

Cara E. Stepp, PhD

Speech, Language, and Hearing Sciences
635 Commonwealth Avenue
Boston University
Boston, MA 02215

Phone: 617.353.7487
Fax: 617.353.5074
Email: cstepp@bu.edu
Web: <http://people.bu.edu/cstepp>

Education:

- 2009 **Ph.D. in Biomedical Engineering**
Division of Health Sciences & Technology
Harvard University - Massachusetts Institute of Technology, Cambridge, MA
- 2008 **S.M. in Electrical Engineering and Computer Science**
Department of Electrical Engineering and Computer Science
Massachusetts Institute of Technology, Cambridge, MA
- 2004 **S.B. in Engineering Science**
Picker Engineering Program
Smith College, Northampton, MA
Cum Laude, Highest Honors in Engineering Science

Academic Appointments:

- 2011 – present Assistant Professor, Department of Speech, Language, and Hearing Sciences, Boston University
- 2011 – present Affiliated Faculty, Department of Biomedical Engineering, Boston University
- 2011 – present Faculty, Hearing Research Center, Boston University
- 2011 – present Faculty, Center for Computational Neuroscience and Neural Technology, Boston University
- 2011 – present Training Faculty, Computational Neuroscience Graduate Program, Boston University
- 2011 – present Training Faculty, Graduate Program for Neuroscience (GPN), Boston University
- 2013 – present Faculty, Center of Excellence for Learning in Education, Science and Technology, Boston University
- 2009 – 2011 Postdoctoral Research Associate, Department of Computer Science and Engineering, University of Washington
- 2009 – 2011 Senior Fellow, Department of Rehabilitation Medicine, University of Washington

Awards and Honors:

- 2013 – 2015 Boston University Clinical and Translational Science Institute K-L2 Fellowship
- 2013 American Speech-Language-Hearing Association Research Mentoring-Pair Travel Award (Mentor of Stephanie Lien)
- 2013 Travel Fellowship, Invited Discussant, International Workshop on Brain-Machine Interface Systems
- 2012 – 2015 Peter Paul Career Development Professorship, Boston University
- 2012 American Speech-Language-Hearing Association Award for Early Career Contributions in Research
- 2012 Conference Fellowship, ASHA/NIDCD Lessons for Success Research Conference
- 2011 NSF Neural Engineering Travel Award
- 2010 Student Excellence in Neural Interfacing Travel Award
- 2009 American Society of Neurorehabilitation (ASNR) Presidential Award

- 2009 NIH T32 Fellowship for postdoctoral study in Rehabilitation Science at UW
- 2008 Raymond H. Stetson Scholarship in Phonetics and Speech Science, Honorable Mention
- 2004 NIH T32 Fellowship for graduate study in Harvard-MIT SHBT Program
- 2004 Adeline Devor Penberthy Memorial Prize (Smith College Engineering)
- 2004 NSF Graduate Fellowship, Honorable Mention
- 2004 Phi Beta Kappa (science and arts honor society)
- 2004 Sigma Xi (research honor society)
- 2004 Tau Beta Kappa (Smith College engineering honor society)

Refereed Journal Publications († denotes student / post-doctoral mentee):

- 31] Perrachione T.K., **Stepp C.E.**, Hillman R.E., Wong P.C.M. "Talker identification across source mechanisms: Experiments with laryngeal and electrolarynx speech", *Journal of Speech, Language, and Hearing Research*, *In Press*.
- 30] Hands G.L.†, Larson E.D., **Stepp C.E.** "Effects of augmentative visual training on learning and generalization of audio-motor mapping", *Human Movement Science*, *In Press*. [NIHMSID 567706]
- 29] Lien Y.S.†, Gattuccio C.I.†, **Stepp C.E.** "Effects of Phonetic Context on Relative Fundamental Frequency", *Journal of Speech, Language, and Hearing Research*, *In Press*. [NIHMSID 554915]
- 28] Thorp E.B.†, Larson E., **Stepp C.E.** "Combined Auditory and Vibrotactile Feedback for Human-Machine-Interface Control", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 22(1), pp.62-68, 2014. [PMC3939061]
- 27] Bowen L.K.†, Hands G.L.†, Pradhan S., **Stepp C.E.** "Fundamental Frequency Variability in Parkinson's Disease", *Journal of Medical Speech-Language Pathology*, 21(3), 2013. [NIHMSID 439995]
- 26] Thorp E.B.†, Virnik B.†, **Stepp C.E.** "Comparison of Nasal Acceleration and Nasalance Across Vowels", *Journal of Speech, Language, and Hearing Research*, 56(5), pp. 1476-1484, 2013.
- 25] Rombokas E.†, **Stepp C.E.**, Chang, C.†, Malhotra M., Matsuoka Y. "Vibrotactile Sensory Substitution for Electromyographic Control of Object Manipulation", *IEEE Transactions on Biomedical Engineering*, 60(8), pp. 2226 – 2232, 2013.
- 24] Larson E.D., Terry H.†, Canevari M.†, **Stepp C.E.** "Categorical vowel perception enhances the effectiveness and generalization of auditory feedback in human-machine-interfaces", *PLoS ONE*, 8(3): e59860, 2013. [PMC3602293]
- 23] Eadie T.L., **Stepp C.E.** "An Acoustic Correlate of Vocal Effort in Spasmodic Dysphonia", *Annals of Otology, Rhinology, & Laryngology*, 122(3), pp. 169-176, 2013.
- 22] **Stepp C.E.** "Relative fundamental frequency during vocal onset and offset in older speakers with and without Parkinson's Disease", *Journal of the Acoustical Society of America*, 133(3), pp. 1637-1643, 2013. [PMC3606308]
- 21] **Stepp C.E.**, Sawin D.E., Eadie T.L. "The Relationship between Perception of Vocal Effort and Relative Fundamental Frequency during Voicing Offset and Onset", *Journal of Speech, Language, and Hearing Research*, 55(6), pp. 1887-1896, 2012.
- 20] **Stepp C.E.** "Surface electromyography for speech and swallowing systems: measurement, analysis, and interpretation", *Journal of Speech, Language, and Hearing Research*, 55(4), pp. 1232-1246, 2012.
- 19] **Stepp C.E.**, An Q., Matsuoka, Y. "Repeated Training with Augmentative Vibrotactile Feedback Increases Object Manipulation Performance", *PLoS ONE*, 7(2), e32743, 2012. [PMC3287982]

- 18] **Stepp C.E.**, Matsuoka.Y. "Vibrotactile Sensory Substitution for Object Manipulation: Amplitude versus Frequency Modulation", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 20(1), pp. 31-37, 2012. [PMC3395369]
- 17] Britton D., Yorkston K.M., Eadie T., **Stepp C.E.**, Ciol M.A., Baylor C., Merati A.L. "Endoscopic assessment of vocal fold movements during cough", *Annals of Otology, Rhinology, & Laryngology*, 121(1), pp. 21-27, 2012.
- 16] **Stepp C.E.**, Oyunerdene N.[†], Matsuoka.Y. "Kinesthetic Motor Imagery Modulates Intermuscular Coherence", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 19(6), pp. 638-643, 2011. [PMC3401579]
- 15] **Stepp C.E.**, Matsuoka.Y. "Object Manipulation Improvements with Single Session Training Outweigh the Differences among Stimulation Sites during Vibrotactile Feedback", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 19(6), pp. 677-685, 2011. [PMC3401581]
- 14] **Stepp C.E.**, Heaton J.T., Stadelman-Cohen T.K., Braden M.N., Jetté M.E., Hillman R.E. "Characteristics of phonatory function in singers and non-singers with vocal fold nodules", *Journal of Voice*, 25(6), pp. 714-724, 2011. [PMC3117117]
- 13] **Stepp C.E.**, Merchant, G.R., Heaton J.T., Hillman, R.E. "Effects of Voice Therapy on Relative Fundamental Frequency during Voicing Offset and Onset in Patients with Vocal Hyperfunction", *Journal of Speech, Language, and Hearing Research*, 54(5), pp. 1260-1266, 2011. [PMC3394393]
- 12] **Stepp C.E.**, Hillman, R.E., Heaton J.T. "Modulation of Neck Intermuscular Beta Coherence during Voice and Speech", *Journal of Speech, Language, and Hearing Research*, 54(3), pp. 836-844, 2011.
- 11] **Stepp C.E.**, Heaton J.T., Braden M.N., Jetté M.E., Stadelman-Cohen, T.K., Hillman R.E. "Comparison of neck tension palpation rating systems with surface electromyographic and acoustic measures in vocal hyperfunction", *Journal of Voice*, 25(1), pp. 67-75, 2011. [PMC2913165]
- 10] **Stepp C.E.**, Hillman R.E., Heaton J.T. "The Impact of Vocal Hyperfunction on Relative Fundamental Frequency during Voicing Offset and Onset", *Journal of Speech, Language, and Hearing Research*, 53(5), pp. 1220-1226, 2010.
- 9] **Stepp C.E.**, Heaton J.T., Jetté M.E., Burns J.A., Hillman, R.E. "Neck surface electromyography as a measure of vocal hyperfunction before and after injection laryngoplasty", *Annals of Otology, Rhinology, & Laryngology*, 119(9), pp. 594-601, 2010. [PMC3392645]
- 8] **Stepp C.E.**, Hillman R.E., Heaton J.T. "Use of Neck Strap Muscle Intermuscular Coherence as a Measure of Vocal Hyperfunction", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 18(30), pp. 329-335, 2010. [PMC3401580]
- 7] **Stepp C.E.**, Hillman R.E., Heaton J.T. "A virtual trajectory model predicts differences in vocal fold kinematics in individuals with vocal hyperfunction", *Journal of the Acoustical Society of America*, 127(5), pp. 3166-3176, 2010. [PMC2882670]
- 6] Kubert H.L., **Stepp C.E.**, Zeitels S.M., Gooley J.E., Walsh M.J., Prakash S.R. Hillman R.E., Heaton J.T. "Electromyographic control of a hands-free electrolarynx using neck strap muscles", *Journal of Communication Disorders*, 42(3), pp. 211-225, 2009.
- 5] **Stepp C.E.**, Heaton J.T., Rolland R.G., Hillman R.E. "Neck and face surface electromyography for prosthetic voice control after total laryngectomy", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 17(2), pp. 146-155, 2009. [PMC387553]
- 4] **Stepp C.E.**, Heaton J.T., Hillman R.E. "Post-laryngectomy speech respiration patterns", *Annals of Otology, Rhinology & Laryngology*, 117(8), pp. 557-563, 2008. [PMC3395327]

- 3] Goldstein E.A., Heaton J.T., **Stepp C.E.**, Hillman R.E. "Training effects on speech production using a hands-free electromyographically-controlled electrolarynx", *Journal of Speech, Language, and Hearing Research*, 50(2), pp 335-351, 2007.
- 2] **Stepp C.E.**, Voss S.E. "Acoustics of the human middle-ear air space", *Journal of the Acoustical Society of America*, 118(2), pp. 861-871, 2005.
- 1] Subramaniam K., **Stepp C.**, Pignatello J.J., Smets B., Grasso, D. "Enhancement of Polynuclear Aromatic Hydrocarbon Desorption by Complexing Agents in Weathered Soil", *Environmental Engineering Science*, 21(4), pp. 515-523, 2004.

Refereed Conference Papers († denotes student / post-doctoral mentee):

- 13] Lien Y.S.†, **Stepp C.E.** "Automated Estimation of Relative Fundamental Frequency", *Proceedings of the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 3 – 7 July, 2013, pp. 2136 - 2139. [poster presentation]
- 12] Hands G.L.†, Larson E., **Stepp C.E.** "The role of augmentative visual training in auditory human-machine-interface performance", *Proceedings of the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 3 – 7 July, 2013, pp.2804 - 2807. [podium presentation]
- 11] Thorp E.†, Virnik B.†, **Stepp C.E.** "Normalization Strategies for Nasal Acceleration to Assess Velopharyngeal Function" *Proceedings of the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 28 August 28 – 1 September, 2012, pp. 6459 - 6462. [podium presentation]
- 10] Larson E., Terry H.†, **Stepp C.E.** "Audio-visual feedback for electromyographic control of vowel synthesis" *Proceedings of the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 28 August 28 – 1 September, 2012, pp. 3600 - 3603. [poster presentation]
- 9] An Q.†, Matsuoka Y., Asama H., **Stepp C.E.** "Effect of Vibrotactile Feedback on Robotic Object Manipulation" *IEEE International Conference on Biomedical Robotics and Biomechatronics*, June 24-28, 2012, pp. 508 - 513. [poster presentation]
- 8] Tejeiro C.†, **Stepp C.E.**, Malhotra M., Rombokas E., Matsuoka Y. "Comparison of Remote Pressure and Vibrotactile Feedback for Prosthetic Hand Control" *IEEE International Conference on Biomedical Robotics and Biomechatronics*, June 24-28, 2012, pp. 521 - 525. [poster presentation]
- 7] **Stepp C.E.**, Chang C.†, Malhotra M., Matsuoka Y. "Vibrotactile feedback aids EMG control of object manipulation" *Proceedings of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 30 August – 3 September, 2011, pp. 1061 - 1064. [poster presentation]
- 6] An Q.†, Matsuoka Y., **Stepp C.E.** "Multi-day Training with Vibrotactile Feedback for Virtual Object Manipulation" *Proceedings of the 12th IEEE International Conference on Rehabilitation Robotics*, June 29 – July 1, 2011, pp. 1-5. [podium presentation]
- 5] An Q.†, Asama H., **Stepp C.E.**, Matsuoka Y. "Uncontrolled Manifold Analysis of Standing-up Motion for Development of an Assistance System," *Proceedings of the 12th IEEE International Conference on Rehabilitation Robotics*, June 29 – July 1, 2011, pp. 1-5. [poster presentation]
- 4] **Stepp C.E.**, Britton D., Chang, C.†, Merati A., Matsuoka Y. "Feasibility of game-based electromyographic biofeedback for dysphagia rehabilitation," *Proceedings of the 5th International IEEE EMBS Conference on Neural Engineering of the IEEE Engineering in Medicine and Biology Society*, April 27 - May 1, 2011, pp. 233-236. [poster presentation] ****Winner of the NSF Neural Engineering Travel Award**

- 3] **Stepp C.E.**, Dellon B.T., Matsuoka, Y. "Contextual effects on robotic experiments of sensory feedback for object manipulation," Proceedings of the 3rd IEEE RAS & EMBS International conference on Biomedical Robotics and Biomechatronics, 26-29 September 2010, pp. 58-63. [podium presentation]
- 2] **Stepp C.E.**, Matsuoka, Y. "Relative to direct haptic feedback, remote vibrotactile feedback improves but slows object manipulation," Proceedings of the 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 31 August – 4 September 2010, pp. 2089-92. [podium presentation]
- 1] Huynh K.[†], **Stepp C.E.**, White L.W.[†], Colgate J.E., Matsuoka Y. "Finding a Feature on a 3D Object through Single-Digit Haptic Exploration", IEEE Proceedings of the 2010 Haptics Symposium, 25-26 March 2010, pp. 83-89. [poster presentation]

Invited Book Chapters/Reviews:

- 1] **Stepp C.E.** Book Review on: Introduction to Neural Engineering for Motor Rehabilitation, Dario Farina (Editor), Winnie Jensen (Editor), Metin Akay (Editor). Wiley-IEEE Press (2013). ISBN: 978-0-470-91673-5, 49, pp. 30-31, 2014.

Conference Abstracts († denotes student / post-doctoral mentee):

- 33] Varghese L.A.[†], Mendoza J.O.[†], Braden M.N., **Stepp C.E.** "Accelerometric correlates of nasalized speech in children," 167th Meeting of the Acoustical Society of America, Providence, RI, May 5 – 9, 2014. [poster presentation]
- 32] Favrot S.E., Michener C.M.[†], **Stepp C.E.** "Effects of discretization of two-dimensional auditory feedback on human-machine-interface control," 167th Meeting of the Acoustical Society of America, Providence, RI, May 5 – 9, 2014. [poster presentation]
- 31] Lien Y.S.[†], Michener C.M.[†], **Stepp C.E.** "Validation of relative fundamental frequency using an aerodynamic estimate of vocal effort," 167th Meeting of the Acoustical Society of America, Providence, RI, May 5 – 9, 2014. [poster presentation]
- 30] Malloy J.R.[†], Valentin J.C.[†], Hands G.L.[†], Stevens C.A.[†], Langmore S. E., Noordzij J.P., **Stepp C.E.** "Neck surface electromyography in Parkinson's disease during swallowing and non-swallowing tasks," 134th Annual Meeting of the American Laryngological Association (ALA), Las Vegas, NV, May 14-15, 2014. [poster presentation]
- 29] Murray, E.H.[†], **Stepp C.E.** "The role of feedback on discrimination of vocal sound pressure levels," Conference on Motor Speech, Sarasota, FL, February 27-March 2, 2014. [poster presentation]
- 28] Malloy J.R.[†], Michener C.M.[†], **Stepp C.E.** "Information transfer rate of an AAC system utilizing facial surface electromyography," Conference on Motor Speech, Sarasota, FL, February 27-March 2, 2014. [poster presentation]
- 27] Varghese L.A.[†], Michalka S.W., Yazdanbakhsh A., Somers D., **Stepp C.E.**, Guenther F.H., Shinn-Cunningham B.G. "Decoding the Locus of Attention to Visual, Auditory, and Audiovisual Stimuli from Single-Trial EEG Data", MidWinter Meeting for the Association for Research in Otolaryngology, San Diego, CA, February 22-26, 2014. [poster presentation]
- 26] **Stepp C.E.**, Vega-Barachowitz C., Ambrosi D., Perry P., Kiran S., "The Next Frontier in Rehabilitation: Connected Care Using tablets, cloud-computing and other technologies," American Speech and Hearing Association (ASHA) Convention, Chicago, IL, November 14-16, 2013. [podium presentation]

- 25] Braden M.N., Varghese L.A.[†], **Stepp C.E.** “Application of normalized nasal acceleration to children with and without cleft palate,” American Speech and Hearing Association (ASHA) Convention, Chicago, IL, November 14-16, 2013. [podium presentation]
- 24] Lien Y.S.[†] and **Stepp C.E.** “Comparison of relative fundamental frequency estimates using neck skin vibration and acoustics,” American Speech and Hearing Association (ASHA) Convention, Chicago, IL, November 14-16, 2013. [podium presentation] ****Winner of ASHA's Student Research Travel Award for submitting the top student paper in "Voice, Resonance, and Alaryngeal Speech."**
- 23] **Stepp C.E.** and Brumberg J. “What you need to know: Surface electromyography & Electroencephalography in Speech & Hearing,” American Speech and Hearing Association (ASHA) Convention, Chicago, IL, November 14-16, 2013. [podium presentation]
- 22] Lien Y.S.[†], Gattuccio, C.I.[†], **Stepp C.E.** “The Effect of Phonetic Context on Relative Fundamental Frequency,” 10th International Advances in Quantitative Laryngology, Voice and Speech Research (AQL) Conference, Cincinnati, OH, 3-4 June 2013. [podium presentation] ****Winner of the AQL Best Paper Award**
- 21] Britton D., Merati A., Benditt J.O., Stepp C., Hu C., Miller R., Yorkston K. “Associations between laryngeal and cough dysfunction in motor neuron disease (MND),” Dysphagia Research Society Annual Meeting, Seattle, WA, March 13-16, 2013. [poster presentation]
- 20] **Stepp C.E.** “Voluntary Anterior Neck Control in Older versus Younger Adults,” American Speech and Hearing Association (ASHA) Convention, Atlanta, GA, November 15-17, 2012 [poster presentation].
- 19] **Stepp C.E.**, Patel R., Brumberg J. “Games for assessment and rehabilitation of speech and language impairments,” American Speech and Hearing Association (ASHA) Convention, Atlanta, GA, November 15-17, 2012. [podium presentation]
- 18] Britton D., Merati A., Benditt J.O., **Stepp C.**, Yorkston K. “Associations between vocal fold movements and airflow during cough in neurological disease: Preliminary analyses,” The Fall Voice Conference, New York, NY, October 4-6, 2012. [podium presentation]
- 17] Bowen L.[†], Pradhan S., **Stepp C.E.** “Fundamental Frequency Variability in Parkinson’s Disease,” 41st Annual Symposium: Care of the Professional Voice, Philadelphia, PA, May 30 – June 3, 2012. [poster presentation]
- 16] Britton D., Merati A., Benditt J.O., **Stepp C.**, Max L., Yorkston K. “Associations between vocal fold movements and peak expiratory cough flow in healthy middle-aged adults: Preliminary analyses,” Dysphagia Research Society Annual Meeting, Toronto, Ontario, March 8 – 10, 2012. [poster presentation]
- 15] **Stepp C.E.** and Pradhan S. “Relationship between Relative Fundamental Frequency and Parkinson’s Disease,” Conference on Motor Speech, Santa Rosa, CA, February 29 – March 4, 2012. [poster presentation]
- 14] **Stepp C.E.** and Eadie T. “Relative Fundamental Frequency as an Acoustic Correlate of Vocal Effort in Spasmodic Dysphonia,” 161st Meeting of the Acoustical Society of America, Seattle, WA, 23-27 May 2011. [poster presentation].
- 13] **Stepp C.E.** and Matsuoka Y. “Novel Augmentative Sensory Feedback for Robotic Rehabilitation,” Future Trends in Rehabilitation Robotics Workshop, BIOROB, Tokyo, September 26, 2010. [podium presentation]
- 12] **Stepp C.E.** and Matsuoka Y. “Visual and Haptic Feedback for Users of Prosthetic Hands,” Neural Interfaces Conference, Long Beach, CA, June 21-23, 2010. [poster presentation] ****Winner of the Neural Interfaces Conference Student Excellence in Neural Interfacing Travel Award**

- 11] **Stepp C.E.**, Hillman R.E., Heaton J.T. "Neck intermuscular coherence distinguishes normal from disordered voice production," Conference on Motor Speech, Savannah, GA, March 4 - 7, 2010. [poster presentation]
- 10] Britton D., Baylor C., Eadie T., Merati A.L., **Stepp C.E.**, Yorkston K.M. "Endoscopic assessment of vocal fold movements during cough," Conference on Motor Speech, Savannah, GA, March 4 - 7, 2010. [poster presentation]
- 9] Merchant G.R.[†], **Stepp C.E.**, Heaton J.T., Hillman R.E. "Relative Fundamental Frequency in Patients with Vocal Hyperfunction," MidWinter Meeting for the Association for Research in Otolaryngology, Anaheim, CA, February 6-10, 2010. [poster presentation]
- 8] Perrachione T.K., **Stepp C.E.**, Hillman R.E., Wong P.C.M. "The role of source and filter characteristics in human talker identification: Experiments with laryngeal and electrolarynx speech," *158th Annual Meeting of the Acoustical Society of America*, San Antonio, TX, October 26 – 30, 2009. [poster presentation]
- 7] **Stepp C.E.**, Hillman R.E., Heaton J.T. "Bilateral Intermuscular Beta Coherence is Reduced in Individuals with Vocal Hyperfunction," ACRM-ASNR Joint Educational Conference, *Building the Evidence Base for Rehabilitation Interventions: From Research to Clinical Care*, Denver, CO, October 7 - 11, 2009. [poster presentation] ****Winner of the ASNR Presidential Award**
- 6] **Stepp C.E.**, Heaton J.T., Stadelman-Cohen T., Braden M.N., Jette M., Hillman R.E. "Vocal Fold Kinematics in Individuals with Vocal Hyperfunction," Society for Neuroscience, Washington, D.C., November 15-19, 2008. [poster presentation]
- 5] **Stepp C.E.**, Heaton J.T., Hillman R.E. "Use of neck and face surface EMG for controlling a prosthetic voice after total laryngectomy," Conference on Motor Speech, Monterey, CA, March 6-9, 2008. [poster presentation]
- 4] **Stepp C.E.**, Heaton J.T., Hillman R.E. "A Longitudinal Study of Post-Laryngectomy Speech and Swallowing Respiration Patterns," American Speech and Hearing Association (ASHA) Convention, Boston, MA, November 15-17, 2007. [poster presentation]
- 3] Kubert H., **Stepp C.E.**, Zeitels S.M., Gooley J., Walsh M., Prakash S.R., Hillman R.E., Heaton J.T. "Electromyographic Control of a Hands-Free Electrolarynx Using Neck Strap Muscles," American Speech and Hearing Association (ASHA) Convention, Boston, MA, November 15-17, 2007. [podium presentation]
- 2] **Stepp C.E.**, Voss S.E. "Acoustics of the middle-ear air space in human ears," American Auditory Society Annual Meeting, Scottsdale, AZ, 6-9 March 2004. [podium presentation]
- 1] **Stepp C.**, Subramaniam K., Smets B., Pignatello J.J., Grasso, D. "Chelating Agent Enhanced Desorption of PAH Compounds," 76th Colloid and Surface Science Symposium, American Chemical Society, University of Michigan, Ann Arbor, MI, 23-26 June 2002. [podium presentation]

Invited Talks:

- 32] "Lessons Learned from a past 'Lessons for Success' Participant," The American Speech-Language-Hearing Association's Lessons for Success, Rockville, MD, April 28, 2014.
- 31] "Objective assessment and sensorimotor bases of vocal hyperfunction," Massachusetts Eye and Ear Infirmary, September 25, 2013.
- 30] "Effects of nonlinear sensory-motor mapping and multi-modal paradigms on human-machine-interface control," Center for Sensorimotor Neural Engineering, University of Washington, March 13, 2013.
- 29] Panel with M. Grinstaff, C. Evans, D. Roblyer, and M. Wanunu, Academic Career Night, Boston University Biomedical Engineering Graduate Student Committee, November 14, 2012.

- 28] "Negotiating the Offer" Panel with M. Modjaz and L. Kolodziejski, Path of Professorship Workshop, Massachusetts Institute of Technology, October 27, 2012.
- 27] "Can we Apply Body-Machine-Interfaces to Dysphagia Rehabilitation?" Madison Swallowing Interdisciplinary Group Monthly Meeting, University of Wisconsin – Madison, July 19, 2012.
- 26] "Sensorimotor Rehabilitation Engineering" Scientific Session 3 – Sensory Systems & Neuroengineering, Boston University Biomedical Engineering Retreat, May 22, 2012.
- 25] "Voluntary control of anterior neck musculature in individuals with dysphagia" Boston Action Club, Northeastern University, February 23, 2012.
- 24] "Negotiating the Offer" Panel with A. Wofson, and M. Gonzalez, Path of Professorship Workshop, Massachusetts Institute of Technology, October 29, 2011.
- 23] "Relative Fundamental Frequency as an Acoustic Correlate of Laryngeal Tension," Hearing Research Center Seminar, Boston University, October 7, 2011.
- 22] "Sensorimotor Rehabilitation through Human-Machine Interaction," Rehabilitation Institute of Chicago, March 16, 2011.
- 21] "Sensorimotor Rehabilitation through Human-Machine Interaction," Department of Electrical Engineering and Computer Science, Northwestern University, March 15, 2011.
- 20] "Human-Machine Interactions for Sensorimotor Rehabilitation," Biomedical Engineering Department, University of Michigan, February 25, 2011.
- 19] "Sensorimotor Neurorehabilitation through Human-Machine Interactions," Fischell Department of Bioengineering, University of Maryland, February 16, 2011.
- 18] "Biosignal Analysis and Augmentation for Rehabilitation of Disordered Sensorimotor Function," Speech, Language and Hearing Sciences department, Boston University, February 11, 2011.
- 17] "Human-Machine Interactions for Rehabilitation of Sensorimotor Function" Department of Biomedical Engineering, Boston University, February 9, 2011.
- 16] "Rehabilitation of Sensorimotor Function through Human-Machine Interfaces," Thayer School of Engineering, Dartmouth College, February 4, 2011.
- 15] "Sensorimotor Interactions and Augmentation for Neurorehabilitation," Weldon School of Biomedical Engineering, Purdue University, January 31, 2011.
- 14] "Sensorimotor Assessment and Rehabilitation through Biosignal Analysis and Sensory Feedback," Department of Communication Sciences and Disorders, University of Wisconsin-Milwaukee, January 27, 2011.
- 13] "Sensorimotor Interactions for Neurorehabilitation," School of Biological and Health Systems Engineering, Arizona State University, January 22, 2011.
- 12] "Biosignal Analysis and Sensory Feedback Augmentation for Sensorimotor Rehabilitation," Department of Communication Sciences and Disorders, Bowling Green State University, January 13, 2011.
- 11] "Human-Machine Interactions for Neurorehabilitation of Sensorimotor Function," Department of Electrical and Computer Engineering, University of Delaware, January 10, 2011.
- 10] "Human-Machine Interactions for Understanding and Rehabilitating Sensorimotor Function," Department of Mechanical Engineering, Vanderbilt University, December 20, 2010.
- 9] "Rehabilitating Sensorimotor Function through Engineering," Department of Communication Sciences and Disorders, University of Cincinnati, December 6, 2010.

- 8] "Human-Machine Interactions for Understanding and Rehabilitating Sensorimotor Function," Weekly Seminar Series on Engineering, Neuroscience & Health, University of Southern California, November 1, 2010.
- 7] "Neurobotics for Sensorimotor Rehabilitation," 2nd Northwest Computational Neuroscience Connection, University of Washington, October 1-2, 2010.
- 6] "Sensorimotor Rehabilitation through Robotics," with Yoky Matsuoka, USA-Japan Workshop on Model-based Assistive Robotic Technologies for Medicine and Rehabilitation, BIOROB, Tokyo, September 27, 2010.
- 5] "Sensory feedback for Prosthetic and Robotic Hands," with Mark Malhotra, Bridging Human Hand Research and the Development of Robotic Technology for Hands, BIOROB, September 26, 2010.
- 4] "Engineering Approaches to Speech Rehabilitation," Cincinnati Children's Hospital, May 10, 2010.
- 3] "Engineering Approaches to Speech Rehabilitation," Army Audiology & Speech Center, Walter Reed Army Medical Center, March 8, 2010.
- 2] "Using Surface Electromyography to Study Vocal Hyperfunction," Speech & Hearing Sciences Colloquium, University of Washington, October 2, 2009.
- 1] "Use of Neck and Face Surface Electromyography to Control a Prosthetic Voice after Total Laryngectomy," Kinesiology and Nutrition Seminars, University of Illinois – Chicago, January 23, 2009.

Current Research Funding

Boston Rehabilitation Outcomes Center Pilot Grants Stapp (PI) 06/01/14-05/31/15

Identifying motor performance outcome measures that underlie speech intelligibility in Parkinson's disease
 The goal of this project is to develop motor outcome measures that correlate with functional measures of speech intelligibility in individuals with PD. Biosignals recorded during a variety of motor tasks will be examined in order to find optimal instrumented outcomes of motor function underlying speech intelligibility in PD.

Role: PI

Total Award Amount: \$30,000

Person-Months Per Year Committed to Project: 0.9

NIH NCATS KL2TR000158 PI (Center) 01/01/13-04/30/13

Boston University Clinical and Translational Science Institute Fellowship 05/01/14-04/30/15

The goal of this project is to provide protected time and research mentoring for selected junior faculty in clinical and translational sciences.

Role: Trainee

Total Award Amount: \$76,770

Person-Months Per Year Funded by Project: 2.82 (9 protected)

BU Center of Excellence for Learning in Education, Science and Technology Stapp (PI) 03/01/14-02/28/15

Increasing usability of human-machine-interfaces through novel sensorimotor inputs

The goal of this project is to develop tactile and muscular (sEMG) inputs to human-machine-interfaces (HMIs) for the BU Unlock framework in order to provide communication for a wider array of individuals with severe motor impairments.

Role: PI

Total Award Amount: \$72,087

Person-Months Per Year Committed to Project: 0.5

Deborah Munroe Noonan Memorial Research Fund Stepp (PI) 09/01/13-08/31/14
Videogame-Based Speech Rehabilitation for Children with Hearing Loss
The goal of this project is to develop a new rehabilitative platform for individuals with hearing loss using a sensor we have designed to measure skin vibration and speech acoustics and to conduct feasibility testing in children with hearing loss to determine the potential short-term gains in speech function possible with this type of intervention.
Role: PI
Total Award Amount: \$80,000
Person-Months Per Year Committed to Project: 0.9

NIH NIDCD R42DC011212 (Phase II STTR) Robertson (PI) 07/01/13-6/30/15
Development of an Electromyographically Controlled Electrolarynx Voice Prosthesis
The objective of this project is to develop and test an electromyographically controlled EL that can be offered commercially to improve the communication of electrolarynx users.
Role: Subcontract PI
Total Award Amount: \$978,501
Total Award Amount to BU: \$50,000
Person-Months Per Year Committed to Project: 0.5 in Y1 and Y2
Impact Score: 46 (not percentiled)

NIH NIDCD R03DC012651 Stepp (PI) 03/05/13-02/28/16
Automation of Relative Fundamental Frequency Estimation
The goal of this project is to develop clinical collection protocols and signal processing tools for automatic estimation of relative fundamental frequency in speakers with typical and disordered voice.
Role: PI
Total Award Amount: \$480,927
Person-Months Per Year Committed to Project: Y1: 2.25, Y2: 3 & Y3: 3
Impact Score: 18 (not percentiled)

Completed Research Funding

American Speech-Language-Hearing Foundation Stepp (PI) 01/01/13-12/31/13
Improving the reliability of estimates of voice relative fundamental frequency
New Century Scholars Research Grant: to develop a corpus of text tokens resulting in maximally internally consistent relative fundamental frequency (RFF) estimates and to determine whether the reliability of RFF estimation is improved by using a measurement of voice-related neck tissue vibration using a small skin-surface accelerometer instead of acoustics.
Role: PI
Total Award Amount: \$10,000
Person-Months Per Year Committed to Project: 1.8 (unfunded)

ALA-Nestle Nutrition Institute Dysphagia Research Grant Stepp (PI) 07/01/12-06/30/13
Voluntary Control of Anterior Neck Musculature in Parkinsonian Dysphagia
The goal of this project is to investigate the abilities of individuals with dysphagia due to Parkinson's Disease to perform voluntary control of anterior neck musculature through interaction with an electromyographic videogame.

Role: PI

Total Award Amount: \$10,000

Person-Months Per Year Committed to Project: 1.8 (unfunded)

Boston University Grants for Undergraduate Teaching and Scholarship Program 11/01/12-06/30/13

Undergraduate Research on the Effects of Modality on Sensory-Motor Learning

The goals of this project are to implement and pilot test use of tactile feedback for human-machine-interface (HMI) control and to design and test healthy participant performance using auditory, visual, and tactile feedback for HMI control.

Role: PI

Total Award Amount: \$1850

Person-Months Per Year Committed to Project: n/a

Coulter Translational Partnership Award Kiran (PI) 07/01/12-6/30/13

Constant Therapy: a tablet therapy platform for speech language therapy for individuals with brain damage

The goal of this project is to create an online health system that provides ongoing rehabilitation services to patients via iPads, iPhones, and the Web.

Role: co-PI

Total Award Amount: \$124,000

Person-Months Per Year Committed to Project: n/a

Dudley A. Sargent Research Fund Stepp (PI) 05/01/12-04/30/13

Improving the reliability of RFF-based measures of voice production

The goal of this project is to develop a corpus of text tokens results in maximally internally consistent RFF (relative fundamental frequency) estimates and to determine whether the reliability of RFF estimation is improved by the use of neck acceleration.

Role: PI

Total Award Amount: \$6,905

Person-Months Per Year Committed to Project: n/a

Boston University Integrated Biomedical Pilot Grant Program Stepp (PI) 07/01/12-04/30/13

Nasal acceleration for ambulatory monitoring of nasality in VPD

The goal of this project is to determine the relationships between normalized nasal acceleration and nasalance in pediatric population with velopharyngeal disorders (VPD) and to determine the usability of normalized nasal acceleration in the same population.

Role: PI

Total Award Amount: \$19,084

Person-Months Per Year Committed to Project: n/a

American Speech-Language-Hearing Foundation Stepp (PI) 01/01/12-12/31/12

Voluntary Control of Anterior Neck Musculature in Dysphagia

New Investigator Grant: to investigate the abilities of individuals with post-stroke dysphagia to perform voluntary control of anterior neck musculature through interaction with an electromyographic videogame.

Role: PI

Total Award Amount: \$5,000

Person-Months Per Year Committed to Project: 3.6 (unfunded)

University of Washington Stolov Research Grant Stepp (PI) 05/01/10-05/01/11
 Augmentative vibrotactile feedback for control of a prosthetic hand
 The goal of this project was to systematically investigate the relative impact of force-based vibrotactile stimulation at multiple body locations and with alternative stimulation paradigms, to identify optimal modes of stimulus presentation for object manipulation.
 Role: PI
 Total Award Amount: \$1,312
 Person-Months Per Year Committed to Project: no effort requested

Teaching (*indicates new course development)

*KHC HS102 The Body Rewired: Reinventing Medicine through Human-Machine Interfaces Spring 2014
 (undergraduate, 4 credits, 11 students)
 Kilachand Honors College, Boston University

SAR SH523 Introduction to Speech Science (undergraduate, 4 credits, 23 students) Fall 2013
 Sargent College, Boston University

*SAR SH755 Applied Speech Science (graduate, 2 credits, 37 students; taught by D. Mehta) Spring 2013
 Sargent College, Boston University
 Guest Lecture: Resonance disorders, perceptual and acoustic features

SAR SH523 Introduction to Speech Science (undergraduate, 4 credits, 24 students) Fall 2012
 Sargent College, Boston University

*SAR SH523 Introduction to Speech Science (undergraduate, 4 credits, 22 students) Fall 2011
 Sargent College, Boston University

Research Advising (see publication/presentation lists for BU student authors):

Post-doctoral Primary Mentor

Supraja Anand, PhD, Post-doctoral Fellow in Speech, Language, and Hearing Sciences 2014 – 2015

Post-doctoral Co-Mentor

Lenny A. Varghese, PhD, Post-doctoral Fellow, Computational Neuroscience & Neural Technology Research Supervisor 2013 – 2015

Doctoral Student Primary Mentor

Meredith Cler, PhD in Computational Neuroscience
 Research Rotation Supervisor (Fall 2013) 2013 – 2014
 Research Supervisor 2013 – present

*Elizabeth Heller Murray, PhD in Speech, Language, and Hearing Sciences
 Academic Advisor / Research Supervisor

*Yu-An (Stephanie) Lien, PhD in Biomedical Engineering 2012 – present
 Academic Advisor / Research Supervisor

Poster session for Ecole Polytechnique Fédérale de Lausanne and Boston University:
 "Algorithms for Estimation of Voice Features for Dysphonia Assessment"
 Winner of the 2013 Advances in Quantitative Laryngology Best Paper Award
 Winner (Mentee) of a 2013 American Speech-Language-Hearing Association's (ASHA's)

Research Mentoring-Pair Travel Award (RMPTA)
Winner of a 2013 American Speech-Language-Hearing Associations (ASHA) Student
Research Travel Award for submitting the top student paper in "Voice, Resonance, and
Alaryngeal Speech"

Doctoral Student Co-Mentor

Dante Smith, PhD in Computational Neuroscience
Research Rotation Supervisor 2012
Co-Advisor, Computational Neuroscience Training Grant 2013 – present

Doctoral Committee Member

Hari M. Bharadwaj, PhD in Biomedical Engineering
Dissertation Committee Member 2013 – 2014
Dissertation: "Individual differences in supra-threshold auditory perception – mechanisms
and objective correlates"

Asako (Kaneoka) Satoh, PhD in Speech, Language, and Hearing Sciences
Qualifying Project Committee Member 2013 – 2014
Qualifying Project: "A Comparison of Two Methods of Endoscopic Laryngeal Sensory Testing: A
Preliminary Study"

Keri Miloro, PhD in Speech, Language, and Hearing Sciences 2010 – 2013
Qualifying Project Committee Member
Qualifying Project: "Does improving the cough function reduce silent aspiration in
Parkinson's disease?"

Doctoral Student Rotation Supervisor

Winnie Wong, PhD in Biomedical Engineering 2012
Matthew Jacobsen, PhD in Biomedical Engineering 2012
Regina Baumgaertel, PhD in Biomedical Engineering 2012

Masters Student Primary Mentor

Carolyn Calabrese, MS in Speech-Language Pathology 2013 – 2015
Thesis: "Differential specificity of acoustic measures to listener perceptions of voice quality"

Kerri Downing, MS in Speech-Language Pathology 2013 – 2015
Thesis: "Perceptual judgments of nasality and audible nasal emissions in speech of children
with cleft palate"

*Caitlin Gattuccio, MS in Speech-Language Pathology 2011 – 2013
Thesis: "The Effects of Linguistic Factors on Analysis of Relative Fundamental Frequency in
Typical Speakers"

*Margaux Canevari, MS in Health Sciences 2011 – 2012
Thesis: "Acoustic Correlates of Intelligibility in Parkinsonian Speech"

Masters Student Thesis Committee Mentor

Elizabeth Heller, MS in Speech-Language Pathology, MGH Institute for Health Professions 2012 – 2013
Thesis: "Naturalness of Electrolarynx Speech Produced with Electromyographic versus
Manual Control"

Anh Nguyen, MS in Speech Language Pathology Thesis: "An Application of Steady State Visual Evoked Potential (SSVEP) Brain-Computer Interface As An Augmentative Alternative Communication System for Individuals with Locked-In Syndrome"	2011 – 2013
Jessica Pisezna, MS in Speech Language Pathology Thesis: "The Efficacy of the Masako Maneuver"	2011 – 2013
Katherine Field, MS in Speech Language Pathology Thesis: "The Boston Residue and Clearance Scale (BRACS): Criterion Validity"	2011 – 2013
Asako (Kaneoka) Satoh, MS in Speech Language Pathology Thesis: "The Boston Residue and Clearance Scale: Reliability Testing"	2011 – 2012
<u>Undergraduate Student Primary Mentor</u>	
Christina Stevens, BS in Biomedical Engineering Senior Project Advisor Project: "Design of Training Interfaces for Intonation Control with an Electromyographic Voice Prosthesis"	2013 – 2014
Research Supervisor Summer Term Alumni Research Scholar (\$3200) Summer 2013	2013 – 2014
Felicia Patel, BS in Biomedical Engineering Senior Project Advisor Project: "Design of Training Interfaces for Intonation Control with an Electromyographic Voice Prosthesis"	2013 – 2014
Juliana Valentin, BS in Biomedical Engineering Senior Project Advisor Project: "Design of Training Interfaces for Intonation Control with an Electromyographic Voice Prosthesis"	2013 – 2014
Research Supervisor	2013
*Joseph Mendoza, BS in Biomedical Engineering Research Supervisor	2013 – 2014
*Carolyn Michener, BS in Speech, Language, and Hearing Sciences Research Supervisor UROP Student Research Award (\$750) Fall 2013 UROP Student Research Award (\$1500) Spring 2014 CELEST Summer Program for Undergraduates (\$4500 + housing costs) Summer 2014	2012 – present
Lynne Messina, BS in Biomedical Engineering Senior Project Advisor Project: "Design of Noninvasive Technology for Real-time Estimation of Hyolaryngeal Kinematics for Videogame Control"	2012 – 2013
Emily Bonazelli, BS in Biomedical Engineering Senior Project Advisor Project: "Design of Noninvasive Technology for Real-time Estimation of Hyolaryngeal Kinematics for Videogame Control"	2012 – 2013
Research Supervisor	2012

Lauren Kalfin, BS in Biomedical Engineering
Research Supervisor 2012 – 2013

*Gabrielle Hands, BS in Neuroscience
Research Supervisor, UROP research mentor 2011 – 2014
UROP Faculty Matching Grant award (\$2000) Summer 2012
Howard Hughes Medical Institute Research Supplies Award (\$750) Summer 2012
2012 Undergraduate Research Symposium Poster Presentation: "Effects of Sensory Training
Modality on Control of an Auditory Body-Machine-Interface" Fall 2012
UROP Student Research Award (\$1750) Fall 2013
UROP Faculty Matching Grant award (\$750) Spring 2014

Nisha Dhawlikar, BS in Biology 2011 – 2013
Research Supervisor

Alan Pacheco, BS in Biomedical Engineering 2011 – 2013
Research Supervisor

*Howard Terry, BS in Biology 2011 – 2012
Research Supervisor

*Boris Virnik, BS in Biomedical Engineering 2011 – 2012
Senior Project Advisor
Project: "Design of a Novel Videogame Based Rehabilitation Tool for Velopharyngeal
Dysfunction"

*Elias Thorp, BS in Biomedical Engineering 2011 – 2012
Senior Project Advisor
Project: "Design of a Novel Videogame Based Rehabilitation Tool for Velopharyngeal
Dysfunction"
Research Supervisor 2012

Undergraduate Honors Thesis Committee Member

Jessica Malloy, BS in Neuroscience
Committee Member, Independent Work for Distinction in Neuroscience 2012 – 2013
Project: "Delayed auditory feedback and syllable sequencing: behavioral and pilot
EEG studies"

Student Advising:

AY 2013 – 2014	13 undergraduate students	2 graduate students
AY 2012 – 2013	10 undergraduate students	1 graduate student

University / Professional Service:

Boston University Representative	2013 – present
Faculty Advisory Group for Quali Coeus user interface	
Member, Faculty Advisory Group for New Research Website	2013
Guest Lecture, SAR SH810	2013

Graduate Program for Neuroscience “Frontiers” course participant	Fall 2012
Member, Colloquium Series Organization Committee Department of Speech, Language, and Hearing Sciences, Boston University	2012 – present
Member Undergraduate Education Committee, Sargent College, Boston University	2012 – present
Member Boston University CompNet Outreach and Meeting Initiatives Committee	2012 – present
Guest Lecture BE 790, Boston University	2011, 2012
Student Member, Admissions Committee Harvard-MIT Division of Health Sciences & Technology SHBT Program	2007-2009
Co-chair, Recruitment Committee Harvard-MIT Division of Health Sciences & Technology SHBT Program	2006-2008

Professional Service:

Member, Voice, Resonance, and Alaryngeal Committee American Speech-Language-Hearing 2014 Annual Convention	2013-2014
Reviewer Journal of the Acoustical Society of America	2013 – present
Reviewer IEEE Transactions on Human-Machine Systems	2013 – present
Reviewer Dysphagia	2013 – present
Member of Speech Motor Control Track Program Committee 2014 Conference on Motor Speech, Sarasota, FL	2013 – 2014
Reviewer Science Translational Medicine	2013 – present
Reviewer Medical & Biological Engineering & Computing	2013 – present
Reviewer NSF Panel SCH-EXP, Smart and Connected Health Program	2013
Reviewer Journal of Electromyography and Kinesiology	2013 – present
Reviewer 6 th International IEEE EMBS Conference on Neural Engineering	2013
Organizer, Associate Editor, Session Chair: “Neural Engineering in Speech and Hearing” IEEE Engineering in Medicine and Biology Conference 2013, Osaka, Japan	2013
Reviewer IEEE Engineering in Medicine and Biology Conference 2013, Osaka, Japan	2013

Reviewer Diseases of the Esophagus	2013 – present
Reviewer Speech Communication	2013 – present
Reviewer Journal of Laryngology and Voice	2012 – present
Reviewer American Journal of Speech-Language Pathology	2012 – present
Member Boston University CompNet Outreach and Meeting Initiatives Committee	2012 – present
Invited Session Chair: “Rehabilitation Engineering for Speech and Hearing Applications” IEEE Engineering in Medicine and Biology Conference 2012, San Diego, CA	2012
Session Co-Chair: “Human Performance I” IEEE Engineering in Medicine and Biology Conference 2012, San Diego, CA	2012
Reviewer IEEE Engineering in Medicine and Biology Conference 2012, San Diego, CA	2012
Reviewer Folia Phoniatica et Logopaedica	2012 – present
Reviewer Computers in Biology and Medicine	2012 – present
Reviewer Human Movement Science	2012 – present
Reviewer Medical Engineering & Physics	2012 – present
Reviewer Journal of NeuroEngineering and Rehabilitation	2011 – present
Member of Speech Motor Control Track Program Committee 2012 Conference on Motor Speech, Santa Rosa, CA	2011 – 2012
Invited Session Chair: “Assistive Technology for Human Communication” Track co-Chair: “Human-Robot Interaction and Robot-aided Living for a Healthier Tomorrow” IEEE Engineering in Medicine and Biology Conference 2011, Boston, MA	2011
Reviewer IEEE Engineering in Medicine and Biology Conference 2011, Boston, MA	2011
Reviewer Journal of Rehabilitation Research and Development	2010 – present
Reviewer IEEE/ASME Transactions on Mechatronics	2010 – present
Reviewer International Conference on Robotics and Automation (ICRA)	2010 – present

Reviewer Journal of Speech, Language, and Hearing Research	2009 – present
Reviewer IEEE Transactions on Biomedical Engineering	2009 – present
Reviewer IEEE Transactions on Neural Systems and Rehabilitation Engineering	2008 – present

Industry / Government / Consulting Experience:

Consultant, Development of a Home-based Hand Rehabilitation Device Pine Hill Labs, Seattle, WA	2010
Consultant, Facial Nerve Function in Rats Tessa Hadlock, M.D., Massachusetts Eye & Ear Infirmary, Boston, MA	2008 – 2009
Consultant, Sub-Vocal Speech Exploration BAE Systems, Burlington, MA	2007
Co-op, Group Environmental Affairs & Safety GE Aircraft Engines, Cincinnati, OH	2003 – 2004
Engineering Co-op, Peebles Test Operation Quality Group GE Aircraft Engines, Peebles, OH	2002 – 2003
Engineering Intern, Department of Public Works Northampton, MA	2001

Professional Affiliations:

American Speech-Language-Hearing Association
Acoustical Society of America
Society for Neuroscience
IEEE, Engineering in Medicine and Biology Society

Outreach:

Research presentation to the BU chapter of the National Student Speech Language Hearing Association (NSSLHA)	2014
Lab host for Perkins School for the Blind (high school) student	2014
Coordination of lab tours and experimental demonstrations of the Stepp Lab for Okayama Prefectural Tsuyama High School (Japan) students	2014
Lab host for BU Academy (high school) science students	2013 – present
Coordination of lab tours and experimental demonstrations of the Stepp Lab for BU Academy (high school) science students	2013 – present
Mentor Graduate Women Alumnae of MIT	2012
Lab outreach to middle school science students at the Elliot School in Boston, MA: guest judges at their school science fair.	Jan 2012

Participated as a “workplace host” for first-year engineering student, Dannia Guzman, as part of the Smith College Engineering Shadow Program.	Jan 2012
Lab outreach presentation and hands-on activities with the 7 th grade science students at the Elliot School in Boston, MA	Dec 2011
Lab outreach presentation and hands-on activities with the Cambridge Boys and Girls Club in Cambridge, MA	Nov 2011
Outreach presentations on careers in science at a local middle school (Blatchley Middle School) and high schools (Mt. Edgecumbe High School), the Sitka Sound Science Center, Sitka Rotary Club, and the local girl scout chapter of Sitka, Alaska: “Every Child is a Scientist: Engaging children in scientific thinking and reasoning through robotics and computer science” and “How to have a career in Brain Computer Interfaces.”	Sep 2010
Coordination of lab tours and school outreach presentations of the Neurobotics lab with Seattle/Bellevue area schools	2009 – 2011
Volunteer BostonCares, Boston, MA	2007 – 2009
Region F Student Leadership Coach Society of Women Engineers (SWE), Region F (northeast)	2004 – 2006