Chair, Rehabilitation Medicine, University of Washington (committee now self-sustaining under resident leadership)
2012-2015	Interviewer for Residency Candidates, Rehabilitation Medicine, University of Washington
2013	Invited Contributor to the Brain-Computer Interface exhibit, Pacific Science Center, Seattle, WA
2013-2016	Consultant to the Institutional Review Board (IRB), Human Subjects Division, University of Washington
2013-2016	Data Safety Monitor for TWILIGHT (Treatment with Light Therapy) Study, University of Washington
2014-present	Practitioner and End-User Advisory Board Member, Center for Sensorimotor Neural Engineering
2015-2016	Physician Lead, University of Washington Brain Injury Rehabilitation Center
2016	Clinical Practice Innovator Program, University of Washington
2017-2019	Trauma Committee, Boulder Community Health
2017-present	Stroke Committee, Boulder Community Health
2017-present	SAGE Advisor, Innosphere Science and Technology Incubator, Colorado
2017	Invited Advisor on Artificial Intelligence Use, Boulder Community Health

RESEARCH FUNDING:

Aug 2012-July 2015	Rehabilitation Medicine Scientist Training Program (RMSTP) K12 (sub-award of NIH K12 2K12HD001097-16). "Premotor and Motor Cortical Signals and Interactions During Human Movement." Role: PI. Primary Mentor: Jeffrey Ojemann, MD. Amount: ~\$265,500 + indirects
May 2013-April 2015	"Walter C and Anita C Stolov Research Fund" at the University of Washington Department of Rehabilitation Medicine. "Characterizing Subcutaneous-Recorded Cortical Signals for use in Brain Computer Interface." Role: PI. Amount: \$2000.
July 2014	NVIDIA Corporation Computing Hardware, in-kind research support. "Cortical Signals and Interactions during Human Movement". Role: PI. ~\$5000 value (Tesla K40 GPU)
Sep 2014-Sep 2016	National Science Foundation Engineering Research Center for Sensorimotor Neural Engineering, Graduate Student Research Assistant Award (sub-award of NSF EEC-1028725). "Neural modulation by activity-dependent electrical stimulation." Role: PI. Amount: \$154,652
Nov 2014-Oct 2015	University of Washington Center for Commercialization (C4C), Commercialization Fellow Funding for Lars Crawford. "vHAB." Role: PI. Amount: \$40,272 plus benefits
Jan 2015-Jan 2016	University of Washington Center for Commercialization (C4C), Commercialization Gap Fund. "vHAB." Role: PI. Amount: \$50,000
Aug 2015-Jun 2016	NIH StrokeNet Research Fellow. 5U10NS086525-03 Role: Trainee. PI: David Tirschwell. Amount: \$50,000

Sep 2015 – Sep 2016	National Science Foundation, SBIR/ SECO “Investigating subdermal myopotentials for use in prosthetic devices.” Role: PI on a sub-award (SECO). PI: Sandy Heck (Reach Bionics). Amount: \$149,979
Nov 2015 – Oct 2016	University of Washington CoMotion Translational Grant. vHAB collaboration with UW Digital Futures Lab. Role: PI. Amount \$5000
Jan 2016 – Jan 2018	University of Washington Department of Neurological Surgery, “Cortical electrophysiology during Deep Brain Stimulation.” PI: Andrew Ko. Role: Co-Investigator. Amount \$43,391.

BIBLIOGRAPHY:

*denotes senior author status, ** denotes equal contribution

Manuscripts in Refereed Journals/ Engineering Conference Papers:

1. Arora VM, Johnson M, **Olson J**, Podrazik PM, Levine S, DuBeau CE, Sachs GA, Meltzer DO. Using ACOVE Quality Indicators to Measure Quality of Hospital Care for Vulnerable Elders. *Journal of the American Geriatrics Society*. 2007;55(11):1705-11.
2. Arora VM, Fish M, Basu A, **Olson J**, Plein C, Suresh K, Sachs G, Meltzer D. Relationship Between Quality of Care of Hospitalized Vulnerable Elders and Postdischarge Mortality. *Journal of the American Geriatrics Society* 2010;58:1642–1648. PMC2946097
3. Wander JD, **Olson JD**, Ojemann JG, Rao RPN. Cortically-Derived Error-Signals During BCI Use. *Proceedings of the Fifth International Brain-Computer Interface Meeting: Defining the Future*. Asilomar, CA. June 2013. ISBN 978-3-85125-260-6 and DOI 10.3217/978-3-85125-260-6
4. Wander JD, Blakely T, Miller KJ, Weaver KE, Johnson LA, **Olson JD**, Fetz EE, Rao RPN, Ojemann JG. Distributed cortical adaptation during learning of a brain–computer interface task. *Proceedings of the National Academy of Sciences*. 2013;110(26):10818-23. doi: 10.1073/pnas.1221127110. PMC3696802
5. Blakely TM, **Olson JD**, Miller KJ, Rao RPN, and Ojemann JG. Neural correlates of learning in an electrocorticographic motor-imagery brain-computer interface. *Brain-Computer Interfaces*. 2014. 1(3-4), pp.147–157. PMC4295512
6. **Olson JD**, Wander JD, Johnson LA, Sarma D, Weaver KE, Novotny EJ, Ojemann JG, Darvas F. Comparison of subdural and subgaleal recordings of cortical high-gamma activity in humans. *Clinical Neurophysiology*, 2016. 127(1), pp.277–284. PMCID: PMC4600028
7. Wang NXR, **Olson JD**, Ojemann JG, Rao RPN, Brunton BW. Unsupervised decoding of long-term, naturalistic human neural recordings with automated video and audio annotations. *Frontiers in Human Neuroscience*, Issue 10, 2016. PMCID: PMC4838634
8. Wu J, Shuman B, Brunton B, Steele K, **Olson JD**, Rao RPN, Ojemann J. Multistep model for predicting upper-limb 3D isometric force application from pre-movement electrocorticographic features. *Engineering in Medicine and Biology* 2016 doi 10.1109/EMBC.2016.7591010
9. Cronin JA, Wu J, Collins KL, Sarma D, Rao RPN, Ojemann JG, **Olson JD***. Task specific sensory feedback via cortical stimulation in humans. *IEEE Transactions on Haptics*, 2016. 9(4) pp. 515-522 doi 10.1109/TOH.2016.2591952.
10. Collins KL, Guterstam A, Cronin JA, **Olson JD**, Ehrsson HH, Ojemann JG. Ownership of an Artificial Limb Induced by Electrical Brain Stimulation. *PNAS* 2017, 114(1) pp. 166-171. doi: 10.1073/pnas.1616305114. PMCID: PMC5224395.
11. **Olson JD**, Wander JD, Darvas F. Demonstration of Motor-Related Beta and High Gamma Brain Signals in Subdermal Electroencephalography Recordings. *Clinical Neurophysiology*, 2017 128(3) pp. 395-6. <http://dx.doi.org/10.1016/j.clinph.2016.12.012>.
12. Weaver KE, Wander JD, Sarma D, Darvas F, Novotny EJ, Poliakov A, **Olson JD**, Grabowski TG, Ojemann JG. Electrocorticography and the early maturation of high-frequency suppression within the default mode network. *Journal of neurosurgery. Pediatrics*, 21(2), pp.133–140. 2017
13. Bockbrader M, Francisco G, Lee R, **Olson J**, Solinsky R, Boninger M. Brain-Computer Interfaces in Rehabilitation Medicine. *PM & R: the journal of injury, function, and rehabilitation*, 10(9 Suppl 2), pp.S233–S243. 2018

Manuscripts In Review

1. Cronin J, Caldwell D, Jua K, Collins K, Wu J, Boynton G, **Olson J**, Tsai J, Ko A, Weaver K, Rao R, Ojemann J. Psychophysics of direct cortical stimulation for encoding somatosensory sensation in humans. Submitted to *eNeuro*, Feb 28, 2020

Book Chapters:

1. Smith M, **Olson JD**, Darvas F, Rao RPN. Chapter 17: Utilizing Subdermal Electrodes as a Non-invasive Alternative for Motor-based BCIs. Book Chapter in Nam, C.S., Nijholt, A. & Lotte, F. *Brain-Computer Interfaces Handbook: Technological and Theoretical Advances*, CRC Press. 2018

Abstracts:

1. **Olson J**, Arora V, Johnson M, Sachs GA, Meltzer D. Frequency and Accuracy of Functional Status Assessments by Physicians and Nurses in Hospitalized Vulnerable Elders. Abstract in: *The Journal of the American Geriatrics Society*. 2006, Apr; 54(4):S51. Cited in PubMed; PMID: 16688890.

2. Arora V, Fish M, Basu A, **Olson J**, Plein C, Suresh K, Sachs G, Meltzer DO. Higher Quality of Care for Hospitalized Older Adults is Associated with Improved Survival One Year After Discharge. Academy Health 2009 Annual Research Meeting, Chicago, IL
3. **Olson J**, Rodriquez A. Whole Limb Vibration Facilitates Magnetic Evoked Potential (MEP) Response. Abstract for Consortium of Multiple Sclerosis Centers, Meeting in San Diego, CA. June 2012
4. **Olson J**, Rodriquez A. Short-Term Effect of Whole Limb Vibration on the Magnetic Evoked Potential (MEP). Poster presentation. American Academy of Physical Medicine and Rehabilitation Annual Assembly in Atlanta, GA. November 2012.
5. Wander JD, Sarma DP, **Olson JD**, Miller KJ, Blakely T, Rao RP, Ojemann JG. Cortical Representation of Cognitive State in a Graded-Difficulty BCI Task. Poster presentation. Neuroscience, San Diego, CA. November 9-13, 2013.
6. **Olson JD**, Wander JD, Weaver KE, Sarma D, Darvas F, Ojemann JG. Electrophysiological Representation of Proprioception in the Cerebral Cortex. Oral RMSTP Plenary Session Presentation. Association of Academic Physiatrists Annual Meeting 2014, Nashville TN, Feb 26-Mar 1, 2014.
7. Skelton F, Crane D, **Olson JD**. Incomplete Tetraplegia from Gunshot Injury Without Direct Trauma To The Cord: A Case Report and Review of the Literature. American Spinal Injury Association 2014 Annual Meeting, San Antonio, TX. Poster presentation. May 14-17, 2014.
8. **Olson JD**, Darvas F. Minimally Invasive Recording of High-Gamma Signals with Subdermal Electroencephalography. Poster and lightning talk at NeuroFutures, Seattle, WA. June 16-18, 2014.
9. **Olson JD**, Wander JD, Johnson L, Sarma D, Collins K, Wu J, Ojemann J, Rao R. Cortical Stimulation Architecture for Sensation. Poster presentation at the Center for Sensorimotor Neural Engineering Industry Affiliate Meeting. Seattle, WA. Nov 6-7, 2014.
10. **Olson JD**, Wander JD, Darvas F. Subdermal recording of high gamma cortical signals for brain machine interfacing. Oral presentation at the Association of Academic Physiatrists 2015 Annual Meeting, San Antonio, TX. March 10-14, 2015.
11. Wang N, **Olson JD**, Brunton B, Farhadi A, Rao R. Multimodal Neural Decoding and Prediction with Natural Data. Poster presentation at the Center for Sensorimotor Neural Engineering Industry Affiliate Meeting and NSF Site Visit, May 2015.
12. **Olson JD**, Wander JD, Zanos S, Sarma D, Su D, Fetz EE, Ojemann JG. Neuroplastic effects from cortical stimulation during beta bursts. Poster presentation at the Center for Sensorimotor Neural Engineering Industry Affiliate Meeting and NSF Site Visit, May 4-6, 2015.
13. **Olson JD**, Wander JD, Sarma D, Darvas F, Johnson L, Ojemann JG. Cortical electrical stimulation for closed-loop sensorimotor multiplexing. Poster presentation at the Center for Sensorimotor Neural Engineering Industry Affiliate Meeting and NSF Site Visit, May 4-6, 2015.
14. **Olson JD**, Darvas F. Minimally Invasive High-Gamma Signals with Subdermal EEG. Poster presentation at the Justus F. Lehmann Symposium. May 8, 2015. Seattle WA.
15. Cronin JA, Collins KL, Sarma D, D'Asaro M, Lang J, Rao RPN, Ojemann JG, **Olson JD**. Task specific sensory feedback via cortical stimulation in humans. Poster presentation at the Neurofutures Conferences, Portland OR, 2015
16. Ho L, Wilson N, **Olson JD**, Cronin JA, Ojemann JG, Rao RPN. Real-Time Error Detection in EEG for a One Dimensional Control Task. Abstract and Poster at The University of Washington Young Scholars Program, Jul 2015.
17. Wang NXR, **Olson J**, Brunton B, Farhadi A, Ojemann JG, Rao RP. Multimodal neural decoding with natural data. Dynamic Poster at Neuroscience, Oct 19, 2015.
18. Caldwell DJ, Wander JD, Weaver KE, Sarma D, **Olson JD**, Johnson LA, Rao RPN, Ojemann JG. Default mode network electrocorticographic brain-computer interface. Poster at Neuroscience, Oct 21, 2015.
19. Cronin JA, Collins KL, Sarma D, D'Asaro ME, Lang JH, Rao RPN, Ojemann JG, **Olson JD***. Task specific sensory feedback via cortical stimulation in humans. Poster at Neuroscience, Oct 19, 2015.
20. Collins KL, Guterstam A, Cronin JA, **Olson JD**, Ehrsson HH, Ojemann JG. Inducing ownership of an artificial limb through direct cortical stimulation in humans. Poster at Neuroscience, Oct 19, 2015.
21. Wang XR, **Olson JD**, Ojemann JG, Rao RPN, Brunton B. Automated unsupervised decoding of long-term, naturalistic human neural recordings with video. Poster accepted to COSYNE 2016.
22. Caldwell D, Cronin J, **Olson JD**, Wander JD, Rao RPN, Ojemann J. Dimensionality Reduction and Characterization of the Human Neural Response to Subdural Direct Electrical Cortical Stimulation. Poster at Data Science in Engineering, Seattle, WA, March 15, 2016.
23. Smith MM, **Olson JD**, Darvas F, Rao RPN. Comparison of Cortical Motor Activity Using Subdermal and Surface Electrodes. NSF Center for Sensorimotor Neural Engineering Annual Meeting. April 11-13, 2016.
24. **Olson JD****, Caldwell D**, Wander JD, Zanos S, Sarma D, Su D, Cronin J, Collins K, Wu J, Johnson L, Weaver K, Sorensen L, Fetz EE, Rao RPN, Ojemann JG. Dose Dependent Enhancement of Cortico-Cortical Evoked Potentials During Beta-Oscillation Triggered Direct Electrical Stimulation of Human Cortex. NSF Center for Sensorimotor Neural Engineering Annual Meeting. April 11-13, 2016.
25. Cronin J, Wu J, Collins K, Sarma D, Rao RPN, Ojemann JG, **Olson JD***. Task-Specific Sensory Feedback via ECoG Stimulation in Humans: An Update. NSF Center for Sensorimotor Neural Engineering Annual Meeting. April 11-13, 2016.
26. Moore G, Smith J, **Olson JD***. Analog Backscatter for Implanted EEG Sensing. NSF Center for Sensorimotor Neural Engineering Annual Meeting. April 11-13, 2016.

27. Caldwell D**, **Olson JD****, Wander JD, Zanos S, Sarma D, Su D, Cronin J, Collins K, Wu J, Johnson L, Weaver K, Fetz EE, Rao RPN, Ojemann JG. Effect of distance on the magnitude and timing of Cortico-Cortical Evoked Potentials in oscillation triggered direct electrical stimulation in humans. Neurofutures. Seattle, WA, June 19-21, 2016.
28. Wu J, Shuman B, Brunton B, Steele K, **Olson J**, Rao R, Ojemann J. Spatiotemporal Localization of Direction-Distinguishing Movement Planning Electrographic Features. NANS/ NIC Joint Meeting, Baltimore MD, June 25-29, 2016.
29. Caldwell D**, **Olson JD****, Wander JD, Zanos S, Sarma D, Su D, Cronin J, Collins K, Wu J, Johnson L, Weaver K, Fetz EE, Rao RPN, Ojemann JG. Enhancement of Cortico-Cortical Evoked Potentials by Beta-Oscillation Triggered Direct Electrical Stimulation in Humans. NANS/ NIC Joint Meeting, Baltimore MD, June 25-29, 2016.
30. Caldwell DJ**, **Olson JD****, Wander JD, Zanos S, Sarma D, Su D, Cronin JA, Collins K, Wu J, Weaver K, Casimo K, Fetz EE, Rao RPN, Ojemann JG. Exploration of the phase and dose dependence of Cortico- Cortical Evoked Potentials during Beta Oscillation Triggered Direct Electrical Stimulation in Humans. Neuroscience 2016 San Diego CA, Nov 12-16, 2016.
31. Cronin JA, Wu J, Caldwell DJ, Collins KL, Sarma D, Rao RPN, Ojemann JG, **Olson JD***. Somatosensory feedback via direct cortical electrical stimulation in humans. Neuroscience 2016 San Diego CA, Nov 12-16, 2016.
32. Ojemann JG, **Olson J**, Cronin J, Weaver K, Collins K, Guterstam A, Ehrsson H, Caldwell D, Johnson L, Sorensen L. Direct cortical stimulation for sensory feedback. Oral presentation at Neuroscience 2016 San Diego CA, Nov 12-16, 2016.
33. Kuo CH, Sarma D, Blakely T, Wu J, Wander J, **Olson J**, Collins K, Caldwell D, Cronin J, Casimo K, Rao R, Ojemann J. High Resolution Micro-ECOG Studies of Human Sensorimotor Cortex during Finger Movements. Organization for Human Brain Mapping (OHBM) 2017, Vancouver, BC, Canada, Jun 25-29, 2017
34. Kuo CH, Blakely TM, Wu J, Casimo K, Sarma D, Caldwell DJ, Cronin JA, Collins KL, Weaver KE, Wander JD, Sun H, **Olson JD**, Rao RP, Ojemann JG. High resolution micro-electrocorticographic studies of human sensorimotor cortex during finger movements. Neuroscience 2017, Washington DC, Nov 11-15, 2017.

OTHER:

National Presentations:

1. Organization and Efficiency Strategies for the New Attending. Co-Presenter, American Academy of Physical Medicine and Rehabilitation, 2013 Annual Assembly, National Harbor, MD.
2. Acquired Brain Injury: Review of Recent Studies That Changed Our Practice. Co-Presenter, American Academy of Physical Medicine and Rehabilitation, 2013 Annual Assembly, National Harbor, MD.
3. Medical Complications of Traumatic Brain Injury (TBI) lecture. Presenter. 2014 PM&R Board Review Course, Seattle WA.
4. Organization and Efficiency Strategies for the New Attending. Co-Presenter, American Academy of Physical Medicine and Rehabilitation, 2014 Annual Assembly, San Diego, CA.
5. Center for Sensorimotor Neural Engineering Industry Affiliate Meeting and NSF Site Visit. "Cortical stimulation for artificial sensory feedback and plasticity." Seattle, WA. May 4, 2015.
6. Modulating Cortical Excitability with Direct Electrical Stimulation. Presenter. NIH StrokeNet Professional Development Webinar. March 29, 2016.
7. Neuromodulation Strategies to Promote Plasticity and Functional Rehabilitation. Presenter. Craig 2018 Brain Injury Summit, Vail, CO Jan 8, 2018.
8. Applied Neuromodulation Technology for Traumatic Brain Injury (TBI) Rehabilitation. Presenter. Craig 2018 Brain Injury Summit, Vail, CO, Jan 10, 2018.

Local and Regional Presentations:

1. Clinician Roundtable. Center for Sensorimotor Neural Engineering. Dec 2, 2014
2. Department of Rehabilitation Grand Rounds, "Toward Restoring Function with Brain Computer Interfaces: Ongoing Research in Cortical Recording and Stimulation in Humans," Feb 2, 2015
3. Neurosciences Institute "Shark Tank" presentation, "Clinical Translation Center for Neural Technologies and Brain-Computer Interface," Apr 9, 2015
4. NIH StrokeNet Northwest Stroke Trials Network Annual Meeting, "Invasive Motor Cortex Stimulation for Stroke Recovery." April 13, 2016.
5. University of Colorado Department of Physical Medicine and Rehabilitation Grand Rounds. "Brains and Bits: Clinical Brain-Computer Interface (BCI) Research in Assistive Technology and Neural Modulation." June 8, 2016.
6. University of Colorado Department of Neurosurgery Research Seminar: "Human ECoG Brain-Computer Interface (BCI) Research in Assistive Technology and Neural Modulation." Oct 18, 2016.
7. Boulder Community Health, Rehabilitation Update, "Autonomic Dysreflexia," April 20, 2017.
8. Boulder Community Health, Stroke Committee, "Anticoagulation for VTE Prophylaxis after Hemorrhagic Stroke," June 14, 2017
9. Boulder Community Health, Rehabilitation Update, "Spinal Cord Injury Overview: Medical Issues in Nursing," Nov 16, 2017
10. Boulder Community Health, Therapist Continuing Education, "Spinal Cord Injury Review: Medical Issues," Mar 6, 2018
11. Boulder Community Health, Inpatient Rehabilitation Administration, "Select Issues in Spinal Cord Injury," Sep 20, 2018

12. Boulder Community Health, Physical Therapy McDowell Scholarship Luncheon, "Brain Computer Interface for Functional Deficits," Oct 25, 2018.

Media Appearances:

1. "How sensors, games and data are giving new hope to stroke patients." GeekWire. News Website. Feb 11, 2015

OTHER WORK EXPERIENCE:

Jan 2001-Jan 2003	Quality/ Reliability Engineer, Seagate Technology, Longmont, CO
2001-2003	Technical liaison for German and Asian customers
2001	Six Sigma Green Belt Trained
2001-2002	Project leader to characterize performance tool (3 engineers)
2002-2003	Six Sigma Black Belt Trained (statistical process improvement)
Jun 2016-present	Founder and Consultant, Sage Arrow Inc, Boulder, CO
Jul 2016-Mar 2017	Co-Founder, Omoi, Boulder, CO
Apr 2017-present	Advisory Board Member, PowerHealth OnDemand, Boulder, CO
Aug 2019-Dec 2019	Physician Life Care Planners, Associate Physician, San Antonio, TX