

Curriculum Vitae

STEVEN M. CHASE

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EDUCATION

Ph.D.	Biomedical Engineering	Johns Hopkins University	2006
M.S.	Electrical Engineering	University of California, Berkeley	1999
B.S. (<i>with honors</i>)	Applied Physics	California Institute of Technology	1997

ACADEMIC POSITIONS

Professor	Carnegie Mellon University	2021-current
Neuroscience Institute and Department of Biomedical Engineering		
Courtesy Appointments: Robotics Institute, Electrical & Computer Engineering		
Associate Professor		2017-2021
Assistant Professor		2011-2017
Visiting Research Scholar	University of Pittsburgh	2010-2011
Department of Neurobiology		
Post-doctoral Research Associate	Carnegie Mellon University	2006-2010
Department of Statistics		
Jointly mentored by:		
Dr. Robert E. Kass, Dept. of Statistics, Carnegie Mellon University, and		
Dr. Andrew B. Schwartz, Dept. of Neurobiology, University of Pittsburgh		

HONORS AND PROFESSIONAL ACHIEVEMENTS

CIT Dean's Early Career Fellowship	2017
NSF CAREER Award	2016
Wimmer Faculty Fellowship	2013
Individual National Research Service Award, NIH grant DC05742	2002
California Fellowship in Microelectronics	1997
Caltech Merit Scholarship	1996

FUNDING

Current, Research

NIH (R01-NS129098) <i>Neural mechanisms of motivated movement</i> Duration: 4/15/2023-2/29/2028	PIs: Chase, Batista, Stauffer	Total Amount: \$1,807,561
NIH (R01-NS129584) <i>Memory formation in motor cortex</i> Duration: 9/21/2022-6/20/2027	PIs: Chase, Yu, Batista	Total Amount: \$2,848,047
NSF (DRL2124066) <i>Collaborative Research: NCS-FR: Volitional control of internal cognitive states</i> Duration: 9/1/2021-9/14/2026	PIs: Chase, Yu, Smith, Batista	Total Amount: \$2,155,795
NIH (R01-NS121079) <i>Quantifying neural variability and learning during real world brain-computer interface use</i> Duration: 6/1/2021-11/30/2026	Co-I (PI: Collinger)	CMU Amount: \$244,869
NIH (U01-NS123125) <i>Influence of task complexity and sensory feedback on cortical control of grasp force</i> Duration: 6/1/2021-5/31/2026	Co-I (PI: Collinger)	Total Amount: \$5,403,200

Current, Training

NIH (R90/T90-NS134068) <i>Interdisciplinary training in computational neuroscience</i> Duration: 9/15/2023-6/30/2028	PIs: Chase, Torres-Oviedo	Total Amount: \$2,729,832
NIH (T32-EB029365) <i>Integrative training in neural interfacing</i> Duration: 9/1/2021-8/31/2026	Co-I (PI: He)	Total Amount: \$1,000,000

Completed

NSF (IOS1553252) - CAREER Award <i>CAREER: Neural mechanisms of skill learning</i> Duration: 9/1/2016-8/31/2022 (NCE)	PI	Total Amount: \$800,000
NIH (R21-NS115036) <i>Use of optical brain-computer interface to define principles of sensorimotor plasticity</i> Duration: 9/30/2020-5/31/2022	Co-I (PI: Kuhlman)	Total Amount: \$403,817
NIH (R01-HD071686) <i>Shaping neural population dynamics to facilitate learning</i> Duration: 4/21/2017-4/20/2022	PIs: Chase, Yu, Batista	Total Amount: \$2,181,120
NIH (U01-NS108922) <i>Context dependent processing in sensorimotor cortex</i> Duration: 9/1/2018-8/31/2020	Co-I (PI: Collinger)	Total Amount: \$1,182,379
NSF (BCS1533672) - Brain-Initiative Grant <i>NCS-FO: The structure of neural variability during motor learning</i>	PI	Total Amount: \$868,950

Duration: 9/1/2015-8/31/2020 (NCE)

PA Dept of Health Research Formula Grant PI Total Amount: \$300,000
Predicting short time scale neural reorganization during learning
 Duration: 1/1/2017-12/31/2019

NSF (IIS1650994) Co-I (PI: Wactler) Total Amount: \$300,000
EAGER: Controlling a robotic third hand - exploring use of distributed intelligence from autonomy to brain machine interfaces for augmenting human capability
 Duration: 8/15/2016-7/31/2018

Curci Foundation PIs: Chase, Gittis, Kuhlman Total Amount: \$250,000
Computational and biological approaches to delineate the neural circuitry of learning
 Duration: 3/1/2017-2/28/2018

NIH (R01-HD071686) Co-I (PIs: Yu & Batista) Total Amount: \$1,575,000
Dissecting brain-computer interfaces: a manifold & feedback-control approach
 Duration: 9/1/2011-6/1/2017 (NCE)

DARPA Co-I (PI: Collinger) Total Amount: \$39,343
Neural control of dexterous manipulation and translation to a portable system
 Duration: 9/1/2016-8/31/2017 (Chase-lab portion)

IARPA Co-I (PI: Lee) Total Amount: \$49,674
MICrONS: Visual cortical neural circuits for compositional learning and inference
 Duration: 1/15/2016-7/15/2017 (Chase-lab portion)

Curci Foundation PIs: Chase, Gittis, Kuhlman Total Amount: \$200,000
Computational and biological approaches to delineate the neural circuitry of learning
 Duration: 3/1/2016-2/28/2017

Craig H. Neilsen Foundation PIs: Chase, Yu Total Amount: \$289,651
A self-recalibrating brain-computer interface
 Duration: 1/1/2014-6/30/2016

Curci Foundation PIs: Chase, Gittis, Kuhlman Total Amount: \$200,000
Computational and biological approaches to delineate the neural circuitry of learning
 Duration: 3/1/2015-2/29/2016

CMU ProSEED Grant PIs: Chase, Gittis, Kuhlman Total Amount: \$50,000
Computational and biological approaches to delineate the neural circuitry of learning
 Duration: 1/1/2015-12/31/2015

DARPA PIs: Chase, Schwartz, Fedder, Cui Total Amount: \$273,527
Reliable cortical interfaces
 Duration: 3/1/2012-12/31/2012 (Chase-lab portion)

PA Dept of Health Research Formula Grant PI Total Amount: \$733,494
Correlated structure in motor cortical populations
 Duration: 1/1/2012-12/31/2015

INTELLECTUAL PROPERTY

1. Disclosure (invention): Marino P, Batista AP, Yu BM, **Chase SM**, Motiwali AN, Oby ER, Smoulder AL (2023). A posture-invariant brain-computer interface. Provisional U.S. Patent.
2. Patent (pending): Oby ER, Batista AP, **Chase SM**, Degenhart AD, Golub MD, Sadtler PT, and Yu BM (2021). Method of incremental training to create new patterns of physiological control signals. Serial No. 17/343,050.
3. Disclosure (invention): Oby ER, Golub MD, Hennig JA, Degenhart AD, **Chase SM**, Yu BM, and Batista AP (2020). New neural activity patterns emerge with long-term learning. Provisional U.S. Patent Application No. 63/036,735.
4. Disclosure (invention): Yu BM, Bishop W, Degenhart A, Oby ER, **Chase SM**, and Batista AP (2018). A stabilized brain-computer interface based on neural manifold alignment. Provisional U.S. Patent Application No. 62/763,874.
5. Disclosure (source code): Golub MD, **Chase SM**, and Yu BM (2017). Matlab code for internal model estimation.
Code publically available at (https://github.com/mattgolub/internal_model_estimation).
6. Disclosure (invention): Sharma A, Nguyen K, **Chase SM**, and Gittis A (2016). A split-wheel treadmill system for rodents. Provisional U.S. Patent Application No. 62/496,572.
7. Patent: **Chase SM**, Chang-Hasnain CJ, and Waite JM (2004). Apparatus and method for controlled cantilever motion through torsional beams and a counterweight. US Patent #6,813,053 B1

PUBLICATIONS

Preprints, Publicly Accessible

1. Smoulder AL, Marino PJ, Oby ER, Snyder SE, Miyata H, Pavlovsky NP, Bishop WE, Yu BM, ***Chase SM**, *Batista AP. A neural basis of choking under pressure. bioRxiv 2023.04.16.537007.
2. Fisac CF, **Chase SM**. Sensory constraints on volitional modulation of the motor cortex. bioRxiv 2023.01.22.525098
3. Losey DM, ⁺Hennig JA, ⁺Oby ER, Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, *Batista AP, *Yu BM, ***Chase, SM**. Learning alters neural activity to simultaneously support memory and action. bioRxiv 2022.07.05.498856

Peer Reviewed Journal Papers

4. Deklava BM, Chowdhury RH, Batista AP, **Chase SM**, Yu BM, Boninger ML, Collinger JL (2024). Motor cortex retains and reorients neural dynamics during motor imagery. Nature Hum Behav. <https://doi.org/10.1038/s41562-023-01804-5>

* Denotes equal contribution.

5. Koh TH, Bishop WE, Kawahima T, Jeon BB, Srinivasan R, Kuhlman SJ, Ahrens MB, ***Chase SM**, *Yu BM (2022) Dimensionality reduction of calcium-imaged neuronal population activity. *Nature Comp Sci.* 3:71-85.
6. Jeon BJ, Fuchs T, **Chase SM**, Kuhlman SJ (2022) Visual experience has opposing influences on the quality of stimulus representation in adult primary visual cortex. *eLife* 11:e80361.
7. Jeon BB, Fuchs T, **Chase SM**, Kuhlman SJ (2022) Existing function in primary visual cortex is not perturbed by new skill acquisition of a non-matched sensory task. *Nature Comm* 13:3638.
8. ⁺Smoulder AL, ⁺Pavlovsky NP, ⁺Marino PJ, Degenhart AD, McClain NT, *Batista AP, ***Chase SM** (2021) Monkeys exhibit a paradoxical decrease in performance in high-stakes scenarios. *PNAS* 118:e2109643118.
[Subject of a PNAS commentary.]
9. Nguyen KP, Sharma A, Gil-Silva M, *Gittis AH, ***Chase SM** (2021) Distinct kinematic adjustments over multiple timescales accompany locomotor learning in mice. *Neuroscience* 466:260-272.
[Subject of a Neuroscience commentary.]
10. Hennig JA, Oby ER, Golub MD, Bahureksa LA, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, *Batista AP, *Chase SM, *Yu BM (2021) Learning is shaped by abrupt changes in neural engagement. *Nature Neurosci.* 24:727-736.
11. *Kowalewski N, *Kauttonen J, Stan PL, Jeon BJ, Fuchs T, **Chase SM**, Lee TS, Kuhlman SJ (2021) Development of natural scene representation in primary visual cortex requires early postnatal experience. *Curr Bio.* 31:369-380.
12. ⁺Degenhart AD, ⁺Bishop WE, Oby ER, Tyler-Kabara EC, ***Chase SM**, *Batista AP, *Yu BM (2020) Stabilization of a brain-computer interface via the alignment of low-dimensional spaces of neural activity. *Nature BME* 4:672-685.
[Subject of a News & Views review.]
13. Oby ER, Golub MD, Hennig JA, Degenhart AD, Tyler-Kabara EC, *Yu BM, ***Chase SM**, *Batista AP (2019) New neural activity patterns emerge with long-term learning. *PNAS.* 116:15210-15215.
[Subject of a PNAS commentary.]
14. Zhou X, Tien R, Ravikumar S, and **Chase SM** (2019) Distinct types of neural reorganization during long-term learning. *J Neurophysiol.* 121:1329-1341.
[Received APS*select* award. Subject of a JNP Podcast.]
15. Jeon B, Swain A, Good J, **Chase SM**, and Kuhlman SJ (2018) Feature selectivity is stable in primary visual cortex across a range of spatial frequencies. *Sci Rep.* 8:15288.
16. Hennig JA, Golub MD, Lund PJ, Sadtler PT, Oby ER, Quick KM, Ryu SI, Tyler-Kabara EC, *Batista AP, *Yu BM, ***Chase SM** (2018) Constraints on neural redundancy. *eLife* 7:e36774.
[Subject of a Trends in Cognitive Sciences Spotlight. Recommended by Faculty of 1000.]
17. Downey J, Schwed N, **Chase SM**, Schwartz AB, and Collinger J (2018) Intracortical recording stability in human brain-computer interface users. *J Neural Eng.* 15:046016.
18. Golub MD, Sadtler PT, Oby ER, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, ***Chase SM**, and *Yu BM (2018). Learning by neural reassociation. *Nature Neurosci.* 21:607-616.
[Subject of a News & Views review. Recommended by Faculty of 1000.]

19. Zhang Y and **Chase SM** (2018). Optimizing the usability of brain computer interfaces. *Neural Comp.* 22:1-36.
20. Bittner SR, Williamson RC, Snyder AC, Litwin-Kumar A, Doiron B, ***Chase SM**, *Smith MA, and *Yu BM (2017). Population activity structure of excitatory and inhibitory neurons. *PLoS One* 12(8): e0181773.
21. Suway SB, Orellana J, McMorland AJC, Fraser GW, Liu Z, Velliste M, **Chase SM**, Kass RE, and Schwartz AB (2017). Temporally segmented directionality in the motor cortex. *Cerebral Cortex* 7:1-14.
22. Rasmussen RG, Schwartz AB, and **Chase SM** (2017). Dynamic range adaptation in primary motor cortical populations. *eLife* 2017;6:e21409.
23. Oby ER, Perel S, Sadtler PT, Ruff DA, Mischel JL, Montez DF, Cohen MR, *Batista AP, and ***Chase SM** (2016). Extracellular voltage threshold settings can be tuned for optimal encoding of movement and stimulus parameters. *J Neural Eng.* 13:036009.
24. Golub MD, *Yu BM, and ***Chase SM** (2015). Internal models for interpreting neural population activity during sensorimotor control. *eLife* 10.7554/eLife.10015.
[Recommended by Faculty of 1000.]
25. Zhang Y and **Chase SM** (2015) Recasting brain-machine interface design from a physical control system perspective. Review. *J Comp Neurosci.* 39:107-118.
26. Perel S, Sadtler PT, Oby ER, Ryu SI, Tyler-Kabara EC, *Batista AP, and ***Chase SM** (2015). Single-unit activity, threshold crossings and local field potentials in motor cortex differentially encode reach kinematics. *J Neurophysiol.* 114: 1500-1512.
27. Kozai T, Du Z, Gugel Z, Smith MA, **Chase SM**, Bodily LM, Caparosa EM, Friedlander RM, Cui XT (2015) Comprehensive chronic laminar single-unit, multi-unit, and local field potential recording performance with planar single shank electrode arrays. *J Neurosci Meth.* 242C:15-40.
28. Sadtler PT, Quick KM, Golub MD, **Chase SM**, Ryu SI, Tyler-Kabara EC, *Yu BM, and *Batista AP (2014). Neural constraints on learning. *Nature.* 512:423-426.
[Cover feature and subject of a research highlight. Recommended by Faculty of 1000.]
29. Todorova S, Sadtler PT, Batista AP, **Chase SM**, and Ventura V (2014). To sort or not to sort: the impact of spike-sorting on neural decoding performance. *J Neural Eng.* 11:056005.
30. Golub MD, Yu BM, Schwartz AB, and **Chase SM** (2014). Motor-cortical control of movement speed with implications for brain-machine interface control. *J Neurophysiol.* 112:411-429.
31. **Chase SM**, Kass RE, and Schwartz AB (2012) Behavioral and neural correlates of visuomotor adaptation observed through a brain-computer interface in primary motor cortex. *J Neurophysiol.* 108:624-644.
32. **Chase SM**, Schwartz AB, and Kass RE (2010) Latent inputs improve estimates of neural encoding in motor cortex. *J Neurosci.* 30:13873-13882.
33. Legenstein R, **Chase SM**, Schwartz AB, and Maass W (2010) A reward-modulated Hebbian learning rule can explain experimentally observed network reorganization in a brain control task. *J Neurosci* 30:8400-8410.

34. Koyama S, **Chase SM**, Whitford A, Velliste M, Schwartz AB, and Kass RE (2010) Comparison between decoding algorithms in open-loop and closed-loop performance. *J Comp Neurosci* 29:73-87.
35. Legenstein R, **Chase SM**, Schwartz AB, and Maass W (2009) Functional network reorganization in motor cortex can be explained by reward-modulated Hebbian learning. In: *Advances in Neural Information Processing Systems* 22.
36. **Chase SM**, Schwartz AB, and Kass RE (2009) Bias, optimal linear estimation, and the differences between open-loop simulation and closed-loop performance of brain-computer interface algorithms. *Neural Networks* 22:1203-1213.
37. Fraser GW, **Chase SM**, Whitford A, and Schwartz AB (2009) Control of a brain-computer interface without spike sorting. *J Neural Eng* 6:055004.
38. *Jarosiewicz B, ***Chase SM**, Fraser GW, Velliste M, Kass RE, and Schwartz AB (2008) Functional network reorganization during learning in a brain-computer interface paradigm. *PNAS* 105:19486-19491.
[Recommended by Faculty of 1000.]
39. **Chase SM** and Young ED (2008) Cues for sound localization are encoded in different aspects of spike trains in the inferior colliculus. *J Neurophysiol* 99:1672-1682.
40. **Chase SM** and Young ED (2007) First-spike latency information in single neurons increases when referenced to population onset. *PNAS* 104:5175-5180.
41. **Chase SM** and Young ED (2006) Spike-timing codes enhance the representation of multiple simultaneous sound-localization cues in the inferior colliculus. *J Neurosci* 26:3889-3898.
[Recommended by Faculty of 1000.]
42. **Chase SM** and Young ED (2005) Limited segregation of different types of sound localization information among classes of units in the inferior colliculus. *J Neurosci* 25:7575-7585.
[Recommended by Faculty of 1000.]

Peer Reviewed Conference Papers

43. Zhang Y and **Chase SM** (2016) A control-theoretic approach to brain-computer interface design. *American Control Conference (ACC) 2016*:5765-5771.
44. Zhang Y and **Chase SM** (2013) A stabilized dual Kalman filter for adaptive tracking of brain-computer interface decoding parameters. *Proc 35th Annual Conf IEEE EMBS* 7100-7103.
45. Perel S, Sadtler PT, Godlove JM, Ryu SI, Wang W, Batista AP, and **Chase SM** (2013) Direction and speed tuning of motor-cortex multi-unit activity and local field potentials during reaching movements. *Proc 35th Annual Conf IEEE EMBS* 299-392.
46. Golub MD, ***Chase SM**, *Yu BM (2013) Learning an Internal Dynamics Model from Control Demonstration. *JMLR Workshop & Conference Proceedings* 28:606-614.
47. Golub MD, *Yu BM, and ***Chase SM** (2012) Internal models engaged by brain-computer interface control. *Proc 34th Annual Conf IEEE EMBS* 1327-1330.
48. Zhang Y, Schwartz AB, **Chase SM**, and Kass RE (2012) Bayesian learning in assisted brain-computer interface tasks. *Proc 34th Annual Conf IEEE EMBS* 2740-2743.
[Finalist, student paper competition.]

Reviews, Book Chapters & Invited Commentaries

49. Hennig JA, Oby ER, Losey DM, *Batista AP, *Yu BM, *Chase SM (2021) How Learning Unfolds in the Brain: Toward an Optimization View. *Neuron* 109:3720-3735.
50. Oby ER, Hennig JA, Batista AP, Yu BM, Chase SM (2020) Intracortical brain machine interfaces. In: He B (Ed) *Neural Engineering*, third edition. Springer.
51. Huggins JE, Guger C, Ziat M, Zander TO, Taylor D, Tangermann M, Soria-Frisch A, Simeral J, Scherer R, Rupp R, Ruffini G, Robinson DKR, Ramsey NF, Nijholt A, Müller-Putz G, McFarland DJ, Mattia D, Lance BJ, Kindermans PJ, Iturrate I, Herff C, Gupta D, Do AH, Collinger JL, Chavarriaga R, Chase SM, Bleichner MG, Batista A, Anderson CW, Aarnoutse EJ (2017) Workshops of the sixth international brain-computer interface meeting: brain-computer interfaces past, present, and future. *Brain-Computer Interfaces* 4:3-36.
52. Golub MD, Chase SM, Batista AP, and Yu BM (2016) Brain-computer interfaces for dissecting cognitive processes underlying sensorimotor control. *Curr Opin Neurobio* 37:53-58.
53. *Yu BM and *Chase SM (2014) Shedding light on learning. *Nature Neurosci.* 17:746-747. *Commissioned commentary (News and Views) on "Volitional modulation of optically recorded calcium signals during neuroprosthetic learning" by Clancy et al., Nature Neurosci. 17:807-809.*
54. Chase SM (2012) Single spikes may suffice. *J Neurophysiol.* 108:1809-1809. *Commissioned commentary (Editorial Focus) on "Comparison of latency and rate coding for the direction of whisker deflection in the subcortical somatosensory pathway" by Storchi et al., J. Neurophysiol. 108:1810-1821.*
55. Chase SM and Schwartz AB (2011) Inference from populations: going beyond models. In: *Enhancing performance for Action and Perception, Progress in Brain Research Volume 192:103-112* (Green AC, Chapman, E, Kalaska JF, & Lepore F, eds).
56. Guger C, Bin G, Gao X, Guo J, Hong B, Liu T, Gao S, Guan C, Ang KK, Phua KS, Wang C, Chin ZY, Zhang H, Lin R, Chua KSG, Kuah C, Ang BT, George H, Kübler A, Halder S, Höslle A, Münßinger J, Palatucci M, Pomerleau D, Hinton G, Mitchell T, Ryan DB, Sellers EW, Townsend G, Chase SM, Whitford AS, Schwartz AB, Kawashima K, Shindo K, Ushiba J, Liu M and Schalk G (2011) State of the art in BCI research: BCI award 2010. In: *Recent Advances in Brain-Computer Interfaces* (Fazel R, ed).

Reviews & Interviews About My Work

1. Saikley A and Haroush K (2021) Toward a neurobiological model of human performance under pressure. *PNAS* 118:e2113777118.
[Commentary on Smoulder et al., *PNAS*, 2021.]
2. Jacobs JR and Carey MR (2021) Move over Rotarod, here comes RotaWheel. *Neuroscience* doi.org/10.1016/j.neuroscience.2021.05.004.
[Commentary on Nguyen et al., *Neuroscience*, 2021.]
3. Wimalasena LN, Miller LE and Pandarinath C (2020) From unstable input to robust output. *Nature BME* 4:665-667.
[Review of Degenhart et al., *Nature BME*, 2020.]
4. Pryluk R and Paz R (2019) Learning outside the box. *PNAS*. 116:15316-15318.
[Commentary on Oby et al., *PNAS*, 2019]

5. Yates B (2019) Distinct types of neural reorganization during long-term learning. JNP Podcasts, released 22 May 2019. <https://jneurophysiol.podbean.com/e/distinct-types-of-neural-reorganization-during-long-term-learning/>. [Spotlight on Zhou et al., J Neurophysiol. 2019]
6. Kalaska J (2019) F1000Prime Recommendation of [Hennig JA et al., *elife* 2018 7]. In F1000Prime, 22 May 2019; 10.3410/f.733821237.793560118.
7. Kalaska J (2019) F1000Prime Recommendation of [Golub MD et al., *Nat Neurosci* 2018 21(4):607-616]. In F1000Prime, 22 May 2019; 10.3410/f.732828264.793560117.
8. Kalaska J (2019) F1000Prime Recommendation of [Sadler PT et al., *Nature* 2014 512(7515):423-426]. In F1000Prime, 22 May 2019; 10.3410/f.718546237.793560114.
9. Kao TC and Hennequin G (2018) Null ain't dull: new perspectives on motor cortex. *Trends in Cognitive Sciences*. 22:1069-1071. [Spotlight on Hennig et al., *eLife*, 2018]
10. Galgali AR and Mante V (2018) Set in one's thoughts. *Nature Neurosci* 21:459-460. [Review of Golub et al., *Nature Neurosci*, 2018]
11. Destexhe A and Kumar A (2017) F1000Prime Recommendation of [Golub MD et al., *elife* 2015 4]. In F1000Prime, 12 Apr 2017; 10.3410/f.726000531.793530347.
12. Whalley K (2014) Learning and memory: Putting limits on learning. *Nature Reviews Neuroscience* 15:631. [Review of Sadler et al., *Nature*, 2014]
13. Frank M (2014) F1000Prime Recommendation of [Sadler PT et al., *Nature* 2014 512(7515):423-426]. In F1000Prime, 01 Sep 2014; 10.3410/f.718546237.793499190.
14. Upson, S (2014) Cyborg confidential. *SA Mind* 25(6):30-35.
15. Fetz E and Richardson A (2009) F1000Prime Recommendation of [Jarosiewicz B et al., *Proc Natl Acad Sci USA* 2008 105(49):19486-19491]. In F1000Prime, 30 Mar 2009; 10.3410/f.1158542.618726.
16. King A (2006) F1000Prime Recommendation of [Chase SM and Young ED, *J Neurosci* 2006 26(15):3889-3898]. In F1000Prime, 27 Apr 2006; 10.3410/f.1011522.371004.
17. Middlebrooks J (2005) F1000Prime Recommendation of [Chase SM and Young ED, *J Neurosci* 2005 25(33):7575-7585]. In F1000Prime, 25 Aug 2005; 10.3410/f.1027578.331641.

DISSERTATIONS AND THESES

- Losey D (2023) The geometry of neural population activity during learning and memory. PhD Dissertation, Program in Neural Computation and Machine Learning, Carnegie Mellon University.
- Koh TH (2023) Statistical analysis of calcium-imaged population activity. PhD Dissertation, Biomedical Engineering, Carnegie Mellon University.

- Nguyen K (2022) Dissection of detailed motor behaviors and circuit function of the basal ganglia in health and disease. PhD Dissertation, Biomedical Engineering, Carnegie Mellon University.
- Fisac C (2022) Sensory constraints on volitional modulation of neural activity in motor cortex. PhD Dissertation, Biomedical Engineering, Carnegie Mellon University.
- Jeon B (2021) Stability and robustness of visual feature representation in mouse V1. PhD Dissertation, Biomedical Engineering, Carnegie Mellon University.
- Hennig J (2021) Structure and time course of neural population activity during learning. PhD Dissertation, Neural Computation and Machine Learning, Carnegie Mellon University.
- Zhou X (2020) Neural reorganization supporting long-term brain-computer interface learning. PhD Dissertation, Biomedical Engineering, Carnegie Mellon University.
- Zhang Y (2018) Provably optimal design of a brain-computer interface. PhD Dissertation, Robotics Institute, Carnegie Mellon University.
- Ravikumar S (2017) Tracking chronically recorded neurons using pairwise cross-correlograms. MS Thesis, Biomedical Engineering, Carnegie Mellon University.
- Sharma A (2017) Design of a split-running wheel for studies of locomotor learning. MS Thesis, Biomedical Engineering, Carnegie Mellon University. (co-advised by Aryn Gittis)
- Jeon B (2016) Design and testing of a closed-loop brain-computer interface system for operation by a mouse. MS Thesis, Biomedical Engineering, Carnegie Mellon University. (co-advised by Sandra Kuhlman)
- Golub MD (2015) Interpreting neural population activity during feedback motor control. PhD Dissertation, Electrical and Computer Engineering, Carnegie Mellon University. (co-advised by Byron Yu)
- Lund P (2014) Predicting high-dimensional neural activity patterns during brain-computer interface control. MS Thesis, Machine Learning, Carnegie Mellon University. (co-advised by Byron Yu)
- Zhao Y (2014) An extended latent Kalman filter for nuisance variable removal in brain-computer interface decoding applications. MS Thesis, Biomedical Engineering, Carnegie Mellon University.
- Chase SM (2006) The representation of sound localization information among neural populations in the inferior colliculus. PhD Dissertation, Biomedical Engineering, Johns Hopkins University. (Advisor: ED Young)
- Chase SM (1999) A micromechanical red-shifting tunable vertical cavity filter. MS Thesis, Electrical Engineering, University of California, Berkeley. (Advisor: CJ Chang-Hasnain)

TEACHING

Classes

42-101

Introduction to BME (12 units)

FCEs: 96 enrolled, 75 responders, 0 audit

Instructor: 4.2/5.0, Course: 4.1/5.0

Spring 2022

86-631/42-631	FCEs: 41 enrolled, 27 responders, 0 audit	Fall 2021
Neural Data Analysis (12 units)	Instructor: 4.6/5.0, Course: 4.5/5.0	
42-101	FCEs: 90 enrolled, 73 responders, 0 audit	Spring 2021
Introduction to BME (12 units)	Instructor: 4.4/5.0, Course: 4.4/5.0	
42-101	FCEs: 75 enrolled, -- responders, 0 audit	Spring 2020
Introduction to BME (12 units)	Instructor: --/5.0, Course: --/5.0	
86-631/42-631	FCEs: 24 enrolled, 20 responders, 0 audit	Fall 2019
Neural Data Analysis (9 units)	Instructor: 5.0/5.0, Course: 5.0/5.0	
42-101	FCEs: 65 enrolled, 32 responders, 0 audit	Spring 2019
Introduction to BME (12 units)	Instructor: 3.8/5.0, Course: 3.7/5.0	
86-631/42-631	FCEs: 28 enrolled, 21 responders, 1 audit	Fall 2018
Neural Data Analysis (9 units)	Instructor: 4.7/5.0, Course: 4.7/5.0	
42-101	FCEs: 59 enrolled, 48 responders, 0 audit	Spring 2018
Introduction to BME (12 units)	Instructor: 4.1/5.0, Course: 4.0/5.0	
86-631/42-631	FCEs: 28 enrolled, 21 responders, 1 audit	Fall 2017
Neural Data Analysis (9 units)	Instructor: 4.7/5.0, Course: 4.8/5.0	
86-631/42-631	FCEs: 22 enrolled, 21 responders, 2 audit	Fall 2016
Neural Data Analysis (9 units)	Instructor: 4.7/5.0, Course: 4.6/5.0	
42-101	FCEs: 54 enrolled, 37 responders, 0 audit	Fall 2015
Introduction to BME (12 units)	Instructor: 4.1/5.0, Course: 4.0/5.0	
86-631/42-631	FCEs: 17 enrolled, 13 responders, 0 audit	Fall 2015
Neural Data Analysis (9 units)	Instructor: 4.8/5.0, Course: 4.7/5.0	
42-101	FCEs: 76 enrolled, 52 responders, 0 audit	Spring 2015
Introduction to BME (12 units)	Instructor: 4.3/5.0, Course: 4.1/5.0	
86-631/42-631	FCEs: 19 enrolled, 17 responders, 1 audit	Fall 2014
Neural Data Analysis (9 units)	Instructor: 4.8/5.0, Course: 4.8/5.0	
42-101 (co-taught w/Newell Washburn)	FCEs: 55 enrolled, 30 responders, 0 audit	Fall 2013
Introduction to BME (12 units)	Instructor: 3.9/5.0, Course: 3.8/5.0	
86-631/42-631	FCEs: 19 enrolled, 15 responders, 3 audit	Fall 2013
Neural Data Analysis (9 units)	Instructor: 4.8/5.0, Course: 4.7/5.0	
86-601	FCEs: 3 enrolled, 2 responders, 2 audit	Spring 2013
Topics in Motor Control (3 units)	Instructor: 5.0/5.0, Course: 4.5/5.0	
42-699B/86-595	FCEs: 14 enrolled, 14 responders, 1 audit	Fall 2012
Neural Data Analysis (9 units)	Instructor: 4.9/5.0, Course: 4.7/5.0	
86-595/42-595	FCEs: 5 enrolled, 5 responders, 2 audit	Spring 2012
Neural Data Analysis (12 units)	Instructor: 4.8/5.0, Course: 4.8/5.0	

Guest Lectures

1. 42-655: Brain-Computer Interface: Principles and Applications Spring 2022
2. 42-101: Introduction to BME Fall 2021
3. uPNC Summer Seminar Series Summer 2021
4. 03-161: Molecules to Mind Spring 2021
5. 42-101: Introduction to BME Fall 2020
6. uPNC Summer Seminar Series Summer 2020
7. 03-161: Molecules to Mind Spring 2020
8. 42-690: BME in Everyday Life Spring 2020
9. 42-101: Introduction to BME Fall 2019
10. uPNC Summer Seminar Series Summer 2019

11. 03-161: Molecules to Mind	Spring 2019
12. 42-630: Introduction to neuroscience for engineers	Spring 2019
13. 85-382/18-782: The psychology and neuroscience of consciousness	Spring 2019
14. NEUS 627 / BEHN 640 (Oregon Health and Science University): Systems Neuroscience	Fall 2018
15. 42-101: Introduction to BME	Fall 2018
16. uPNC Summer Seminar Series	Summer 2018
17. NEUS 627 / BEHN 640 (Oregon Health and Science University): Systems Neuroscience	Fall 2017
18. 42-447: Rehabilitation Engineering	Fall 2017
19. 42-101: Introduction to BME	Fall 2017
20. uPNC Summer Seminar Series	Summer 2017
21. 42-101: Introduction to BME	Spring 2017
22. 42-201: Professional Issues in BME	Spring 2017
23. 42-201: Professional Issues in BME	Fall 2016
24. 42-101: Introduction to BME	Fall 2016
25. uPNC Summer Seminar Series	Summer 2016
26. 42-630: Introduction to Neuroscience for Engineers	Spring 2016
27. 42-201: Professional Issues in BME	Spring 2016
28. 42-101: Introduction to BME	Spring 2016
29. uPNC Summer Seminar Series	Summer 2015
30. 03-161: Molecules to Mind	Spring 2015
31. 42-201: Professional Issues in BME	Spring 2015
32. 42-101: Introduction to BME	Fall 2014
33. 42-632: Neural Signal Processing	Spring 2014
34. 80-270: Philosophy of Mind	Spring 2014
35. 15-386/15-686: Neural Computation	Spring 2014(2)
36. 15-386/15-686: Neural Computation	Spring 2014(1)
37. 18-819: Neural Technology, Sensing and Stimulation	Fall 2013
38. uPNC Summer Seminar Series	Summer 2013
39. 36-759: Statistical Models of the Brain	Spring 2013
40. 42-201: Professional Issues in BME	Spring 2013
41. uPNC Summer Seminar Series	Summer 2012
42. 42-201: Professional Issues in BME	Spring 2012
43. 15-386/15-686: Neural Computation	Spring 2012
44. 18-101: Introduction to Electrical and Computer Engineering	Fall 2012
45. 42-101: Introduction to BME	Spring 2012
46. BIOEN 2696 (Pitt): Control theory in neuroscience	Spring 2012
47. BIOEN 2800 (Pitt): Neurotechnology	Spring 2012
48. 86-375/86-675: Computational Perception	Spring 2012
49. uPNC Summer Seminar Series	Summer 2011
50. 15-386/15-686: Neural Computation	Spring 2011
51. 15-386/15-686: Neural Computation	Spring 2010
52. MSNBIO 2632 (Pitt): Advanced Neurophysiology	Spring 2007

PROFESSIONAL SERVICE

Co-Director: Program in Neural Computation, 2016 – current.

Chair: Biomedical Engineering Graduate Affairs Committee, 2020 – 2022.

Editorial & External committee service

Editor: *Neurons, Behavior, Data Analysis, and Theory*, 2018 – current.

Program Committee: Translational and Computational Motor Control Workshop, 2015 – current.

Program Committee: *Cosyne* 2018 – 2020.

Guest editor, *PLoS Comp Bio*, 2015-2016.

Workshop organization

Organizer: CMU/Pitt Workshop: The Neural Basis of Internal States, Pittsburgh, PA, June 2023.

Organizer: BME track of the Machine Learning in Science and Engineering Conference, Atlanta, GA, June 2019.

Organizer: CMU/Pitt Neuro-Learning Workshop, Pittsburgh, PA, June 2018.

Session chair: Neuroinformatics session, Machine Learning in Science and Engineering 2018.

Session organizer: “Methods: How do you find a manifold, and what do you do when you’ve found one?” M5: Midwest Monkey Manifolds for Movement Meeting, May 2018.

BCI 2016 Workshop organizer: “Algorithms and performance using implanted devices.”

BCI 2016 Workshop organizer, “Studying learning with brain-computer interfaces.”

Organizer: CNBC retreat. Nov 2012 & Oct 2013.

Organizer: Biosignals Day Symposium, “Power in numbers: How many neurons are needed to...?” Feb 2012.

Session co-chair: Platform session on neural computation & statistical analysis of neural data, BMES 2009.

Review activities

Grant review: Department of Defense Peer Reviewed Medical Research Program (PRMRP), FNRS (Fonds de la Recherche Scientifique, Belgium), Israel Binational Foundation, NSF Neuronex, NSF CISS-IIS, NSF BIO-IOS, NIH LMDN, NIH SPC, Singapore Ministry of Education.

Ad-hoc reviewer for: American Controls Conference, Biological Cybernetics, Cerebral Cortex, Computational Methods and Programs in Biomedicine, *Current Biology*, *Current Opinions in Neurobiology*, *eLife*, *Frontiers in Neuroscience*, *IEEE Engineering in Medicine and Biology Society*, *IEEE Signal Processing Letters*, *IEEE Transactions on Biomedical Engineering*, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *Journal of the Association for Research in Otolaryngology*, *Journal of Neural Engineering*, *Journal of Neurophysiology*, *Journal of Neuroscience*, *Journal of Neuroscience Methods*, *Nature*, *Nature Biomedical Engineering*, *Nature Communications*, *Nature Medicine*, *Nature Neuroscience*, *Neural Computation*, *Neurobiology of Disease*, *Neuroinformatics*, *Neuroscience*, *Neuron*, *PLOS Computational Biology*, *PLOS One*, *PNAS*, *Science*, *Science and Translational Medicine*, and *Scientific Reports*.

Scientific Societies

Founding Member: BCI Society.

Member: AAAS, APS, SfN, NCM.

Internal leadership & committee roles

Member: CNBC Executive committee, 2011-current.

Member: Neuroscience Undergraduate Education Committee, 2017-current.

Member: Graduate Affairs Committee, Biomedical Engineering, 2011-2020.

Member: University Committee on Faculty Promotions without Indefinite Tenure, 2019-2021.

Member: BME faculty search committee, 2018-2019.

Member: CNBC/Biological sciences faculty search committee, 2018-2019.

Member: Carnegie Mellon Neuroscience Institute planning committee, 2018.

Member: Graduate affairs committee, Program in Neural Computation, 2013-2016.

Member: BrainHub engineering search committee, 2015.

Member: BME search committee, 2014-2015.

OUTREACH

Media Mentions

7/2023 Elling T “The science of why we choke under pressure.” Books on pod Episode #349.

7/2023 Elling T “Why we choke under pressure.” ESPN radio Austin 102.7.

5/2023 Faris N “Why do players choke under pressure? For the same reason monkeys do.” theScore.

12/2022 podcast: “Neuroactivity, Brain-Computer Interfaces, and the Animal Kingdom: Carnegie Mellon Scholars’ Take” on The Morning Fix by 510k Cafe

10/2021 CMU press release “Does the brain learn like a computer learns?” picked up by technologynetworks and the American Society for Engineering Education, among others.

10/2021 Radio Interview, Quirks & Quarks, CBC.

04/2021 Our work showing that monkeys choke under pressure was picked up broadly by news outlets:

Hart M, “This monkey chokes under pressure just like humans do”, Nerdist.
Johnson D, “At least one species of primate underperforms when the heat is on”, ArsTechnica.

Also featured in news.yahoo, flipboard, dailyadvent, phys.org, and dailymail, among others.

08/2020 Quoted by Vox: Heilweil R “Elon Musk is one step closer to connecting a computer to your brain.”

04/2020 Walsh B “Using brain interfaces to learn about learning”, Axios.

- 04/2020 Press release about our work “Stabilizing brain-computer interfaces” picked up by several online news sites, including interestingengineering.com, sciencedaily.com, unite.ai, and neurosciencenews.com.
- 08/2019 Zhou et al. (2019) cited in an article in Axios, “Looking to AI to understand how we learn.”
- 06/2019 Press release about our work “Pitt and CMU researchers discover how the brain changes when mastering a new skill” picked up by medindia.net, innovationtoronto.com, among others.
- 05/2019 Work subject of a Journal of Neurophysiology Podcast: “Distinct types of neural reorganization during long-term learning.”
- 12/2018 Quoted by Reuters: Rapaport L “Brain implants might one day help paralyzed patients use tablets.”
- 07/2018 FutureTech podcast: Jacobs R “Mind Control – Steven Chase and Byron Yu, Professors of Biomedical Engineering, Carnegie Mellon University – Computer brain interfaces that could allow control of body movement through thought.”
- 04/2018 Quoted in Wearable: Caddy B “Beyond sci-fi: Building the bioic body.”
- 03/2018 Davis K “When Learning A New Task, Our Brains Are Less Flexible Than We Thought.” WESA (Pittsburgh’s NPR station).
- 03/2018 Rennie J “Brain clings to old habits when learning new tricks.” Quanta Magazine.
- 02/2018 Quoted in the Brown Daily Herald, “University study improves interfaces between brain, computers.”
- 05/2017 Quoted in WIRED, “Want a true bionic limb? Good luck without machine learning.”
- 04/2017 Contributed an ‘Expert Views’ piece to an article published by AXIOS, “When computers merge with our minds.”
- 02/2016 Templeton D “CMU study explores why we make mistakes,” Pittsburgh Post-Gazette.
- 12/2015 Press release about our work “Researchers gain understanding of why the brain makes mistakes,” picked up by MedicalXpress (and shared by Neuroscience News, Science Beta, and DeepStuff.org).
- 07/2013 Interview, IGN (an online news service)

External Outreach

- 11/2021 Speaker, “Communicating with the Brain: Improving Lives with Neuroengineering” Alumni Association in Turkey webinar
- 08/2018 Science Briefing, Congressman Keith Rothfus
- 03/2017 Judge, Pittsburgh Regional Science & Engineering Fair
- 10/2016 Speaker, Society of Women Engineers high school outreach day
- 08/2016 Speaker, Andrew Carnegie Society
- 02/2016 Instructor, OSHER lifelong learning course
- 05/2015 Science Briefing, Heinz Foundation
- 03/2014 Science Briefing, Congressman Chaka Fattah
- 03/2014 Judge, Pittsburgh Regional Science & Engineering Fair
- 03/2013 Science Briefing, Hillman Foundation

10/2012 Science Briefing, Hillman Foundation

Internal Outreach / Mentorship

05/2018 Panelist, NSF CAREER writing workshop

09/2017 Panelist, Young Investigator Grants information session

08/2017 Panelist, Work/Life Balance workshop

05/2017 Panelist, NSF CAREER writing workshop 04/2014 Panelist, CNBC Panel, “Graduate Academic Job Search”

06/2013 Mentor, CNBC Data Blitz

05/2012 Panelist, GBMES Panel, “Discussions at the Interface of Nature & Technology”

PRESENTATIONS

Invited Talks

1. 2022. UC Davis, Davis, CA. “Dissecting learning and memory with brain-computer interfaces.”
2. 2021. PMC XIII, Auckland, New Zealand. “Acting out your feelings: internal state signals in motor cortex.” *virtual*
3. 2021. Ben Gurion University, Be’er Sheva, Israel. “Dissecting learning and memory with brain-computer interfaces.” *virtual*
4. 2020. 6th CiNet Conference. Osaka University, Osaka, Japan. “Neural manifolds: from basic science to practical improvements in brain-computer interfaces.”
5. 2019. Action Club, Northeastern, Boston, MA. “Dissecting learning processes with brain-computer interfaces.”
6. 2019. Cedars-Sinai, Los Angeles, CA. “Brain-computer interfaces for dissecting motor learning.”
7. 2019. Machine Learning in Science and Engineering, Atlanta, GA. “A stabilized brain-computer interface based on neural manifold alignment.”
8. 2019. Sungkyunkwan University, Suwon, South Korea. “Neural manifolds: from basic science to practical improvements in brain-computer interfaces.”
9. 2019. IEEE 2019 Winter BCI Conference, High 1 Resort, South Korea. “Neural manifolds: from basic science to practical improvements in brain-computer interfaces.”
10. 2018. Oregon Health & Science University, Portland, OR. Invited to give two classroom lectures on motor system function and brain-machine interfaces.
11. 2018. CMU/Pitt Neuro-Learning Workshop, Pittsburgh, PA. “Dissecting the neural mechanisms of learning with brain-computer interfaces.”
12. 2018. Machine Learning in Science and Engineering, Pittsburgh, PA. “Using machine learning to understand biological learning.”
13. 2018. Neural control of movement panel, Sante Fe, NM. “BCI learning: fast and slow.”
14. 2017. Oregon Health & Science University, Portland, OR. Invited to give two classroom lectures on motor system function and brain-machine interfaces.
15. 2017. TEDxCMU Pittsburgh, PA. “The limits of learnability.”
16. 2016. UPMC Enterprises, Pittsburgh, PA. “State-of-the-art in intracortical brain-computer interfaces.”

17. 2016. Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA. “Cognitive factors that shape neural prosthetic control.”
18. 2016. Department of Biomedical Engineering, University of Rochester, Rochester, NY. “Cognitive factors in neural prosthetic control.”
19. 2016. American control conference panel, Boston, MA. “A control-theoretic approach to brain-computer interface design.”
20. 2015. International Neuropsychological Symposium, Collioure, France. “Internal conceptions of external systems.”
21. 2015. Center for Neural Engineering Prostheses and Redwood Center for Theoretical Neuroscience, UC Berkeley, Berkeley, CA. “Internal models for interpreting neural population activity.”
22. 2014. SASP-SSP Continuing Education Symposium, Pittsburgh, PA. “From BrainHub to brain-computer interfaces: new research initiatives at Carnegie Mellon.”
23. 2014. Johns Hopkins Biomedical Engineering Retreat, Ocean City, MD. “From goats to brain-computer interfaces.”
24. 2014. Computational Motor Control Workshop, Beer-Sheva, Israel. “Internal model mismatch is responsible for the majority of errors in neuroprosthetic control.”
25. 2013. 2nd Annual Next Generation Medical Imaging Workshop, Pittsburgh, PA. “Movement-related information conveyed by non-traditional signal sources in motor cortex.”
26. 2013. Fourth Annual Aspen Brain Forum, Aspen, CO. “Developing algorithms for enhanced brain-machine interfaces.”
27. 2013. International BCI Meeting, Pacific Grove, CA. “Visuomotor adaptation in BCI: differences and similarities from natural reaching.”
28. 2011. The IEEE Pittsburgh Section Signal Processing and EMBS Chapters, Pittsburgh, PA. “Important and unimportant factors in neural prosthetic control.”
29. 2011. George Mason University, Fairfax, VA. “Visuomotor adaptation observed through a brain-computer interface.”
30. 2011. Harvard University, Cambridge, MA. “Visuomotor adaptation observed through a brain-computer interface.”
31. 2011. Boston University, Boston, MA. “Visuomotor adaptation observed through a brain-computer interface.”
32. 2010. CNUP Annual Retreat, Wheeling, WV. “Visuomotor adaptation observed through a brain-computer interface.”
33. 2010. Computational Motor Control Workshop, Beer-Sheva, Israel. “Visuomotor adaptation observed through a brain-computer interface.”
34. 2010. Hebrew University, Jerusalem, Israel. “Visuomotor adaptation observed through a brain-computer interface.”
35. 2010. Johns Hopkins Applied Physics Laboratory, Laurel, MD. “Important and unimportant factors in neural prosthetic control.”
36. 2009. Networks: a BMES satellite meeting, Pittsburgh, PA. “Leveraging BCI paradigms to study neural plasticity.”
37. 2009. McGowan Institute Annual Retreat, Farmington, PA. “Advances in neural prosthetic control.”

Conference Presentations**2023**

1. Wen J, Smoulder AL, Miyata H, Borgonon S, Marino P, *Batista AP, *Chase SM (2023) Motor cortex separately encodes reward magnitude and reward type. SfN annual meeting.
2. Miyata H, Smoulder AL, Wen J, Borgonon S, Marino P, *Batista AP, *Chase SM (2023) Interactions between reward and task difficulty in M1 neural population activity. SfN annual meeting.
3. Hockeimer W, Weiss JM, Deklava BD, Weir D, Kunigk NG, Chase SM, Boninger ML, Collinger JL (2023) Independent use of an at-home intracortical BCI system. SfN annual meeting.
4. Couras J, Oby E, Motiwala A, Snyder S, Losey D, Hennig J, *Yu BM, *Chase SM, *Batista AP (2023) A link between memory traces in motor cortex and savings. SfN annual meeting.
5. Kunigk NG, Hockeimer W, Gontier C, Dekeva BD, Chase SM, Boninger ML, Collinger JL (2023) Pupil diameter correlates with population activity and performance in human intracortical brain-computer interface task. SfN annual meeting.
6. Snyder S, Oby E, Smith M, *Chase SM, *Yu BM, *Batista AP (2023) A causal test of the flexibility of interactions between cortical areas. SfN annual meeting.
7. Chandrasekaran AN, Smoulder A, McDonnell M, Ki C, Marino P, Wen J, Miyata H, Borgognon S, Yu B, *Batista A, *Smith M, *Chase SM (2023) Reward and task difficulty drive distinct behavioral changes in monkeys performing a challenging sensorimotor task. CMU BME Forum. [Winner, Outstanding Poster Award]
8. Wen J, Smoulder AL, Miyata H, Borgonon S, Marino P, *Batista AP, *Chase SM (2023) Motor cortex separately encodes reward magnitude and reward type. CMU BME Forum.
9. Miyata H, Smoulder AL, Wen J, Borgonon S, Marino P, *Batista AP, *Chase SM (2023) Interactions between reward and task difficulty in M1 neural population activity. CMU BME Forum.
10. Blumenthal GH, Deklava BM, Gonzalez-Martinez JA, Yu BM, Batista AP, Gaunt RA, Boninger ML, Chase SM, Collinger JL (2023) Distinct neural modes carry information about grasp timing and grip force in sensorimotor cortex. Brain Initiative investigators meeting.
11. Kunigk NG, Deklava BM, Liu F, Chase SM, Boninger ML, Collinger JL (2023) BCI performance is influenced by motor imagery strategy and somatotopic constraints. International BCI meeting.
12. Hockeimer W, Kunigk N, Deklava B, Chase SM, Boninger ML, Collinger JL (2023) Tracking variability in subject state and iBCI performance over time. International BCI meeting.
13. Chase SM (2023) Motor memories are active in neural activity after learning. Speaker on panel: Are memories active? by Batista AP, Sternad D, Chase SM, Park SW, Swanson R, and Wolpaw J. NCM annual meeting.
14. Chase SM (2023) Discussant on panel: Aligned neural population dynamics provide a stable window onto motor intent. Rizzoglio, F, Ma X, O'Shea D, Chang J, Chase SM.

15. Smoulder AL, Marino PJ, Pavlovsky NP, Oby ER, Snyder SE, Bishop WE, Yu BM, ***Chase SM**, *Batista AP (2023) A neural basis of choking under pressure. Speaker on panel Motivated movement: how reward shapes neural activity and behavior. Smoulder AL, Jang HJ, Ahmed A, Ebitz B, and Cisek P. NCM annual meeting.
16. Smoulder AL, Marino PJ, Pavlovsky NP, Oby ER, Snyder SE, Bishop WE, Yu BM, ***Chase SM**, *Batista AP (2023) A neural basis of choking under pressure. Poster, NCM annual meeting.
17. Marino PJ, Bahureksa L, Fisac CF, Oby ER, Motiwala A, Grigsby E, Smoulder A, Degenhart A, Joiner WM, ***Chase SM**, *Yu BM, *Batista AP (2023) A “posture subspace” in motor cortex. Poster, NCM annual meeting.
18. Blumenthal GH, Deklava BM, Gonzalez-Martinez JA, Yu BM, Batista AP, Guant RA, Boninger ML, **Chase SM**, Collinger JL (2023) Distinct neural modes carry information about grasp timing and grip force in sensorimotor cortex. Poster, NCM annual meeting.
19. Deklava BM, Hockeimer WI, Kunigk NC, Chowdhury RH, Miller LE, **Chase SM**, Batista AP, Boninger ML, Collinger JL (2023) Target-based discretization of motor cortical responses during motor imagery. Poster, NCM annual meeting.
20. Marino PJ, Bahureksa L, Fisac CF, Oby ER, Motiwala A, Grigsby E, Smoulder A, Degenhart A, Joiner WM, ***Chase SM**, *Yu BM, *Batista AP (2023) A “posture subspace” in motor cortex. NCM Satellite Meeting: Computations and neural code underlying the control of posture.

2022

21. Smoulder AL, Marino PJ, Pavlovsky NP, Oby ER, Snyder SE, Bishop WE, Yu BM, ***Chase SM**, *Batista AP (2022) Exceptionally large rewards collapse task information in neural population activity. MLMC annual meeting.
22. Fisac CF and **Chase SM** (2022) Sensory constraints on volitional modulation of motor cortex. SfN annual meeting.
23. Kunigk NG, Dekleva BD, Herrera AJ, Liu F, **Chase SM**, Boninger ML, Collinger JL (2022) Somatotopically-congruent imagery enhances BCI control in human participants. SfN annual meeting.
24. Losey D, Hennig J, Oby ER, Golub MD, Sadtler PT, Quick KM, Ryu S, Tyler-Kabara EC, *Batista AP, *Yu BM, ***Chase SM** (2022) Learning alters neural activity to simultaneously support memory and action. SfN annual meeting.
25. Blumenthal GH, Dekleva BM, Batista AP, Boninger ML, **Chase SM**, Gaunt RA, Gonzalez-Martinez JA, Yu BM, Collinger JL (2022) Distinct neural modes are associated with static and dynamic grasping force. SfN annual meeting.
26. Smoulder AL, Marino PJ, Pavlovsky NP, Oby ER, Snyder SE, Bishop WE, Yu BM, ***Chase SM**, *Batista AP (2022) Exceptionally large rewards collapse task information in neural population activity. SfN annual meeting.
27. Marino PJ, Bahureksa L, Fisac CF, Oby ER, Motiwala A, Grigsby E, Smoulder A, Degenhart A, Joiner WM, ***Chase SM**, *Yu BM, *Batista AP (2022) Posture and motor signals are organized in primary motor cortex. SfN annual meeting.

28. Koh TH, Bishop WE, Kawashima T, Jeon BB, Srinivasan R, Mu Y, Wei Z, Kuhlman SJ, Ahrens MB, ***Chase SM**, *Yu BM (2022) Dimensionality reduction of calcium-imaged neuronal population activity. CRCNS PI Mtg.
29. Blumenthal G, Dekleva B, Batista A, Boninger M, **Chase S**, Gaunt R, Gonzalez-Martinez J, Yu B, Collinger J (2022) Distinct neural modes are associated with static and dynamic grasping force. Brain Initiative PI meeting.
30. Marino PJ, Bahureksa L, Fisac C, Oby ER, Motiwali A, Grigsby E, Smoulder A, Degenhart A, Joiner WM, ***Chase SM**, *Yu BM, *Batista AP (2022) Postural and volitional signals occupy separate neural dimensions in motor cortex. NCM annual meeting.
31. Smoulder AL, Marino PJ, Pavlovsky NP, Oby ER, Snyder SE, Bishop WE, Yu BM, ***Chase SM**, *Batista AP (2022) Exceptionally large rewards lead to a collapse in neural information about upcoming movements. Cosyne annual meeting.

2021

32. Herrera AJ, Dekleva BM, Boninger ML, Yu BM, Batista AP, **Chase SM**, Collinger JL (2021) Effect of object presence and grasp intention on M1 activity during BCI controlled reaches. Brain Initiative investigators meeting.
33. Hennig JH, Oby ER, Golub MD, Bahureksa L, Sadtler P, Quick K, Ryu S, Tyler-Kabara E, *Batista AP, ***Chase SM**, *Yu BM (2021) Learning is shaped by an abrupt change in "neural engagement". IEEE NER mini-symposium.
34. Jeon BJ, **Chase SM**, and Kuhlman SJ (2021) Integration of new skills does not perturb preexisting function in primary visual cortex. SfN Global Connectome.
35. Hennig JA, Oby ER, Golub MD, Bahureksa LA, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, *Batista AP, ***Chase SM**, *Yu BM (2021) Learning is shaped by abrupt changes in neural engagement. Cosyne annual meeting.

2020

36. Herrera AJ, Deklava BM, Boninger ML, Yu BM, Batista AP, **Chase SM**, Collinger JL (2020) Effect of object presence and grasp intention on M1 activity during planning and movement execution. Human single neuron conference.
37. ⁺Smoulder AS, ⁺Pavlovsky NP, ⁺Marino P, Degenhart AD, *Batista AP, ***Chase SM** (2020) Monkeys exhibit paradoxical decrement in performance in high-stakes scenarios – they ‘choke under pressure’. MLMC workshop.
38. Fisac CF and **Chase SM** (2020) Sensory feedback impacts volitional control of single neurons even after prolonged training. CMU BME Forum.
39. ⁺Pavlovsky NP, ⁺Smoulder AS, Degenhart AD, Marino P, *Batista AP, ***Chase SM** (2020) Monkeys exhibit paradoxical decrement in performance in high-stakes scenarios. CMU BME Forum.
40. Losey DM, Hennig JA, Oby ER, Golub MD, Sadtler PT, Quick KM, Ryu S, Tyler-Kabara EC, *Batista AP, *Yu BM, ***Chase SM** (2020) Evidence of a memory trace in motor cortex after short term learning. Cosyne annual meeting.

41. Koh TH, Bishop W, Kawashima M, Ahrens M, *Chase SM, *Yu BM (2020) Simultaneous dimensionality reduction and deconvolution for calcium imaging recordings. Cosyne annual meeting.
42. Menendez J, Hennig J, Golub M, Oby E, Batista A, Chase SM, Yu BM, Latham P (2020) A motor cortical model of brain-machine interface learning, fast and slow. Cosyne annual meeting.

2019

43. Losey DM, Hennig JA, Oby ER, Golub MD, Sadtler PT, Quick KM, Ryu S, Tyler-Kabara EC, *Batista AP, *Yu BM, *Chase SM (2019) Evidence of a memory trace in motor cortex after short term learning. SfN annual meeting.
44. Pavlovsky N, Degenhart AD, Marino P, *Batista AP, *Chase SM (2019) Monkeys choke under pressure. SfN annual meeting.
45. Jeon BB, *Chase SM, *Kuhlman SJ (2019) Use of optical brain computer interface to identify neural strategies underlying new skill acquisition and performance following extended practice. SfN annual meeting.
46. Herrera AJ, Gaunt RA, Boninger ML, Batista AP, Yu BM, Chase SM, Collinger JL (2019) The influence of object presence on M1 activity during movement planning and execution. SfN annual meeting.
47. Fitzgerald J, Zhou W, Chase SM, Joiner WM (2019) Sensory dissociation reveals postural influences on motor adaptation. SfN annual meeting.
48. +Stan PL, +Kauttonen J, Jeon BB, Fuchs T, Chase SM, Lee TS, Kuhlman SJ (2019) Impact of standard experience on tuning diversity and natural scene discrimination in primary visual cortex. SfN annual meeting.
49. Bahureksa L, Joiner WM, Chase SM (2019) Influence of movement workspace on M1 neural representations of arm movement. CMU BME Forum.
50. Koh TH, Bishop WE, *Chase SM, *Yu BM (2019) Simultaneous dimensionality reduction and deconvolution of calcium imaging activity. CMU BME Forum.
51. Jeon BB, *Chase SM, *Kuhlman SJ (2019) Well-trained mice maintain distinct but multiple neural strategies to solve a task. CNBC Retreat.
52. Koh TH, Bishop WE, *Chase SM, *Yu BM (2019) Simultaneous dimensionality reduction and deconvolution of calcium imaging activity. SAND 9 Workshop.
53. Jeon BB, Chase SM, Kuhlman SJ (2019) Feature selectivity is stable in primary visual cortex across a range of spatial frequencies. SAND 9 Workshop.
54. Fisac CF and Chase SM (2019) Sensory context interferes with volitional modulation of single neurons. NCM annual meeting.
55. Pavlovsky N, Degenhart A, Marino P, *Batista A, *Chase SM (2019) Monkeys choke under pressure. Brain initiative PI meeting.
56. Collinger JL, Batista AP, Boninger ML, Herrera AJ, Chase SM, Gaunt RA, Karapetyan V, Loughlin P, Tyler-Kabara E, Yu BM (2019) Context-dependent processing in sensorimotor cortex. Brain Initiative PI meeting.

57. Herrera AJ, Downey JE, Gaunt RA, Boninger ML, Batista AP, Yu BM, **Chase SM**, Collinger JL (2019) Object presence changes latent neural activity in motor cortex during reaching. Brain Initiative PI meeting.

2018

58. Nguyen KP, Sharma A, Liu J, Gil-Silva MR, Maheshwari N, *Gittis AH, ***Chase SM** (2018) Mice learn to modulate intra-and inter-limb paw kinematics with training on a novel locomotor behavioral paradigm. SfN annual meeting.
59. Herrera AJ, Degenhart AD, Bishop WE, Oby ER, Tyler-Kabara EC, **Chase SM**, Batista AP, Yu BM, Collinger JL (2018) Neural signal stabilization improves human intracortical BCI control. SfN annual meeting.
60. Whitford AD, **Chase SM**, Schwartz AB (2018) Patterns of cortical population activity during intentional control of single neurons. SfN annual meeting.
61. Fisac CF and **Chase SM** (2018) Dissociating volitional and non-volitional drivers of activity in M1. CMU BME Forum.
62. Nguyen KP, Sharma A, Liu J, Gil-Silva MR, Maheshwari N, *Gittis AH, ***Chase SM** (2018). Mice learn to modulate intra-and inter-limb paw kinematics with training on a novel locomotor behavioral paradigm. CMU BME Forum.
[Winner, best poster award.]
63. Bahureksa L, Joiner W, **Chase SM** (2018) Comparing M1 neural reorganization during contralateral and ipsilateral visuomotor rotation learning. CMU/Pitt Neuro-Learning Workshop.
64. ⁺Degenhart A, ⁺Bishop W, Oby E, Tyler-Kabara E, ***Chase SM**, *Batista AP, *Yu BM (2018) A stabilized brain-computer interface based on neural manifold alignment. CMU/Pitt Neuro-Learning Workshop.
65. Oby E, Golub M, Hennig J, Degenhart A, Tyler-Kabara E, *Yu B, ***Chase SM**, *Batista A (2018). Long term learning can change neural covariability. CMU/Pitt Neuro-Learning Workshop.
66. Nguyen KP, Sharma A, Liu J, Gil-Silva MR, Maheshwari N, *Gittis AH, ***Chase SM** (2018). Mice learn to modulate intra-and inter-limb paw kinematics with training on a novel locomotor behavioral paradigm. CMU/Pitt Neuro-Learning Workshop.
67. Bishop W, Crowder E, Zandvakili A, Zhou X, **Chase SM**, Kohn A, Olson C, and Yu B (2018). Leveraging low-dimensional structure in neural population activity to combine neural recordings. CMU/Pitt Neuro-Learning Workshop.
68. Herrera AJ, Downey JE, Moran DE, Batista AP, **Chase SM**, Yu BM, Boninger ML, Gaunt RA, Collinger JL (2018) Population-level changes in primary motor cortex induced by the presence of an object. BCI 2018.
69. **Chase SM** and Collinger JL (2018) Practical uses of manifolds. M5: Midwest Monkey Manifolds for Movement Meeting.
70. **Chase SM** (2018) BCI learning: fast and slow. Part of a panel: Torres-Oviedo G, Haith A, Penhune V, **Chase SM** (2018) The role of practice in motor learning: from sensorimotor adaptation to mastering de-novo skills. NCM annual meeting.

71. Jeon BB, **Chase SM**, Kuhlman SJ (2018) Feature selectivity is stable in primary visual cortex across a range of spatial frequencies. Cold Spring Harbor Neural Circuits meeting.
72. Oby E, Golub M, Hennig J, Degenhart A, Tyler-Kabara E, *Yu B, ***Chase SM**, *Batista A (2018). Learning can change neural covariability. Brain initiative PI meeting.
73. Oby E, Golub M, Hennig J, Degenhart A, Tyler-Kabara E, *Yu B, ***Chase SM**, *Batista A (2018). Learning can generate new patterns of neural population activity. Cosyne annual meeting. [Accepted as a talk: 4% acceptance rate.]
74. Bishop W, Crowder E, Zandvakili A, Zhou X, **Chase SM**, Kohn A, Olson C, and Yu B (2018). Leveraging low-dimensional structure in neural population activity to combine neural recordings. Cosyne annual meeting.

2017

75. Bahureksa L, Joiner W, **Chase SM** (2017) Comparing M1 neural reorganization during contralateral and ipsilateral visuomotor rotation learning. SfN annual meeting.
76. Zhou W, Colucci-Chang K, **Chase SM**, Joiner WM (2017) Dissociating the influence of postural and visual shifts on the transfer of motor adaptation to novel workspace locations. SfN annual meeting.
77. Jeon B, Quick K, **Chase SM**, Kuhlman SF (2017) Stability of orientation and spatial frequency tuning in mouse primary visual cortex. SfN annual meeting.
78. Stan P, Kauttonen J, Jeon B, **Chase SM**, Lee TS, Kuhlman SF (2017) Primary visual cortex encodes orientation-invariant attributes of complex images. SfN annual meeting.
79. ⁺Bishop W, ⁺Degenhart A, Oby ER, Tyler-Kabara EC, Batista AP, ***Chase SM**, *Yu BM (2017) Extracting stable representations of neural population state from unstable neural recordings. SAND 8 Workshop.
80. Joiner WM, Colucci-Chang K, Zhou W, and **Chase SM** (2017) Dissociating the influence of postural and visual shifts on the transfer of motor adaptation to novel workspace locations. NCM annual meeting.
81. Hennig JA, Golub MD, Lund PJ, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, *Yu BM, ***Chase SM** (2017) Predicting neural activity in behaviorally irrelevant dimensions. Cosyne annual meeting.
82. ⁺Bishop W, ⁺Degenhart A, Oby ER, Tyler-Kabara EC, ***Chase SM**, *Batista AP, *Yu BM (2017) Extracting stable representations of neural population state from unstable neural recordings. Cosyne annual meeting.
83. Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, ***Chase SM**, *Yu BM (2017) Learning by neural reassociation. Cosyne annual meeting.

2016

84. Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, ***Chase SM**, *Yu BM (2016) Learning by neural reassociation. Brain-Initiative PI meeting.
85. Flesher SN, Downey JE, Weiss J, Tyler-Kabara EC, **Chase SM**, Schwartz AB, Boninger ML, Collinger JL, Gaunt RA (2016) Grasp Force Control with Somatosensory Feedback in a Brain-Computer Interface. Brain-Initiative PI meeting.

86. Hennig JA, Golub MD, Lund PJ, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, *Yu BM, *Chase SM (2016). Predicting neural activity in behaviorally irrelevant dimensions. SfN annual meeting.
87. Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, *Chase SM, *Yu BM (2016) Population-level changes in neural activity during learning. SfN annual meeting.
88. ⁺Degenhart A, ⁺Bishop W, Oby ER, Tyler-Kabara EC, Batista AP, *Chase SM, *Yu BM (2016). Self-recalibrating brain-computer interfaces based on population subspace alignment. SfN annual meeting.
89. Oby ER, Degenhart A, Tyler-Kabara E, Yu B, Chase SM, and Batista AP (2016) Learning to generate new patterns of neural activity. Brain Day, University of Pittsburgh.
90. ⁺Degenhart A, ⁺Bishop W, Oby ER, Tyler-Kabara EC, Batista AP, *Chase SM, *Yu BM (2016). Self-recalibrating brain-computer interfaces based on population subspace alignment. Brain Day, University of Pittsburgh.
91. Zhang Y and Chase SM (2016). A control-theoretic approach to brain-computer interface design. American Controls Conference 2016.
92. Chase SM (2016) Provably optimal design of intracortical BCI decoding algorithms. BCI 2016 workshop, “Algorithms and performance using implanted devices” organized by Chase, Batista, Yu, and Carmena.
93. Zhou X, Tien R, and Chase SM (2016) Distinct timescales of cortical reorganization in a long-term learning task. BCI 2016.
94. Golub MD, Chase SM, Batista AP, and Yu BM (2016) Brain-computer interfaces for dissecting cognitive processes underlying sensorimotor control. Complexity of Neural Computation and Cognition Workshop, Janelia Farms.
95. Oby ER, Degenhart A, Tyler-Kabara E, Yu B, Chase SM, and Batista AP (2016) Exploring learning-induced changes in neural population activity. NCM annual meeting.
96. Zhou X, Tien R, and Chase SM (2016) Distinct timescales of cortical reorganization in a long-term learning task. Cosyne annual meeting.
97. Bittner S, Williamson RC, Snyder AC, Litwin-Kumar A, Doiron B, *Chase SM, *Smith MA, and *Yu BM (2016) Effects of excitatory versus inhibitory neuron sampling on outputs of dimensionality reduction. Cosyne annual meeting.
98. Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, *Chase SM, and *Yu BM (2016) Learning engages both high- and low-covariance modes of neural population activity. Cosyne annual meeting.
99. Golub MD, Sadtler PT, Quick KM, Ryu SI, Tyler-Kabara EC, Batista AP, *Chase SM, and *Yu BM (2016) Population-level changes in neural activity during learning. Cosyne workshop, “Sensorimotor learning through multi-dimensional spaces” organized by Golub.

2015

100. Oby ER, *Chase SM, *Yu BM, *Batista AP (2015) Exploring learning-induced changes in neural manifolds. Brain Initiative PI meeting.

101. Zhou X, Tien R, and **Chase SM** (2015) Distinct timescales of cortical reorganization in a long-term learning task. TCMC workshop.
102. Alemayehu B, Pavlovsky N, Chiou J, **Chase SM**, and Batista AP (2015) Eye-centered tuning is weak in dorsal premotor cortex when monkeys are not trained to fixate. SfN annual meeting.
103. Zhou X, Tien R, and **Chase SM** (2015) Distinct timescales of cortical reorganization in a long-term learning task. SfN annual meeting.
104. Zhang Y and **Chase SM** (2015) Recasting brain-machine interface design from a physical control system perspective. SAND 7 Workshop.
105. Matano F, **Chase SM**, Shalizi C, and Ventura V (2015). Improved kinematic models for decoding neural activity. SAND 7 Workshop.
106. Golub MD, *Yu BM, and ***Chase SM** (2015) Internal models for interpreting neural population activity during sensorimotor control. McGovern Institute Spring Symposium.
107. Golub MD, *Yu BM, and ***Chase SM** (2015) Internal models for interpreting neural population activity during sensorimotor control. Cosyne annual meeting.

2014

108. Kappel D, Pecevski D, Whitford AS, **Chase SM**, Maass W (2014). Stochastic motor control as probabilistic inference in spiking neural networks with noise. SfN annual meeting.
109. Rasmussen RG, **Chase SM**, Schwartz AB (2014). Limits on transmission of information in primary motor cortex during multidimensional reaches. SfN annual meeting.
110. Suway SB, McMorland AJC, Fraser GW, Sohn JW, **Chase SM**, Liu Z, Velliste M, Kass RE, Schwartz AB (2014) Short time-scale stability of directional tuning in motor cortex measured using maximum likelihood estimation. SfN annual meeting.
111. Rasmussen RG, Swartz AB, and **Chase SM** (2014). Dynamic range adaptation in motor cortical neurons. Cosyne annual meeting.

2013

112. Perel S, Sadtler PT, Ryu SI, Batista AP, **Chase SM** (2013). Tuning to reach kinematics of single-unit activity, threshold-crossings, and local field potentials in motor cortex. SfN annual meeting.
113. Alemayehu B, Pavlovsky N, Tyler-Kabara EC, **Chase SM**, Batista A (2013). Neurons in monkey dorsal premotor cortex are weakly sensitive to eye position when gaze fixation is untrained. SfN annual meeting.
114. Zhang Y and **Chase SM** (2013) A stabilized dual Kalman filter for adaptive tracking of brain-computer interface decoding parameters. EMBC.
115. Perel S, Sadtler PT, Godlove JM, Ryu SI, Wang W, Batista AP, **Chase SM** (2013) Direction and speed tuning of motor-cortex multi-unit activity and local field potentials during reaching movements. EMBC.

2012

116. Todorova S, **Chase SM**, Ventura V (2012). Simple automatic spike sorting can improve the efficiency of decoding from neuron spike trains. WiML 2012, Lake Tahoe, NV.

117. Todorova S, **Chase SM**, Ventura V (2012). Model-Based Clustering of non-Poisson, non-homogenous Point Processes Events with Application to Neuroscience. 7th Annual Machine Learning Workshop of the NYAS. New York, NY.
118. Golub MD, *Yu BM, and ***Chase SM** (2012) Internal models engaged by brain-computer interface control. SfN annual meeting.
119. Zhang Y, Schwartz AB, **Chase SM**, and Kass RE (2012) Bayesian learning in assisted brain-computer interface tasks. EMBC.
120. Golub MD, *Yu BM, and ***Chase SM** (2012) Internal models engaged by brain-computer interface control. EMBC.
121. Golub MD, Yu BM, Schwartz AB, and **Chase SM** (2012) Enhanced stability of cursor stopping in brain-computer interfaces. EMBC.
122. Todorova S, **Chase SM**, and Ventura V (2012) Model-Based Clustering of non-Poisson, non-homogenous Point Processes Events with Application to Neuroscience. Classification Society Annual Meeting.
123. Golub MD, ***Chase SM**, and *Yu BM (2012) Internal model estimation for closed-loop brain-computer interfaces. Young Investigator Talk, SAND 6 Workshop.
124. Todorova S, **Chase SM**, and Ventura V (2012) Simple automatic spike sorting methods improve decoding accuracy in a 3D movement task. SAND 6 Workshop.
125. Zhang Y, Schwartz AB, **Chase SM**, and Kass RE (2012) Bayesian learning in assisted brain-computer interface tasks. SAND 6 Workshop.
126. Golub MD, ***Chase SM**, and *Yu BM (2012) Internal model estimation for feedback control in brain-computer interfaces. Cosyne annual meeting & Machine Learning, Statistical Inference, and Neuroscience, Janelia Farms.

2011

127. Rao H, Schwartz AB, and **Chase SM** (2011) Adaptation to visuomotor gains applied through a brain-computer interface. SfN annual meeting.
128. Golub MD, Yu BM, Schwartz AB, and **Chase SM** (2011) Improving cursor stops in closed-loop brain-computer interfaces by leveraging trajectory curvature. SfN annual meeting.

2010

129. **Chase SM**, Whitford AS, Kass RE, and Schwartz AB (2010) Operant conditioning to identify volitionally controllable patterns of neural activity. SfN annual meeting.
130. Whitford AS, **Chase SM**, and Schwartz AB (2010) Coordination and control of cortical activity patterns identified via operant conditioning. SfN annual meeting.
131. McMorland AJC, Liu Z, **Chase SM**, Velliste M, Kass RE, and Schwartz AB (2010) Towards better prediction of temporal dynamics of M1 firing rates during reaching. SfN annual meeting.
132. **Chase SM**, Kass RE, and Schwartz AB (2010) Differentiating global and local adaptation responses to visuomotor rotations of a brain-computer interface. CNS10 Workshop.
133. **Chase SM** (2010) Separating intention from action in motor cortical tuning curves. Young Investigator Talk, SAND 5 Workshop.

2009

134. Legenstein R, **Chase SM**, Schwartz AB, and Maass W (2009) A reward-modulated Hebbian learning rule can explain experimentally observed network reorganization in a brain control task. NIPS
135. **Chase SM**, Schwartz AB, and Kass RE (2009) Adaptive gain modulation in the motor system observed through a brain-computer interface. SfN annual meeting.
136. Whitford AS, **Chase SM**, and Schwartz AB (2009) Task-specific tuning properties of motor cortical units used to control a brain-computer interface. SfN annual meeting.
137. Fraser GW, **Chase SM**, Koyama S, Kass RE, and Schwartz AB (2009) Important and unimportant factors for neural prosthetic control. SfN annual meeting.
138. **Chase SM**, Schwartz AB, and Kass RE (2009) Computational approaches for investigating network adaptive behavior in a brain-computer interface. BMES annual meeting.
139. **Chase SM**, Kass RE, and Schwartz AB (2009) Recent advances in neural prosthetic control. BMES annual meeting.
140. Schwartz AB, Kass RE, and **Chase SM** (2009) Learning and decoding in a multielectrode brain-machine interface paradigm. CRCNS PI meeting.
141. Koyama S, **Chase SM**, Whitford A, Velliste M, Schwartz AB, and Kass RE (2009) Comparison between decoding algorithms in open-loop and closed-loop performance. Cosyne annual meeting.

2008

142. **Chase SM**, Kass RE, and Schwartz AB (2008) A framework for modeling the closed-loop performance of brain-computer interface algorithms. SfN annual meeting.
143. Legenstein R, **Chase SM**, Schwartz AB, and Maass W (2008) A model for learning effects in motor cortex that may facilitate the brain control of neuroprosthetic devices. SfN annual meeting.
144. Koyama S, Whitford A, **Chase SM**, Velliste M, Schwartz AB, and Kass RE (2008) Recursive Bayesian algorithms for real-time cortical control of 3D neuroprosthetic devices. SfN annual meeting.
145. **Chase SM**, Schwartz AB, and Kass RE (2008) General adaptation strategies used to compensate for perturbations of a brain-computer interface. SAND 4 Workshop.

pre-2008

146. **Chase SM**, Fraser GW, Kass RE, and Schwartz AB (2007) Neural adaptation to a 3-dimensional, rotation perturbation in a closed loop brain-computer interface. SfN annual meeting.
147. **Chase SM**, Kass RE, and Schwartz AB (2007) BCI – A novel paradigm for studies of neural plasticity. BMES annual meeting.
148. **Chase SM**, Fraser GW, Kass RE, and Schwartz AB (2007) Neural adaptation to a 2-dimensional rotation perturbation in a closed loop brain-computer interface. CRCNS PI meeting.

149. **Chase SM** and Young ED (2006) Using a population reference for stimulus onset time in first spike latency coding. Cosyne annual meeting.
150. **Chase SM** and Young ED (2005) Spike timing dependent information on sound location in the inferior colliculus. SfN annual meeting.
151. **Chase SM** and Young ED (2005) The representation of sound location information among neural populations in the inferior colliculus ARO 28th midwinter meeting.
152. **Chase SM** and Young ED (2004) The processing of sound location cues by classes of units in the inferior colliculus. ARO 27th midwinter meeting.