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Education:

2007 Ph.D. Electrical Engineering
Arizona State University
Dissertation: "*Bandwidth extension of speech using perceptual criteria*"

2005 M.S. Electrical Engineering
Arizona State University
Direct to Ph.D. student

2003 B.S. Electrical Engineering
Arizona State University
Summa Cum Laude

Academic Appointments:

2017 – present Mayo-ASU Alliance Research Fellow, Mayo Clinic Department of Neurology

2013 – present Assistant Professor, Department of Speech and Hearing Science (SHS), Arizona State University

2013 – present Assistant Professor, School of Electrical Computer and Energy Engineering (ECEE), Arizona State University

2013 – present Faculty, Barrett Honors College, Arizona State University

2007 – 2009 Research Scientist at the Massachusetts Institute of Technology Lincoln Laboratory

CV Summary:

- I received 14 research grants (NIH, NSF, ONR, DoD) or contracts (Google, Boehringer Ingelheim). An additional NIH R21 grant was just recommended for funding. The total allocated to me on these grants exceeds \$2.5M. My research expenditures in 2017 were ~\$445K. I am PI or mPI on 7 of the 14 proposals. I am co-PI on the remaining grants.
- I published a total of 26 journal publications and 2 more are submitted and currently under review (20 of these publications have come since my appointment at ASU in 2013).
- Of the 26 journal publications, 23 were published in Tier 1 journals in their main fields according to the SCImago Journal Ranking (<http://www.scimagojr.com/>).
- Of the 26 journal publications, 14 have been with me or a student/postdoc as first author.
- I also published 37 conference proceedings articles (ranging between 4 - 6 pages each). I published 18 since joining ASU, and 27 are with me or a student/postdoc as first author.
- I filed 5 patents, 2 are issued and 1 is licensed.
- I was invited to present at seminars or conferences 10 times.
- My research has been highlighted in several national media outlets, including in half-page articles in the Science section of the New York Times and in an interview on NPR.
- I am the chair or primary co-chair for 5 PhD students, 2 postdocs, 4 honor's undergraduate students, and 2 Master's students.
- I graduated 1 PhD student (co-chair; I was primary advisor), 1 Master's student, and 3 honor's undergraduate students. The PhD student is now a postdoctoral researcher at the New Zealand Institute of Language, Brain and Behaviour at the University of Canterbury. The MS student is now a cognitive analytics scientist at Verisk Analytics. The 3 Honor's students

are pursuing graduate studies at the University of Wisconsin-Madison, Notre Dame University, and Arizona State University. One of the postdocs started a tenure-track position at California State University, Chico. Two other PhD students graduate in 2018.

- I developed two new graduate courses and cross-listed one of the courses between SHS and ECEE. I have taught graduate students in Communication Disorders (SHS598), graduate students in Audiology (SHS500), and graduate/undergraduate students in Engineering (EEE 598, EEE203, EEE350). My reviews in the courses range from 4 to 5 (out of 5).
- I served as Associate Editor for the Journal of Alzheimer's Disease handling submissions related to speech and language. I was selected for the IEEE Speech and Language Technical Committee in 2017. I participated in several department level committees and co-chaired 1 college-level committee. I am chair of the PhD program in SHS. I was a reviewer for several journals.
- I founded a company through the National Science Foundation SBIR/STTR program. The company is now in revenue, supports 6 full-time employees and has been recognized nationally and internationally in several competitions. I was named *Fulton Entrepreneurial Professor* by the College of Engineering.

Industry Appointments:

2015 – Present Co-founder and Chief Science Officer, Aural Analytics
2009 – 2013 Principal Research Engineer, Raytheon Co., Tucson, AZ

Honors and Awards:

2017 Winner of the Scrip Award for Best Technological Development for Clinical Trials
2017 The 2016 Journal of Speech, Language, and Hearing Editor's Award
2017 Mayo Clinic-ASU Alliance Fellow
2017 ASU Fulton Entrepreneurial Professor
2015 National Academy of Sciences Keck Futures Initiative Invitee, 2015
2015 Harvard Business School New Venture Competition Finalist (SW Region)
2015 International Vodafone Wireless Innovation Challenge Finalist
2013 Acoustical Society of America Signal Processing Application Challenge, 1st place
2013 Winner of the Raytheon Innovation Challenge
2007 - 2008 Palais Outstanding Doctoral Student Award
2005 - 2007 ARCS Foundation Fellow
2004 - 2007 National Science Foundation Graduate Research Fellow

Recognition in the national and international press:

1. **Wall Street Journal:** "New study shows boxing's early toll on Muhammad Ali," written by Jonathan Eig, Visar Berisha, and Julie Liss, August 2017.
2. **ESPN:** "Muhammad Ali exhibited slowed, slurred speech well before Parkinson's diagnosis, study finds," written by William Weinbaum, August 2017.
3. **New York Times, Science Section:** "The earliest signs of brain damage in athletes? Listen for them," written by Dr. Larry Altman, June 2017.
4. **New York Times, Science Section:** "Parsing Ronald Reagan's Words for Early Signs of Alzheimer's," written by Dr. Larry Altman, March 2015.
5. **Yahoo! Health:** "Researchers Analyze Ronald Reagan's Speech For Early Signs Of Alzheimer's," written by Korin Miller, March 2015.
6. **Interview on National Public Radio:** "Arizona State University Researchers Explore New Way To Diagnose Neurological Diseases," interview by Mark Brodie, April 2015.
7. **USA Today, Technology Section:** "CES to include new generation of smartwear for health," written by Michael Feibus, December 2015

PUBLICATIONS

Asterisk denotes a graduate or undergraduate student that I advise; an underline indicates a postdoctoral researcher funded by a grant on which I am PI or mPI. The listing below shows the most recent publications first; they are numbered in descending order. Each set of publications has a different prefix: J=Journal Publication; JUR=Journal Manuscript, Under Review; C=Conference Proceedings; CUR=Conference Proceedings Manuscript, Under Review; CA=Conference Abstract; CAUR= Conference Abstract Manuscript, Under Review; P=Issued patent; PP=Submitted patent; E=Editorial; B=Book; CO=Invited colloquium

Following each journal publication is the SCImago Journal Rank Indicator (SJR) index (see <http://www.scimagojr.com/>). This index is an established measure of the journal's impact and prestige. In addition, we also provide information about which tier the journal belongs to according to the same website. The latest available SJR index (2016) from the website is listed below.

Peer-Reviewed Journal Publications:

Published:

- J29. Schwedt, T., *Peplinski, J., **Berisha, V.** (in press). Altered speech during migraine attacks: A prospective, longitudinal study of episodic migraine without aura. *Cephalalgia*.
[SJR: 2.067; Tier 1 journal in Neurology and Medicine]
- J28. Chong, C., *Peplinski, J., **Berisha, V.**, Ross, K., Schwedt, T. (in press). Differences in Fibertract Profiles between Patients with Migraine and those with Persistent Post-Traumatic Headache *Cephalalgia*.
[SJR: 2.067; Tier 1 journal in Neurology and Medicine]
- J27. Rutkove, S., Qi, K., Shelton, K., Liss, J., **Berisha, V.**, Shefner, J. (in press) ALS longitudinal studies with frequent data collection at home: study design and baseline data. *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*.
[SJR: 1.817; Tier 1 journal in Neurology and Medicine]
- J26. *Utianski, R., *Sandoval, S., **Berisha, V.**, Lansford, K., Liss, J. (in press) The effects of speech compression algorithms on the intelligibility of two individuals with dysarthric speech. *American Journal of Speech-Language Pathology*.
[SJR: 0.94; Tier 1 journal in Language and Linguistics, Tier 2 in Speech and Hearing]
- J25. Howard, L., Dumkrieger, G., Chong, C., Ross, K., **Berisha, V.**, Schwedt TJ. (in press) Symptoms of Autonomic Dysfunction Amongst Those with Persistent Post-Traumatic Headache Attributed to Mild Traumatic Brain Injury: a Comparison to Migraine and Healthy Controls. *Headache*.
[SJR: 1.07; Tier 2 journal in Neurology]
- J24. **Berisha, V.**, *Gilton, D., Baxter, L., Corman, S., Blais, C., Brewer, G., Ruston, S., Ball, H., Peter, B., Wingert, K., Rogalsky, C. (2018). Structural neural predictors of Farsi-English bilingualism. *Brain and Language*, 180, 42-49.
[SJR: 2.035; Tier 1 journal in Speech and Hearing, Language and Linguistics, Cognitive Neuroscience]

- J23. *Wisler, A., **Berisha, V.**, Spanias, A., & Hero, A. O. (2017). Direct estimation of density functionals using a polynomial basis. *IEEE Transactions on Signal Processing*, 66(3), 558-572.
[SJR: 1.591; Tier 1 journal in Electrical and Electronic Engineering, Signal Processing]
- J22. Schwedt, T. J., Chong, C. D., *Peplinski, J., Ross, K., & **Berisha, V.** (2017). Persistent post-traumatic headache vs. migraine: an MRI study demonstrating differences in brain structure. *The journal of headache and pain*, 18(1), 87.
[SJR: 0.775; Tier 1 journal in Anesthesiology and Pain Medicine, Medicine (miscellaneous), Tier 2 journal in Neurology]
- J21. **Berisha, V.**, *Wang, S., LaCross, A., Liss, J., Garcia-Filion, P. (2017). Longitudinal changes in linguistic complexity among professional football players. *Brain and language*, 169, 57-63.
[SJR: 2.035; Tier 1 journal in Speech and Hearing, Language and Linguistics, Cognitive Neuroscience]
- J20. Xu, Z., Skorheim, S., *Tu, M., **Berisha, V.**, Yu, S., Seo, J. S., ... & Cao, Y. (2017). Improving efficiency in sparse learning with the feedforward inhibitory motif. *Neurocomputing*, 267, 141-151.
[SJR: 0.968; Tier 1 journal in Artificial Intelligence, CS Applications, Tier 2 journal in Cognitive Neuroscience]
- J19. Hsu, S. C., *Jiao, Y., McAuliffe, M. J., **Berisha, V.**, Wu, R. M., & Levy, E. S. (2017). Acoustic and perceptual speech characteristics of native Mandarin speakers with Parkinson's disease. *The Journal of the Acoustical Society of America*, 141(3), EL293-EL299.
[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]
- J18. *Jiao, Y., **Berisha, V.**, Liss, J., *Hsu, S. C., Levy, E., & McAuliffe, M. (2017). Articulation entropy: An unsupervised measure of articulatory precision. *IEEE Signal Processing Letters*, 24(4), 485-489.
[SJR: 0.942; Tier 1 journal in Signal Processing, Electrical and Electronic Engineering, Tier 2 journal in Applied Mathematics]
- J17. LaCross, A., Liss, J., Barragan, B., Adams, A., **Berisha, V.**, McAuliffe, M., & Fromont, R. (2016). The role of stress and word size in Spanish speech segmentation. *The Journal of the Acoustical Society of America*, 140(6), EL484-EL490.
[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]
- J16. *Tu, M., *Wisler, A., **Berisha, V.**, & Liss, J. M. (2016). The relationship between perceptual disturbances in dysarthric speech and automatic speech recognition performance. *The Journal of the Acoustical Society of America*, 140(5), ELR416-EL422.
[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]

- J15. Dorman, M. F., Liss, J., *Wang, S., **Berisha, V.**, Ludwig, C., & Natale, S. C. (2016). Experiments on auditory-visual perception of sentences by users of unilateral, bimodal, and bilateral cochlear implants. *Journal of Speech, Language, and Hearing Research*, 59(6), 1505-1519. **(2016 Editors Award)**
[SJR: 1.152; Tier 1 journal in Speech and Hearing, Language and Linguistics, Medicine (miscellaneous)]
- J14. Lansford, K. L., **Berisha, V.**, & *Utianski, R. L. (2016). Modeling listener perception of speaker similarity in dysarthria. *The Journal of the Acoustical Society of America*, 139(6), EL209-EL215.
[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]
- J13. **Berisha, V.**, *Wisler, A., Hero, A. O., & Spanias, A. (2016). Empirically estimable classification bounds based on a nonparametric divergence measure. *IEEE Transactions on Signal Processing*, 64(3), 580-591.
[SJR: 1.591; Tier 1 journal in Electrical and Electronic Engineering, Signal Processing]
- J12. *Jiao, Y., **Berisha, V.**, *Tu, M., & Liss, J. (2015). Convex weighting criteria for speaking rate estimation. *IEEE/ACM transactions on audio, speech, and language processing*, 23(9), 1421-1430.
[SJR: 0.887; Tier 1 journal in Acoustics and Ultrasonics, Electrical and Electronic Engineering]
- J11. **Berisha, V.**, *Wang, S., LaCross, A., & Liss, J. (2015). Tracking discourse complexity preceding Alzheimer's disease diagnosis: a case study comparing the press conferences of presidents Ronald Reagan and George Herbert Walker Bush. *Journal of Alzheimer's Disease*, 45(3), 959-963.
[SJR: 1.536; Tier 1 journal in Clinical Psychology, Geriatrics and Gerontology, Psychiatry and Mental Health]
- J10. **Berisha, V.**, & Hero, A. O. (2015). Empirical non-parametric estimation of the Fisher Information. *IEEE Signal Processing Letters*, 22(7), 988-992.
[SJR: 0.942; Tier 1 journal in Signal Processing, Electrical and Electronic Engineering, Tier 2 journal in Applied Mathematics]
- J9. Schwedt, T. J., **Berisha, V.**, & Chong, C. D. (2015). Temporal lobe cortical thickness correlations differentiate the migraine brain from the healthy brain. *PLoS One*, 10(2), e0116687.
[SJR: 1.201; Tier 1 journal in Medicine (miscellaneous), Agricultural and Biological Sciences (miscellaneous), etc.]
- J8. **Berisha, V.**, & Cochran, D. (2015). Active data labeling for improved classifier generalizability. *Signal Processing*, 108, 272-277.
[SJR: 1.041; Tier 1 journal in Signal Processing, Computer Vision and Pattern Recognition, Electrical and Electronic Engineering]
- J7. **Berisha, V.**, *Sandoval, S., Utianski, R., Liss, J., & Spanias, A. (2014). Characterizing the distribution of the quadrilateral vowel space area. *The Journal of the Acoustical Society of America*, 135(1), 421-427.

[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]

- J6. *Sandoval, S., **Berisha, V.**, Utianski, R. L., Liss, J. M., & Spanias, A. (2013). Automatic assessment of vowel space area. *The Journal of the Acoustical Society of America*, 134(5), EL477-EL483.
[SJR: 0.749; Tier 1 journal in Acoustics and Ultrasonics, Tier 2 journal in Arts and Humanities (miscellaneous)]
- J5. Krishnamoorthi, H., Spanias, A., & **Berisha, V.** (2009). A frequency/detector pruning approach for loudness estimation. *IEEE Signal Processing Letters*, 16(11), 997-1000.
[SJR: 0.942; Tier 1 journal in Signal Processing, Electrical and Electronic Engineering, Tier 2 journal in Applied Mathematics]
- J4. Kwon, H., **Berisha, V.**, Atti, V., & Spanias, A. (2009). Experiments with sensor notes and Java-DSP. *IEEE Transactions on Education*, 52(2), 257-262.
[SJR: 0.916; Tier 1 journal in Education and Electrical and Electronic Engineering]
- J3. Atti, V., Spanias, A., Tsakalis, K., Panayiotou, C., Iasemidis, L., & **Berisha, V.** (2008). Gradient projection-based channel equalization under sustained fading. *Signal Processing*, 88(2), 236-246.
[SJR: 1.041; Tier 1 journal in Signal Processing, Computer Vision and Pattern Recognition, Electrical and Electronic Engineering]
- J2. **Berisha, V.**, & Spanias, A. (2007). Wideband speech recovery using psychoacoustic criteria. *EURASIP Journal on Audio, Speech, and Music Processing*, 2007(2), 5-5.
[SJR: 0.28; Tier 2 journal in Electrical and Electronic Engineering, Tier 3 journal in Acoustics and Ultrasonics]
- J1. Spanias, A., Huang, C. W., Natarajan, A., Ferzli, R., Kwon, H., Atti, V., **Berisha, V.**, ... & Misra, S. (2007). Interfacing Java-DSP with a TI DSK for use in a signal processing class. *Computers in Education Journal*, 17(3), 27-35.
[SJR: 0.107; Tier 4 journal in Education, Tier 4 journal in Computer Science (miscellaneous)]

Submitted and Under Review:

- JUR1. Shah, M., *Tu, M., **Berisha, V.**, Chakrabarti, C., Spanias, A. (2017). *Articulation constrained learning with application to speech emotion recognition*. Manuscript submitted for publication.

Peer-Reviewed Conference Proceedings Publications:

Published:

- C38. Dixit, A., Shankar, U., Spanias, A., **Berisha, V.**, Banavar, M. Online Machine Learning Experiments using the new HTML5 Object Oriented Software. In Proceedings of Frontiers in Education Workshop, 2018.

- C37. Song, H., *Willi, M., Thuagarajan, J., **Berisha, V.**, and Spanias, A. (2018) Triplet network with attention for speaker diarization. In *Proceedings of 2018 Interspeech Conference*.
- C36. *Tu, M., Grabek, A., Liss, J., **Berisha V.** (2018) Investigating the role of L1 in automatic pronunciation evaluation of L2 speech. In *Proceedings of 2018 Interspeech Conference*
- C35. Willi, M., Borrie, S., Barrett, T., Tu, M., **Berisha, V.** (2018) A discriminative acoustic-prosodic approach for measuring local entrainment. In *Proceedings of 2018 Interspeech Conference*
- C34. *Wisler, A., Moon, K., & **Berisha, V.** (2018). Direct ensemble estimation of density functionals. In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. (also available on *arXiv preprint arXiv:1705.06315*.)
- C33. *Jiao, Y., *Tu, M., **Berisha, V.**, Liss, J. (2018) Simulating dysarthric speech for training data augmentation in clinical speech applications, In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.
- C32. *Kadambi, P., Mohanty, A., Ren, H., Smith, J. McGuinness, K., Holt, K., Furtwaengler, A., Slepetyts, R., Yang, Z., Seo, J., Chae, J., Cao, Y. **Berisha, V.** (2018) Towards a wearable cough detector based on neural networks, In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.
- C31. *Kadambi, P., *Wisler, A., **Berisha, V.** (2017) Improved Finite-Sample Estimate of a Nonparametric f-Divergence. In *Proc of Asilomar Conference on Signals, Systems, and Computers*. IEEE.
- C30. **Berisha, V.**, Liss, J., *Huston, T., *Wisler, A., *Jiao, Y., & Eig, J. (2017). Float like a butterfly sting like a bee: Changes in speech preceded Parkinsonism diagnosis for Muhammad Ali. *Proc. Interspeech 2017*, 1809-1813.
- C29. *Jiao, Y., **Berisha, V.**, & Liss, J. (2017, March). Interpretable phonological features for clinical applications. In *Acoustics, Speech and Signal Processing (ICASSP), 2017 IEEE International Conference on* (pp. 5045-5049). IEEE.
- C28. *Tu, M., **Berisha, V.**, & Liss, J. (2017, March). Objective assessment of pathological speech using distribution regression. In *Acoustics, Speech and Signal Processing (ICASSP), 2017 IEEE International Conference on* (pp. 5050-5054). IEEE.
- C27. *Kawabata, K., **Berisha, V.**, Scaglione, A., LaCross, A. (2016). A convex model for linguistic influence in group conversations. In *INTERSPEECH* (pp. 1442-1446).
- C26. *Jiao, Y., Tu, M., **Berisha, V.**, & Liss, J. M. (2016). Accent identification by combining deep neural networks and recurrent neural networks trained on long and short term features. In *INTERSPEECH* (pp. 2388-2392).
- C25. *Tu, M., **Berisha, V.**, Woolf, M., Seo, J. S., & Cao, Y. (2016, March). Ranking the parameters of deep neural networks using the fisher information. In *Acoustics, Speech and Signal Processing (ICASSP), 2016 IEEE International Conference on* (pp. 2647-2651). IEEE.
- C24. *Jiao, Y., *Tu, M., **Berisha, V.**, & Liss, J. (2016, March). Online speaking rate estimation using recurrent neural networks. In *Acoustics, Speech and Signal Processing (ICASSP), 2016 IEEE International Conference on* (pp. 5245-5249). IEEE.
- C23. *Wisler, A., **Berisha, V.**, Wei, D., Ramamurthy, K., & Spanias, A. (2016, March). Empirically-estimable multi-class classification bounds. In *Acoustics, Speech and*

- Signal Processing (ICASSP), 2016 IEEE International Conference on* (pp. 2594-2598). IEEE.
- C22. *Wisler, A., **Berisha, V.**, Ramamurthy, K., Spanias, A., & Liss, J. (2015, April). Removing data with noisy responses in regression analysis. In *Acoustics, Speech and Signal Processing (ICASSP), 2015 IEEE International Conference on* (pp. 2066-2070). IEEE.
- C21. *Wisler, A., **Berisha, V.**, Liss, J., & Spanias, A. (2014, December). Domain invariant speech features using a new divergence measure. In *Spoken Language Technology Workshop (SLT), 2014 IEEE* (pp. 77-82). IEEE.
- C20. **Berisha, V.**, Liss, J., *Sandoval, S., Utianski, R., & Spanias, A. (2014, May). Modeling pathological speech perception from data with similarity labels. In *Acoustics, Speech and Signal Processing (ICASSP), 2014 IEEE International Conference on* (pp. 915-919). IEEE.
- C19. **Berisha, V.**, Utianski, R., & Liss, J. (2013, May). Towards a clinical tool for automatic intelligibility assessment. In *Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference on* (pp. 2825-2828). IEEE.
- C18. **Berisha, V.**, Javadi, A., Hammet, K. R., Anderson, D. V., & Gray, A. (2010, November). Making decisions about unseen data: Semi-supervised learning at different levels of specificity. In *Signals, Systems and Computers (ASILOMAR), 2010 Conference Record of the Forty Fourth Asilomar Conference on* (pp. 75-79). IEEE.
- C17. Krishnamoorthi, H., Spanias, A., **Berisha, V.**, Kwon, H., & Thornburg, H. (2010, March). An auditory-domain based speech enhancement algorithm. In *Acoustics, Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on* (pp. 4786-4789). IEEE.
- C16. Thiagarajan, J. J., Ramamurthy, K. N., Knee, P., Spanias, A., & **Berisha, V.** (2010, March). Sparse representations for automatic target classification in SAR images. In *Communications, Control and Signal Processing (ISCCSP), 2010 4th International Symposium on* (pp. 1-4). IEEE.
- C15. Kwon, H., Krishnamoorthi, H., **Berisha, V.**, & Spanias, A. (2009, May). A sensor network for real-time acoustic scene analysis. In *Circuits and Systems, 2009. ISCAS 2009. IEEE International Symposium on* (pp. 169-172). IEEE.
- C14. Krishnamoorthi, H., **Berisha, V.**, Spanias, A., & Kwon, H. (2009, April). Low-complexity sinusoidal component selection using loudness patterns. In *Acoustics, Speech and Signal Processing, 2009. ICASSP 2009. IEEE International Conference on* (pp. 301-304). IEEE.
- C13. Philips, S., **Berisha, V.**, & Spanias, A. (2009, April). Energy-constrained discriminant analysis. In *Acoustics, Speech and Signal Processing, 2009. ICASSP 2009. IEEE International Conference on* (pp. 3281-3284). IEEE.
- C12. **Berisha, V.**, Benitz, G., Martinez, B., and Kogon, S. (2008, June). Radar Classification of Persons Based on Gait Analysis. In *2008 Proceedings of the Tri-Service Radar Symposium*.
- C11. Kwon, H., **Berisha, V.**, & Spanias, A. (2008, May). Real-time sensing and acoustic scene characterization for security applications. In *Wireless Pervasive Computing, 2008. ISWPC 2008. 3rd International Symposium on* (pp. 755-758). IEEE.
- C10. Krishnamoorthi, H., **Berisha, V.**, & Spanias, A. (2008, March). A low-complexity loudness estimation algorithm. In *Acoustics, Speech and Signal Processing, 2008. ICASSP 2008. IEEE International Conference on* (pp. 361-364). IEEE.
- C9. **Berisha, V.**, & Spanias, A. (2007, April). A scalable bandwidth extension algorithm. In *Acoustics, Speech and Signal Processing, 2007. ICASSP 2007. IEEE International Conference on* (Vol. 4, pp. IV-601). IEEE.

- C8. **Berisha, V.**, Shah, N., Waagen, D., Schmitt, H., Bellofiore, S., Spanias, A., & Cochran, D. (2007, April). Sparse manifold learning with applications to SAR image classification. In *Acoustics, Speech and Signal Processing, 2007. ICASSP 2007. IEEE International Conference on* (Vol. 3, pp. III-1089). IEEE.
- C7. **Berisha, V.**, & Spanias, A. (2006, October). Bandwidth extension of audio based on partial loudness criteria. In *Multimedia Signal Processing, 2006 IEEE 8th Workshop on* (pp. 146-149). IEEE.
- C6. Kwon, H., **Berisha, V.**, & Spanias, A. (2006, September). Distributed Sensing with Java-DSP. In *Digital Signal Processing Workshop, 12th-Signal Processing Education Workshop, 4th* (pp. 311-315). IEEE.
- C5. **Berisha, V.**, Kwon, H., & Spanias, A. (2006, May). Real-time collaborative monitoring in wireless sensor networks. In *Acoustics, Speech and Signal Processing, 2006. ICASSP 2006 Proceedings. 2006 IEEE International Conference on* (Vol. 3, pp. III-III). IEEE.
- C4. **Berisha, V.**, Kwon, H., & Spanias, A. (2006, May). Real-time acoustic monitoring using wireless sensor motes. In *Circuits and Systems, 2006. ISCAS 2006. Proceedings. 2006 IEEE International Symposium on* (pp. 4-pp). IEEE.
- C3. **Berisha, V.**, & Spanias, A. (2005, October). Enhancing the quality of coded audio using perceptual criteria. In *Multimedia Signal Processing, 2005 IEEE 7th Workshop on* (pp. 1-4). IEEE.
- C2. **Berisha, V.**, & Spanias, A. (2005, May). Enhancing vocoder performance for music signals. In *Circuits and Systems, 2005. ISCAS 2005. IEEE International Symposium on* (pp. 4050-4053). IEEE.
- C1. Song, Y., Spanias, A., Atti, V., & **Berisha, V.** (2005, March). Interactive Java modules for the MPEG-1 psychoacoustic model [audio coding teaching applications]. In *Acoustics, Speech and Signal Processing, 2005. Proceedings. (ICASSP'05). IEEE International Conference on* (Vol. 5, pp. v-581). IEEE.

Peer-Reviewed Conference Abstracts (for conferences not publishing proceedings):

- CA9. **Berisha, V.**, Liss, J., *Tu, M. (2018). A primer on clinical-speech applications of deep learning, Motor Speech Conference, Savannah, GA.
- CA8. **Berisha, V.** (2016). Objective evaluation of perceptual dimensions in dysarthria. American Speech and Hearing Association Convention – Special session on Motor Speech Assessment Tools: Outcomes & Efficacy Data Session, Philadelphia, PA. **(Invited)**
- CA7. *Schiltz, J. H., & **Berisha, V.** (2016). The role of the carrier waveform in vocoded Mandarin speech perception with applications to cochlear implants. *The Journal of the Acoustical Society of America*, 139(4), 2047-2047.
- CA6. **Berisha, V.**, & Liss, J. (2016). Objective evaluation of perceptual quality in the dysarthrias: an engineering perspective. Motor Speech Conference, Savannah, GA.
- CA5. Schatzki, M., *Wang, S., **Berisha, V.**, Zhong, X. (2014). Using Real-Time Automatic Speech Recognition in Accent Modification Practice. American Speech and Hearing Association Convention, Orlando, FL.
- CA4. Zhong, X., *Wang, S., Schatzki, M., **Berisha, V.** (2014). Development of an Individualized Accented Speech Training System. American Speech and Hearing Association Convention, Orlando, FL.

- CA3. Utianski, R., *Sandoval, S., Lehrer, N., **Berisha, V.**, & Liss, J. (2013). Speech assist: An augmentative tool for practice in speech-language pathology. *Journal of the Acoustical Society of America*, 134(5). **(Winner of the ASA Mobile App Competition)**
- CA2. Utianski, R. L., *Sandoval, S., **Berisha, V.**, & Liss, J. (2013). The effects of speech compression algorithms on the intelligibility of dysarthric speech. *The Journal of the Acoustical Society of America*, 134(5), 4132-4132.
- CA1. *Sandoval, S., Utianski, R., **Berisha, V.**, Liss, J., & Spanias, A. (2013). Feature divergence of pathological speech. *The Journal of the Acoustical Society of America*, 134(5), 4133-4133.

Patents (issued):

- P3. **Berisha, V.**, & Spanias, A. (2013). *U.S. Patent No. 8,392,198*. Washington, DC: U.S. Patent and Trademark Office.
- P2. Krishnamoorthi, H., Spanias, A., & **Berisha, V.** (2015). *U.S. Patent No. 9,055,374*. Washington, DC: U.S. Patent and Trademark Office.
- P1. Abousleman, G. P., Budge, D. W., & **Berisha, V.** (2008). *U.S. Patent No. 7,327,691*. Washington, DC: U.S. Patent and Trademark Office.

Patents (filed):

- PP2. Zhong, X., **Berisha, V.**, Liss, J., Dorman, M., Yost, W. (Filed 2016). A speech assistive device. *Under Review*. Washington, DC: U.S. Patent and Trademark Office.
- PP1. **Berisha, V.**, Liss, J., *Wisler, A., *Tu, M. (Filed 2017). Speech analysis algorithms for disease detection. *Under Review*. Washington, DC: U.S. Patent and Trademark Office. (**licensed externally**).

Books:

- B1. **Berisha, V.**, *Sandoval, S., & Liss, J. (2013). Bandwidth extension of speech using perceptual criteria. *Synthesis Lectures on Algorithms and Software in Engineering*, 5(2), 1-83.

Editorials:

- E2. **Berisha, V.**, & Liss, J. (2017, June). What if your cell phone data can reveal whether you have Alzheimer's? *Slate Magazine*. Retrieved from http://www.slate.com/articles/technology/future_tense/2017/06/using_smartphone_data_to_diagnose_health_problems_like_alzheimer_s.html
- E1. Eig, J., **Berisha, V.**, & Liss, J. (2017, August 23). New study shows boxing's early toll on Muhammad Ali. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/new-study-shows-boxings-early-toll-on-muhammad-ali-1503489119>

Invited colloquia:

- CO10. **Berisha, V.** (2018, July). Speech and language analytics for early detection of neurological decline. Invited presentation at the 2018 American Academy of Neurology Sports Concussion Conference, Indianapolis, IN.
- CO9. **Berisha, V.** (2018, April). Clinical speech analytics: interpretable algorithms and information limits. Seminar presented at the *University of California Los Angeles*, Los Angeles, CA.
- CO8. **Berisha, V.** (2018, April). Detecting paralinguistic information from speech for clinical applications: Interpretable algorithms and information limits. Seminar presented at the *IEEE Dallas Chapter of Signal Processing Society*, Dallas, TX.
- CO7. **Berisha, V.**, & Liss, J. (2017, December). New technologies for measures of clinical progression. Seminar presented at the *28th International Symposium on ALS/MND*, Boston, MA.
- CO6. **Berisha, V.** (2017, March). Detecting paralinguistic information from speech for clinical applications: Interpretable algorithms and information limits. Seminar presented at the *University of Southern California Signal Analysis and Interpretation Laboratory, Ming Hsieh Department of Electrical Engineering*, Los Angeles, CA.
- CO5. **Berisha, V.** (2016, December). Speech and language analytics for health applications. Seminar presented at the *University of Arizona Fall Colloquium Series*. Tucson, AZ.
- CO4. **Berisha, V.** (2015, November). Tracking outcome measures in neurological disorders through speech and language processing. Seminar presented at the *Mayo Clinic Neuroscience Conference*, Scottsdale, AZ.
- CO3. **Berisha, V.** (2007, September). Speech compression using loudness criteria. Seminar presented at *Lincoln Laboratory*, Boston, MA.
- CO2. **Berisha, V.** (2007, November). Speech enhancement using perceptual criteria. Seminar presented at *Center for Computer Research in Music and Acoustics at Stanford University*, Palo Alto, CA.
- CO1. **Berisha, V.** (2007, December). Recent developments in bandwidth extension of speech. Seminar presented at *Microsoft Research*, Redmond, WA.

TEACHING AND MENTORING

Courses Taught:

Semester/Year	Course Number and Name	Mean Student Evaluation on Instructor Questions
Spring 2018	SHS 500: Research Methods (Graduate Course)	4.29 out of 5
Spring 2018	SHS 790: Doctoral Proseminar Writing Group (Graduate Course)	4.43 out of 5
Fall 2017	SHS 598: Intro to Data Science for SHS Research (Graduate Course)	4.9 out of 5
Spring 2017	EEE 203: Signals and Systems I (Undergraduate Course)	4.63 out of 5
Spring 2017	SHS 500: Research Methods (Graduate Course)	3.83 out of 5
Fall 2016	SHS 790: Doctoral Proseminar Writing Group (Graduate Course)	4.0 out of 5
Fall 2016	EEE 598: Speech and Audio Processing and Analysis (cross-listed) (Graduate Course)	4.7 out of 5
Spring 2016	SHS 500: Research Methods (Graduate Course)	4.22 out of 5
Spring 2016	EEE 350: Random Signal Analysis (Undergraduate Course)	4.1 out of 5
Fall 2015	SHS 598: Intro to Data Science for SHS Research (Graduate Course)	4.48 out of 5
Spring 2015	SHS 500: Research Methods (Graduate Course)	4.6 out of 5
Fall 2014	EEE 598: Speech and Audio Processing and Analysis (cross-listed) (Graduate Course)	4.78 out of 5
Fall 2014	SHS 598: Speech and Audio Processing and Analysis (cross-listed) (Graduate Course)	4.22 out of 5
Spring 2014	SHS 500: Research Methods (Graduate Course)	4.41 out of 5

Courses Developed:

<i>SHS/EEE 598: Speech and Audio Processing and Analysis</i>	
	<p>This principal objective of this project-based course is to learn and apply (in Matlab) concepts from Speech Signal Processing. The course will cover a number of important topics, including:</p> <ul style="list-style-type: none"> - Review of Digital Signal Processing - Speech production - Computational models of speech analysis/synthesis (STFT, LPC) - Computing and modifying important speech parameters (pitch, formants, envelope, etc.) - Basic computational psychoacoustics - Applications of speech processing (speech compression, speech recognition, etc.) <p>This course is cross-listed between the School of Electrical Computer and Energy Engineering (ECEE) and the Department of Speech and hearing science (SHS).</p>

<i>SHS 598: Intro to Data Science for SHS Research</i>	
	<p>In many applications in our field, data is becoming increasingly easier to collect and increasingly heterogeneous. For example, in neuroscience applications, we often want to combine behavioral scores with neuroimaging data. In other applications, we may want to integrate behavioral measures with statistics extracted from raw text. Data science refers to the process of extracting useful information from a raw data set. The principal aim of the course is to introduce students to a world of data analysis and analytics that exists outside of traditional statistics. We will cover important topics and concepts in the field such as data scrubbing, linear and non-linear classification, regression methods, clustering, visualization, and other concepts. The focus of the class will be on the applicability of the methods rather than the underlying theory. As a result, there will be many hands-on activities with the free <i>weka</i> analytics platform. This will be a project-based course where students will be encouraged to bring their own data for analysis.</p>

Student Mentoring:**Doctoral students in SHS (committee chair or primary co-chair):**

Name	Status	Expected Graduation
Pranav Ambadi	Current Student	May 2022.
Ming Tu	Current Student	Graduated August 2018.
Yishan Jiao	Current Student	May 2019

Doctoral students in ECEE (committee chair or primary co-chair):

Name	Status	Expected Graduation
Weizhi Li	Current Student	December 2021
Prad Kadambi	Current Student	December 2021

Jennifer Liu	Current Student	Spring 2022
Rohit Voleti	Current Student	Spring 2022
Alan Wisler	Primary advisor but co-chaired with Andreas Spanias. Graduated. Postdoctoral researcher at the New Zealand Institute of Brain and Language at the University of Canterbury (summer 2017)	Graduated Spring 2017
Steven Sandoval	Initially, I was a co-chair of Steven's PhD thesis committee (along with Spanias). We published two journal papers together. He eventually switched topics and advisors.	Graduated Spring 2016

Doctoral students in SHS (member of PhD committee)

Name	Expected Graduation
Beatriz Barragan	Spring 2018
Shuai Wang	Graduated Spring 2016
Rene Utianski	Graduated Spring 2014

Doctoral students in ECEE (member of PhD committee)

Name	Expected Graduation
Owen Ma	2020
Arindam Dutta	December 2018
Francisco Javier	unknown
Bryan O. Paul	Graduated Spring 2017
Hoi To Wai	Graduated Fall 2017
Xue Zhang	Graduated Spring 2016
Meng Zhou	Graduated Fall 2014
Henry Braun	Graduated Fall 2016
John Kota	Graduated Spring 2016

Masters students in ECEE (committee chair or primary co-chair):

Name	Status	Expected Graduation

Shuai Wang	Graduated. Now a cognitive analytics scientist at Verisk Analytics.	Graduated Spring 2016
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Masters students in BHSE (member of committee):

Name	Expected Graduation
Austin Butts	Graduated Summer 2015

Undergraduate honors students:

Name	Status	Expected Graduation
Jacob Peplinski	Senior in ECEE. Will continue graduate studies at ASU.	Spring 2018
Davis Gilton	Graduated. Now a PhD candidate at the University of Wisconsin-Madison.	Graduated Spring 2016
Prad Kadambi	Graduated. Now an MS candidate in ASU ECEE.	Graduated Spring 2016
Jessica Schiltz	Graduated. Now a PhD candidate at the University of Notre Dame.	Graduated Spring 2015

Postdoctoral researchers:

Name	Status
Megan Willi, PhD	Megan received her PhD at the University of Arizona. She joined my lab after graduation and has been working on algorithms for characterizing acoustic-prosodic entrainment. She recently received an offer for a tenure-track Assistant Professor position at the University of Northern Colorado.
Amy LaCross, PhD	Amy received her PhD at the University of Arizona. She is co-advised by me and Prof. Julie Liss. She is currently studying the interplay between the properties of a speaker's native language, the disturbances in speech resulting from dysarthria, and the resulting impact on speech intelligibility.

SERVICE

Internal Service:

- Degree coordinator for SHS PhD program, Fall 2018
- Member of the ECEE *Systems* search committee, Spring 2018
- Co-chair of the Translational Team Structure, Process, and Evaluation working group in the College of Health Solutions, Spring 2018
- Co-founder of the Coffee and Cognition (CoCo) seminar, 2014
- Member of PhD committee in SHS, 2016 - Present
- Member of the ECEE ad-hoc committee to improve student recruitment, 2015 - 2016
- Member of web-design committee in SHS, 2013-2014

External Service:

- Virtual review panelist for NSF (Smart Health), 2018
- In person review panelist for NSF (CCF), 2018
- Selected as member of the IEEE Speech and Language Technical Committee, 2017
- Virtual review panelist for NSF (Smart Health), 2017
- In person review panelist for NSF (CCF), 2017
- Organizer and chair of an invited session at the 2016 Asilomar Conference (Speech and language analysis for health applications), 2016
- Associate editor, Journal of Alzheimer's Disease, 2014 – 2016
- Virtual review panelist for NSF (Smart Health), 2015
- Vice-chair of the IEEE Industry DSP Standing Committee, 2010 - 2012
- Guest editor, Elsevier Digital Signal Processing Journal Special Issue on Defense Applications of Signal Processing, 2009
- Reviewer for IEEE Transactions, Journal of Alzheimer's Disease, Journal of the Acoustical Society of America, Journal of Speech Language and Hearing Research, among others, 2011 - present

Research Funding

The total allocated to Berisha was calculated based on the PI recognition percentage (column titled Investigator Recognition in the Faculty Sponsored Activity Report). This is calculated by multiplying the recognition percentage by the total award value.

Funded:

- 15 **Title:** Objectively Quantifying Speech Outcomes of Children with Cleft Palate
Sponsor: National Institutes of Health – National Institute on Deafness and Other Communication Disorders
PIs: Visar Berisha, Nancy Scherer (Multiple PI Proposal, Scherer contact PI)
Berisha's Role: 1 of 2 Principal Investigators
Total Award Value: \$429, 243
Total Allocated to Berisha: \$145, 942
Performance Period: 9/1/2018 – 8/31/2020

- 14 **Title:** An information-theoretic approach to improving the robustness of deep learning architectures
Sponsor: Office of Naval Research
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$349, 012
Total Allocated to Berisha: \$349, 012
Performance Period: 9/1/2017 – 8/31/2020

- 13 **Title:** R01: Perception of dysarthric speech: An objective model of dysarthric speech with actionable outcomes
Sponsor: National Institutes of Health – National Institute on Deafness and Other Communication Disorders
PIs: Visar Berisha, Julie M. Liss (Multiple PI Proposal, Liss contact PI)
Berisha's Role: 1 of 2 Principal Investigators
Total Award Value: \$1, 815, 012
Total Allocated to Berisha: \$907, 506
Performance Period: 4/1/2017 – 3/31/2022

- 12 **Title:** R21: Speech rhythm entrainment in the context of dysarthria
Sponsor: National Institutes of Health – National Institute on Deafness and Other Communication Disorders
PIs: Stephanie Borrie (Utah State University)
Berisha's Role: Co-Investigator (PI of ASU subcontract)
Total Award Value: \$450, 000 (approx.)
Total Allocated to Berisha: \$158, 795
Performance Period: 4/1/2017 – 3/31/2020

- 11 **Title:** Speech and Language Analytics for Early Detection of Psychosis
Sponsor: Boehringer Ingelheim GmbH
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$139, 018

Total Allocated to Berisha: \$69,509
Performance Period: 1/1/2017 – 12/31/2019

- 10 **Title:** Speech Changes as Predictors of Migraine Attack Onset
Sponsor: Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery
PIs: Visar Berisha, Todd Schwedt
Berisha's Role: Co-Principal Investigator
Total Award Value: \$100, 000 (approx.)
Total Allocated to Berisha: \$56, 035
Performance Period: 1/1/2017 – 12/31/2017

- 9 **Title:** Asthma Control / Cough Assessment with Smart Wearable Devices
Sponsor: Boehringer Ingelheim GmbH
PIs: Yu Cao, Visar Berisha,
Berisha's Role: Co-Principal Investigator
Total Award Value: \$113, 747
Total Allocated to Berisha: \$11, 374
Performance Period: 1/1/2017 – 6/1/2017

- 8 **Title:** Passive monitoring of motoric abilities using mobile technology
Sponsor: Google Inc.
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$193, 789
Total Allocated to Berisha: \$193, 789
Performance Period: 7/1/2016 – 12/31/2017
Notes: Appears as two projects on the Sponsored Activities Report

- 7 **Title:** Robust low-power implementations of complex models
Sponsor: Raytheon Co.
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$100, 265
Total Allocated to Berisha: \$100, 265
Performance Period: 5/1/2016 – 5/31/2017

- 6 **Title:** The reticulation/activation nexus in organizations: An agent-based model and empirical test using unique data
Sponsor: National Science Foundation
PIs: Steven Corman, Daniel Bliss, Visar Berisha
Berisha's Role: Co-Principal Investigator
Total Award Value: \$205, 060
Total Allocated to Berisha: \$41, 012
Performance Period: 9/1/2016 – 8/31/2018

- 5 **Title:** MRI-based algorithms that differentiate between patients with post-traumatic headaches and migraine
Sponsor: Department of Defense
PIs: Todd Schwedt
Berisha's Role: Co-Principal Investigator (PI of ASU Subcontract)

Total Award Value: \$1, 570, 000
Total Allocated to Berisha: \$203, 517
Performance Period: 9/1/2015 – 9/1/2018

- 4 **Title:** STTR: speaklear: an augmentative tool to connect speech language pathologists with patients
Sponsor: National Science Foundation (STTR)
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$119, 996
Total Allocated to Berisha: \$119, 996
Performance Period: 1/1/2015 – 8/1/2016
Notes: Later transitioned to Michael Dorman due to conflict of interest. Does not appear in Sponsored Activity Report and I do not count it as a part of the total amount reported.

- 3 **Title:** Multivariable Models of Brain Structure that Classify Post-Traumatic Headache and Differentiate It from Migraine
Sponsor: ASU – Mayo Seed Grant
PIs: Visar Berisha, Todd Schwedt
Berisha's Role: Co-Principal Investigator (PI of ASU subcontract)
Total Award Value: \$40, 000 (approx.)
Total Allocated to Berisha: \$14, 816
Performance Period: 1/1/2015 – 12/31/2015

- 2 **Title:** R21: A web-based platform for cross-linguistic research in dysarthric speech
Sponsor: National Institutes of Health – National Institute on Deafness and Other Communication Disorders
PIs: Julie Liss, Visar Berisha, Megan McAuliffe (Multiple PI Proposal)
Berisha's Role: 1 of 3 Principal Investigators (Liss contact PI)
Total Award Value: \$359, 175
Total Allocated to Berisha: \$179, 587
Performance Period: 1/1/2015 – 12/31/2016

- 1 **Title:** Improving the Robustness of Deployed Machine Learning Algorithms
Sponsor: Office of Naval Research
PIs: Visar Berisha
Berisha's Role: Principal Investigator
Total Award Value: \$293, 877
Total Allocated to Berisha: \$293, 877
Performance Period: 7/1/2014 – 6/30/2017