

# Jonathan S. Brumberg

## Curriculum Vitae

October 2018

Address: Department of Speech-Language-Hearing: Sciences & Disorders  
University of Kansas  
3001 Dole, 1000 Sunnyside Ave., Lawrence, KS 66045  
Phone: (785) 864-1061  
Email: brumberg@ku.edu

### Education

- 2003–2008 Ph.D. Cognitive and Neural Systems Boston University, Boston, MA  
Thesis: *“An electrophysiological investigation of human motor cortex and its application to speech restoration”*
- 1998–2002 B.S. Computer and Information Sciences University of Delaware, Newark, DE
- 1998–2002 B.A. Philosophy University of Delaware, Newark, DE

### Academic appointments

- 2012–present **Assistant Professor:** Department of Speech-Language-Hearing: Sciences & Disorders  
Intercampus Program in Communicative Disorders  
**Co-director:** Biobehavioral Technology Core, Kansas Intellectual and Developmental Disabilities Research Center (2015–present)  
**Courtesy Assistant Professor:** Department of Electrical Engineering and Computer Science, Department of Hearing and Speech [KUMC] (2013–present)  
**Affiliate Faculty:** Graduate Programs in Neuroscience, Bioengineering & Cognitive and Brain Sciences (Psychology), Biobehavioral Neurosciences in Communication Disorders (BNCD) Center, Child Language Doctoral Program (2013–present)  
**Director:** Speech and Applied Neuroscience Laboratory (2012–present)  
*University of Kansas, Lawrence, KS*
- 2011–2014 **Adjunct Professor:** Department of Electrical and Computer Engineering  
*Georgia Institute of Technology, Atlanta, GA*
- 2010–2012 **Research Assistant Professor:** Department of Speech, Language and Hearing Sciences; (2011–2012) Center for Computational Neuroscience and Neural Technology; (2010–2011) Department of Cognitive and Neural Systems;  
**Faculty Member:** Graduate Program for Neuroscience: Computational Neuroscience; Center of Excellence for Learning in Education, Science and Technology (CELEST)  
**Co-director** Neural Prosthesis Laboratory  
*Boston University, Boston, MA*
- 2008–2010 **Research Associate:** Department of Cognitive and Neural Systems  
*Boston University, Boston, MA*
- 2003–2008 **Research Assistant:** Department of Cognitive and Neural Systems  
*Boston University, Boston, MA*
- 2002–2003 **Research Assistant:** Psychology Department  
*Temple University, Philadelphia, PA*

### Consultant and scientific positions

- 2009–2013 **Research Consultant:** Communication Analysis and Design Laboratory (CADLAB)  
*Northeastern University, Boston, MA*
- 2008–2009 **Research Scientist**  
*Neural Signals, Inc., Duluth, GA*

## Courses taught

### University of Kansas: Department of Speech-Language-Hearing

SPLH 320 *The Communicating Brain*, 2014–2015

SPLH 462 *Principles of Speech Science: Anatomy & Physiology*, 2012–present

SPLH 852 *Augmentative and Alternative Communication*, 2012

AUD 940 / SPLH 764 *Seminar in Imaging*, 2013, 2015

AUD 816 / SPLH 764 *Speech Perception*, 2014, 2016–present

### Northeastern University, Department of Speech-Language Pathology and Audiology

Guest lecture in *Motor Speech Disorders*: Special lecture on brain implants for deep brain stimulation and brain-machine interfacing. Spring 2011

### Boston University, Department of Health Sciences

Guest lecture in *Introduction to Computational Neuroscience of Speech, Language and Hearing*: Special lecture on speech neuroscience & brain computer interfacing for speech, communication and control. Fall 2010

## Current research support

**NIH R01 DC016343-01A1, Principal Investigator (PI: J. Brumberg)** 07/01/2018 – 06/30/2023

National Institute of Deafness and Other Communication Disorders (NIDCD)

*A virtual vocal tract for speech output using non-invasive brain-computer interface*

**NIH U54 HD090216, Co-Director, Clinical Outcomes & Biobehavioral Technology Core (PI: J. Colombo)** 09/2016 – 08/2021

Eunice Kennedy Shriver National Institute of Child Health and Human Development

*Kansas Intellectual and Developmental Disabilities Research Center*

## Completed research support

**New Faculty General Research Fund (PI: J. Brumberg)** 09/12/2014 – 09/11/2016

University of Kansas

*Translating brain-computer interface research to commercial augmentative and alternative communication devices for clinical practice*

Funded amount: \$8000

**New Century Scholars Research Grant (PI: J. Brumberg)** 12/01/2015 – 11/31/2016

American Speech-Language-Hearing Foundation

*Evaluating control of commercial AAC devices via brain-computer interface by individuals with neuromotor deficits*

Funded amount: \$25,000 total costs, 1 year

**NIH R21 DC013095, Co-Investigator (PI: R. Patel)** 12/01/2013 – 11/30/2015

National Institute of Deafness and Other Communication Disorders (NIDCD)

*Prosody in congenital and acquired dysarthria*

Subcontract funded amount: \$59,947 TDC, 2 years

**NIH R03 DC011304, Principal Investigator (PI: J. Brumberg)** 09/21/2011 – 08/31/2014

National Institute of Deafness and Other Communication Disorders (NIDCD)

*Investigating output modality for a brain-computer interface for communication*

Funded amount: \$300,000 TDC, 3 years

**NSF SMA-0835976, Sub-contract (PI: B. Shinn-Cunningham)** 03/01/2013 – 02/28/2015

National Science Foundation

*Subcontract for developing sensorimotor rhythm functionality for Unlock Framework, supported by*

*NSF Science of Learning Center: CELEST under ABCI capstone*

Subcontract funded amount: \$26,041 TDC, 2 years

**Mentored student funding**

<b>Astronaut Scholarship (B. Marsh, Neuroscience)</b> Astronaut Scholarship Foundation	May 2018
<b>Research Mentoring Pair Travel Award (J. Kidwai, SPLH &amp; J. Brumberg)</b> American Speech-Language-Hearing Association <i>Funded amount: \$750 (J. Kidwai), \$250 (J. Brumberg)</i>	ASHA 2018
<b>Summer Research Scholarship (K. Pitt, SPLH)</b> University of Kansas Trialing brain-computer interfaces for augmentative and alternative communication: Evaluating BCI learning and changes in personal preference <i>Funded amount: \$5000</i>	Summer 2018
<b>Undergraduate Research Award (B. Marsh, Neuroscience)</b> University of Kansas <i>The Role of the CNV in Intent to Speak</i> <i>Funded amount: \$1000</i>	Spring 2018
<b>Collaborative Research Experiences for Undergraduates (CREU)</b> <b>Erick Oduniyi &amp; Rebekah Manweiller</b> Computing Research Association - Women (CRA-W) & Institute for African-American Mentoring in Computing Sciences (iAAMCS) <i>Funded amount: \$3000 / student (co-mentoring 2 students)</i>	2017–2018
<b>Student Research Travel Award for ASHA Convention (K. Pitt, SPLH)</b> American Speech-Language-Hearing Association Highest-rated student authored paper in Motor Speech: “Inter-Institutional, Cutting Edge ALS Research Across the Disease Course, From Motor Speech to AAC BCI” <i>Funded amount: \$500</i>	ASHA 2016
<b>Doctoral Student Research Fund (J. Burnison, NURO)</b> University of Kansas Effects of stimuli relevance on auditory driven brain-computer interface <i>Funded amount: \$1800</i>	Spring 2016
<b>Undergraduate Research Award (S. Stasi, SPLH)</b> University of Kansas <i>Effect of Glottal Source Characteristics on Speech Perception</i> <i>Funded amount: \$2000 (\$1000 per sem)</i>	Spring 2016, Fall 2016
<b>Undergraduate Research Award (J. Marple, EECS)</b> University of Kansas <i>An Alternative Eye Tracking System</i> <i>Funded amount: \$2000 (\$1000 per sem)</i>	Spring 2015, Fall 2015
<b>Graduate Research Consultant (N. Castro, Psychology)</b> University of Kansas <i>SPLH 320: The Communicating Brain</i> <i>Funded amount: \$500</i>	Spring 2015
<b>Graduate Research Consultant (J. Burnison, Neuroscience)</b> University of Kansas <i>SPLH 462: Speech Science, Anatomy &amp; Physiology</i> <i>Funded amount: \$500</i>	Fall 2015
<b>NIH F31 DC011663, Co-sponsor (candidate: E. Stephen)</b> National Institute of Deafness and Other Communication Disorders (NIDCD) <i>Decoding imagined vowel productions using electroencephalography</i> Sponsor: F. Guenther	08/01/2011 – 05/31/2014

## Publications

† Authors contributed equally

\* Student author

## Refereed research papers

1. \*Pitt, K. M. and Brumberg, J. S. (in press). A Screening Protocol Incorporating Brain-Computer Interface Feature Matching Considerations for Augmentative and Alternative Communication. *Assistive Technology*.
2. Brumberg, J. S., Thorson, J. C., and Patel, R. (in press). The Prosodic Marionette: a method to visualize speech prosody and assess perceptual and expressive prosodic abilities. *Speech Communication*. doi: 10.1016/j.specom.2018.09.009.
3. \*Pitt, K. M. and Brumberg, J. S. (2018). Guidelines for Feature Matching Assessment of Brain-Computer Interfaces for Augmentative and Alternative Communication. *American Journal of Speech-Language Pathology* 27(3), 950–964. doi: 10.1044/2018\_AJSLP-17-0135.
4. Brumberg, J. S., \*Nguyen, A., \*Pitt, K. M., and \*Lorenz, S. D. (2018). Examining sensory ability, feature matching, and assessment-based adaptation for a brain-computer interface using the steady-state visually evoked potential. *Disability and Rehabilitation: Assistive Technology*, 1–9. doi: 10.1080/17483107.2018.1428369.
5. Brumberg, J. S., \*Pitt, K. M., and \*Burnison, J. D. (2018). A non-invasive brain-computer interface for real-time speech synthesis: the importance of multimodal feedback. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 26(4), 874–881. PMID: PMC5906041. doi: 10.1109/TNSRE.2018.2808425.
6. Brumberg, J. S., \*Pitt, K. M., Mantie-Kozlowski, A., and \*Burnison, J. D. (2018). Brain-Computer Interfaces for Augmentative and Alternative Communication: A Tutorial. *American Journal of Speech-Language Pathology* 27(1), 1–12. PMID: In Process. doi: 10.1044/2017\_AJSLP-16-0244.
7. Schultz, T., Wand, M., Hueber, T., Krusienski, D., and Brumberg, J. (2017). Biosignal-based Spoken Communication: A Survey. *IEEE Transactions on Audio, Speech and Language Processing* 25(17), 2257–2271. doi: 10.1109/TASLP.2017.2752365.
8. Brumberg, J. S., Krusienski, D. J., Chakrabarti, S., Gunduz, A., Brunner, P., Ritaccio, A. L., and Schalk, G. (2016). Spatio-temporal Progression of Cortical Activity Related to Continuous Overt and Covert Speech Production in a Reading Task. *PLoS ONE* 11(11), e0166872. PMID: PMC5119784. doi: 10.1371/journal.pone.0166872.
9. \*Chakrabarti, S., \*Sandberg, H. M., Brumberg, J. S., and Krusienski, D. J. (2015). Progress in speech decoding from the electrocorticogram. *Biomedical Engineering Letters* 5(1), 10–21. doi: 10.1007/s13534-015-0175-1.
10. †Lotte, F., †Brumberg, J. S., Brunner, P., Gunduz, A., Ritaccio, A. L., Guan, C., and Schalk, G. (2015). Electrocorticographic representations of segmental features in continuous speech. *Frontiers in Human Neuroscience* 9(97), 1–13. PMID: PMC4338752. doi: 10.3389/fnhum.2015.00097.
11. \*Stephen, E., LePage, K. Q., Eden, U. T., Brumberg, J. S., Guenther, F. H., and Kramer, M. A. (2014). Assessing dynamics, spatial scale, and uncertainty in task-related brain network analyses. *Frontiers in Computational Neuroscience* 8(31). PMID: PMC3958753. doi: 10.3389/fncom.2014.00031.
12. Terband, H., Maassen, B., Guenther, F. H., and Brumberg, J. S. (2014). Neurocomputational modeling of speech motor control in developmental speech disorders: testing hypotheses about underlying neurological mechanisms. *Journal of Communication Disorders* 47, 17–33. PMID: PMC3971843. doi: 10.1016/j.jcomdis.2014.01.001.
13. Brumberg, J. S., Wright, E. J., Andreasen, D. S., Guenther, F. H., and Kennedy, P. R. (2011). Classification of intended phoneme production from chronic intracortical microelectrode recordings in speech-motor cortex. *Frontiers in Neuroscience* 5, 65. PMID: PMC3096823. doi: 10.3389/fnins.2011.00065.
14. Maguire, M. J., Brumberg, J., Ennis, M., and Shipley, T. F. (2011). Similarities in Object and Event Segmentation: A Geometric Approach to Event Path Segmentation. *Spatial Cognition & Computation* 11(3), 254–279. doi: 10.1080/13875868.2011.566955.
15. Brumberg, J., Nieto-Castanon, A., Kennedy, P., and Guenther, F. (2010). Brain-computer interfaces for speech communication. *Speech Communication* 52(4), 367–379. PMID: PMC2829990. doi: 10.1016/j.specom.2010.01.001.
16. Brumberg, J. S. and Guenther, F. H. (2010). Development of speech prostheses: current status and recent advances. *Expert Review of Medical Devices* 7(5), 667–79. PMID: PMC2953242. doi: 10.1586/erd.10.34.
17. Denby, B., Schultz, T., Honda, K., Hueber, T., Gilbert, J., and Brumberg, J. (2010). Silent speech interfaces. *Speech Communication* 52(4), 270–287. doi: DOI: 10.1016/j.specom.2009.08.002.

18. Guenther, F. H., Brumberg, J. S., Wright, E. J., Nieto-Castanon, A., Tourville, J. A., Panko, M., Law, R., Siebert, S. A., Bartels, J. L., Andreasen, D. S., Ehirim, P., Mao, H., and Kennedy, P. R. (2009). A Wireless Brain-Machine Interface for Real-Time Speech Synthesis. *PLoS ONE* 4(12), e8218. PMID: PMC2784218. doi: 10.1371/journal.pone.0008218.
19. Terband, H., Maassen, B., Guenther, F. H., and Brumberg, J. (2009). Computational Neural Modeling of Speech Motor Control in Childhood Apraxia of Speech (CAS). *Journal of Speech Hearing and Language Research* 52(6), 1595–1609. PMID: PMC2959199. doi: 10.1044/1092-4388(2009/07-0283).

### Papers in conference proceedings

1. Brumberg, J. S., \*Burnison, J. D., and \*Pitt, K. M. (2016). Using motor imagery to control brain-computer interfaces for communication. In: *Foundations of Augmented Cognition: Neuroergonomics and Operational Neuroscience*. Ed. by D. Schmorrow and C. Fidopiastis. Toronto, Canada: Springer International Publishing Switzerland.
2. Brumberg, J. S., \*Castro, N., and \*Rao, A. (2015). Temporal dynamics of the speech readiness potential, and its use in a neural decoder of speech-motor intention. In: *16th Annual Conference of the International Speech Communication Association (INTERSPEECH 2015)*. Dresden, Germany.
3. Brumberg, J. S., Lorenz, S. D., Galbraith, B. V., and Guenther, F. H. (2012). The Unlock Project: A Python-based framework for practical brain-computer interface communication “app” development. In: *Proceedings of the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '12)*. San Diego, CA. doi: 10.1109/EMBC.2012.6346473. PMID: PMC3694612.
4. Guenther, F. H. and Brumberg, J. S. (2011). Brain-machine interfaces for real-time speech synthesis. In: *Proceedings of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11)*. Boston, MA. doi: 10.1109/IEMBS.2011.6091326. PMID: PMC3637898.
5. Matthews, B., Kim, J., Brumberg, J. S., and Clements, M. (2010). A Probabilistic Decoding Approach to a Neural Prosthesis for Speech. In: *2010 4th International Conference on Bioinformatics and Biomedical Engineering*. IEEE, pp.1–4. doi: 10.1109/ICBBE.2010.5515784.
6. Brumberg, J. S., Kennedy, P. R., and Guenther, F. H. (2009). Artificial speech synthesizer control by brain-computer interface. In: *10th Annual Conference of the International Speech Communication Association (Interspeech 2009)*. Brighton, U.K.: International Speech Communication Association.

### Papers in review and preparation

1. Brumberg, J. S. and \*Pitt, K. M. (in revision). Motor induced suppression of the N100 ERP during motor-imagery control of a speech synthesizer brain-computer interface.
2. \*Pitt, K. M., Brumberg, J. S., and \*Pitt, A. R. (in review). Considering Augmentative and Alternative Communication Research for Brain-Computer Interface Practice.

### Book chapters

1. Brumberg, J. S., \*Burnison, J. D., and Guenther, F. H. (2016). “Brain-machine interfaces for speech restoration”. In: *Speech motor control in normal and disordered speech: future developments in theory and methodology*. Ed. by P. Van Lieshout, B. Maassen, and H. Terband. Rockville, MD: ASHA Press, pp.275–304.
2. Brumberg, J. S., Guenther, F. H., and Kennedy, P. R. (2013). “An auditory output brain-computer interface for communication”. In: *The State of the Art in BCI Research*. Ed. by C. Guger, B. Z. Allison, and G. Edlinger. Springer.

### Posters & Abstracts

1. Brumberg, J. S. and Biro, T. (2018). Decoding articulatory information from electrocorticography during speech production. In: *2018 Motor Speech Conference*. Savannah, GA.
2. Brumberg, J. S. and Pitt, K. M. (2018). Motor induced suppression of the N100 ERP during motor-imagery while controlling a speech synthesizer brain-computer interface. In: *2018 Motor Speech Conference*. Savannah, GA.
3. Kidwai, J., Marsh, B., and Brumberg, J. S. (2018). Can CNV indicate speech intention in aphasia. In: *American Speech-Language-Hearing Association Convention 2018*. Boston, MA.
4. Pitt, K. and Brumberg, J. S. (2018). Brain-computer interfaces for AAC: Addressing Training Needs for Moving From Bench to Bedside. In: *American Speech-Language-Hearing Association Convention 2018*. Boston, MA.

5. Pitt, K. and Brumberg, J. S. (2017). A multidisciplinary feature matching based assessment protocol for evaluation across varied AAC brain-computer interfaces. In: *American Speech-Language-Hearing Association Convention 2017*. Los Angeles, CA.
6. Pitt, K., Zarifa, K., Brumberg, J. S., and Brady, N. (2017). Clinically translating AAC brain-computer interface training protocols by utilizing single-subject design and motor-imagery techniques. In: *American Speech-Language-Hearing Association Convention 2017*. Los Angeles, CA.
7. Brumberg, J. S., Burnison, J. D., and Pitt, K. M. (2016). Development of a Real Time Speech Synthesizer Based Brain Computer Interface. In: *Sixth International Brain-Computer Interface Meeting*. Pacific Grove, CA.
8. Brumberg, J. S., Thorson, J. C., Pitt, K. M., and Patel, R. (2016). Speech & non-speech motor control of prosody by individuals with congenital & acquired dysarthria. In: *American Speech-Language-Hearing Association Convention 2016*. Philadelphia, PA.
9. Burnison, J. D. and Brumberg, J. S. (2016). Effects of Stimuli Relevance on Auditory BCI. In: *Sixth International Brain-Computer Interface Meeting*. Pacific Grove, CA.
10. Masterson, C., Pitt, K. M., and Brumberg, J. S. (2016). Motor-imagery performance by individuals with neuromotor deficits for application to AAC brain-computer interface intervention. In: *American Speech-Language-Hearing Association Convention 2016*. Philadelphia, PA.
11. Pitt, K. M., Brumberg, J. S., and Masterson, C. (2016). Development of a clinical decision tree to assess user candidacy for brain-computer interfaces for AAC. In: *American Speech-Language-Hearing Association Convention 2016*. Philadelphia, PA.
12. Pitt, K. M., Burnison, J. D., and Brumberg, J. S. (2016). Brain Computer Interfaces as a New AAC Access Modality for Individuals with Advanced Paralysis. In: *Sixth International Brain-Computer Interface Meeting*. Pacific Grove, CA.
13. Thorson, J., Brumberg, J. S., and Patel, R. (2016). Prosodic Abilities in Individuals with Congenital versus Acquired Dysarthria. In: *2016 Motor Speech Conference*. Newport Beach, CA.
14. Pitt, K. M., Brumberg, J. S., Burnison, J. D., and Duff, J. (2015). CNV potentials during overt & covert hand movements for use in communicative brain-computer interfaces. In: *American Speech-Language-Hearing Association Convention 2015*. Denver, CO.
15. Salazar, T. and Brumberg, J. S. (2015). Effects of glottal source modulation on speech perception and production. In: *Neuroscience Meeting Planner 2015*. Chicago, IL.
16. Brumberg, J. S. and Burnison, J. (2014). Auditory and phonetic contributions to the neural mechanisms underlying vowel perception. In: *167th Meeting of the Acoustical Society of America*. Providence, RI.
17. Brumberg, J. S. and Nguyen, A. (2014). Effects of operational competency & environmental distractors on a brain-computer interface. In: *American Speech-Language-Hearing Association Convention 2014*. Orlando, FL.
18. Burnison, J. D. and Brumberg, J. S. (2014). The mismatched negativity as a marker for acoustic and phonological distinctions between vowel sounds. In: *Neuroscience Meeting Planner 2014*. Washington, DC.
19. Castro, N. and Brumberg, J. S. (2014). Predicting speech onset using the bereitshaftspotential: An ERP application for brain-computer interfaces. In: *American Speech-Language-Hearing Association Convention 2014*. Orlando, FL.
20. Chakrabarti, S., Brumberg, J. S., Schalk, G., and Krusienski, D. J. (2014). Modeling the Mel Frequency Cepstral Coefficients of Continuous Speech from Electrographic High-Gamma Activity. In: *2014 Neural Interfaces Conference*. Dallas, TX.
21. Patel, R., Brumberg, J. S., Shattuck-Hufnagel, S., Velleux, N., and Usher, N. (2014). The developmental trajectory of linguistic prosody. In: *2014 Motor Speech Conference*. Sarasota, FL.
22. Chakrabarti, S., Brumberg, J. S., Gunduz, A., Brunner, P., Schalk, G., and Krusienski, D. J. (2013). Using ECoG gamma activity to model the mel-frequency cepstral coefficients of speech. In: *Fifth International Brain-Computer Interface Meeting*. Pacific Grove, CA.
23. Chakrabarti, S., Krusienski, D. J., Schalk, G., and Brumberg, J. S. (2013). Predicting mel-frequency cepstral coefficients from electrocorticographic signals during continuous speech production. In: *6th International IEEE EMBS Conference on Neural Engineering*. San Diego, CA.
24. Panko, M., Brincat, S., Salazar-Gómez, A., Jia, N., Brumberg, J. S., Kennedy, P. R., Miller, E., and Guenther, F. H. (2013). Comparison of invasive chronic electrodes for brain-computer interface applications. In: *Fifth International Brain-Computer Interface Meeting*. Pacific Grove, CA.

25. Stephen, E. P., LePage, K. Q., Eden, U. T., Brumberg, J. S., Guenther, F. H., and Kramer, M. A. (2013). Assessing dynamics, spatial scale, and uncertainty in task-related brain functional network analyses. In: *2013 Neuroscience Meeting Planner*. New Orleans, LA: Society for Neuroscience, 2013. Online.
26. Brumberg, J. S., Krusienski, D. J., and Schalk, G. (2012). Spatiotemporal dynamics of electrocorticographic high gamma activity during continuous overt and covert speech. In: *2012 Neural Interfaces Conference*. Salt Lake City, UT.
27. Brumberg, J. S., Salazar-Gomez, A., and Guenther, F. H. (2012). Controlling a formant synthesizer using a non-invasive brain-machine interface. In: *2012 Motor Speech Conference*. Santa Rosa, CA.
28. Galbraith, B. V., Brumberg, J. S., Lorenz, S. D., and Guenther, F. H. (2012). Unlock: A Python-based framework for rapid development of practical brain-computer interface applications. In: *Proceedings of the 11th Python in Science conference (SciPy 2012)*. Austin, TX.
29. Stephen, E. P., Kramer, M. A., LePage, K. Q., Eden, U. T., Brunner, P., Guenther, F. H., Schalk, G., and Brumberg, J. S. (2012). Characterizing the dynamically evolving functional networks of speech. In: *2012 Neuroscience Meeting Planner*. New Orleans, LA: Society for Neuroscience, 2012. Online.
30. Brumberg, J. S. and Guenther, F. H. (2011). A non-invasive brain-machine interface for control of a speech synthesizer. In: *Neuroscience Meeting Planner 2011*. Program No. 816.02. Washington, DC: Society for Neuroscience.
31. Panko, M., Brincat, S., Brumberg, J., Salazar-Gomez, A., Roy, J., Overduin, S., Kennedy, P., Miller, E. K., and Guenther, F. (2011). Signal stability in chronic invasive brain-machine interfaces. In: *Neuroscience Meeting Planner 2011*. Program No. 280.13. Washington, DC: Society for Neuroscience.
32. Stephen, E. P., Brumberg, J. S., and Guenther, F. H. (2011). Distinguishing imagined movement from rest using electroencephalography. In: *Neuroscience Meeting Planner 2011*. Program No. 711.05. Washington, DC: Society for Neuroscience.
33. Brumberg, J. S., Kim, J., Matthews, B., Wright, E. J., Guenther, F. H., Clements, M., and Kennedy, P. R. (2010). Evaluation of supervised classification techniques for direct phoneme prediction by a brain-computer interface. In: *Neuroscience Meeting Planner 2010*. Program No. 86.11. San Diego, CA: Society for Neuroscience.
34. Law, R., Brumberg, J., and Guenther, F. (2010). Nonlinear Bayesian filters for EEG-based speech prostheses. In: *Proceedings of the Fourteenth International Conference on Cognitive and Neural Systems (ICCN)*. Boston, MA.
35. Kennedy, P., Andreasen, D., Brumberg, J., Clements, M., Guenther, F., Kim, J., Matthews, B., Ramos, C., Velliste, M., and Wright, E. (2009). Human speech cortex [2]: Tuning of single units during listening and imagined singing of tones and musical notes using feedback. In: *Neuroscience Meeting Planner 2009*. Program No. 181.11. Chicago, IL USA: Society for Neuroscience.
36. Panko, M., Brumberg, J. S., Nieto-Castanon, A., Wright, E. J., Law, R., Kennedy, P. R., and Guenther, F. H. (2009). Decoding intended speech with a brain-machine interface utilizing a Neurotrophic Electrode. In: *Berlin Brain-Computer Interface Workshop: Advances in Neurotechnology, July 8-10, 2009*.
37. Velliste, M., Brumberg, J. S., Perel, S., Fraser, G. W., Spalding, M. C., Whitford, A. S., McMorland, A. J. C., Wright, E. J., Guenther, F. H., Kennedy, P. R., and Schwartz, A. B. (2009). Modular software architecture for neural prosthetic control. In: *Neuroscience Meeting Planner 2009*. Program No. 985.1. Chicago, IL USA: Society for Neuroscience.
38. Brumberg, J., Nieto-Castanon, A., Guenther, F., Bartels, J., Wright, E., Siebert, S., Andreasen, D., and Kennedy, P. (2008). Methods for construction of a long-term human brain machine interface with the Neurotrophic Electrode. In: *Neuroscience Meeting Planner 2008*. Program No. 779.5. Washington, DC: Society for Neuroscience.
39. Guenther, F., Brumberg, J., and Nieto-Castanon, A. (2008). A brain-computer interface for real-time speech synthesis by a locked-in individual implanted with a Neurotrophic Electrode. In: *Neuroscience Meeting Planner 2008*. Program No. 712.1. Washington, DC: Society for Neuroscience.
40. Terband, H., Maassen, B., Brumberg, J. S., and Guenther, F. H. (2008). Increased levels of neural noise as the core deficit in childhood apraxia of speech (CAS). In: *Conference on Motor Speech*. Monterey, CA.
41. Brumberg, J. S., Andreasen, D. S., Bartels, J. L., Guenther, F. H., Kennedy, P. R., Siebert, S. A., Schwartz, A. B., Velliste, M., and Wright, E. J. (2007). Human speech cortex long-term recordings [5]: formant frequency analyses. In: *Neuroscience Meeting Planner 2007*. Program No. 517.17. San Diego, CA.
42. Siebert, S. A., Andreasen, D. S., Bartels, J. L., Brumberg, J. S., Guenther, F. H., Kennedy, P. R., and Wright, E. J. (2007). Human speech cortex long-term recordings [1]: spike sorting and noise reduction. In: *Neuroscience Meeting Planner 2007*. Program No. 728.14. San Diego, CA: Society for Neuroscience.
43. Terband, H., Maassen, B., and Brumberg, J. (2007). Motor speech in adults and children: computational-neurological modeling of childhood apraxia of speech (CAS). In: *American Speech-Language-Hearing Association Conference 2007*. Boston, MA.

44. Wright, E. J., Andreasen, D. S., Bartels, J. L., Brumberg, J. S., Guenther, F. H., Kennedy, P. R., Miller, L., Rebesco, J., Schwartz, A. B., Siebert, S. A., and Velliste, M. (2007). Human speech cortex long-term recordings [3]: neural net analyses. In: *Neuroscience Meeting Planner 2007*. Program No. 517.18. San Diego, CA: Society for Neuroscience.
45. Shipley, T. F., Maguire, M. J., and Brumberg, J. (2004). Segmentation of event paths. *Journal of Vision* 4(8), 562–562. doi: 10.1167/4.8.562.
46. Shipley, T. F., Maguire, M. J., and Brumberg, J. S. (2003). Top down effects on search for biological motion. *Abstracts of the Psychonomics Society* 8(51).

### Tech reports & professional papers

1. Guenther, F. H. and Brumberg, J. S. (2013, January 01). Unchained Mind. *The ASHA Leader*, 48–53.
2. Brumberg, J. S., Kennedy, P. R., and Guenther, F. H. (2011). *An auditory output brain-computer interface for speech communication*. Tech. rep. BCI Award 2011.
3. Shipley, T. F. and Brumberg, J. S. (2003). *Markerless motion-capture for point-light displays*. Tech. rep. Philadelphia, PA: Temple University, Temple University Vision Laboratory.

### PhD thesis

1. Brumberg, J. (2008). “An electrophysiological investigation of human motor cortex and its application to speech restoration”. PhD thesis. Boston, MA, p. 147.

### Student advising and mentorship

#### Doctoral committees: chaired

Ph.D. Advisory chair	<u>Jeremy Burnison</u> . Neuroscience Graduate Program, University of Kansas. August 2012 – August 2015.
Ph.D. Advisory chair	<u>Kevin Pitt</u> . Intercampus Program in Communicative Disorders, University of Kansas. August 2014 – present
Ph.D. Comps chair	<u>Jeremy Burnison</u> . Neuroscience Graduate Program, University of Kansas. August 2015
PhD. Dissertation committee chair	<u>Jeremy Burnison</u> “Use of Task Relevant Stimuli in an Auditory Brain-Computer Interface” Graduate Neuroscience Program, University of Kansas. March 2017
Ph.D. Comps chair	<u>Kevin Pitt</u> . Intercampus Program in Communicative Disorders, University of Kansas. November 2017
Ph.D. Comps chair	<u>Shadi Pir Hosseinloo</u> . Electrical Engineering and Computer Science, University of Kansas. May 2018

#### Doctoral committees: non-chaired

Ph.D. Dissertation external committee member	<u>Brett Matthews</u> : “Probabilistic modeling of neural data for analysis and synthesis of speech.” Department of Electrical and Computer Engineering, Georgia Institute of Technology. August 2012
Ph.D. Dissertation 2 <sup>nd</sup> reader	<u>Sean Lorenz</u> : “Context-specific user interface design for a brain-computer communication device.” Program in Cognitive and Neural Systems, Boston University. August 2012
Ph.D. Dissertation 2 <sup>nd</sup> reader	<u>Robert Law</u> : “Calculation of synchronous activity on arbitrary networks of nonlinear cells with application to brain-computer interface design.” Program in Cognitive and Neural Systems, Boston University. December 2013
Ph.D. Dissertation external reviewer	<u>Kian Bee Ng</u> : “Visual Evoked Potential based brain-computer interface.” Queensland Brain Institute, University of Queensland. June 2013
Ph.D. Comps committee member	<u>Austin Oder</u> . Department of Speech-Language-Hearing, University of Kansas. October 2013
Ph.D. Comps committee member	<u>Heather Nelson</u> . Department of Music Education & Music Therapy, University of Kansas. December 2013



- Ph.D. Advisory committee member  
 Ph.D. Dissertation external reviewer  
 Au.D. Research advisor  
 Ph.D. Comps committee member  
 Ph.D. Comps committee member  
 Ph.D. Advisory external reviewer  
 Ph.D. Dissertation committee member  
 Ph.D. Dissertation external member  
 Ph.D. Comps committee member  
 Ph.D. Comps committee member  
 Ph.D. Comps committee member  
 Ph.D. Comps committee member  
 Ph.D. Advisory committee member  
 Ph.D. Dissertation outside member  
 PhD Comps outside member  
 Ph.D. Dissrtation committee member  
 PhD Comps outside member  
 Ph.D. Dissertation committee member  
 Ph.D. Advisory committee member  
 Ph.D. Qualifying committee member
- Nikki Go. Audiology, University of Kansas. January 2014 – April 2016
- Misha Panko: “Toward invasive brain-machine interfaces: comparing long-term implant technologies using information theory.” Graduate Program for Neuroscience, Boston University. April 2014
- Ashley Lombardi: “Effects of intensity on N100 cortical potentials to tonal and speech stimuli.” Intercampus Program in Communicative Disorders, University of Kansas. April 2014
- Gina DeBarthe. Department of Speech-Language-Hearing, University of Kansas. August 2014
- Amelia Rollings. Department of Music Education & Music Therapy, University of Kansas. December 2014
- Andrès Salazar-Gomez. Graduate Program for Neuroscience, Boston University.
- Amelia Rollings. “Head over heels: the effects of three heel heights on postural and acoustical measures of university femail voice majors, and measured relationships between heel height, pitch, vowel, behavior, head position, jaw opening and dB SPL.” Department of Music Education & Music Therapy, University of Kansas. May 2015
- Emily Stephen. “Characterizing dynamically evolving functional networks in humans with application to speech.” Graduate Program in Neuroscience, Boston University. August, 2015
- Hana Almohammad. Audiology, University of Kansas. December, 2015
- Stephanie Knollhoff. Intercampus Program in Communicative Disorders, University of Kansas. January, 2016
- Breanna Kruger. Intercampus Program in Communicative Disorders, University of Kansas. February, 2016
- Nikki Go Audiology, University of Kansas. April, 2016
- Corinne Walker. Intercampus Program in Communicative Disorders, Univeristy of Kansas. May 2016 – present.
- Heather Nelson. “The effects of actual recital hall and four digitally-produced variable practice room environments on phonatory, acoustical, and perceptual measures of vocal performances by experienced female singers” Department of Music Education & Music Therapy, University of Kansas. September 2016
- Alan Martin Department of Music Education & Music Therapy, University of Kansas. November 2016
- Hana Almohammad. “ANOW response recorded via electrocochleography in normal hearing adults” Audiology, University of Kansas. December 2016
- Nichol Castro Department of Psychology, University of Kansas. December 2016
- Breanna Krueger. “Age as a Factor in the Treatment of Late Acquired Sounds” Intercampus Program in Communicative Disorders, University of Kansas. May 2017
- Maxwell Murphy. Bioengineering Graduate Program. February 2017 – present
- Maxwell Murphy. Bioengineering Graduate Program. May 2017

Ph.D. Dissertation <i>outside member</i>	<u>Alan Martin</u> . "Time Use and Reported Perception of University Voice Students During Self-Guided Practice Sessions: A Quantitative Content Analysis" Department of Music Education & Music Therapy, University of Kansas. June 2017
Ph.D. Dissertation <i>committee member</i>	<u>Gina DeBarthe</u> . "The impact of Alternative & Augmentative Communication on the Utterance Length of Children with Limited Speech" Intercampus Program in Communicative Disorders, University of Kansas. August 2017
Ph.D. Dissertation <i>outside member</i>	<u>Nichol Castro</u> . "An Analysis of Semantic and Phonological Associations using Network Science" Dual-title Program in Gerontology and Psychology, University of Kansas. August 2017
Ph.D. Dissertation <i>committee member</i>	<u>Aryn Kamerer</u> . "Identifying the cellular sources of the low-frequency cochlear response" Intercampus Program in Communicative Disorders, University of Kansas. August 2017
Ph.D. Qualifying <i>committee member</i>	<u>Ember Krech</u> . Bioengineering Graduate Program. May 2018
Ph.D. Dissertation <i>outside member</i>	<u>Adam Sterczala</u> . "The effects of resistance training on motor unit firing rates and recruitment during submaximal contractions" Department of Health, Sport and Exercise Sciences, University of Kansas. June 2018
Ph.D. Dissertation <i>outside member</i>	<u>Jordan Craig</u> . "Quantifying gait stability based on body segment coordination relationships measured with wireless sensors," Bioengineering Graduate Program, University of Kansas. August 2018

#### Doctoral students, primary mentor

Jeremy Burnison	Graduate Neuroscience Program, University of Kansas, 2012 – 2017
Kevin Pitt	Intercampus Program in Communicative Disorders, University of Kansas, 2014 –
Tiffany Biro	Intercampus Program in Communicative Disorders, University of Kansas, 2016 – 2018 (co-mentor with Viswanathan)
Shadi Pir Hosseini	Electrical Engineering and Computer Science, University of Kansas, 2017 –
Juhi Kidwai	Intercampus Program in Communicative Disorders (SLP), University of Kansas, 2018 – (co-mentor with Jackson)

#### Doctoral students, secondary research

Nichol Castro	Child Language Doctoral Program, University of Kansas, 2013 – 2017
Ashley Lombardi	Intercampus Program in Communicative Disorders (Au.D.), University of Kansas, 2013–2014
Christine Kosirog	Graduate Neuroscience Program, University of Kansas, 2013
Emily Stephen	Graduate Program in Neuroscience, Boston University (co-sponsored NIH F31 predoctoral fellowship), 2011–2015
Misha Panko	Graduate Program in Neuroscience, Boston University, 2010–2012
Sean Lorenz	Program in Cognitive and Neural Systems, Boston University, 2010–2012
Rob Law	Program in Cognitive and Neural Systems, Boston University, 2009–2013

**Masters committees**

Masters Thesis <i>advisor &amp; chair</i>	<u>Anh Nguyen</u> : “An Application of Steady State Visual Evoked Potential (SSVEP) Brain-Computer Interface as An Augmentative Alternative Communication System for Individuals with Locked-In Syndrome.” Department of Speech, Language and Hearing Sciences, Boston University. May 2013
Masters Thesis <i>committee member</i>	<u>Breanna Krueger</u> : “The Effect of Misarticulation on Preschooler’s Word Recognition.” Department of Speech-Language-Hearing, University of Kansas. December 2013
Masters Thesis <i>committee member</i>	<u>Akshatha Rao</u> : Department of Electrical Engineering and Computer Science. June 2015
Masters Thesis <i>committee member</i>	<u>Corinne Walker</u> : “Intensive eye gaze training for AAC access: a case study.” Department of Speech-Language-Hearing, University of Kansas. April 2016.

**Masters students, primary mentor**

Anh Nguyen	Speech, Language and Hearing Sciences, Boston University, 2012–2013
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**Masters students, secondary research**

Akshatha Rao	Electrical Engineering & Computer Science, University of Kansas, 2014
Jarrod Purkeypile	Intercampus Program in Communicative Disorders, University of Kansas, 2013–2014
Kaylan Conner	Intercampus Program in Communicative Disorders, University of Kansas, 2013

**Undergraduate students, Research Experience Program Mentor**

Maggie Olson	Speech-Language-Hearing, 2018–
Darcy Koesterer	Speech-Language-Hearing, 2018–
Erick Oduniyi	Electrical Engineering & Computer Science, 2017– “Computational Stories Pt 1: Developing a Framework for Processing Language & Culture” ( <b>presented at KU undergraduate research symposium</b> )
Rebekah Manweiler	Electrical Engineering & Computer Science, 2017– “Exploring The Network Structure of Child Directed Speech” ( <b>presented at KU undergraduate research symposium; awarded Sigma Xi membership (one of eight presentations)</b> )
Bri Marsh	Neuroscience, 2018– “Decoding the Neural Substrates of Intent to Speak” ( <b>presented at KU Initiative for Maximizing Student Development research symposium</b> )
Anna Schauer	Speech-Language-Hearing, 2017–
Bridget Rennard	“Lemurs and BCI, What’s the Big Deal?”
Lexi Oatman	Speech-Language-Hearing, 2018 “Alpha Waves During Language Preparation”
Ellarie Woolpert	Speech-Language-Hearing, 2017 “Incorporating Explicit and Implicit Motor Imagery Training for Application to AAC-BCI Control”
Mallory Miller	Speech-Language-Hearing, 2016–2017 “Effects of spatial cues and repetitions on word recognition reaction time”
Lauren Mason	Speech-Language-Hearing, 2016–2017 “Investigating Prosody in Congenital and Acquired Dysarthria using the Prosodic Marionette Computer Interface”

Shaina Stasi	Speech-Language-Hearing, 2016–2017 “Effect of Glottal Source Characteristics on Speech Perception” ( <b>presented at KU undergraduate research symposium; awarded UGRA Spring &amp; Fall 2016</b> )
Ginna Long	Speech-Language-Hearing, 2015–2016
Courtney Huffman	Speech-Language-Hearing, 2015 “CNV Potentials During Overt and Covert Hand Movements”
Amy Morrison	Speech-Language-Hearing, 2015 “Effects of Glottal Source Modulation on Speech Perception and Maintenance”
Joshua Marple	Electrical Engineering & Computer Science, 2015–2016 “An Alternative Eye Tracking System” ( <b>presented at 2016 KU undergraduate research symposium ACE talks; awarded UGRA Spring &amp; Fall 2015</b> )
Jackie Duff	Speech-Language-Hearing, 2014–2015 “Coordination of Cognitive Preparation and Motor Commands in an EEG Study of Overt and Covert Movements for Brain-Computer Interfaces” ( <b>contributed to ASHA poster presentation</b> )
Paige Gundelfinger	Speech-Language-Hearing, 2014–2015
Seth Polsley	Electrical Engineering and Computer Science, 2013–2014 “Control System Based on Electromyography” ( <b>presented at KU undergraduate research symposium; published in KU Journal of Undergraduate Research</b> ), 2013–2014
Rebecca Howard	Speech-Language-Hearing, 2013–2014 “Influence of synthesized vowel sounds on neural processing of speech perception” ( <b>presented at KU undergraduate research symposium</b> )
Shelby Snyder	Speech-Language-Hearing, 2013–2015 “Prosodic Perception and Production Development in Children”

## Presentations

### Invited presentations

1. “Examining speech production using intracranial electrophysiological recordings.” 7th International Brain-Computer Interface Meeting, Workshop on Progress in Decoding Speech Processes using Intracranial Signals, Pacific Grove, CA, May 23, 2018. (Sole presenter)
2. “BCIs for Children.” Cerebral Palsy Alliance Research Foundation Technology Summit, San Francisco, CA, May 3, 2018. (Sole presenter)
3. “Using imagined and preparatory motor activity to control assistive devices for speech communication.” 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Workshop on Communication, Restoration of Function, and Consciousness Assessment with BCI, Orlando, FL, August 16, 2016. (Sole presenter)
4. “Using motor imagery to control brain-computer interfaces for communication.” 18th International Conference on Human-Computer Interaction, 10th International Conference on Augmented Cognition, Toronto, ON, Canada, July 20, 2016. (Lead presenter, co-authors: J. Burnison and K. Pitt)
5. “Examining speech production using intracranial electrophysiological recordings.” 6th International Brain-Computer Interface Meeting, Workshop on Decoding Speech Processes using Intracranial Signals, Pacific Grove, CA, May 30 – June 3, 2016. (Lead presenter, co-authors: D. J. Krusienski, F. Lotte, G. Schalk)
6. “Using speech and language neuroscience to develop a brain-machine interface for communication.” Center for Brain, Biology & Behavior (CB3), Colloquium Series 2015–2016, University of Nebraska, Lincoln, NE, October 5, 2015.

7. "Tenure track: the job search & the interview process" American Speech-Language-Hearing Association Convention 2014, Orlando, FL, November 21, 2014. (Presented with: E. Zimmerman, J. Hoover, S. Adlof and A. Sterling).
8. "Auditory considerations for a motor imagery brain-computer interface for speech synthesizer control" 48th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2–5, 2014
9. "Interdisciplinary collaborations at work in brain-machine interface research" Merrill Research Retreat, Lied Lodge, Nebraska City, NE, July 16–18, 2014
10. "SLC alumni academic panel." iSLC Conference, Pittsburgh, PA, March 8, 2014
11. "Brain-computer interfaces for communication." Science of Learning Centers PI Awardee Meeting, Washington, DC, October 14, 2010.

### Competitively reviewed presentations

1. "AAC Technology for Individuals With Severe Physical Impairment: Current Practice & Future Trends" American Speech-Language-Hearing Association Convention 2018, Philadelphia, PA, November 17, 2018. (Presented with K. Pitt, S. Fager, L. Biggs-Heidrick)
2. "A new feature set for masking-based monaural speech separation" 52nd Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, October 28-31, 2018, (Lead Presenter: S. Pir Hosseinloo)
3. "Evaluating control of commercial AAC devices via brain-computer interface by individuals with neuromotor deficits" American Speech-Language-Hearing Association Convention 2016, Philadelphia, PA, November 17, 2016. (Lead presenter, co-authors: K. Pitt, J. Burnison).
4. "Inter-institutional, cutting edge ALS research across the disease course, from motor speech to AAC BCI" American Speech-Language-Hearing Association Convention 2016, Philadelphia, PA, November 18, 2016. (Presented with K. Pitt, J. Searl, M. Kuruvilla-Dugdale)
5. "The spatiotemporal dynamics of speech at segmental and suprasegmental timescales" 2016 Motor Speech Conference, Newport Beach, CA, March 6, 2016. (Lead Presenter, co-authors: F. Lotte, D. J. Krusienski, G. Schalk)
6. "State of the science update: brain-computer interfaces for augmentative & alternative communication" American Speech-Language-Hearing Association Convention 2015, Denver, CO, November 12, 2015. (Presented with B. Peters, A. Mooney, D. Zeitlin, M. Fried-Oken)
7. "Temporal dynamics of the speech readiness potential, and its use in a neural decoder of speech-motor intention" Interspeech 2015, Dresden, Germany, September 6–10, 2015 (Lead presenter, co-authors: N. Castro, A. Rao)
8. "Biological signal acquisition and analysis for speech production and perception: electromyography, electroencephalography and magnetoencephalography (EMG, EEG and MEG)" Interspeech 2015, Dresden, Germany, September 6–10, 2015 (Lead presenter, Presented with C. Stepp, A. Lee, E. Lalor)
9. "What you need to know: surface electromyography & electroencephalography in speech & hearing." American Speech-Language-Hearing Association Convention 2013, Chicago, IL, November 16, 2013. (Presented with C. Stepp)
10. "Games for assessment and rehabilitation of speech and language impairments." American Speech-Language-Hearing Association Convention 2012, Atlanta, GA, November 15, 2012. (Presented with C. Stepp and R. Patel)
11. "Artificial speech synthesizer control by brain-computer interface." Interspeech 2009, Brighton, UK, September 7, 2009.

12. “Real-time speech synthesis for neural prosthesis.” Acoustical Society of America, Portland, OR, May 18, 2009.

### Academic & professional service

- 2018– Guest Editor, Journal of Speech, Language, and Hearing Research, Special Issue for 2018 Conference on Motor Speech.
- 2018 Reviewer, American Speech-Language-Hearing Foundation, Grant Review and Reviewer Training
- 2017–2018, Mentor, Collaborative Research Experiences for Undergraduates (CREU)
- 2017–2018, Mentor, Mentoring Academic Research Careers (MARC)
- 2017, Workshop instructor, Project Discovery, KU High School Engineering Summer Camp
- 2017, Reviewer, ASHA Students Preparing for Academic Research Careers (SPARC) Award
- 2016, Mentor, PROMoting the Next GENERation of Researchers (PROGENY)
- 2016–2018 Guest Editor, IEEE Transactions on Audio, Speech and Language Processing, Special issue on Biosignal based Speech Communication.
- 2014 Organizer, University of Kansas brain-computer interface workshop
- 2014–2016 Reviewer, Behavioral Science General Research Fund committee, University of Kansas
- 2014 Grant reviewer, Medical Research Council, UK (2014), NSF Perception, Action, Cognition (2014)
- 2014– Member, University of Kansas Graduate Neuroscience Steering Committee
- 2014– Associate Editor / Editorial Board, *Brain-computer interfaces* (04/2014, 08/2014)
- 2013–2014, Member, Speech-Language-Hearing Department Faculty Search Committee
- 2013– Faculty Judge, University of Kansas Graduate Research Competition
- 2012–2013, KU Majors Fair
- Ad hoc reviewer for *Journal of Speech, Language and Hearing Research* (10/2012, 11/2013), *Neuroscience* (09/2011, 11/2011, 01/2012), *Journal of Cognitive Neuroscience* (2009), *Sensors* (01/2012), *IEEE Transactions on Neural Systems and Rehabilitation Engineering* (06/2010, 10/2010), *BioMedical Engineering* (01/2013, 03/2013), *Speech Communication* (01/2014, 08/2014, 12/2014), *Neurorehabilitation and Neural Repair* (12/2014, 05/2015, 07/2017), *Frontiers in Neuroprosthetics* (10/2015, 02/2016), *Clinical EEG & Neuroscience* (08/2015), *American Journal of Speech-Language Pathology* (04/2016, 07/2016), *Brain Research* (04/2017, 07/2017), *Augmentative and Alternative Communication* (06/2018), *Journal of Neural Engineering* (09/2018).
- 2010–2012, Faculty Judge, Boston University Science and Engineering Symposium

### Professional development

- 2018 Participant, Research in Departmental Curriculum Working Group, University of Kansas, Center for Undergraduate Research
- 2017 Trainee, University of Kansas NSF CAREER Writers Workshop
- 2014 Trainee, Best Practices Institute, University of Kansas, Center for Teaching Excellence
- 2013 Trainee, American Speech-Language-Hearing Foundation, Grant Review and Reviewer Training
- 2011 Trainee, ASHA/NIDCD Lessons for Success Research Conference

### Awards, honors and memberships

- 2016, Meritorious submission, Annual Convention of ASHA, “Speech & non-speech motor control of prosody by individuals with congenital & acquired dysarthria.”
- 2015, EURASIP Best Paper Award, “Silent Speech Interfaces” *Speech Communication*
- 2014, Friends of the Lifespan Investigator Award (\$7500)
- 2014, Meritorious submission, Annual Convention of ASHA, “Effects of operational competency & environmental distractors on a brain-computer interface.”
- 2011, BCI Award Finalist (top ten out of 64 entries)
- 2011, Awarded Conference Fellowship, ASHA/NIDCD Lessons for Success Research Conference
- 2007–present Member, Society for Neuroscience

- 2012–present Member, American Speech-Language-Hearing Association
- 2016–present Member, BCI Society
- 2003–2008, Boston University Graduate Research Fellowship
- 1998–2002, University of Delaware Honors Program

### Student awards and honors

- 2017, K. Pitt recieved Friends of the Lifespan Institute GRA award
- 2016, K. Pitt recieved ASHA SRTA
- 2016, K. Pitt recieved SPLH PhD student award
- 2016, J. Marple ACE talk & award for KU undergraduate research symposium
- 2016, J. Burnison selection to first Summer School in Adaptive Neurotechnologies, July 11-29, 2016, in Albany, New York.
- 2015, J. Burnison received SPLH GTA award
- 2015, N. Castro selected to summer school for computational sciences

### Technical skills

- Advanced knowledge of computer and web programming languages including C, C++, Matlab, Pascal, Java, Perl/CGI, Python, PHP, HTML, L<sup>A</sup>T<sub>E</sub>X, SQL and Microsoft .NET (C# and VB)
- Development using Arduino and Raspberry Pi architectures
- Administration of Linux server clusters and Microsoft Windows Server
- Extensive experience using Microsoft Office suite and Adobe Photoshop
- Proficiency with statistical analysis software packages S/R and speech synthesis including text-to-speech (Festival), formant-based (e.g., Klatt, KTH Snack Toolkit) and articulatory-based (e.g., Maeda).